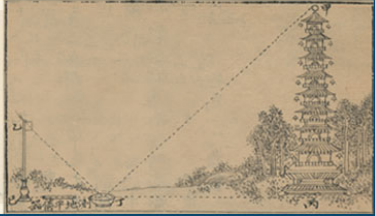




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HISTORY OF SCIENCE 將地與
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SOURCES, LOCALITY AND GLOBAL HISTORY:
SCIENCE, TECHNOLOGY AND MEDICINE IN EAST ASIA

BOOK OF ABSTRACTS

6-10 July 2015
EHESS, Paris

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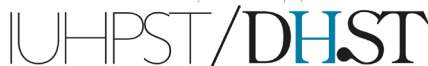
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THE HISTORY OF SCIENCE IN EAST ASIA

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SCIENCE, TECHNOLOGY AND MEDICINE IN EAST ASIA

BOOK
OF
ABSTRACTS

Designed by Sica Acapo
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ABSTRACTS

PL

Plenary Lecture 1**Innovation and entrepreneurship in China's pre-modern economy:
Huizhou and Shanxi merchant networks revisited**

François GIPOULOUX

(UMR China, Korea, Japan, CNRS & EHESS)

While abundant scholarship has been devoted to the study of marketisation and the gradual emergence of industries in early modern China, less attention has been devoted to investigating the contrasted social, economic, and political functions of merchant networks. This paper will focus on two trading networks — Huizhou and Shanxi merchants — that have always been considered separately in academic literature. The objective is to provide a comprehensive analysis of China's endogenous financial instruments over a long period of time (16th-20th centuries). The rise of interregional trading networks in China was supported by both formal and informal financial institutions. The lack of financial innovation, however, seems to have been a crippling weakness. The pawnshops and other loans or money shops could not properly be called banks, for they were confined to lending money to households or lending working capital to craftsmen. Chinese endogenous institutions did not commit themselves to long-term credit.

In the last two decades, numerous scholars have reconsidered the relationship between the State and the economy in late imperial China. In particular, the question of the great divergence between China and Europe has received considerable attention in both Mainland China and the West, especially since China's return to the centre stage of the world economy at the beginning of the 21st century. The issue has long been debated, mainly in the form of two questions. First, there was the 'Needham puzzle': why did economic development in China fall behind that of the West despite the advance of Chinese civilisation in the technological and/or commercial revolution during the Song dynasty (by 1000 A.D.)? Then, there was the 'Jones question': Why was the Song achievement, which set China's economic development well ahead of other societies in both Europe and Asia, never repeated in China?

Instead of focusing exclusively on quantitative data — which are, in the case of China, scarce and incomplete — or on a normative standard, the primary objective of this paper is to address two sets of questions: 1. What was the overall contribution of these regional trade groups to economic development? and 2. How can we explain the paradox of the wealthy merchant emerging in a context of uncertain processes of capital accumulation?

PL

Plenary Lecture 2**Doing EASTM in the early twenty-first century:
the case of Japanese family planning in Cold War Asia****Aya HOMEI**

(University of Manchester)

This paper aims to assess possibilities and challenges of scholars identifying with EASTM by introducing my current research on Japan's involvement in international cooperation in family planning in the 1960s and 1970s, and the trajectory I was compelled to take in my research. I am going to discuss how EASTM scholars can contribute to different fields of inquiry by reappraising established categories, such as colonial science and international health. I am also going to discuss issues that can emerge out of this form of scholarship. Some are general problems with which an academic field needs to engage in the process of institutionalization, such as the dilemma between ghettoization or interdisciplinary collaboration and the question of advocacy versus academic integrity. Others are more specific issues arising from doing EASTM of the recent period and dealing with knowledge that informs political action. How, for instance, can we reconcile our critical approach to knowledge production with the often progressivist views of our informers? I will be illustrating these issues with examples from my research on birth control and population policy.

PL

Plenary Lecture 3**Beyond the Imperial Court:
The Changing Role of European Astronomy in Late Imperial China**

LÜ Lingfeng

(University of Science and Technology of China)

The dissemination and adoption of European astronomy exemplifies the localization of Western science in China, as well as that country's scientific modernization. The reign of the emperor Kangxi (1661-1722) inaugurated an era of peace for the adoption of Western sciences in China, in which disputation abated while Western astronomy introduced by the Jesuits replaced traditional Chinese astronomy and became "the emperor's new science". Boasting a higher accuracy in its forecasting techniques, Western astronomy was the most desirable aspect of Western learning for the state, serving the imperial court and its ruling order, in the way that traditional Chinese astronomy had done previously. As for the role of enlightening the public about scientific knowledge, that was beyond the reach of Western astronomy practitioners at that time.

The 19th century saw the re-launching by missionaries of a movement to translate Western learning, within which, however, astronomy was no longer privileged. Particularly after the Self-strengthening Movement, the demands for Western learning changed drastically in terms of its content. Literati working for state-owned translation institutes, however, attached great importance to translating textbooks dealing with the foundations of Western astronomy. These translators themselves were not professional astronomers, and the focus of their works shifted away from accurate calculation and application, on which emphasis had been laid in the 17th century. Their interest in translating works on the elementary theories of astronomy reveals their aspiration for learning about and understanding nature and the universe.

In the meantime, astronomy appeared on the curricula of certain educational organizations for Western learning; to improve the public understanding of the universe and astronomical phenomena scientifically, articles on the elementary principles of astronomy was also published by journalists. It is noteworthy that those who turned their attentions to the latest advances in astronomy were not professional astronomers, but the humanist literati, whose knowledge background was traditional Chinese classics; they even made their own assertions about astronomy. A collection of Chinese diplomats and literati followed closely the news regarding Western observatories and astronomical instruments in their overseas visits; at home, they promoted the Western calendar so as to keep pace with the global world. Like other natural sciences, astronomy in China thus came to enable Chinese literati to perceive nature and the universe, altering their views on the world via playing the role of enlightening them about scientific knowledge.

However, even in early 20th century China when interest in Western learning surged, astronomy attracted attention through its traditional role of interpreting and forecasting. Especially on occasions when extraordinary astronomical phenomena, such as the transit of Venus and the appearance of comets, occurred simultaneously with major political events, even those aware of Western learning, felt they were somehow linked closely with such events as the death of emperor, the outbreak of the Revolution of 1911, and so on. Various opinions, astrological or scientific, published in newspapers and magazines, and the associated debates were no longer secrets confined within the imperial court but topics spreading among the public and mass media.

SP

**Special Plenary Session:
The Collège de France Research Group on East Asian Science,
Technology and Medicine (1984-1998)**

SP/1

 Marc KALINOWSKI

(École pratique des Hautes Études)

***Cosmology and politics in late
Warring States and early Han:
The cosmological system in the Yin-
Yang chapters of the Chunqiu fanlu***
春秋繁露

My paper will deal with the Yin-Yang chapters of the *Chunqiu fanlu* 春秋繁露, a textual compendium whose dating and authenticity is a matter of debate among modern historians of the Han period. Recent studies tend to see the content of these chapters as a blending of diverse cosmological theories lacking coherence and with no equivalent in the received literature from pre-Han and early Han times. In the first part of the paper, I will challenge current views on the Yin-Yang chapters of the *Chunqiu fanlu* by showing that they display a unified and highly complex cosmological system, and that the complexity of this system lies in the way it describes the seasonal revolutions of Yin and Yang in time and space. Then, since the function of this system in the Yin-Yang chapters is to promote a form of government based primarily on wisdom and “virtue” (*de* 德) rather than on law and “punishment” (*xing* 刑), I will attempt to evaluate the degree of mutual contamination between the political agenda defined by the authors of these chapters and the cosmological system used to support it. In the final part of the paper, I will draw evidence from early Han excavated manuscripts that may possibly be related to the cosmology of the Yin-Yang chapters.

SP/2

 Françoise SABBAN
(UMR China, Korea, Japan,
CNRS & EHESS)

***The order of things and words: the
technical system of food preparation
in the Qimin yaoshu 齊民要術***
(6th Century)

The *Qimin yaoshu* (Essential Techniques for the Peasantry), taken as reference here, is a well known treatise on agriculture, the oldest Chinese text of its genre preserved in its entirety. The work, which synthesizes the personal experience of its author and a rich collection of ancient texts, consists of ten numbered chapters (*juan*), about a quarter of them being dedicated to food preparations, and explained in about 300 recipes. The order of their presentation reflects the hierarchy of values attached to food products as well as their place in the patterns of consumption and in the culinary process. Alcoholic drinks and starters to prepare them appear first, a sign of their essential social, ritual and economic role. Then come other specific ferments, malts, salts, condiments, and vinegars, basic tools of the cuisine, and finally ordinary culinary preparations. Maltoses or cereal sugars conclude the list. This structured series of formulas is based on an implicit technical system shaped by a specific conception of material life and a relevant technical lexicon.

SP/3

Catherine DESPEUX

(INALCO)

***The medical manuscripts from
Central Asia, a privileged place
for observing phenomena of
globalization, exchange and transfer
between Asian medicines***

Medical manuscripts in Chinese and several other languages have been discovered in a number of large centres on the Silk Road - mainly in Dunhuang, but also in Turfan, Khotan and Khara-Khoto. A careful reading of these sources and comparison with printed sources enriches our understanding of the history of Chinese medicine itself, and also of the transfer phenomena, exchanges and diffusions of various medicines involved.

SP/4

Georges MÉTAILLIÉ

(Centre Alexandre Koyré)

***The reception of modern science
in Japan and in China - The case of
botany***

Japan and China offer a very stimulating field of comparison in considering the beginning of modern botany. In 1878, A.G.C. Geerts, a Dutch scholar who was the first to present chemistry in Japan, wrote in the introduction of a book *The Products of Japanese and Chinese Nature*: "...The progress made by the natural sciences in Europe since the last century has had very little influence on the state of knowledge of that nation [China], so that its scientific knowledge is hardly different from the picture that Von Siebold produced of natural history among the Japanese fifty years ago."

Taking botany as an example, I would like to try to understand why there was such a difference. In this respect, the following topics will be analyzed:

- The local background before the moment botany as a science was first known,
- The evolution, if any, of the field at its beginning,
- The moment when the science of plants became part of scientific knowledge and teaching in the two countries, and when the scientists of the two countries entered the international field of botany.

NSMS

The Life and Work of Nakayama Shigeru (1928-2014)

Organisers: Morris LOW & TSUKAHARA Togo

This panel is devoted to celebrating the achievements of the late Professor NAKAYAMA Shigeru. Chaired by Morris Low and TSUKAHARA Togo, it includes presentations by senior scholars in the field whose own work and lives have been touched by Professor Nakayama and his work. Professor Nakayama (1928-2014) passed away in Tokyo on 10 May 2014, at the age of 85. He was the most internationally known historian of Japanese science and this panel is organised to highlight this and the wide impact of his work. Nakayama regarded Thomas S. Kuhn (1922-96), Joseph Needham (1900-1995) and Kiyosi YABUUTI (1906-2000) as his teachers. Nakayama entered graduate school at Harvard in 1955, and was Kuhn's first graduate student. Nakayama focussed on the history of Japanese astronomy. In 1957, he went to see Joseph Needham in Cambridge England and that was the beginning of a long-term friendship. Nakayama made Needham aware of YABUUTI Kiyosi's work on the history of Chinese calendrical astronomy. Nakayama then went to Kyoto University in 1958 to see Yabuuti. Nakayama completed his dissertation in 1959 and in 1960, joined the Faculty of Arts and Sciences at the University of Tokyo. As part of the panel, SUN Xiaochun will speak on Nakayama's contribution to the history of astronomy.

In 1975, Hitoshi Yoshioka would attend one of Nakayama's public lectures at Tokyo University. He approached Nakayama to be his mentor and we are fortunate to have him participate as the first speaker in the panel as Nakayama's long-term collaborator. Nakayama's work had a major impact not only in Japan but throughout the world. HONG Sungook will speak on the impact of his work in South Korea.

In 1989, Nakayama officially retired from the University of Tokyo and it was from that time he would visit Australia regularly, often accompanied by his family. Tessa Morris-Suzuki was one of the Australian scholars he strongly respected. She will be speaking on her appreciation of Nakayama's work and his development of the concept of 'service science'. Nakayama subsequently moved to the School of International Business Administration at Kanagawa University where he was the Professor of the STS Centre for ten years. In 2008-09, Nakayama was appointed Paul Terasaki Chair in US-Japan Relations at UCLA. Sharon Traweek will be speaking on Nakayama's years in Los Angeles.

NSMS/1

YOSHIOKA Hitoshi

(Kyushu University)

The Nakayama Project on the Social History of Science and Technology in Contemporary Japan

Nakayama Shigeru commenced this major research project in 1986. It culminated in a series of publications, and the following are its translations in English, all edited by Nakayama with Goto Kunio and Yoshioka Hitoshi:

- *A Social History of Science and Technology in Contemporary Japan, Volume 1 : The Occupation Period, 1945-1952* (Trans Pacific Press, 2001)

- *A Social History of Science and Technology in Contemporary Japan, Volume 2 : Road to Self-Reliance, 1952-1959* (Trans Pacific Press, 2005)

- *A Social History of Science and Technology in Contemporary Japan, Volume 3: High Economic Growth Period 1960-1969* (Japanese Society Series) (Trans Pacific Press, 2006)

- *A Social History of Science and Technology in Contemporary Japan, Volume 4: Transformation Period 1970-1979* (Trans Pacific Press, 2006)

I succeeded Nakayama and have led this project since 2005. The Nakayama project is now referred to as the New Contemporary History (*Shin Tsushi*) Project and a series of books covering 1995-2011 were published in 2011-2012. These series of publications describe over sixty-six years of contemporary social history of Japanese techno-science, from the end of WWII through to the Fukushima Nuclear disaster.

In this presentation, I would like to outline how this Nakayama project has been organized, and to briefly outline its achievements. Due to the number of authors, there are different approaches and writing styles vary. But the most important thing is that this series as a whole provided ample resources for the description of

contemporary techno-science history. I also discuss characteristics of Nakayama's methodology for this project. There are two characteristics. The first one is the way in which the history of specific disciplines and/or topics are described. Nakayama felt that histories should not be the simple accumulation of achievements and developments in each field, but that there was a need to first to survey Japan's societal background, and contextualize techno-scientific events in the social context. Secondly, each of the fields are contextualized within the four social sectors that drive techno-science, (namely, Bureaucracy, Industry, Academia and Populace), with special attention paid to the "Populace" or people.

NSMS/2

Tessa MORRIS-SUZUKI

(The Australian National University)

The Vision of Service Science in Japan: Nakayama Shigeru and the Japanese Experience of Citizen Science

A hallmark of the career of Professor Nakayama Shigeru was his commitment to the development of "service science": scientific activities which directly contribute to the welfare of humanity. As he noted, service science is distinctive not only in its goals, but also in its creation and assessment. It involves systems which allow ordinary citizens, as well as professional scientists, to be involved in the assessment of scientific research. The vision of service science has come to have particular relevance in Japan in the wake of the 2011 Fukushima disaster. This paper will use ideas developed by Professor Nakayama to explore neglected traditions of citizen science in Japan from the 1920s to the 2010s.

NSMS/3

SUN Xiaochun

(Institute for the History of Natural Sciences, Chinese Academy of Sciences)

On Nakayama's Contribution to the History of Astronomy

Professor Nakayama's approach to the history of Japanese and Chinese astronomy was truly global and comprehensive. In his "A History of Japanese Astronomy", he gave a concise account of Chinese astronomy from the sixth to the sixteenth centuries, which constituted the tradition and the background of Japanese astronomy before the influence of Western astronomy. Since the late sixteenth century, the transmission of Western astronomical knowledge to the East challenged the Chinese tradition in Japan. Professor Nakayama's study of Japanese astronomy of this period demonstrates how the Japanese reacted to the challenge by initiating their own calendrical reform. It is interesting to see how the Japanese differed from the Chinese in their attitude and approach towards Western astronomical knowledge. Since the mid-eighteenth and through the nineteenth centuries, the Japanese finally came to recognize the supremacy of Western astronomy. All this was done with a world history of astronomy and comparative perspective in his mind. This global view brought him into contact, and very often close collaboration, with distinguished scholars such as YABUUTI Kiyosi 藪内清, Joseph Needham, Nathan Sivin, and Aydin Sayili. It was through Professor Nakayama's introduction that Joseph Needham realized the importance of Yabuuti's work on Chinese mathematical astronomy. It was the long time collaboration with Yabuuti and Nathan Sivin that produced excellent studies on the *Shoushi li* (Season Granting system) by Guo Shoujing. It was his inquiry about the transmission of astronomical knowledge in the medieval times between Central Asia and China that stimulated

Aydin Sayili to make a study entitled *Al Kwarazmi, 'Abdu' l-Hamid ibn Turk and the Place of Central Asia in the History of Science*. All these demonstrate Professor Nakayama's global view of the history of astronomy.

Personally I had the privilege of having many conversations with Professor Nakayama. Today, recalling his words, reading his writings, I feel greatly inspired by his vision and insights on the history of astronomy.

NSMS/4

HONG Sungook

(Seoul National University)

The Influence of Nakayama Shigeru's "The Modern History of Science and Society" in Korea

The late Professor Nakayama's "The Modern History of Science and Society" (in Japanese) was translated into Korean and then published in Seoul in 1982. At that time, the protests of college students against Korea's despotic government, which had come to power by military coup in 1980, was very intense. Among these radical students, there were groups of students who majored in natural science and engineering. They tried to combine their concern regarding social issues related to science and technology with their criticism of the government, which with its strong focus on the economic development of Korea, had neglected the environment and the health of the people, abusing the benefits of modern science and technology in the process. Nakayama's book, which was avidly read by these radical students, served as the best guide for this strategy. My paper will illuminate how Nakayama's book was read, adopted, and adapted by radical Korean students in the early and mid-1980s, and how the book's ideas were appropriated and expressed in the "Science and Technology Movement" during that decade.

NSMS/5

Sharon TRAWEEK

(University of California, Los Angeles)

Nakayama Shigeru in Los Angeles

Nakayama sensei spent 2008-09 as the Terasaki Visiting Professor at the University of California, Los Angeles (UCLA). He was excited by digital research and teaching; he also enjoyed planning, hosting, and publishing papers from an iconoclastic and influential workshop on “Discontinuities: Nation-State Formation in Japan with Science, Technology, and Medicine during Imperialism, War, Occupation, and Peace, 1932-1962.”

HPYMS

In memory of Ho Peng Yoke (1926-2014): contributions to the history of astronomy, alchemy and divination in China

Organiser: Christopher CULLEN

Professor Ho Peng Yoke was born in Perak, in what was then Malaya, in 1926, and died in Brisbane in 2014. He held academic posts in Singapore, Kuala Lumpur, Hong Kong and Australia, as well as spending substantial periods in Cambridge, where he collaborated with Joseph Needham, and eventually became Director of the Needham Research Institute in succession to Needham himself. This panel will commemorate his life and work as a collaborator and supporter of Needham, and as a historian of astronomy, alchemy and divination in China.

HPYMS/1

Christopher CULLEN
(Needham Research Institute
Cambridge & CRCAO)

Ho Peng Yoke and the Needham project

Joseph Needham's *Science and Civilisation in China* project has been called "perhaps the greatest act of historical synthesis and intercultural communication ever attempted by one man". There is a measure of truth in that characterisation - SCC is indeed an immense and unprecedented effort of scholarship and a bold and courageous attempt to demonstrate the permeability of cultural boundaries - but it was never a one-person project, any more than was the creation of the Needham Research Institute that became its essential research base. These achievements depended crucially on the work of a group of collaborators who have tended to disappear into the great shadow of Needham himself, sometimes intentionally but sometimes not entirely so.

Ho Peng Yoke was one of the most important long-term members of Needham's team of supporters, collaborators and co-authors. As well as contributing his considerable scholarship, he also worked tirelessly to ensure the financial viability of the Needham

enterprise. His own accounts of his work with Needham are written with a light touch, and are sometimes understated to the point of irony. This talk will attempt to use the author's personal acquaintance with Ho Peng Yoke to give a more nuanced picture of the nature of his relations with Needham and with Needham's work.

HPYMS/2

QU Anjing
(Northwestern University)

Ho Peng Yoke and Chinese astronomy: his contribution to the field, and some personal reminiscences

The first time I met Professor Ho Peng Yoke was in 1986 when he gave a talk in Xi'an under the title "Needham and me". This paper will discuss Professor Ho Peng Yoke's contributions to research in the field of Chinese astronomy, and will also tell a few relevant stories about my encounters with him, and his relations with my university.

HPYMS/3

Fabrizio PREGADIO(Friedrich-Alexander Universität
Erlangen-Nürnberg)***Ho Peng Yoke, Chinese Alchemy,
and Daoism***

One of the main areas of enquiry of Professor Ho Peng Yoke was *Waidan* 外丹 (External Alchemy). Some of the main results of his research in this field are at the basis of several hundreds of pages in Joseph Needham's *Science and Civilisation in China*. Ho began to collaborate with Needham in 1958-59. Their cooperation resulted in the drafts of large portions of the *Science and Civilisation in China* volumes on *Waidan* (especially the introductory overview in vol. V.2, and the historical survey in vol. V.3) and on gunpowder (vol. V.7). In addition, Ho and Needham coauthored a series of articles on *Waidan*, parts of which were included in those volumes.

While the contributions to *Science and Civilisation in China* may be the most visible—or perhaps, invisible—aspect of his contributions, this is only one facet of Ho Peng Yoke's work on Chinese alchemy. From the mid-1960s, Ho expanded the scope of his research to reach beyond the Daoist Canon, as he began investigating materials on alchemy found in sources ranging from pharmacological texts to poetry and novels. This wider perspective resulted in several new studies, whose subjects span from the alchemical content of pharmacopeias (*bencao*) to the references to alchemy in the works of major poets, including Bai Juyi 白居易 and Lu You 陆游. Nonetheless, Daoist texts continued to be a major focus of Ho Peng Yoke's work, as shown by an exemplary study on the dating of works in the Daoist Canon, exemplified by texts on alchemy.

This talk will summarize the contents of Ho Peng Yoke's main contributions to the study of Chinese alchemy, discuss

their place within this field, and try to evaluate their importance with regard to the broader issues of Daoism and Chinese science with regard to alchemy.

HPYMS/4

Lisa RAPHALS

(University of California, Riverside)

Science and Divination Reconsidered: Ho Peng Yoke and the history of Chinese science and mantic practices

Ho Peng Yoke wrote across many areas of the history of science in China. His early studies focused on Chinese Alchemy, for example, "Theories of Categories in Early Mediaeval Chinese Alchemy" (1959, with Joseph Needham), "Alchemy in Ming China" (1971), "The System of the Book of Changes and Chinese Science" (1972), "Chinese Alchemical and Medical Prescriptions" (1974) and more recently *Explorations in Daoism: Medicine and Alchemy in Literature* (2011). Other important aspects of his work are less widely known. These relate to the mantic arts as an area of scientific enquiry, particularly the calculation of fate and its relation to mathematics, astronomy, *yin-yang* cosmology and its microcosmic counterparts. These interests first appear in *Li, Qi and Shu: An Introduction to Science and Civilization in China* (1987) and are more fully explored in *Chinese Mathematical Astrology* (2003). This paper will set this part of his work in the wider context of divination in Chinese culture and history, and discuss how it relates to Ho Peng Yoke's stance on the question of the nature of "Chinese science."

P1

The formation, transmission and reception of mathematical knowledge in East Asia since the 11th century

Organisers: *YING Jia-Ming & Charlotte POLLET*

This panel is devoted to the formation, transmission and reception of mathematical knowledge in East Asia since the 11th century. The formation of mathematical knowledge is known to be a complicated process, and the phenomenon of how formation and transmission are entangled is less studied in the East Asian context. The 1st and the 2nd paper in this panel will address the issue with the example of particular algebraic methods developed in China in the 11th to the 13th century and how these methods were received by later Chinese readers. These papers show how transmission and reception are as creative as the formation process. The transmission of mathematical expertise within East Asia and from Europe into East Asia, and the reception/transformation of mathematical knowledge in different parts of East Asia, is the other topic that is discussed in this panel. The transmission of mathematical knowledge within East Asia, through time from earlier centuries to later ones, or through space from one country to another, has been studied by historians since the late 20th century.

Traditionally this process was assumed as a continuation of “ancient Chinese knowledge” in later centuries and among China’s neighbors, but recent studies show that original scholarship in transforming ancient knowledge, discovering new problems and creating new solutions are also important elements of this process, which still require more study in detail. What complicates the situation is the transmission of European mathematics into East Asia, especially Euclidean geometry and symbolic algebra, which have completely different forms and aims from traditional East Asian mathematics. This process has attracted more attention from historians of science, but we will also revisit this issue in our panel in the perspective of how East Asian scholars integrated the new knowledge with their own traditions. The 3rd and 4th papers in this panel address the topic of Euclidean geometry and symbolic algebra, respectively, while the 5th and 6th papers discuss how Korean and Japanese mathematicians absorbed earlier mathematical expertise from different traditions and presented mathematics in their own original styles.

P1/1

ZHU Yiwen

(Institute of Logic and Cognition,
Department of Philosophy,
Sun Yat-sen University)

ZHENG Cheng

(Institute for the History of Natural
Sciences, Chinese Academy of Sciences)

Qin Jiushao’s mathematical written system (13th century) and its acceptance by Qing scholars during the 18th and 19th centuries

This talk will commence with an analysis of Qin Jiushao’s 秦九韶 (1208-1261) mathematical written system, which was presented in *Mathematical Book in Nine Chapters* (*Shushu Jiuzhang* 數書九章, 1247). In this book, Qin Jiushao created a kind of mathematical written system that is used for depicting the process of the operation of counting rods outside paper. Therefore, the system is connected to counting rods. However, in 18th and 19th centuries, when people did not use counting rods anymore, how did they

*The formation, transmission and reception of mathematical
knowledge in East Asia since the 11th century*

understand Qin Jiushao's work? Based on the newfound manuscript of the *Mathematical Book in Nine Chapters* (Zhao Qimei's 趙琦美 manuscript, 1617), we are going to deal with the problem by two cases: 1. how did practitioners transcribe this book into Complete Library of the Four Treasures (*Siku Quanshu* 四庫全書, 1784)? 2. how did Song Jingchang 宋景昌 make the first printed editions of this book (1842)? I think my talk will contribute to the discussion of how Qing 清 scholars accepted the mathematical knowledge in Song and Yuan dynasties.

P1/2

Charlotte POLLET

(National Chiao-Tung University)

Analogy and order of problems: Combinatorics and algebra in China Song dynasty mathematics

Li Ye, 李冶 (1192-1279) is known for the *Ceyuan haijing* 測圓海鏡, and the *Yigu yanduan* 益古演段, two important treatises containing an algebraic procedure for setting up polynomial equations: the Procedure of Celestial Source 天元術. Being the oldest surviving works on polynomial algebra, the treatises are used to depict "Chinese" algebra and it is said since Qing dynasty that Li Ye's purpose was to introduce «practically» the famous procedure. It is possible to offer a new reading of his mathematical treatises. The content of *Yigu yanduan* as well as *Ceyuan haijing* challenges definition. If read as separate list of formulas and problems, the algebraic content is obvious. Yet, the study of the other procedure introduced in the *Yigu yanduan*, the Section of Pieces [of Areas], 條段, shows that the grouping of data and geometrical figures is meaningful and relies on mathematical knowledge not explicitly stated in the books. There is a system of order of problems that reveals Li Ye's previously unconsidered mathematical preoccupations.

In fact, the analysis of the structure of the book reveals specific concerns dealing with transformations and combinatorics. The structure is made through analogies and reductions, which are made evident through the construction of the geometrical diagrams. The structure that is thus revealed conveys mathematical meanings. I suggest that the Procedure of Celestial Source was first used to check the correctness of the algorithm presented first in the Section of Pieces [of Areas]. It also seems that this specific practice of reflection on transformations was not confined to the mathematical context. Philosophical reasons probably led Li Ye to the focusing on transformations in mathematical procedures and it is highly probable that the organisation of the treatise is older than Li Ye's time. The question is thus: what is the source of this structure and how was it transmitted to and by Li Ye?

P1/3

YING Jia-Ming

(Taipei Medical University)

SU Jim-Hong

(National Taiwan Normal University)

The influence of two versions of Jihe yuanben in China – A revisit

In 1607, the first six books of Christopher Clavius' edition of Euclid's Elements, translated by Matteo Ricci (1552-1610) and Xu Guangqi 徐光啟 (1562-1633) with the title *Jihe yuanben* 幾何原本 (Elements of Mathematics), was published in Beijing. In 1723, the mathematical compendium *Yuzhi Shuli jingyun* 御製數理精蘊 (Essential Principles of Mathematics, Imperially Composed), which includes a section also named *Jihe yuanben* (Elements of Geometry) based indirectly on Ignace-Gaston Pardies' (1636-1673) *Elémens de Géométrie*, was published and regarded by the Qing dynasty as the standard knowledge of mathematics. Historians of science have explored the influences of

the two versions of “Elements” in China, but they do not totally agree in their conclusions. Some stress the impact of the 1607 version on the Westernisation of Chinese mathematics, while others believe that the 1723 version has more influence as part of the imperial canon. This paper tries to revisit the influence of the two texts and give a synthesis for some of the previous studies.

Ricci himself categorised mathematics into the dichotomy of *shu* 數 (number) and *du* 度 (measurement), trying to connect the contents of his translation with traditional Chinese mathematics. This strategy indeed helped him find a position for Euclid’s Elements among traditional Chinese studies, but it also put Euclidean geometry mainly in the realm of real-world applications. This tendency can be seen from Xu Guangqi’s, Du Zhigeng’s 杜知耕 and Fang Zhongtong’s 方中通 reception and original works about Euclidean geometry. They did stress the importance of *suanli* 算理 (principles of calculations), but the style of argumentation usually concentrates on giving numerical examples or exact diagrams for explanations, which deviates from the axiomatic-deductive structure of Euclid’s Elements. The intuitive style of argumentation in the 1723 version only strengthened this tendency. Although the emphasis on *suanli* can be seen throughout Qing mathematicians’ works, the focus was never on the logical structure. In other words, problem-solving was still one of the most important aims for mathematical treatises.

P1/4

Jiang-Ping Jeff CHEN

(St. Cloud State University, Minnesota)

DONG Jie

(Inner Mongolia Normal University)

Episodes of “Symbolic Algebra” in China

The first appearance of «symbolic» algebra in China is often attributed to the cossic algebra introduced by the Jesuits in the

1690s or to Jean-François Fouquet’s (1665 – 1741) manuscript, *Aerrebala xin fa* 阿爾熱巴拉新法 (New Method of Algebra) in 1711. Historians of Chinese mathematics, on the other hand, generally consider that symbolic algebra did not enter Chinese mathematics until after the translation of Elements of Algebra in 1859, although the mathematical compendium *Shuli jingyun*, 數理精蘊 (Essence of Numbers and Principles), commissioned by Kangxi Emperor (1654-1722) and published in 1723, does contain sections discussing the “symbolic” expressions and their operations. The rationale is that symbolic algebra was not adopted in Chinese mathematics. Recently, we uncovered records of usage of symbolic algebra in two early 19th-century treatises. In one treatise, the symbols for addition, subtraction, and equality were introduced, the four basic operations of “polynomials” of one unknown discussed, and in particular, the processes of computations explicitly demonstrated. It is worth nothing that the convention of expressions of the unknown and its powers as well as the symbols of operations follows that in *Shuli jingyun*. In the other treatise, although the processes of computations of “polynomials” in one unknown are not demonstrated symbolically, they are recorded in the main text. In one instance, the text explicitly describes the results of complicate maneuvers such as expanding squares of the sum of three terms, squares of fractional expressions, and the cancellation of common factors of quantities on both sides of the equality. Our findings juxtaposed with the current records of symbolic algebra in China provides a better understanding of the practice of “symbolic” algebra recorded in the extant treatises in the 18th and 19th century. The new evidence goes directly against the current belief of the timing when symbolism in algebra entered mathematical practice in China.

The formation, transmission and reception of mathematical knowledge in East Asia since the 11th century

Furthermore, our discovery calls for a closer examination of the custom of not including the processes of computation as part of the text in composing mathematical treatises. This paper shows the need to reevaluate the uses and impact of symbolism in algebra in 19th-century China and invites more participation.

P1/5

WANG Yu-Jen

(National Taiwan Normal University)

HUANG Jyun-Wei

(National Taiwan Normal University)

Ajima Naonobu's motives for mathematical studies – The values of generalisation and simplification

The paper examines two texts, the *Tetsujutsu Katsupo* 綴術括法 (Consolidated method for the difficult procedure, 1785) and the *Fukyu sanpo* 不朽算法 (Calculation methods that last forever, 1799), written by Ajima Naonobu 安島直圓 (1732 - 1798), and explores his motives for mathematical studies. Ajima inherited some methods and problems in the Seki 關 school, and he generalised the binomial expansion with the power $1/2$ to that of the power $1/n$, which is the «consolidated method for the difficult procedure». From problems in the *Fukyu sanpo*, we can see Ajima's interests in generalised methods. For instance, he tried to generalise a problem about a triangle inscribed with three circles. Ajima changed the isosceles triangle in the old problem to any triangle, and then found the solution for that problem with n equal circles. However, in the process of this solution, the calculation with the “difficult procedure” is in fact too complicated, so Ajima set out to look for new calculation procedures. He used the properties of exponents and logarithms to find a quicker and easier

method. The examples in this paper show that “generalisation” and “simplification” are two important values for Japanese mathematicians in the second half of the 18th century.

P1/6

OH Young Sook

(Seoul National University)

Mathematical Calculating Tools in Eighteenth-Century Chosŏn

Mathematical calculating tools tend to be regarded to be easily transferred between cultures if they could provide the same numerical result. However, in history, we can find that various mathematical calculating tools in a certain culture had been successfully transferred into the other cultures, while some tools had been rejected. Also when the mathematical calculating tools were transferred, they conveyed their own algorithm and reasoning, but were consumed within a given context of the culture. This paper aims to underline the contextuality of the mathematical calculating tools, analyzing the case of the Eighteen-Century Chosŏn. At that time the counting rod calculation was widely prevailing, but a specific group of people planned to implant new calculating tools through the whole century. This paper will study this historical situation at three levels. First, what was the intention of the import of new tools; why this specific group of people chose to introduce these specific tools. Second, how the dissemination of the new tools changed the given calculating culture. Third, how the new calculating tools themselves had been interpreted and transformed within the given culture.

P2

The Universality and Locality of the History of Science and Civilization in Korea as Seen from the Perspective of East Asia

Organiser: JUN Yong Hoon

Even until recently, research on science and civilization in Korea has stressed unique discoveries and inventions made by Koreans. Furthermore, the factors that made possible such discoveries and inventions, to which the modifier “first” or “best” could be attached, have often been explained in terms of the particularity of Korea’s culture and history. Affected by such interest and direction of research on the part of South Korean researchers, the international interest in science and civilization in Korea remained focused on special discoveries and inventions, failing to lead to earnest academic interest.

This session will present studies on several important cases that determined the flow of history of science and civilization in Korea, especially in regards to the three fields of heaven, earth, and humans. Through understanding these studies, we will reexamine the existing research perspective on science and civilization in Korea and grasp the characteristics of the history of science and civilization. At the same time, we will take into consideration East Asian universality and Korean locality. Here, key cases that determined the respective currents in the fields of astronomy, geomancy 風水 (feng shui), and medicine will be presented.

The studies first describe a historical understanding of incidents and cases in Korea. Moreover, they trace the causes of how the current knowledge in the respective fields of history of science and civilization in Korea were determined. All studies adopted a comparative perspective, where they verified the situation in China and Japan and examined the ways in which the trends in Korea were related to external circumstances. Through such case studies, it will be possible to experience at once the East Asian universality and Korean locality of the history of science and civilization in Korea.

P2/1

JUN Yong Hoon

(The Academy of Korean Studies)

The Study of Calendrical Systems during the Early Joseon 朝鮮 (1392-1896) Dynasty

Completed in 1280 in Yuan China, the calendrical system of *Shoushi li* 授時曆 (Season-granting calendar) was introduced into the Goryeo 高麗 Dynasty in 1308. In Goryeo Korea, however, the *Shoushi* system was limited to the knowledge for calculating dates and producing annual calendars. It could not be applied to predict

the occurrence of solar or lunar eclipses and the positions of the five planets.

While the dynasty ruling over the Korean Peninsula changed from Goryeo to Joseon 朝鮮 in 1392, the study of calendrical system did not advance, remaining in the condition of the previous dynasty. Immediately after his ascension to the throne, King Sejong 世宗 (r. 1418-1450) ordered intellectual-officials to study the *Shoushi* system in depth. As a result of over ten years of continued study of it, it became possible to apply the calculation methods of the *Shoushi* system not only to the production of annual calendars but also

to calculations predicting the occurrence of solar and lunar eclipses and the positions of the five planets. The fruits of such labor are summarized in *Chiljeongsan Naepyeon* 七政算內篇 (The Inner Chapters of the Calculation of the Motions of the Seven Celestial Determinants).

The methods for studying calendrical system established during King Sejong's reign subsequently became a model for the study of calendars in Korea. Accordingly, this presentation will, with a focus on the process and progress of the study of the *Shoushi* system in China and Japan. The defining characteristic of the study of calendrical systems in Korea during the Joseon Dynasty lies in the importation of Chinese systems and their application to the coordinates (longitude and latitude) of Seoul, the Capital city—in other words, not the “development of new calendrical systems” but the “Korean adaptation of already developed systems.”

P2/2

CHOI Wonsuk

(Kyeongsang University)

***Identity and Characteristics of
Korean Geomancy in the East Asian
Geomantic Cultural Zone***

It would not be an exaggeration to call East Asia a geomantic culture zone. As geomancy (*pungsu* in Korean, *fengshui* in Chinese, *husui* in Japanese) was developed in China and spread to neighboring countries, it had a direct influence on Korean society and culture from the country's early stages. The effects of this philosophy still remain to this day, with traces of its influence still visible in many contemporary Korean's geographical and spatial thoughts.

Pungsu, or geomancy, is an environmental philosophy and spatial belief system that

connects nature and people. Therefore, geomancy, i.e. the history of East Asians' adaptation to nature in the sphere of their habitat, is an important theme to examine in our study of traditional East Asian science and civilization.

The history of Korean geomancy can be approached from two perspectives. One is through the history of its theoretical formation and evolution, and the other is through the history of its social and cultural formation and evolution. The former, i.e. geomantic theories, was produced and developed by intellectuals as an elaborate system of cosmic knowledge and logic. The latter, i.e. geomantic culture, was consumed and adopted by various social groups in their spatial life practices.

It was Chinese intellectuals that originally initiated and carried out the production, formation, and development of the geomantic theoretical system. Intellectuals in neighboring countries adapted Chinese *fengshui* to their local environment, incorporating their own historical and cultural features, and practiced this transformed and indigenized form of geomancy.

The evolution of Korean geomancy can be summarized as having the following five characteristics. First, Koreans accepted geomancy from China, pragmatically adapting it to fit the Korean natural and social environment, and then used it for social discourse on space. Second, geomancy had a comprehensive and varied influence on Korean culture throughout its different historical periods. Third, combined with social thought led by differing social classes, Korean geomancy existed as an element of social discourse. Fourth, Koreans' theoretical preferences of geomancy were for the landform method over the *liqi* 理氣 method. Fifth, the *bibo* (the human attempts to remedy imperfect

geomantic landscapes) philosophy was a unique feature of Korean geomancy.

serious consideration of the relationship between Chinese and Chosŏn medicines.

P2/3

SHIN Dongwon

(Chonbuk National University)

Tong'uibogam and the Center-Periphery Debate in East Asian Medicine

Tong'uibogam 東醫寶鑑 [Treasured Collections of Eastern Medicine, 1613] is perhaps the most representative historical Korean medical textbook. Scholarly interest in it far surpasses interest in any other subject matter in the field. We may, in fact, be apt in calling it a “*Tong'uibogam* Project.” The reason for this overwhelming interest in the book has to do with its unique status in East Asian medical history. From the ancient times to around the 19th century, the relationship between Chinese and Korean civilizations was characterized more or less by the overwhelming Chinese influence on Korea. The opposite was rare. Although it may not be entirely the case, *Tong'uibogam* was the rare case in which influence changed hands from China to Korea on the most advanced level of medical scholarship at the time. Thus, we cannot help asking a number of questions regarding this phenomenon: What was the substance of the *Tong'uibogam* fad not only in China and Chosŏn but also in Japan? What were its causes? How was the book written? What was the context behind its publication? What were its defining medical characteristics, and what unique achievements did it help achieve? What were the medical and philosophical backgrounds for the publication of such an advanced medical textbook in Chosŏn? Who was Hŏ Chun, its main editor/author and what were the intellectual and medical backgrounds of his co-editors? Examining these questions will naturally expand to a

P3

The Materiality of Science Translation in Asia, 19th and 20th centuries**Organiser: Yulia FRUMER**

At the core of translation lies a “text.” Whether it is written, verbal, or pictorial, this text is transformed from one format to another, and often from an object in one language into a new object in another. But translation does not begin and end with the text. The associations that words evoke vary for different cultures and individuals, as they are rooted in lived experience that encompasses the social, historical, but also practical and material environment. Taking seriously the notion that a text embodies a process of relating certain contents to people’s material environment and lived experience, the panel seeks to go beyond the narrow framework of isolated textual transmission and transformation. Relying on recent methods in history of science and technology, we take translation to be a dual process of reconstructing the cultural and material associations of the original text, and at the same time integrating aspects of the text into a different preexisting web of material, visual, and practical associations.

The panel addresses this material reconstruction and integration by looking at several cases of scientific and technological translation in Asia. The panelists specifically focus on the ways in which the process of integrating novel pieces of information into existing webs of material, visual, and practical associations, gradually transforms these webs. Yulia Frumer explores the translation of barometers and thermometers in early nineteenth century Japan, pointing out ways in which these translations provoked reconceptualization of such notions as “air”, “heat”, and “cold”, and transformed subjective perceptions of these phenomena. Shellen Wu investigates translations of geographical literature in early twentieth-century China, and shows how tying novel concepts of race and nationhood to existing notions of Chinese territoriality changed the perception of geographical space. Eugenia Lean investigates the role of translation in the development of vernacular industries in early twentieth-century China, specifically looking at the ways foreign pharmaceutical knowledge was incorporated into the conceptualization and procurement of local raw materials. Projit Mukharji analyzes various approaches to systematization of translation of scientific terminology in India, focusing on attempts to base the translation of terms on the perceived correspondence between their meaning and the physical qualities of the sounds of the words.

P3/1

Yulia FRUMER

(Johns Hopkins University)

***Translating the Weather in Early
Nineteenth Century Japan***

With the surge of objects arriving in Japan through Dejima at the beginning of the nineteenth century, Japanese scholars found that they not only needed

to communicate with Europeans, but also to understand their books, their artifacts, specimens, and instruments. This new understanding was not confined to the objects themselves. Scientific instruments, in particular, were consciously designed to mediate between humans and the natural world, so that exploring them also meant reflecting on encounters with materialities

external to the instrument.

Among the scientific apparatus Japanese scholars encountered, were meteorological instruments — barometers and thermometers. These instruments raised a series of questions. What was it about the structure of a barometer that allowed it to “foresee” the weather? And what was it about air that made the prediction possible? Moreover, these instruments demanded the construction of a correlation between very subjective feelings and the behavior of mercury in a tube. But what if the correlation could not be felt? What if one could feel cooler when the mercury claimed it was hotter? What were the implications of this realization for Japanese scholars’ understanding of air?

Attempting to gain information about barometers and thermometers from Dutch dictionaries and encyclopedia only partially solved the problem. Japanese translators could learn more about Torricelli and the origins of these instruments, but what did it mean to have “air pressure”? What is “void” and how does it work? And how can “nothingness” or “emptiness” work at all? In order to answer these questions, Japanese translators experimented with the instruments, and found ways to integrate their understanding of those instruments not only with the prevailing conceptual and scholarly worldview, but also with their own personal experiences of meteorological phenomena. In doing so, they gradually but substantively altered their own web of material, visual, and practical associations related to weather and, through dissemination of their translations, provoked similar shifts in concepts of weather among others. The climate in Japan remained the same, yet the way it was felt slowly came to be conceptualized in more global terms.

P3/2

Shellen Xiao WU

(University of Tennessee, Knoxville)

Translating Empire Through Geography

This paper uses the case study of geographical works in early twentieth-century China to reexamine our understanding of scientific translation, including issues of meaning, accuracy, circulation and dissemination. From the last decades of the Qing into the Republican period, a lively publishing industry in China targeted the translation of foreign books on geography for the domestic market, including a number of Japanese, American, and European works. At first glance, these work seem to confirm Japan’s place as a crucial clearing house for works on science. A closer examination of these works, however, quickly reveals the inadequacy of translation in the narrow sense for understanding the process of knowledge transfer and adaptation. Chinese schools in the Republican era mandated the teaching of geography, and a wide selection of geographical works circulated as textbooks. From Europe and the US, to Japan and China, promoters of a “new” geography in the age of imperialism conflated science with globally circulating ideas about race, social hierarchy, historical progress, and civilization. At the same time, geographical works and travel accounts, particularly of frontier areas, borrowed heavily from earlier Qing works, and a new genre dealing specifically with travel abroad also retained rhetorical conventions from earlier writings. Imperial conceptions of Chinese territoriality underlay the geographical discourse. Thus the process of translation entailed far more than the linear transfer of original works into Chinese.

Geography occupied a venerable position in traditional Chinese epistemological

framework, as a sub-category of history. With the arrival of Western and Japanese works of geography at the turn of the twentieth century, writers repurposed traditional geographical textual forms and imperial conceptions of territoriality to accommodate newly imported ideas on race and nationhood. The historical framework remained important for understanding the “scientific” geography imported from Japan and the West. More than any other scientific discipline, then, geography translations allows us to examine changing popular understandings of science in late nineteenth and early twentieth century China, as well as the effect of historical context and global circulation on the process of translation.

P3/3

Eugenia LEAN
(Columbia University)

“Flowing Water” Translation and the Building of Vernacular Industry in Early Twentieth Century China

As an industrial entrepreneur and scientific man-of-letters in early twentieth-century China, polymath Chen Diexian translated, adapted and applied global pharmaceutical and manufacturing knowledge into classical Chinese to find commercial success and promote *xiao gongyi*, literally, the “minor industries,” or what I term, “vernacular industry.” Despite not knowing a single word of a foreign language, Chen founded in 1914 a translation bureau that engaged in a form of collaborative translation that involved a process known as the “flowing water operations.” The bureau translated into classical Chinese society pieces, romance and detective fiction, and works on the household, education, history, and science. In 1918, Chen founded one of China’s

first domestic pharmaceutical empires, Household Industries. Its most notable product was “Butterfly Toothpowder,” unique in its ability to double as face cream. The company’s success stemmed in large part from Chen’s earlier efforts to translate and adapt pharmaceutical knowledge from Japan and the West, as well as from his own avid experimentation and tinkering with cuttlefish shells to source magnesium locally in order to manufacture magnesium carbonate, a key ingredient for the toothpowder. By reviewing his textual translation as well as his material adaptation of recipes, this paper proposes to examine the integral role of translation and tinkering in building “vernacular industry,” a form of industrialism that was local and “homegrown” (as opposed to imperialist or foreign), informal, daily, and part of China’s consumer culture (rather than state-sponsored or academic), and artisanal in nature (if based in factories). Unlike the vernacular language movement (*baihua yundong*) led by May Fourth intellectuals, Chen’s vernacular industrialism was predicated upon commercially oriented translations of pharmaceutical knowledge into the classical language. It also depended upon hands-on adaptation of raw materials. This study helps complicate our understanding of notions of vernacularism, translated modernity, and the building of industry in China.

P3/4

Projit Bihari MUKHARJI
(University of Pennsylvania)

Sonic Materiality and the Translation of Western Scientific Terminology into Bengali, c. 1893-1916

The issue of how to translate “western” scientific terminology into Indian

languages had emerged around the middle of the nineteenth century. The combined effect of a colonial educational system and the emergent vernacular print cultures made the issue a crucial one. By the end of the century, the sheer numerical growth of both Indian students of science and the size of the print markets had made it even more urgent. As a result, a number of competing approaches to the translation of scientific terminology emerged. Some thought it best to simply transliterate “western” terms into Indian languages. Others sought to find related terms from existing Indian intellectual traditions. Here again debates existed about whether classical Sanskrit, classical Persian or contemporary contemporary linguistic traditions like Bengali, Hindustani, Tamil etc. might best supply the need. Still others argued for creating new Indian terms using Sanskrit roots.

With the emergence of nationalism in the late nineteenth century, Indian intellectuals came to view the multiplicity of approaches to translating scientific terminology as a hindrance to national progress. Nowhere were these concerns stronger than in the capital city of Calcutta. Here a burgeoning and diverse Bengali print culture, the large number of educational institutions and the growing number of people being exposed to scientific terminology in schools and colleges alongside a strong nationalist base, proved a particularly heady cocktail. It was in this context that the Bengali Literary Academy appointed a committee to look into the matter and propose a uniform system for translating “western” scientific terminology. The committee was to be chaired by Ramendrasundar Tribedi, a well-known science professor, educator and essayist.

Tribedi developed a unique theory of translation based on the physical qualities

(naisargik guna) of sounds. Based upon this theory he developed an elaborate scheme for translating scientific terms in general and more particular schemes for translating medical, chemical and biological terms in particular.

In this paper I analyze this long forgotten scheme not only as a way of illuminating the complexities of scientific translation, but also to tease out the very different material ontology of sound that it employed. Finally, I will elaborate how such ontologies resonated with the political climate of that period.

P4

Medicine as Method: East Asian Imperialism and Colonial Medicine in a Global Perspective

Organiser: PARK Jin-kyung

Scholars are paying increasing attention to the global history of colonial medicine. In view of this, the study of the Japanese Empire and its colonial medical practices holds special significance in the comparative colonial perspective. Japan as a non-Western imperial power was keen to develop the Western, biomedical system as a key aspect of its empire-building and colonial governance in East and South Asia. In what aspects did Japanese colonial medicine bear resemblance to that of Western colonial regimes? How was it different from that in Western colonial settings, especially in the ways that colonial subjects were articulated by Japanese physicians, governed by medical-minded Asian rulers, and mapped out by medical entrepreneurs? What do these differences reveal about the particularities of Japan's colonial medicine? In keeping in mind these broad questions, this panel serves as a preliminary endeavor to interrogate Japan's colonial medicine in a comparative colonial perspective.

In particular, this panel proposes to approach Japan's colonial medicine as method in interrogating the global circulation of medical knowledge, theory, image, and agents. So far, historians of colonial medicine have mainly examined the knowledge transfer and movements of physicians between the metropolises and colonies of Western empires. Attention to the Japanese Empire enables us to trace a global medical network that closely interconnected the non-Western imperial power, its colonies, and the West. Many influential medical officials, doctors, and entrepreneurs of the Japanese Empire received their medical educations in the West and frequently interacted with those in Europe and America. These key players often-times developed their careers in, as well as expanded their medical business networks (e.g., in the pharmaceutical industry) to, Japan's colonies, utilizing the medical training, knowledge, and experience that they had cultivated in the West. Building on their colonial careers and business networks, these agents also occupied key posts in the metropolitan government and built lucrative medical and pharmaceutical enterprises in the empire's homeland. This web of relations and movements paved the way for the global and trans-imperial circulation of medical theories, goods, and practices. Conceptualizing Japan's colonial medicine as method will yield much in the search for specific cases that would exemplify East Asia's role in the global history of colonial medicine.

P4/1

Timothy YANG
(Pacific University)

Pharmaceuticals, Empire, and Japan's Interwar Moment

Japan's pharmaceuticals industry did not fully come into being until World War One. Although some businessmen

had begun importing Western medicines as early as the mid-nineteenth century (at a time when the majority sold Chinese herbal medicines), most drug merchants became manufacturers only after the outbreak of the First World War disrupted imports of European, particularly, German, medicines. With Europe mired in conflict,

Japanese companies seized the moment to manufacture their own Western-style medicines. Under the banner of “self-sufficiency” (*jikyū jisoku*), which identified the shortage of essential medicines as a threat to national security, the Home Ministry voided overseas patent rights, ordered state laboratories to reveal drug formulae to private firms, and provided monetary incentives to promote domestic production. Government intervention during the war led to a rapid expansion in the pharmaceutical industry, as firms old and new rushed to satisfy the demand at home and carve out new markets abroad. In a six-year period, the total production of pharmaceuticals had increased almost three-fold, from 19.9 million yen in 1914 to 51.2 million yen in 1920.

This paper uses the case of Hoshi Pharmaceuticals, one of the largest and most influential drug companies at the time, to show how the industry emerged in an interwar global context defined by uncertainty, scarcity, competition, and most of all, state sponsorship. Hoshi was one among a number of private, transnational drug companies that helped to manufacture and promote Japan as a modern, civilized empire, founded upon middle-class consumerism, technocratic expertise, and the allegedly self-evident value of modern medicine. By following Hoshi’s activities across Japan’s expanding empire and beyond to the wider world, this paper connects the imperialist dreams and schemes of politicians and bureaucrats to the innovations of scientists as well as to the productive power of labor, not only within East Asia but also in Peru, Indonesia, Turkey, and the United States.

P4/2

PARK Jin-kyung

(Hankuk University of Foreign Studies)

***Non-Western Imperial Biopolitics:
Managing the Korean Peninsula,
Human Resources, and Population***

In recent years, medical historians have examined the imperial and colonial formations of biopolitics and governmentality. These Foucauldian concepts enable us to come to terms with modern technologies of calculating and managing populations at work for the construction and maintenance of empire. As scholars have revealed, in both the empire’s homeland and colonies, the evolution of biomedicine as knowledge, institution, policy, and practice were well aligned with the biopolitics of the colonial empire, playing a crucial role in the administration of public health, epidemic control, and sanitation that sought to ensure the optimal size, health, and well-being of the population. In carefully examining this scholarship, as well as that on population more broadly, Alison Bashford raises a centrally important question with which those concerned with the biopolitics of empire have to engage. Bashford argues that the population discourse of the twentieth century focused as much on issues of space as on reproduction and sexuality. Scholars have so far typically viewed the question of population as relevant to the history of birth and death, the fertility of women, and the crises of overpopulation and depopulation. The key debates and policies on population at a global level have been keenly centered on spatial dimensions: geopolitics, territorial expansion, war, colonization, land, arability, settlement, the distribution of human population, etc.

In light of Bashford’s work, this paper explores the discourses of population

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Colonial Medicine in a Global Perspective*

that concern the Japanese Empire in East Asia. A critical scrutiny of the Japanese colonial archive from the interwar period bears witness to the spatial dimensions of the population question during the course of Japan's empire-building. I focus on the writings of Japanese physicians such as Koya Yoshio, Teruoka Gitō, and KudōTakeki, all of whom received their medical training in Europe and were involved in the proliferation of population discourse about imperial Japan, the Korean Peninsula, and Manchuria. In particular, I demonstrate how the population discourse of the Korean Peninsula intersected with the settlement of the Korean population in Manchuria as the pivotal human resources of the empire and the construction of the East Asian Co-prosperity Sphere. This paper serves as a preliminary effort to place East Asian imperialism and the spatial dimension of the population question in the global history of empire, nation, and population.

P4/3

KIM Hoi-eun

(Texas A&M University)

The Afterlife of Colonial Physical Anthropology in Post-Colonial Korea

This paper is a preliminary attempt to trace the post-colonial intellectual trajectories of Korean physical anthropologists who received their professional education during the Japanese colonial era. While there have been recent scholarly attempts to explicate the roles of Japanese physical anthropology in the management of colonial Korea, little has been written about the post-colonial afterlife of this branch of colonial science.

My reading of the academic writings of the most prominent Korean physical anthropologist Rha Sejin, which has been in part prompted by recent literature on

the persistence of the concept of “race” and its academic, cultural, and political relevance in post-Nazi German society, points to a narrative that is different from those of other countries. In France, for instance, as historian Alice L. Conklin evinces in her recent monograph, there was a marked transition from the culture of the 1930s when “the biological study and ranking of the human races was still a fully legitimate branch of the human sciences” to that of the 1950s when cultural pluralism and the irrelevance of race became the operative words of the day, a trend that is also noticeable in the history of American physical anthropology of the last century. In contrast, post-colonial Korean physical anthropologists did not find it problematic to use statistics of body measurements collected and analyzed by their Japanese teachers and colleagues during the colonial period to identify the racial characteristics of Koreans. The political utility of physical anthropology did not change either with the change of the political regime; Korean physical anthropologists simply retooled their skills, now in the service of the new demands of the post-colonial nation-state, to support a discourse of a homogeneous ethnic Korean society using measurable (and seemingly irrefutable scientific) evidences.

Recognizing this uninterrupted continuity of physical anthropology through the colonial and post-colonial period is, for one, to discover the long-term intellectual lineage of Baelz-ian physical anthropology in Korea, a lineage mediated and relayed through Japanese progenies of German physician-anthropologists in Meiji Japan. At the same time, it will be a response to the growing literature in European history that tackles the question of “race after 1945”—the persistence of race as a category of research despite the ostensible and conscious effort to move away from using it.

P5

Visualizations of the Heavens**Organisers: Sonja BRENTJES & Dagmar SCHÄFER**

This panel aims at stimulating a cross-cultural debate about how the heavens were depicted in different Asian societies and contexts. We want to exchange views and information about which tools and theories were employed for creating images of different kinds (diagrams, sketches, anthropomorphic figures), which stories were inscribed in the images and which technical skills craftsmen possess who painted, hammered, minted or weaved the heavenly representations. Furthermore, we will look at the different audiences and their political and ideological interests when commissioning or studying visualizations of the heavens.

We invited junior and senior colleagues from different academic fields who study themes of relevance to the visualization of the heavens in Chinese, Indian, Central Asian and West Asian societies. We asked them to reflect explicitly about their methodological approaches and the methods of interpretation. We believe that through such an interconnected discussion our panel will contribute not only to a better understanding of the various factors that shaped the iconographies of the heavens in different Asian contexts, but will also show us where our methods and approaches are interrelated and thus can be employed across disciplinary boundaries.

P5/1

Samra AZARNOUCHE

(École Pratique des Hautes Etudes, Section des Sciences religieuses)

Iranian Uranography: Celestial Stations according to the Zoroastrian Cosmogony

In the cosmology of Zoroastrianism, the religion of pre-islamic Iran, the sky combines two different aspects: it is a deity venerated on the 27th day of the month and involved in the cosmogonical process, and it is also the stratified space where gods and heavenly bodies dwell.

In the religious tradition (the sacred text of the Avesta, c. 1500-600 B.C., and its Middle Persian exegetical corpus, 3rd to 6th century A.D.), this space division follows different schemes, including a threefold division (stars, moon, sun) or a more elaborate one composed by five or seven stations. In this paper, the origins

of these systems of the heavenly world as exposed by Antonio Panaino (University of Bologna) will be discussed, and we will see how mythological speculations have affected its stratification.

The sky is also inhabited by souls. According to the latter scheme, the highest station of heaven is the paradise, or the "House of song" in the Avesta, for which the only iconographical representations are provided by funerary material from Sogdiana (7th century A.D.).

P5/2

NIU Weixing

(Shanghai Jiao Tong University)

On the Dunhuang Manuscript P.4071

A tenth century Chinese horoscope manuscript Pelliot Chinois Touen-houang 4071 (P.4071), which is preserved in the Bibliothèque Nationale de France, has attracted the attention of many scholars. For

example, Rao Zongyi 饶宗颐 expounded the development of the 'eleven luminaries' system from the seven and nine luminaries system, taking P.4071 as one of his basic references. Jiang Boqin 姜伯勤 pointed out that the astrology in P.4071 originated from the Persian work *Bundahishn*. However Chen Wancheng 陈万成 connected the astrology in P.4071 directly with Ptolemy's *Tetrabiblos*. Chen Yuzhu 陈于柱 edited and annotated P.4071 as well as other Dunhuang manuscripts in his doctoral dissertation. Huang Zhengjian 黄正建 and Marc Kalinowski both summarized the main contents of P.4071 in their books.

In this presentation my interest will be focused firstly on the astronomical basis of this astrological manuscript. Thus, were the listed celestial positions of the eleven luminaries in accordance with real astronomical phenomena or not? If so, what about the precision of the planetary positions, and what kind of ephemeris was used by the astrologers of that time? It was taken for granted by previous researches that the fate calculation in P.4071 was based on the *Futian li* 符天历, but if so, then why was the epoch used in P.4071 not the same as that of the *Futian li*?

Secondly on the changing astronomical meaning of Rahu and Ketu in the nine graha system and in the eleven luminaries system, I will try to resolve the problem of whether the concept of the *Siyu* 四余 (Four Residuals) in the eleven luminaries system was imported along with the translation of the *Yusijing* 聿斯经 as scholars previously believed, or was just invented by local Chinese astrologer(s).

Thirdly I shall discuss some astrological aspects of P.4071 which have not yet been mentioned by previous researchers, for example, which definition of *Minggong* 命宫 (Fate House) did P.4071 take? Was it an ascendant sign or a Sun sign? What exactly

did the *Shengong* 身宫 (Body House) mean? What did a natal horoscope look like in 10th century China?

All the discussion will be based on a comprehensively and thorough interpretation of P.4071 itself. It is concluded that the manuscript P.4071 demonstrates several aspects of the sinicization of the western horoscope, and effectively illustrates the absorption and adaptation of some astronomical and astrological concepts when they were diffused from one civilization to another.

P5/3

Bill M. MAK
(Kyoto University)

***Zodiac in South and East Asia:
Transformation and interaction with
indigenous astral science as seen from
textual and iconographical sources***

The concept of the Zodiac and the representation of zodiac signs came into South and East Asian through various waves since the early centuries of the common era. These astral ideas were met with varying degrees of success as they were adopted wholesale and indigenized in India, rejected in China while preserved in Japan as curious testimony of their convoluted history. Among the most successful routes of transmission were firstly, the one from Alexandrian Greece to the Indian subcontinent via the Indo-Greek, and secondly, from India to China and Japan via Gandhāra and Central Asia via the itinerant Buddhist monks. This paper examines the transformation of these concepts through text-critical and iconographical sources. In the first case, detailed information may be gleaned from extant Sanskrit *jyotiṣa* texts such as the *Yavanajātaka* as well as Chinese texts such as those preserved in the Chinese Buddhist Canon. In the latter case, there is also a

rich body of fresco painting, sculptures and astral handbooks which are yet to be examined and compared systematically. In particular, I would like to draw attention to their interaction with the indigenous astral science and the socio-historical milieu where these novel representation of the heaven were accepted, rejected or transformed.

P5/4

Johannes THOMANN
(University of Zurich)

Is the design of Arabic horoscopes an application of Chinese visualizations of the heavens?

Many horoscopes from antiquity were written down either as plain texts or as tables. The few diagrams found in them all share the same crude circular form. The more frequent medieval horoscope diagrams in Greek, Arabic, and Latin codices and documents show, in contrast, a quadratic frame divided into nine squares, with diagonal divisions of the four corner squares. Although unknown to antiquity, this layout was common in Chinese hemerology (the method for determining favorable and unfavorable days), where the twelve yellow and black spirits were arranged in an identical scheme. Presenting a precise example of the transmission of scientific knowledge from China to the Islamic World would be significant because the matter has too often been discussed in vague terms (such as those of lunar mansions and alchemy, for instance).

P5/5

Sonja BRENTJES

(Max Planck Institute for the History of Science)

Shared Elements of the Iconography of the Zodiac in Texts, Architecture and Metalwork from Eastern Central Asia to the Iberian Peninsula (10th-14th centuries)

Historians of Science in Islamicate Societies often privilege only two spheres when studying the mobility of knowledge: Islamicate Societies in Their Mutual Relationship and the Translation of Texts from Arabic into Latin. This focus on internal streams of knowledge and on a Western flow of parts of this knowledge paints a distorted image of the cultural and intellectual connections that were important for specific dynasties and their cultural policies. In my talk, I will survey objects, which represent the Zodiac, and ask what these objects tell us about other flows of knowledge in forms of texts and images and their material carriers.

P5/6

Karin RÜHRDANZ

(Royal Ontario Museum)

Between author's intention and patron's expectation: The illustrations of the chapter on planets in Zakariya al-Qazwini's "Wonders of Creation"Ö

Muhammad b. Mahmud Tusi Salmani (2nd half 12th cent.) from Hamadan wrote an encyclopedia on the heavens and its centerpiece, the earth, dedicating it to the Seljuq Sultan Tughril b. Arslan (r. 1166-1176/77). Zakariyya' b.

Muhammad al-Qazwini (1203-1283), a century later, wrote a similar kind of work using the title of his predecessor, *al-Aja'ib al-makhluqat wa'l-ghara'ib al-mawjudat* (The Wonders of the Created Beings

and the Particularities of the Beings (on Earth?)) and dedicating it to the Iranian governor of Baghdad in the service of the Ilkhanids, 'Ata'-Malik Juvayni (1226-1283). While Tusi's work survives in one almost full version and a few fragments only, Quawini's composition was translated at least twice into Persian and once into Ottoman Turkish. In my talk, I will discuss possible relationships between the two writers about knowledge of the heavens and nature with regard to their iconography of the planets.

P5/7

Matthew MELVIN-KOUSHKI
(University of Southern California)

Calculating Power: Occult-Scientific Cosmology and Universal Kingship in 15th-Century Iran and Central Asia

The early 15th century saw a renaissance of occultism throughout the Islamic world, and particularly in the Persianate east. The first post-Mongol Muslim ruler to systematically incorporate the occult sciences into his bid for Chinggisid-style universal kingship was Iskandar Sulṭān (r. 1409-14), Temür's grandson, whose abortive but brilliant reign in Isfahan came to serve as a model for early modern Turko-Mongol Perso-Islamic imperial projects from Anatolia to the borders of China. Most notably, Iskandar cultivated a personal expertise in lettrism (*kabbalah*), astrology and mathematical astronomy as the sciences best able to buttress his claims. His interest in astronomy-astrology (*'ilm-i nujūm*) and cosmological mapping is well known; less well known is the fact that in his preface to the *Jāmi'-i Sulṭānī*, an astronomical manual, Iskandar asserted the occult science of letters (*'ilm-i hurūf*) to be the only truly universal science—and hence the purview of any king who would

rule universally, microcosm in perfect semblance of macrocosm.

Iskandar failed; but his argument did not. This dual interest in lettrism and astronomy-astrology continued to drive the patronage programs of ruling elites throughout the Persianate world. Lettrists and astronomers appear to have worked side by side at the prestigious Samarkand Observatory, and lettrist and astrological proofs were routinely combined in imperial propaganda campaigns until at least the 17th century. This paper, then, will examine the mechanics and cosmological implications of Iskandar's occult-scientific ideology as entrée to understanding both the performance of Turko-Mongol Perso-Islamic kingship and the practice of science throughout much of early modern Asia.

P5/8

Ahmet Tunc SEN
(University of Chicago)

Astrology and politics in early modern Ottoman almanacs

Although almanacs (sg. *taqwim*) are one of the most versatile and long-lasting genres in the entire history of Ottoman textual production, they have received little scholarly attention. Typically produced by court astrologers and submitted to the sultan by the vernal equinox of each year, these annual compositions began to appear in the Ottoman context from the early fifteenth century onwards and continued up until the twentieth century. Almanacs provide not only calendrical information about the upcoming year but also offer in-depth astrological forecasts. Predictions regarding the fortunes of the sultan and other people from different social groups are accompanied by sections on chronology, medicine, meteorology, and agriculture. Although *taqwims* are designedly an

ephemeral genre, they are still invaluable sources to track, among other things, the changing social tensions and political imaginings in the Ottoman world. The aim of this paper is to explore fifteenth and sixteenth century Ottoman almanacs as an index of how Ottoman court astrologers imagined the world surrounding them, and as an expression of their intellectual proclivities and professional expectations, particularly as shaped by shifting power dynamics at the court.

P5/9

Petra SCHMIDL

(Johann Wolfgang Goethe University)

Abd al-Qadir Muhibb's Astrolabe

In 17th century India, Abd al-Qadir Muhibb made an astrolabe, later ascribed to Nasir al-Din Tusi (d. 1274), that not only depicts the sky on the rete, the celestial part of each astrolabe, but also adds tables as another form of visualizing the heavens.

After shortly discussing the ascription to Nasir al-Din Tusi and demonstrating the instrument's belonging to 17th century India, this talk will concentrate on the two manners of depicting the sky on this instrument, the rete and the tables, and compare them to learn more about their commonalities and differences as well as their dependencies.

*Fathoming the Universe and Calculating for Perfection:
The Book of Changes as a Cosmological Map*

P6

**Fathoming the Universe and Calculating for Perfection:
The Book of Changes as a Cosmological Map
in the First Millennium CE China**

Organisers: ZHAO Lu & HON Tze-ki

To many people, the *Book of Changes* (*Yijing* 易經) does not just offer instructions for divination; it provides deeper truths of the world, ranging from moral cultivation to the origins of the cosmos. This panel will focus on a particular understanding of the text: how the text functioned as a cosmological map in the first millennium CE China, and how this map was used to perfect two bodies: the human body and the political body. The use of the *Changes* as a cosmological manual has been dismissed as superstitious by modern historians. Nevertheless, people from various communities in ancient China used the *Changes* to answer their general but crucial questions: what is the cosmos like, how does it function, how are we related to it, and more importantly, what good does it do us to answer these questions? In responding to these questions, people in this time period, ranging from an emperor to Daoist practitioners, turned to various numerological and mapping systems to analyze this universe in depth.

This panel will start with a historical introduction to the development of the cosmological reading of the *Changes*. Tze-ki Hon will explain how this reading took shape in the first century BCE and CE, a process that has yet to be fully examined. In this process, the hexagrams in the text were linked to seasonal changes. These changes, as elements of a framework of time, were thus represented pictorially. Zhao Lu's presentation will explore the application of this map in the political realm in the mid-first century BCE. It will discuss a phenomenon in which the emperor compared the structure of his empire to that of the map. In doing so, he would be able to regulate the empire to its ideal state. By studying an intersection between Confucianism, Daoism, and folk religions, Fabrizio Pregadio will explore the application of the cosmological map in the *Changes* to individuals and Daoist traditions. Focusing on medieval China, Pregadio will pin down the integration of this map to Daoist ideas derived from the *Daode jing* and to alchemical practices. Holger Schneider will explore the historical trajectory of this cosmological map, and how the scholars, especially Liu Mu 劉牧 (1011-1064) in the 11th century CE described and renewed it numerologically and diagrammatically. Manchu and Indian languages, to consider the scientific exchange between Europe and China in its proper global context.

P6/1

HON Tze-ki

(State University of New York at Geneseo)

***Responsiveness between Nature and
Humankind: The Yijing Commentaries
of the Han Dynasty***

Originally a collection of divination

records, the *Yijing* (Book of Changes) is consisted of three distinct layers: the visual images (the trigrams and hexagrams), the written documents (the hexagram statements and line statements), and the early commentarial materials (the Ten Wings). Over the centuries, these three textual layers were considered to be

inseparable in explaining the structure of the universe, the interdependence between the natural realm and human realm, and a philosophy of change. In thousands of commentaries written for the *Yijing*, the coherence of the text was further enhanced by adopting methods and techniques from astrology, medicine, and numerology.

During the Han dynasty (206 BCE–220 CE), the *Yijing* scholars were particularly interested in establishing a direct correspondence between the natural and human worlds. This belief in the mutual responsiveness between nature and humankind is based on two assumptions. First, the cosmos is regarded as an orderly and stable structure. Its orderliness and stability are shown in the regular succession of the four seasons, the twelve months, the 365 $\frac{1}{4}$ days. Second, the stable structure of the cosmos is reflected in the human realm, as evidenced in the life cycle and the rhythm of work and rest. For human beings, their purpose of life is to manifest the hidden structure of the cosmos in their daily lives.

In this paper, I will compare the commentaries by three Han *Yijing* scholars: Meng Xi 孟喜 (ca. 90–40 BCE), Jing Fang 京房 (77–37 BCE), and Zheng Xuan 鄭玄 (127–200 CE). The paper will be divided into two parts. In part one, I will reconstruct the arguments of the three *Yijing* scholars based on Li Dingzuo's *Zhouyi jijie* 周易集解 (Collected Commentaries on the *Yijing*)—a comprehensive collection of Han *Yijing* commentaries completed in the Tang dynasty (618–906). In the second part, I will compare the three scholars' technologies to elucidate the hidden structure of the universe, such as “changing the positions of hexagram lines” (*yiwei* 易位) and “interlocking trigrams” (*hugua* 互卦 or *huti* 互體). By linking individual hexagrams to a web of hexagrams, I argue,

the Han *Yijing* scholars proved that the *Yijing* is indeed a graphic representation of an orderly and stable cosmos.

P6/2

ZHAO Lu

(International Consortium for Research in the Humanities, Friedrich-Alexander-University of Erlangen-Nuremberg)

The Acceptance of the Book of Changes (Yijing 易經) as a Cosmological Manual in Late Western Han China

It is well accepted that the Changes was originally used for divination in the Western Zhou period (1066–771 B.C.). The binary system of solid (–) and broken (--) lines constitute the eight trigrams: *Qian* 乾 ☰, *Kun* 坤 ☷, *Gen* 艮 ☶, *Kan* 坎 ☵, *Xun* 巽 ☴, *Zhen* 震 ☳, *Li* 離 ☲, *Dui* 兌 ☱, and the received version of the Changes contain sixty-four hexagrams, each of which appears to include two of the trigrams. While various interpretations throughout Chinese history, included in the received version or not, are rooted in these trigrams and hexagrams, it is still obscure to us why certain interpretations were popular during certain times. This article will focus on a particular understanding, in which the trigrams and hexagrams signify certain fluctuations of *yin* and *yang*, two kinds of *qi* 氣, in certain period of the year. This understanding departs from both the early divinatory tradition and the self-cultivation emphasized in the Confucian tradition. This article will pin down the imperial reception of this understanding of the Changes in the mid-first century B.C. and the political-intellectual context of this reception. It will argue that this reception had less to do with self-cultivation or nurturing one's virtues than with regulating the cosmos.

In this article, I argue that the imperial

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acceptance of the Changes was due to the anxiety that the Han imperial house would soon lose the Mandate of Heaven. In reaction to this anxiety, the literati employed the Changes as a manual to understand Heaven's will, as well as to regulate the human world based on the regularity of Heaven, especially the seasonal changes. It was in this context that experts of Changes became active in the court. In the first section, we will explore how the anxiety of losing Heaven's favor took place in the first decades of the last century B.C. The second section will examine literati's assumptions about what Heaven wanted from Han emperors. To many intellectuals of that time, the human imitation of heavenly order was the key to these assumptions. The third section will discuss how the Changes, or more specifically, certainly literati's reading of the Changes, met this need.

P6/3

Fabrizio PREGADIO

(Friedrich-Alexander-University of
Erlangen-Nuremberg)

***From the Book of Changes to the
Golden Elixir: Doctrinal and Textual
Layers in the Cantong qi 參同契 (The
Seal of the Unity of the Three)***

The Daoist tradition is almost unanimous in maintaining that the *Cantong qi* 參同契 (Seal of the Unity of the Three) was written by Wei Boyang 魏伯陽, dates from the Later Han period (mid-2nd century CE), and deals with *Neidan* 內丹, or Internal Alchemy. However, there is no trace of an influence of the *Cantong qi* on the Chinese alchemy as a whole until the early Tang period, and no historical testimony shows that *Neidan* existed before ca. 700 CE.

In this paper, I take account of a different view of the contents of the *Cantong qi*, according to which the text is made of three

layers. The first layer, concerned with the view of the Dao and the cosmos, is rooted in Han-dynasty cosmology and makes use of sentences, images, and emblems drawn from the *Yijing* 易經 (Book of Changes). The second layer, consisting of portions devoted to alchemy, applies, for the first time, the cosmological views of the *Yijing* to alchemy. The third layer, mainly focused on the Daoist saint or sage (*shengren* 聖人), draws sentences and terms from the *Daode jing* 道德經 (Book of the Way and Its Virtue).

When its multiple doctrinal and textual layers are taken into account, the history of the *Cantong qi* becomes clearer. The *Cantong qi* did not originate as an alchemical work, but was initially transmitted by representatives of the Han cosmological traditions in southern China. The attribution to Wei Boyang (a southern alchemist) dates from the Six Dynasties. The text as we have it today took shape after the addition of portions concerning the Daoist ideal of sainthood, which occurred after ca. 400 CE and possibly one or even two centuries later. This view of the doctrinal and textual layers of the *Cantong qi* provides a fruitful perspective to look at the application of Daoist principles and of *Yijing* cosmology to alchemy.

P6/4

Holger SCHNEIDER

(Friedrich-Alexander-University of
Erlangen-Nuremberg)

***On the Relationship between
Diagram, Evidentiality and
Divinatory Technique***

When a group of visionary philosophers beginning in the Northern Song made efforts towards an integration of cosmology with the practice of consulting the *Yijing* – being itself based on calculation as well as interpretation – numbers are identified

in a range of cosmological, divinatory, and natural systems and translated into diagrammatic depiction. Here they figure as components of diagrams that themselves become systematically interrelated. In the course of this translation numbers retain their numerological qualities and adopt new functions inherent in the laws of calculation as well as in the grammar of diagrammatic representation.

Diagrams as used in Liu Mu's 劉牧 (1011-1064) repertoire are capable of visualizing processes of transition within a cosmogonical theory, they can themselves be symbolic, iconic, metaphoric, mnemonic and mathematic in varying degrees. They represent a supplementary layer of exposition aside from classic, commentary and post-classical writings, capable of explicating complex ideas that can be paraphrased as problem, experiment, and proof.

By examining closely these roles of diagrams as interfaces of the above mentioned translations this paper seeks to address one central question: Given the assumption that the adoption of diagrammatic argumentation allows for retaining of conventions while simultaneously introducing innovative ideas - how do Liu Mu and others use this new discursive space to pursue their own goals?

To understand this problem I will identify and elaborate on the concepts of number and image in the texts of the respective authors. Here, images (象) bring forth (生) things of form (形). Accordingly are things of form appearances (體) of images. Images consequently are corresponding (應) to things of form. Subsequently a third realm, that of number, is postulated which is primordial to and above (上) the forms whereby numbers configure (設) images. Following my main question, I hope to

show how these conceptions inform the selection of certain pre-Song sources such as Meng Xi 孟喜 (~90--40 BCE), He Yan 何晏 (?195 - 249), Han Kangbo 韓康伯 (?332-?380) as well as transmitted fragments of apocryphal works 易緯 such as *Zhou yi qian zao* (Izuo?) *du* 周易乾鑿度 and *Ji lan tu* 稽覽圖.

P7

Beyond China and Europe: Jesuit Missionaries Between Global Networks in the Long Eighteenth Century

Organisers: WU Huiyi & Alexander STATMAN

During the long eighteenth century, Jesuit missionaries played a crucial role as mediators of science between China and Europe - but what about the spaces in between and beyond? The Jesuits were not merely a bridge between the easternmost and westernmost extensions of Eurasia; they constituted a global network whose members exchanged knowledge between China, India and America. The Jesuit network also functioned in symbiosis with many overlapping and sometimes competing global and regional institutions: the continental networks of the Russian, Manchu and Moghul Empires actively collaborated with the Jesuits within the frameworks of their own political and scientific agendas. The Republic of Letters allowed publications, correspondence and scientific observations to travel from Istanbul to Beijing via Paris, from French trading outposts along the Indian coast to the West Indies. Just as multiple routes and pit stops and nodes were features of the physical journey from Paris to Beijing, so too was the case with the transfer of texts, objects and knowledge from one cultural context to another. Chinese books were translated into French and Russian via Manchu intermediaries, American saplings transplanted in France triggered Jesuit interest on similar species in China. In this panel, we seek to refine our understanding of the role Jesuits in the history of science in China during the long Eighteenth Century by identifying the specific people, media, institutions and routes which enabled – or hindered – the circulation of knowledge. How was the network of Jesuit correspondence constructed and maintained? How did specific sites of Jesuit knowledge differ between each other? How were Jesuit scientific practices shaped by both this global dimension and the local contexts of China? How was knowledge produced in East Asia made “global” through these networks? We aim to open new perspectives by bringing together a diverse group of scholars based in three continents and working on eighteenth-century Jesuit networks with sources written not only in Chinese, French and Latin but also in Russian, Manchu and Indian languages, to consider the scientific exchange between Europe and China in its proper global context.

P7/1

Mario CAMS

(Katholieke Universiteit Leuven)

Blurring the Boundaries: Collaborative Surveying during the Early Qing

In the last decades, much has been written about the ‘Jesuit networks’ of the Early Modern world and how these networks shaped exchanges or the circulation of knowledge between continents and peoples. Many scholars have focused on

the encounter between Europe and China, evaluating and describing exchanges in light of the opposition of the two as culturally distinct units. The proliferation of scholarship on the issue has led to a deeper and wider understanding of Sino-European contacts in general, but it has also brought to light some of the difficulties with regard to this framework of analysis. This paper will explore the collaborative character of the Qing field surveys of the early 18th

century, covering all of Qing China and involving both European missionaries and Qing officials of different backgrounds. Based on a close analysis of a variety of European, Chinese and Manchu sources, it identifies some of the specific people, institutions, localities and contacts that can be linked to the surveys. I argue that tracing the most basic or local connections when studying networks can reveal surprising patterns and unexpected actors, which in turn emphasizes the complexities involved in network formation and blurs the boundaries between macro units such as 'Europe' and 'China'. Ultimately, this leads to a better understanding of the role of each of the participants in these networks and, therefore, of the dynamics of the global circulation of knowledge in Early Modern times.

P7/2

Alexander STATMAN
(Stanford University)

The origins of the 'China, too!' Slogan: Beijing Jesuits, Paris Sinologists, and World History in the 18th Century

In today's world history classroom, the most powerful tonic offered to undergraduate students for the lingering symptoms of Eurocentricism is the record of China. For any supposedly European phenomenon, from the print revolution to global voyages of exploration, one can gesture toward the East and say, "that happened in China, too!" This is especially true in the history of science, where at least since the works of Joseph Needham, the Chinese scientific tradition has been seen as the greatest independent challenge to the uniqueness of Europe. In this paper, I show how "China, too!" was formulated through a series of late eighteenth-century conversations between formerly-Jesuit missionaries in Beijing and their correspondents, the forerunners of

academic sinology in Paris. Missionaries such as Joseph-Marie Amiot, and Pierre-Martial Cibot and scholars such as Michel-Ange Deshauterayes and Joseph de Guignes wrote extensively on the history and development of science and technology in China, from the naturalphilosophical conceptions of *taiji* and *yin-yang* to technological innovations including gunpowder and the compass. For them, as for Needham, Europe's preeminent place in the history of science had to be qualified, but at the same time, Europe's preeminent place in the future of science was secure: already in the late eighteenth century, the "universal ocean" of modern science was visible on the horizon.

P7/3

WU Huiyi

(Needham Research Institute/ Centre
d'études sur la Chine moderne et
contemporaine)

"The observations we have done in the Indies and in China": French Jesuits' knowledge of other non-Western regions and the impact on their scientific work in China

Jesuit experience in China is usually analyzed within the unilinear framework of Sino-Western relationship. However, taking a close look on Jesuits' writings, we shall notice that their experience in and knowledge about China are often evoked in close association with other parts of the non-European world, ranging from India, South East Asia, the Ottoman Empire, Africa to America – generally known as "the Indies (les Indes)" at that time. This paper is based on a preliminary survey of documentary evidence in French Jesuits' writings between 1690s and 1750s, with a particular focus on Bouvet (1656-1730), Dentrecolles (1664-1741) and Gaubil (1689-1759). I will first argue that the encounter with these regions was part of

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China Jesuits' standard itinerary, for all made stopovers there during their travel to China, and some also did so on their way back to Europe. During their stay in China, some Jesuits were able to build up second-hand knowledge through correspondence or reading. I will argue that such knowledge was decisive for Jesuits' scientific work in China, as it allowed comparison with Chinese fauna and flora, shaped Jesuits' interest on particular Chinese crafts or medical practices, while French settlements in these regions were envisioned as a laboratory to acclimatize Chinese plants. The nature of the networks (missionary, colonial and scientific) underlying these spatial dynamisms will also be addressed. In the end, I will discuss how examining the connections between China and "the Indies" can contribute to understand 18th century European knowledge on China as part of a global enterprise.

in the *Journal des Savants* between 1670 and 1730, in order to enhance not just our appreciation of the extent of this activity, but look at the circulation of Jesuit knowledge both between India and China and in Europe, the Jesuit collection practices and more importantly the relationship between the networks of Jesuit science in Asia and the emerging institutions of science in Europe.

P7/4

Dhruv RAINA

(Jawaharlal Nehru University)

***The Collection, Circulation and
Networks of Jesuit Scientific
Knowledge in 'les Indes': From Re-
ports and Reviews in the Journal des
Savants (1670-1730)***

Historians of science have pointed out how 'Jesuit science' became marginal to the mainstream institutionalization of science in Europe towards the end of the seventeenth and beginning of the eighteenth centuries. The *Journal des Savants*, as is well known, was an important periodical from France reporting not just scientific and scholarly activity in Europe from the seventeenth into the nineteenth century. This paper explores the reports by Jesuits themselves as well of secular savants reviewing or reporting Jesuit scientific activity and travel in India (and China)

P8

Ideology and Technology: Artistic visions constructing cultural identities and political authority

Organiser: Roslyn HAMMERS

In general terms, ideology may be defined as a systematic approach or way of thinking that attends to the creation of a normative, naturalized vision of political or social structures. Throughout history art and artists have been engaged to lend their persuasive power of visualization to amplify and render concrete the ideological constructions of states, elites, and rulers. The display and application of technological advances in both real and fictive realms argue for the intellectual superiority and cultural hegemony of the patrons. For political actors the patronization of technology in art production functions as a rhetorical strategy to legitimate authority. The technological content in art facilitates the naturalization of the authority the patron seeks to affirm. Artistic visions that valorize technology and innovation serve necessarily as a novel lens to apprehend different views of world, empire, and state. Art and technology work together to establish or justify new laws, economic policies, governing structures, and generally the management of society.

This panel seeks to explore the ideological frameworks for the use of technology and technological content in productions of art aligned with government or political authority in East Asia. Related ideas associated with ideology and technology that papers in this panel may engage include the role of accuracy as a rhetorical tool to argue for social or political programs, the use of utopian concepts in constructing representations of technology, and appeals to historical idealized societies and their models that become updated with advances in technology. The papers in this panel evaluate the valorization of technology in art to verify visions of social progress, cultural hegemony and political authority.

P8/1

CHUNG Hyung-min
(Seoul National University)

Techniques and Technical Objects in the Genre Paintings of Gim Hong-do 金弘道 (1745-ca. 1806)

Gim Hong-do was the most famous court painter of the late Joseon dynasty during the reign of King Jeong-jo (r. 1752-1800), who praised him highly as the painter in charge of all the affairs concerning painting as recorded in the *Collection of writings of Hongjae* (弘齋全書). Even today Gim is ranked as the most representative painter of Korean painting. Gim was middle-class man (*jung-in* 中人) who excelled in a wide

range of subject matters: landscape, birds-and-flower, portraiture, Buddhist, and genre.

In his genre paintings, he accurately depicted technical objects and matters involved in the livelihood of common people, such as tilling and weaving, fishing, tea preparation, blacksmith, building, and martial arts, etc. The accuracy of technical depiction of these scenes is unprecedented but at the same time the scenes are so well integrated into the backdrop or create vivid narrative that his works have been read as genre paintings rather than technical drawings.

What inspired Gim Hongdo to depict

the livelihood of common people with such details? Who was the patron of his painting of the common people? What was the artist's intention of such creation? He is said to have associated with *jung-in* scholars of the Northern Learning (北學), who might have directly or indirectly influenced the painter in practical matters. How can his paintings be read in comparison with his contemporaries of the Qianlong court? This paper seeks to explore Gim Hongdo as participating in larger Asian painting practices associated with technological content while considering his contributions as inspired by Korean visual culture.

P8/2

Roslyn HAMMERS

(University of Hong Kong)

***Technology and knowledge in the
Qianlong Emperor's Pictures of
Tilling and Weaving***

In 1739 and again in 1769 the Qianlong Emperor (r. 1736-1796) commissioned the reproduction of the Pictures of Tilling and Weaving. This genre of painting and poetry was inaugurated in the 12th-century and consisted of two handscrolls, one of which depicted the procedures involved in the cultivation of rice and the other represented the scenes of silk fabric manufacture. Each step had a poem included with it. The subject had been extremely popular from its inception to the end of the Yuan dynasty. In patronizing the Pictures of Tilling and Weaving, the Qianlong Emperor was following his grandfather's and father's example. First the Kangxi Emperor (r. 1661-1722) and then Prince Yinzhen (the future Yongzheng Emperor [r.1722-1735]) had commissioned a new suite of imagery and a new series of poems for this genre.

Such sustained imperial patronage revitalized the genre even while it

experienced significant iconographic transformation. The Kangxi Emperor made adjustments to the steps he included in his *Imperially Commissioned Pictures of Tilling and Weaving*, but the most startling change was the introduction of a hybridized form of linear, or geometric, perspective. I briefly explore the suitability of this style which was greatly inspired by Western knowledge Jesuits brought to Kangxi's court. This emperor's Pictures of Tilling and Weaving was the first imperial commission in China that incorporated perspective. As the study of linear perspective was aligned with the fields of mathematics and astronomy in the Jesuit curriculum, I argue that the Pictures of Tilling and Weaving, intimately related to the cyclical seasonal changes of the year, were a particularly appropriate subject matter to happily combine Chinese agrarian technological imagery with this Western mode of representation.

Qianlong and Yongzheng had continued to deploy Kangxi's novel style of painting for their versions of the Pictures of Tilling and Weaving. However in 1769, the Qianlong Emperor radically altered this course by returning to a Chinese form of representation. Through a discussion of the appeal of the different modes of creating imagery with an exploration of Qianlong's accompanying prefaces to his Pictures of Tilling and Weaving, I analyze the motives for Qianlong's promotion of historical forms of technology with the development of different types of knowledge.

P8/3

John FINLAY

(Centre d'études sur la Chine moderne et contemporaine)

“Chinese Ceilings” and the Knowledge of Linear Perspective in 18th-Century China

The story of the transfer of European linear perspective to China is a compelling one, and the subject has been studied in some detail. The best-known encounter between Chinese art and European perspective is the instruction of court painters in the mathematical principles and painterly effects of linear perspective by Jesuit missionary-artists serving in the imperial workshops of the Qing dynasty (1644-1911). Jesuit painters and Chinese court artists together created *trompe-l'oeil* murals—paintings designed to “fool the eye”—for the interiors of imperial buildings. Incomplete and often anecdotal information on Chinese painting and the reception of linear perspective returned to Europe in various forms, including paintings specifically showing Chinese architecture. In this inter-cultural encounter, the French Minister of State Henri Bertin (1720-1792) played a central role. Bertin maintained a vast correspondence with the French Jesuit mission in Beijing, and the missionaries sent him a remarkable body of information—texts and images—on many subjects, including Chinese painting and architecture. All of the paintings produced by Chinese artists in Beijing for Bertin to illustrate Chinese architecture are rendered in a hybrid Chinese-European style with linear perspective and modeling in light and shade. Among these is a large-scale album with the title *Plafonds Chinois*—“Chinese Ceilings”—that contains two superb paintings of *trompe-l'oeil* ceilings, two paintings of palace buildings, and a fascinating text on ceilings in Chinese architecture and Chinese painting

in general. While the paintings of ceilings appear to show in remarkable detail the architecture of sumptuous Chinese interiors, the accompanying text identifies them as images of *trompe-l'oeil* paintings and not renderings of actual ceilings. In effect, a European decorative technique—a painting that creates the illusion of deep space—has supposedly been translated into a Chinese context, and then a representation of that adoption of European style in China has been sent back to Europe. The complexities of this remarkable interchange are highlighted by the issues raised in the missionaries' text. This paper proposes to examine questions of how European knowledge was transferred to 18th-century China, of who received such knowledge, and what the mathematics, the artistic and even the theological implications of linear perspective might have meant there.

P8/3

Kristina KLEUTGHEN

(Washington University in St. Louis)

Vision, Optical Devices, and Art in Late Imperial China

When Western lenses and optical devices were first introduced into early modern East Asia, the objects and their effects on vision affected not only the viewing experience, but also the production of Chinese and Japanese art. The effects of optical devices on Japanese art are well established, but the Chinese case remains little explored despite increasing research on Chinese optics. Although the scientific field of optics did not develop significantly in China prior to the mid-nineteenth century, beginning in the seventeenth century Chinese domestic production and use of lenses and optical devices resulted in significant relationships with art at the imperial, elite, and popular levels. From eyeglasses and telescopes to the zograscope, peepbox, and more, Chinese

art produced in response to optical devices could be found across all social levels and around the empire during the seventeenth, eighteenth, and nineteenth centuries. The production and consumption of these new works, as well as what they depicted and how, varied with place, format, and audience. All cases, however, presented innovations that challenged both Western and Chinese ideas about how to visually and physically experience the world: the act of looking literally looked different, and was expressed consistently in the form of visual art.

Across the entire social spectrum, late imperial Chinese art related to lenses and optical devices produced during the last centuries of imperial rule demonstrates specific and unprecedented instances of interaction between visual and material culture, science and art, and the domestic and the foreign. Optical devices and the viewing experiences that they mediated created varying levels of foreign intervention into Chinese art, vision, and visibility. However, the consistent but diverse methods of Sinitification of all these elements and the reliance on domestic production rather than imports offers new insights into how China engaged the West and optics more as art than as science. Integrating the histories of science and art, this paper examines several case studies of optical devices and their related works of art at various social levels and over time to begin tracing the visual and material history of optics in late imperial China.

P8/5

Morris LOW

(University of Queensland)

Art, Technology and Expo '70

There has been little in the way of scholarly historical analysis of Expo '70,

the first World's Fair to have been held in Asia. It was a major milestone in Japanese history, realising Japan's dream of holding an international exposition. It not only celebrated a quarter of a century since the end of World War II but also marked three decades since an international exposition was to have been held in Tokyo and Yokohama. This time, though, the location was Osaka and the site covered an area of 3.3 million square meters, larger than the site of the 1967 World's Exposition held in Montreal. Despite the Expo's theme of 'Progress and Harmony for Mankind', there was the perception that the real aim of the event was to shift the attention of the public away from the renewal of the US-Japan security treaty in 1970 to something which was more festive in spirit and celebrated technology and communication. For this reason, criticism of the Expo became linked with opposition to the treaty. The architect Tange Kenzō sought to create the Expo as a model for a future city. The Expo marked the rise of the information society - a distancing away from actual objects and a shift to immersing consumers in a positive environment which they would ultimately associate with the brand whether it was a nation or a product. Eighty per cent of pavilions employed projected images (often on multi-screens), resulting in image overload and the complaint that they hid the problems of Japanese society. Powered with electricity from the new Tsuruga Nuclear Power Plant, Expo '70 ushered in a period of Japanese science cities and technopolises built in the quest to realise the dream of a technoscience-led future. What is sometimes forgotten is the role of artists in shaping this vision. This paper focuses on the work of contemporary Japanese artists who exhibited at Expo '70.

P9

Strange Nature, Strange Technologies: Exploring the Inexplicable in Early Modern East Asia

Organisers: Martina SIEBERT & ZHANG Qiong

Uncommon phenomena, seeming wonders, unheard-of monstrosities, they all challenge the explanatory capability of humans and at the same time trigger their fantasies and visions. But they may also be left untouched, unexplored, and labeled as random exceptions not worth investigating, so that they will not be stirred further and given a chance to topple established order. The panel uses the concept of “strange” as a key to understand how early modern scholars in China, Korea and Japan wrote about, reflected on and tried to explain (or explicitly not explain) things/phenomena/hear-say knowledge from beyond the fringes of the world they knew and understood. In some of these cases, “strangeness” was produced by encounters of heterogeneous mentalities/epistemologies, in others by transferring things/knowledge, etc., between different spheres - these spheres may be different social groups or knowledge networks, peasant practices and scholarly erudition, animal behavior and human understanding, natural phenomena and human perception, the past and the contemporary, foreigners and natives and so forth.

The panel brings together scholars from the US, Korea, Japan, Germany and Taiwan working on “brush notes” (筆記) and other forms of more private scholarly writings. We will investigate notions of the “strange” and the handling of the “inexplicable” by specific works and authors to highlight how they negotiated realities and drew borderlines between things inside and outside of the acknowledged order of their worlds. Zhang Qiong will navigate and explore the “Many Wonderful Worlds” of Xie Zhaozhe, Martina Siebert collects and analyses objects with “science fiction” capabilities, Jeon Hyeri shows how the Korean Confucianist Yi Sukwang embraced the world of oddities in his writings, Onabe Tomoko investigates the interrelatedness of esoteric technologies and Shinto practice in Edo period “strange stories.” Fu Daiwie, who already in the early 1990s has drawn the attention of historians of East Asian sciences to the function of wonders and the classification of the “strange” in Mengxi bitan, the representative work of one of the icons of our field, Shen Gua, will present a late reflection on the topic and comment on the four papers.

P9/1

ZHANG Qiong

(Wake Forest University)

Xie Zhaozhe and his Many Wonderful Worlds: A Case Study of Late Ming Discourse of Exotica

The late Ming has been noted for many important intellectual and cultural transformations. Among these were the decline of the Cheng-Zhu orthodox school

of Confucian moral discourse; the rise of *biji* 筆記 (brush notes) as the dominant form of narrative adopted by scholars; an explosion of the printed press for both commercial and governmental venues; an unprecedented level of interests in travel, geographical exploration, and ethnographic studies; and a conscious turn to craft and stage individual self-identity through the cultivation and

display of personal hobbies and obsessions. These developments nurtured a robust “discourse of things” (*bowu* 博物) that almost exclusively focused on the strange and exotic. This paper presents a case study of this discourse through examining the works of Xie Zhaozhe 謝肇淛 (1567-1624, *jinshi*, 1592), known as one of the three *bowu* masters of the late Ming. A successful scholar official whose administrative career and personal love for travel took him to many different parts of the Ming empire, Xie published several collections of *biji* recording what he had seen, heard and read about. The most celebrated of these was *Wuzazu* 五雜俎, The Five Assorted Offerings, 1618), an encyclopedic collection of notes set in five broad categories - Heaven, Earth, Human Beings, Things, and Events. Here one encounters only the truly remarkable: a snake-hunter who retrieved the gall bladder from a snake through a precise procedure without killing it; a ghost who offered a miracle formula of healing drugs; and the macaques which were trained to use firearms by General Qi Jiguang’s 戚繼光 troops and helped them ambush and sack the pirates, etc. These collections of notes encapsulated Xie’s adventures into and critical reflections upon the wonders of the many worlds which he had traversed in his life and work, in particular, the textual world of the *zhiguai* 志怪 (narratives of the strange), dynastic histories, and classical literature; the realm of popular cultural practices and daily living; and the exotic world on and beyond the Chinese frontiers. In my paper I will explore the conceptions of nature, reality, and knowledge with which Xie engaged his sources and highlight some of the thematic resonances between his work and several other representative works in the late Ming discourse of exotica.

P9/2

Martina SIEBERT(Max Planck Institute for the History of
Science)***Things Outside of the Box: "Science
Fiction Objects" in Early Modern
Chinese Literature***

Among the accounts of the "strange" that appear in Chinese scholarly writings some objects possess a technical or artifactual nature. They are objects retrieved by a lucky accident from the ground or they were handed down through time often with an unknown origin. Some objects were products of a long-lost craft or made by an especially talented (known or unknown) master, some were exceptions from the 'normal' brought forth by extraordinary natural circumstances. Telling examples are the "self-warming cup," the "walking stick that glows at night," the "mirror showing internal diseases of the person reflected." And there are objects familiar to the erudite, well-read scholar which he seldom actually physically touched or saw himself but still wrote about them, such as the mystical Han-time "translucent mirrors," the "south-pointing chariot" of the Zhou kings' entourage or Liezi's "mechanical servant."

My presentation focuses on the fictionality of these objects as well as on the vision, assumed capabilities and potential they represent. As "Science fiction objects" they point in two directions: one is the direction of their origin, i.e. how do the authors think objects with these extraordinary capabilities came about; the other direction is what imagined but in the "real world" unrealized functions do these objects fulfill and what do they, similar to SciFi literature, say about the authors' visions of things possible. A selection of sources will be combed for those objects and explanations and "non-explanations" analyzed.

P9/3

JEON Hyeri

(Seoul National University)

***Leaving the Strange Things Strange:
How a Confucian Scholar Embraced
the World of Oddities in Early Se-
venteenth-Century Korea***

Although strange things/phenomena had never explicitly been regarded as legitimate topics for Neo-Confucian investigation of things, many Confucian scholars were fascinated by the strange and its manifestations in nature. Their standpoints from which to engage with the strange showed wide individual variations. This paper examines the example of Yi Sukwang 李晔光 (1563-1628), a Confucian scholar-official in early seventeenth-century Korea, and how he dealt with strange phenomena in nature. Yi's life was full of extraordinary experiences: while travelling to the Ming court as an envoy, he encountered with various foreign cultures, Chinese and other; during the Japanese Invasion of Korea (1592-98) he witnessed and went through wartime hardships. Living in the growing capital city of Seoul, where trade and cultural exchanges with Ming China were flourishing, he moreover could easily get access to up-to-date literary texts from Ming, including contemporary *biji* 筆記, (brush notes) and *leishu* 類書 (encyclopedias).

Relying on the rich resources provided by these direct and indirect experiences he wrote the *Jibong yusöl* 芝峰類說 (Jibong's Encyclopedic Accounts, 1614), allegedly the pioneering *leishu* in Chosön period. *Jibong yusöl* consists of 3,435 *biji*-styled jottings containing his lifelong *jianwen* 見聞 ("experience and knowledge"), classified into comparatively detailed categories. Although he, as a Confucian scholar, explicitly declared in his preface that he

would never record any mysterious affairs in his book, quite a number of jottings in *Jibong yusöl* deal with things commonly considered as strange, such as gonochorous plants, hermaphroditic animals, animal metamorphosis, oviparous man, and a country of women. More interestingly, he never attempted to rationalize or naturalize those oddities. Instead, he appreciated the very strangeness of them while at the same time maintaining the epistemological principles of Neo-Confucian orthodoxy. In his idea, strangeness resided in a realm that was governed by “a principle outside of the principle” (*li wai zhi li* 理外之理), a realm beyond that of the commonsensical principle. With this subtle conception, strange things/phenomena could remain as wonders or marvels of nature, not being subjected to any further rationalization. Yi Sukwang’s case shows a strategy by which a Neo-Confucian scholar-official could embrace, or even participate in, the world of oddities while not directly challenging Neo-Confucian orthodoxy, which was increasingly dominant in contemporary Korean politic and academic societies.

P9/4

ONABE Tomoko
(Osaka University)

Amazing Tales of Hermit Technologies in Japan

The Edo period in Japan witnessed a surge of records of mysterious adventures or “strange stories” (奇聞), including interviews with sailors who survived drifting overseas (漂流譚), or compilations of bizarre anecdotes such as the famous Bag of ears (耳袋). These stories often took the form of commoner hearsay, sometimes of samurai records, or of direct interviews with people who had experienced the abnormal. The topics vary from peculiar

urban myths, magical cures, and ghost stories, to exotic experiences overseas. Odd stories were enjoyed regardless of the types or genre of the narrative; some were fiction, some non-fiction. The consumption of such discourses was widely advanced by all social classes, being encouraged by a popular imagination with intense curiosity towards the unusual. Their production, on the other hand, was mainly conducted by leading intellectuals, including philosophers and samurai bureaucrats who often were members of various intellectual circles. As a leading example, this paper examines Hirata Atsutane’s (1776-1843) *Amazing Tales of the Hermit World* (仙境異聞, 1821) which is based on interviews with a boy “abducted by an alien hermit master.” Among the interviewees were the political thinker and polymath Sato Nobuhiro (1769-1850), gunsmith scientist Kunitomo Tobei (1778-1840), and pharmacist and essayist Yamazaki Yoshishige (1796-1856). I will explore the interrelatedness of esoteric technologies and Shinto practice shown in this piece of writing, as Hirata presents Shinto as the supreme belief through the boy’s narrations while disapproving of Buddhist faiths found in the hermit’s world. This paper shows how science, technology and Shinto faith of the late Edo period (18th-19thc) supported by powerful anti-Buddhist trends contributed to the popular imagery of such strange worlds. The results indicate the existence of a shared concept among these intellectuals of the progressive nature of technologies as well as the interviewees’ intention to connect Shinto’s esoteric tradition with the seemingly new by their “discourse of the strange”. By building this philosophic bridge from the old to the new, they could lay claim to the new while redefining and reaffirming the old.

P10

Re-discovered Maps of East and South-East Asia**Organisers: Vera DOROFEEVA-LICHTMANN & Martin HOFMANN**

The re-discovery in 2008 in the Bodleian Library (Oxford, UK) of the so-called Selden Map (ca. 1619) by Robert Batchelor became an outstanding event in the history of cartography. The Selden Map immediately gained interest of a large scholarly public, due to its eye-catching artistic attributes and complex combination of several East and South-East Asian and Western cartographical traditions. The main 'effect' of the Selden Map, however, is its triggering scholarly attention to overlooked maps among library acquisitions that indicate a far richer set of traditions and interactions in early modern East and South-East Asian cartography than has been previously acknowledged.

The proposed panel is concerned with several cases of forgotten maps of Asia and East-Asia and questions raised by these re-discoveries.

In view of the recent interest in Chinese nautical maps and new data in the field, Wang Qianjin (Institute for the History of Natural History, Beijing) proposes their new classification.

Ekaterina Simonova-Gudzenko (Moscow State University, Russia) reconsiders the early Japanese tradition of Gyoki-style maps, showing a combination of different cultural and religious aspects of visual self-representation of Japan, in particular, the insular mentality.

Hsu Kuang-tai (National Tsing Hua University, Taiwan) will examine one of the treasures of the Old Palace Museum in Taipei, a small hand-coloured map dated by 1654, which looks much like a printed black and white Martini's map in his *De Bello Tartarico Historia*, but due to the usage of various colours, more informative than the original.

Vera Dorofeeva-Lichtmann (CNRS-EHESS, France) will provide first insights into a large manuscript map of the Chinese Empire by Li Mingqie 李明徹 (1751-1832), catalogued in January 2014, about two centuries after its acquisition by the Göttingen State and University Library (Germany).

Alexei Volkov (National Tsing Hua University, Taiwan) makes an attempt to reconstruct the lost tradition of early Vietnamese cartography.

These six papers reveal a large range of still unexplored aspects of East and South-East Asian cartographies and open new perspectives in their study.

P10/1

WANG Qianjin

(Institute for the History of Natural Sciences, Chinese Academy of Sciences)

Properties and Classification of China's Traditional Nautical Charts

In order to conduct in-depth research into China's traditional nautical charts,

it is necessary to analyze their properties and classify them according to different standards. The following are classifications of traditional nautical charts based on 12 standards.

1. According to the areas and regions for which the charts are made, there are three classifications of nautical charts: coastal

nautical charts, nautical route charts and sea area nautical charts;

2. According to the means of expression for the navigation routes, there are three classifications of nautical charts: island nautical charts, channel nautical charts and compass-leading course nautical charts;

3. According to the properties of navigation, there are four classifications of nautical charts: canal nautical charts, military nautical charts, commercial nautical charts and fishery nautical charts;

4. According to the distance of navigation, there are two classifications of nautical charts: off-shore nautical charts and ocean nautical charts;

5. According to the administrative areas of navigation, there are four classifications of nautical charts: international nautical charts, overall nautical charts of China, provincial nautical charts and county territory nautical charts;

6. According to the proportion of pictures and scripts, there are three classifications of nautical charts: picture-focused nautical charts, picture-script nautical charts and script-focused nautical charts;

7. According to the means of publication, there are two classifications of nautical charts: hand-drawn nautical charts and block-printed nautical charts;

8. According to the properties of the charts, there are two classifications of nautical charts: folk-produced nautical charts and officially produced nautical charts;

9. According to the functions of the charts, there are two classifications of nautical charts: nautical charts for everyday use and nautical charts for illustration;

10. According to the times of charts, there are two classifications of nautical charts: ancient nautical charts and modern nautical charts;

11. According to the content of

navigation, there are two classifications of nautical charts: normal nautical charts and nautical charts for event recording;

12. According to the existing forms of nautical charts, there are three classifications: independent nautical charts (single paged), attached nautical charts (to files) and inserted nautical charts (into books).

P10/2

Ekaterina SIMONOVA-GUDZENKO
(Institute of Asian and African Studies,
Moscow State University)

***Reconsidering the Shomyoji map:
different cultural and religious
aspects of Gyoki-type maps***

The first known Japanese visual representation of the archipelago is attributed to Gyoki Bosatsu (668-749), a Korean monk who spread Buddhism around the country, constructed roads, bridges, canals and is said to be the founder of mapping Japan.

The first written record of monk Gyoki as a founder of mapping in Japan dates to the fourteenth century (Tendai source *Keiran shuyoshu*). The same 14th century also saw the creation of one of the earliest known today Gyoki-style map – the Shomyoji-map, and also the data on the maps (the centre marked as Heian, the capital since 789) testifying that the first maps of the Japanese archipelago seemed to be drawn not earlier than the 13th-14th centuries.

The 14th century was the time, when after Mongol invasion attempts Japan opened to the outside world and tried to find a place for herself in it. The “political” data on the Gyoki-style maps (foreign countries, provinces, roads, capital) but not relief data seemed to be some kind of reaction to “entering the big world”, the desire to show that Japan is “a cultural country” like its neighbours, China and Korea. Attribution

of the maps to a Buddhist monk of the 8th c. was not only intended to make the fact of mapping the country more ancient but also to confirm the priority of Buddhist spatial ideas as the most ancient and understandable.

The easiest and the most comprehensible way to explain the new, complicated and frightening world is to use already known Buddhist cosmological and spatial instruments. One could find the explanation also in the written sources of the period, for example, Kitabatake Chikafusa's *Jinno shotoki* (1339, 1343), and in visual sources – so called Buddhist world maps and partly in Gyoki-style maps.

But if we look thoroughly at Gyoki-style maps of the period we'll see that they are more complicated and represent not only Buddhist cosmological and spatial ideas, but are a combination of aspects of different cultural and religious traditions:

- Insular mentality,
- Chinese tradition,
- Buddhist aspect,
- Shinto influence.

Conclusion. The combination of different cultural and religious aspects in the visual self-representation of Japan on Gyoki-style maps reflects early attempt by Japanese culture mechanisms to assimilate and adapt different other-cultural phenomena and things.

P10/3

HSU Kuang-Tai

(National Tsing Hua University)

A Hand-Painted Color Map from Martino Martini's De Bello Tartarico Historia Preserved in the Old Palace Museum in Taipei

In late Ming, Jesuit missionaries went to China to propagate Christianity. Matteo Ricci 利瑪竇 (1552-1610) produced several world maps for Chinese literati;

on the other hand, Michele Ruggieri 羅明堅 (1543-1607) left his unpublished manuscript of Atlas of China when he died in 1607 in Italy. Ruggieri was not the only missionary who made a map of China in the 17th century. For example, Martino Martini 衛匡國 (1614-1661), an Italian Jesuit, came to mainland China in 1643. He did travel in several provinces, gathering information on the geography of the Chinese empire. At that time the Ming capital Beijing fell to Li Zicheng's rebels and then to the Manchus. Martini worked with the short-lived regime of the (Southern) Ming Longwu 隆武 Emperor. When the Manchu troops arrived and controlled Zhejiang 浙江, Martini switched his loyalty to the Qing Dynasty. However, concerning the replacement of Ming dynasty by Qing dynasty, he did not only have experience, but also made his own report of the history of the subjugation of Qing over Ming dynasty from late Ming to 1648 in his work, *De Bello Tartarico Historia*, published in 1654 with a map of China without any colour.

There is a colour map preserved in the Old Palace Museum in Taipei which looks much like Martini's map in his *De Bello Tartarico Historia* except it is hand-painted in color. In this paper, the author tries to take this opportunity to analyze this hand-painted colour map from viewpoint of historical geography, in order to make clear its content in terms of the work.

P10/4

Vera DOROFEEVA-LICHTMANN

(UMR China, Korea, Japan,
CNRS & EHESS)

A re-discovered manuscript map of the Chinese Empire by Li Mingqie 李明徹 (1751-1832) from the Göttingen State and University Library

A large Chinese manuscript map of

the Qing Empire has been owned by the Göttingen State and University Library for about two centuries, but was catalogued in January 2014 [Cod.Ms.MAPP_34], only now having become an accessible item of its rich collection of early maps (<http://www.sub.uni-goettingen.de/sammlungen/kartensammlung/>).

The map can approximately be dated by the end of the 18th – the early 19th centuries and has a title *Da Qing wannian yitong jingwei yutu* 大清萬年一統經緯輿圖 (The Unified Latitude and Longitude General Map of the Ten-thousand-years Great Qing Empire). It is signed by Li Mingche 李明徹 (1751-1832) – a famous taoist master and scientist, especially known for his studies in astronomy.

The map bears a library stamp that confirms its acquisition in the late 18th – the early 19th century. Its possible provenance might be the generous donation to the Göttingen University by Baron Georg von Asch (1729-1807), a member of a German family in service of the Russian Tsars. The Asch Collection (Sammlung Asch), indeed, contains several East Asian maps (<http://frontiers.loc.gov/intldl/mtfhtml/mfdigcol/lists/mtfgvatitindex.html>).

The title of the map and its body do not have complete matches with the extant maps. It evokes the Western system of parallels and meridians, and the map, indeed, relies on Western prototypes, but still has many distinct features of Chinese cartography, being a fusion of the two cartographical traditions.

The map comprises the core Chinese territory, but puts the emphasis on the vast Western and Northern lands of the Qing Empire. The centre corresponds to the region around the Yellow River source highlighted in the map by bright yellow colour. The focus on the Yellow River source by graphical means is complemented by

a long textual passage on its history in the lower left corner of the map. The core Chinese territory is divided into the 17 provinces, showing a transitional division from the 15 Ming provinces into the final set of 18 Qing provinces, the adjustment of the administrative system taking shape from the 1662 through the 1667. The outdated administrative division in the map accentuates its historical dimension.

I shall provide some insights into this unique map, discussing theses and some other of its characteristics.

P10/5

Alexei VOLKOV

(National Tsing Hua University)

Pre-colonial Vietnam in Chinese and Western Maps: A Revisit

It has been often tacitly assumed that the Vietnamese cartographic tradition was a continuation of its Chinese counterpart after the nation gained its independence from China in 939. There exist mentions of two maps of (Northern) Vietnam made in the 11th and 12th centuries, yet the earliest extant maps of Vietnam are dated (probably, with one exception) of the 17th century, although some of them are based on the results of a large-scale cartographic project conducted in the late 15th century.

The first part of this paper deals with the representation of Vietnam in Chinese maps produced prior to the early 17th century when Chinese cartography started being influenced by its Western counterpart; in particular, it will focus on the following Chinese maps: (1) “Administrative Map of Nine Regions” *Jiuyu shouling tu* 九域守令圖 (1121), (2) “Map of the Tracks of Yu [the Great]” *Yu ji tu* 禹跡圖 (1136), (3) “Authenticated General Map of the Mountains and Rivers of Nine Provinces [= China]” *Jiuzhou shanchuan shizheng zong*

tu 九州山川實證總圖 (1177), and (4) “General Map of the Essential [Features of] Ancient and Present Regions of China and of Barbarian countries” *Gujin hua yi Quyu Zongyao tu* 古今華夷區域總要圖 (12th - 13th century) .

In the second part of the paper I will focus on Western and Vietnamese maps depicting Vietnam produced by the Catholic missionaries in the 17th century, especially (1) the map published in the History of the Kingdom of Tonkin by Alexandre de Rhodes (1591-1660) in 1650; (2) the map of Vietnam from the *Thiên tải nhàn đàm* 千載閒談 (1810) probably inspired by a late 15th century Vietnamese map which, in turn, may have been the prototype of de Rhodes’ map; (3) another map published in de Rhodes’ *Divers voyages et missions* (1653) and often credited to his authorship; and finally (4) the map reproduced in an anonymous note titled “Eclaircissement sur les cartes du Tonquin” in the *Lettres édifiantes et curieuses* in 1819.

The goal of the present study is to identify the sources of cartographic data that the Vietnamese and Western map-makers may have used in their work.

P11

Poisons and Antidotes in Cross-Cultural Perspectives

Organiser: CHEN Hsiu-Fen

In the light of global history and material culture studies, medicinal exchange has attracted more attention than ever. It is not only because we are living in a highly globalised age when exchanges occur all the time, but also because the uses/abuses of substances have become an important issue in our daily life. Of the medicinals, poisons and antidotes are chosen as this panel subject due to several concerns. In general, the term 'poison', or its rough equivalents such as 'du' in Chinese, or 'duk' (dug) in Tibetan, has diverse connotations. In biology, poisons are regarded as substances that cause disturbances to organisms. In socio-cultural fields, the significations of poisons are more complicated, often related to multi-layered interweaving of medicine and non-medical forces. Poisons and antidotes among transnational and border-crossing relations may also involve cultural confrontation, appropriation and acculturation. Due to the fruitful ambiguities of poisons and antidotes, this panel will contribute best understandings to their knowledge and practice in historical and anthropological perspectives. We will illustrate various case studies based on textual analyses of sources. To begin with, CHEN Ming will show what Chinese medicine had received from the rest of the world since mediaeval times. In the case of three exotic antidotes, his discussion of Indian, Islamic and Christian influences in premodern Chinese medical systems will challenge the given idea of 'Chinese medicine' as a unified and monolithic whole.

Likewise, Shih-Hsun LIU explores the transmission of western medicine into the Qing Court. In her analysis of the Treatise on Western Medicine by the Jesuits for the Manchu, she will scrutinise whether the antidotes as recorded in this work were domesticated and actualised in clinical encounters. Apart from global history, Hsiu-Fen CHEN will instead shed new light to gu poisons in the scope of local history. With a focus on treatments – both medical and social – she will show how medicine, religion, magic and folklore had characterised gu poisons in late imperial China.

Last but not least, Barbara GERKE will provide general contemplations on the nature of poisons and antidotes. By analysing classical Tibetan medical texts she will argue how poisoning, contagion and infection are closely interrelated and how poisonous substances can be processed as antidotes in turn to treat them.

P11/1

CHEN Ming

(Peking University)

Agada, Theriac and 'Hsi-du-shih' (Lapis serpentinus): Transmission and Transformation of Three Exotic Antidotes in Pre-modern Chinese Medicine

There had been a long tradition of knowledge and uses of poisons, toxicants

and antidotes in the history of Chinese medicine. In mediaeval times, following the cultural, religious, and medical exchanges between China and other countries were the introduction of several foreign poisons and antidotes as panacea into China. They had drawn some Chinese physicians' attention and some of them were recorded in the medical works. Of these antidotes, Agada, Theriac and 'Hsi-du-shih' (*Lapis*

serpentinus) are representative yet rooted in very different historical backgrounds. The origin of Agada can be traced back to Agadatantra (a treatise on toxicology), one of the eight branches of ancient Indian Ayurvedic medicine. Along with the transmission of Buddhist works and their medical practices into China, the recipe of Agada pills was later described in Sun Simiao's *Qianjin Yifang* (682). In Chinese Buddhist canons, Agada not only refers to an antidote that cures all poisons, but also becomes a metaphor referring to the potency of Buddha's dharma and wisdom. By contrast, Theriac originates in ancient Greek medicine. During the early Tang period, it was contributed into China by Nestorian traders or doctors. In the Yuan Dynasty, *Huihui Yaofang* also recorded another kind of Theriac, namely *Diryaaq*, coming from Islamic medicine in West Asia. During the Ming and Qing periods, Theriac was renamed as *De-li-ya-jia* or *De-li-ya-ga* (*deriyaka*) and introduced into China again by the Jesuits from Europe. Similarly, the transmission of '*Hsi-du-shih*' was also owing to the missionary works of Jesuits in East Asia, in particular China, Korea and Japan. The production and transmission of knowledge about '*Hsi-du-shih*' had intimate connection with pre-modern European-Asian medical knowledge. In summary, the transmitted knowledge of these three antidotes and Chinese physicians' changing views of their properties and functions just mirror a long-term transition from the mediaeval until the pre-modern period, during which Chinese medicine had encountered with foreign medical systems. This article focuses on the different transmissions and historical changes of these three exotic antidotes in a perspective of global history, so as to reveal the development of Chinese medicine in the complex European-Asian

context interwoven with different religions and cultures.

P11/2

CHEN Hsiu-Fen

(National Chengchi University)

Treating Gu Poison in Ming-Qing China: Medication, Prevention and Exorcism

As a venom-based poison, *gu* 蠱 had been viewed in diverse ways since the antiquity. In Chinese folklore, *gu* poison could be practiced as a black magic involving manipulation of sexual partners and control of evil power. In Daoist traditions, it might be seen as a parallel to 'demons' or 'corpse worms', the major obstacles that had prevented religious practitioners from their attainment of perfection and longevity. No less important is the medical realm, in which *gu* poison was often diagnosed as a source of various malignant diseases and even caused death. In any case, religious masters, medical experts and laymen all strived to escape from or fight against *gu* poison. Their treatments included medication, prevention and exorcism by application of antidotes, talismans, incantations and dietary adjustments, etc. Certain tactics for 'testing' *gu* poison were also recommended. When some of recent researches have focused on the historical changes of *gu* poison before the Song dynasty and its localisation as a Southern disease – mainly in Guangdong, Guangxi and the South-western regions – in the late imperial period, my survey will go further to scrutinise whether people's treatments of *gu* poison also changed accordingly. For example, when some physicians and scholars tended to stigmatise *gu* poisons as a dirty trick by the 'less civilised' Miao women, did the antidotes they proposed also imply any gender characteristic or

ethnic imagination? What I attempt to reveal here is not only the knowledge and practice of *gu* poison and its antidotes in local contexts, but also the blurred and ambiguous boundaries between the medical, the magical and the ethnic which have helped to shape their significance.

P11/3

Barbara GERKE

(Humboldt University of Berlin)

Of Poisons, Contagion, and Antidotes: "Poisoning" (Dug Nad) and its Treatment in Classical Tibetan Medical Texts

Poisonous substances have been valued for their medical potency across cultures. What makes a substance be perceived as poisonous in a given cultural context? How are ideas of poisoning linked to contamination and disease? There are several examples in the literature of how sense perceptions of poisons and poisonous substances shape ideas of efficacy, and how they involve the biological and cultural as well as the poisonous and medicinal. The term for 'poison' in the Sino-Tibetan and Tibeto-Burman language families reveals parallel linguistic histories. The Old Chinese root of the Modern Chinese word for poison, *du* 毒, is cognate with the Tibetan *duk* (*dug*). The Chinese term *du* not only means poison but also a potent drug; it is linked to ideas of strength and power. In both China and Tibet, poisons, especially metals and minerals, were believed to 'enhance vitality,' and became popular ingredients of certain medicines. In processed states, they were also used as antidotes to poisoning. To make a contribution to the panel discussions on cross-cultural perspectives of poisons, this presentation will explore the dynamics between forms of poisoning and the antidotes used to treat them in classical

Tibetan medical texts, especially the Four Tantras (*Rgyud bzhi*) and some of its commentaries. I analyse how processed or 'detoxified' poisonous substances (e.g. mercury) are presented as antidotes for poisoning, contagion, and infectious diseases, for example, in the form of popular multi-compound 'precious pills' or *rinchen rilbu* (*rin chen ril bu*). The presentation shows how Tibetan disease classifications of 'poisoning' or *dukné* (*dug nad*) conflate concepts of poisoning (e.g. food poisoning), contagion (e.g. venereal diseases), and 'infections' caused by animals (e.g. rabies). These diseases were often grouped together in the medical literature under *dukné* and treated with certain 'antidotes' called *nyenpö dzé* (*gnyen po'i rdzas*). What is the nature of these poisons and their antidotes, which also contain poisons, and what is the underlying rationale of treating poisons with poisons?

P11/4

LIU Shih-Hsun

(National Chengchi University)

Manchu Recipes in the Jesuits' Writings: Poison and Antidote in the Treatise on Western Medicine

The Treatise on Western Medicine (*si yang ni okto i bithe*) was written by the French Jesuits Joachim Bouvet (1656 - 1730) and Jean-François Gerbillon (1654-1707) in Manchu language during the reign of Emperor Kangxi (1662-1722). It was aimed at introducing contemporary European medical knowledge to the monarch. The Treatise on Western Medicine records 36 anonymous recipes, of which 8 are related to poison curing. My research will thus focus on the antidote recipes in this medical work and look into several questions: Why do antidote recipes occupy the major part of the Treatise on Western Medicine, and

how are they classified? Do they share any common element or knowledge? What kind of poisonous images do they represent? Also, what is the relationship between poison, antidote and the body as revealed in this book? As the Treatise on Western Medicine was compiled by the Jesuits, their work naturally carried their viewpoints of contemporary 'Western Learnings'. But, did their understandings actually meet the standards of European medicine at that time? More precisely, what this medical treatise delivers is authentic western medical knowledge or already a mixture with Chinese medical concepts and vocabularies? In order to answer these questions, this research will firstly analyse the contents of antidote recipes in the Treatise on Western Medicine. Secondly, I will discuss how the Jesuits had introduced western medical knowledge into China, as well as to examine whether they had appropriated any recipe from European missionary medicine or Chinese medicine. Then my emphasis will be placed on the medical case records in the Qing Court to explore whether these antidote recipes were clinically practiced. In a comparative perspective, finally, I will evaluate the importance of the Treatise on Western Medicine by positioning it into the medical systems of the Qing Court and global history in general.

P12

Transfers of technology: exchanging knowledge in visual and material culture**Organiser: Roslyn HAMMERS**

This panel seeks to explore the mechanisms for the transfer of technological and scientific knowledge through material and visual objects. Responding to information encompassed in objects has proved to be an important source of inspiration for artists and technicians within and across cultures. Studying closely the media through which such knowledge has been exchanged between various actors affords new insights into the social, historical, and mercantile dynamics that underpin the construction of visual material, art, and technology across histories, borders, and ethnic groups. Material culture applies technology to make innovations that exploit scientific advances in order to generate new forms. Alternatively demands for novel solutions in material culture serve to stimulate the development of new technology.

This panel investigates the history of East Asian material culture and the transfer of knowledge, skills and/or manufacturing methods by focusing on specific material objects and imagery in the above-mentioned context. Related concepts the papers in the panel may discuss include considerations of the epistemic devices through which visual culture has enabled greater accessibility to technological information, the modes of interaction through which artists, intellectuals, and/or technicians respond to technological information in order to advance or apply it in novel situations, and the qualities of the imagery or the objects that catalyze such innovative transfers of knowledge.

P12/1

Anne GERRITSEN
(University of Warwick)

Cizhou wares, the circulation of objects, and the transmission of technology

From the Five Dynasties onwards, Cizhou wares were made in the northern provinces, especially (but exclusively) in Hebei, thickly potted of a darkish clay and covered with cream coloured slip. The variety of shapes and the liveliness of the decorative schemes suggest that these wares were made for a broad spectrum of consumers throughout the region. We also know that these objects never appeared on the imperial order lists. They were “popular” wares rather than imperial wares, but, as archaeological evidence suggests, they circulated well beyond

their sites of production. Moreover, I would argue that the technology of the majority of the Cizhou ware decorations—the brush application of brown or black pigments to the cream surface, creating fine and detailed paintings—went on to have a significant impact on the decorative schemes in the southern provinces. The circulation of Cizhou wares in the southern provinces turned these objects from local objects to regional and empire-wide goods. When the technology of using a brush to apply pigments to monochrome surfaces was combined with the increasingly wide circulation of cobalt during the Mongol Yuan dynasty, the stage was set for the emergence of a global commodity. The circulation of Cizhou wares, then, allows me to explore a number of important topics: the circulation of goods between northern and southern provinces (a

significant distinction not only because of the very different types of clay in use, but also because of the political divisions between north and south during the Song and Jin dynasties); the transmission of technology that occurred in tandem with the circulation of objects; and the transitions from local and regional material cultures to the emergence of a global material culture with the circulation of blue and white porcelain.

P12/2

Angela SHENG
(McMaster University)

Visualizing Textile Work in Ming-Qing China

Textiles were produced in China since antiquity for functional use, tribute to the state, tax payment, and as consumption of luxury. Though textile work was occasionally represented in early China; as a pictorial theme, it became acceptable sometime in the twelfth century and in a Confucian bureaucratic framework for good governance. During the Ming dynasty (1368-1643), ruled by Han emperors again after the Mongol reign, the burgeoning Han middle class grew increasingly more interested in collecting art works of all kinds. Simultaneously, advances in wood-block printing led to an explosion of illustrated texts. Textile-making and textile makers became a sub-genre of trades and tradesmen in general. In the subsequent Qing dynasty (1644-1911) when the Manchu elite dominated the Han majority, several emperors also showed a keen interest in the ethnic minorities living on the frontier. Various minorities, neither Han nor Manchu, were depicted in album leaves, with some showing them making textiles. Whereas the official discourse reflected the normative and prescriptive

values of the state, did too the pictorial representations?

This paper aims to explore three ideas for a new project on Visualizing Textile Work that follows my earlier and current research: Writing with Thread (2009) and Reading Textiles (in progress). The three main ideas for Visualizing Textile Work are as follows. First, how textile work was represented and how it changed over time. Second, who did what textile kind of work as captured in visual representation and how it changed and why. Third, depending on the authorial hand, did the representation of textile work differ between that undertaken by the Han and that by the non-Han minorities and if so, why?

P12/3

CHEN BuYun
(Swarthmore College)

The Case of Bingata: Trafficking Textile Art and Technique across the East China Sea

This paper seeks to understand how the flow of goods, resources, and people between southern China and the Ryūkyū islands spurred innovations in the design and production of *bingata* 紅型, a sumptuously patterned textile prized by the Ryūkyūan court. Focusing on the tributary trade system between Ming and Qing dynasty China and the Ryūkyū Kingdom, I show how commerce and diplomacy served as a key conduit for the transmission of craft knowledge and skills. Through the insights of material culture studies and cultural history, I investigate how the circulation of both technique and raw materials informed the making of specialized knowledge at the local level.

Bingata, textiles that were dyed through the use of multiple stencils, paste-resist techniques, and the repeated application

of dyes and pigments with brushed, were produced exclusively in the Ryūkyū islands for the royal court. The color, design, and methods involved in the construction of *bingata* suggest that the origins of the labor-intensive textile lay outside the kingdom. Some scholars have proposed that the term is derived from the type of red dye imported from Fujian province. Kamakura Yoshitarō has argued that the dyeing techniques, pigments, motifs, and even the stencils employed to craft these textiles suggest a close connection to Fujian painting and textiles. But *bingata* also shared elements in common with both the stencil-dyed and freehand paste-resist dyed textiles that were popular in Edo Japan. What made *bingata* distinct and highly desired was its elaborate arrangement of pattern and depth of color, leading the Qing envoy to court of King Shō En, Li Dingyuan to remark, “They must be in possession of a production secret that they do not reveal to others. For this reason, the patterned cloth of the East Sea is highly valued.”

In this paper, I examine trade records (including the *Rekidai Hōan*, a compilation of trade and diplomatic accounts dating from 1424 to 1867) and chronicles of Qing envoy missions alongside extant examples of *bingata* to trace the history of its influences. In looking at *bingata*, I seek to illuminate the role of trade and court patronage in the transfer and production of specialized work, and to better understand how the traffic of people and ideas across the East China Sea generated new ways of crafting goods.

P12/4

CHEN Kaijun
(Columbia University)

***Contact Zone: Reconstructing the
Multiple Channels of Exchange
between Ceramic Specialists from
Eurasia***

This paper reconstructs the zone of technological contact between two major specialists in the ceramic industry across Eurasia at the beginning of the eighteenth century. In dialogue with Etienne-Will's recent work on the culture of specialists of the late Imperial China, I aim to shed light on the bannermen's technocratic approach to knowledge in the local society and their interaction with Jesuits in the global context. I examine several of the technical treatises written by Lang Tingji (1663-1715) and Dentrecolles (1664-1741) to reveal the comparable and connective modes of knowledge making. Deriving from Galison's idea of the “trading zone” of technicians, the zone of contact means a realm of collaboration where my protagonists exchanged empirical information as well as methodology of making knowledge. We do not necessary have all the empirical pieces to fit in the puzzle of their exchange in ceramic production in Jingdezhen. However, by analyzing their treatises in other technology and tracking their collaborative engagement with wine, I intend to delineate how the specialists exchanged and textualized knowledge when they operated under very different social agenda and within distinct epistemological traditions.

First, I link Lang Tingji's *Wonderful Beverage (Sheng Yin Pian)*, a compendium on wine to his later experience with French wine brought by Dentrecolles. Second, I closely analyze Dentrecolles' treatise (1712) on porcelain production. Based on

extant porcelain pieces made under Lang Tangji's supervision and other discovery of this reign, I try to detect Lang's input in Dentrecolles' treatise. Last but not least, I briefly analyze poetic formula from Lang Tingji *Handbook for Assembling a Poem with Tang Poetry (Ji Tang Yao Fa)*, a manual for poetry composition. It describes a preparatory exercise by selection and combination of lines from Tang poetry.

In brief, by engaging with porcelain objects and three short treatises written by specialists in China and Europe, I investigate how the cultural encounter affected the heterogeneous modes of knowledge production in the contact zone bonded to the local society.

P12/5

Rachel SILBERSTEIN
(Rhode Island School of Design)

Patterning an industry: Embroidery pattern-books, producer networks and regional style in late-Qing and Republican-period China

The lack of extant examples of Chinese embroidery patterns - that most ephemeral of design tools - has meant the pattern's role in the formation and rise of the commercial embroidery industry has been little investigated.

Beginning in the late Ming (1368-1644) and gathering pace in the mid-late Qing dynasty (1644-1911), embroidery underwent a process of commercialization. As commercial embroidery (*shangpin xiu* 商品繡) flourished, complex producer systems evolved: encompassing urban guilds, commercial workshops, pattern-drafters, intermediary agents, and female embroiderers, to whom the work was often subcontracted around the local countryside of Suzhou, Guangdong, and Chongqing. Embroidered dress and accessories, theatrical costumes and props,

household art and furnishings - all could be produced in this way, as products of networks, with different tasks divided and specialized across diverse individuals in a manner similar to printing or porcelain.

What role did the embroidery pattern play in communicating between these players divided by gender and status, as well as place? How far did the pattern provide a means of constituting and disseminating new categories of embroidery, in particular, regionally defined embroidery styles?

In this paper, by reviewing the few known examples of embroidery patterns and introducing some recently discovered embroidery pattern-books in British collections, I discuss how the evolution of the embroidery pattern through the Qing and Republic (1912-49) contributes to our understanding of the commercialization or professionalization of embroidery during this period. In particular I focus on the changing role of the pattern during the nineteenth and twentieth-centuries, a time in which the epistemic culture of embroidery fundamentally shifted, as the industry became increasingly financially vital and its female producers entered public arenas as students and teachers, artists and shop-owners. As individuals competed to control and define embroidery skills, knowledge and styles, the pattern became a means of comprising artistic value and local identity, something of great importance to the creation of "The Four Great Regional Embroideries" (*Si da ming xiu* 四大名繡), a grouping of regional embroidery styles that emerged during this juncture. At a time when locality had become a mode of artistic and industrial competition, this paper repositions the humble pattern as an informant on the relationships between diverse historical players.

P13

Climate and disease in the Philippines (19th – 20th centuries): local realities, global histories

Organisers: *Francisco Javier MARTINEZ & Sandro JIMÉNEZ MÍNGUEZ*

This panel proposes fresh topics and perspectives on the history of science, technology and medicine in the Philippines in the 19th and early 20th centuries, presented by an international group of scholars from Europe and Asia. The focus is placed on the study of climate and disease as broad subjects capable of revealing the changing nature of Spanish and American domination of the archipelago, or the often unexplored insertion of the Philippines within wider global frames, be they imperial, regional (South-East Asian) or international. Climate and disease, which periodically adopted the more threatening forms of natural disasters and epidemics, were of central importance in the relations between the colonial administrations and the Filipino populations. Their understanding and eventual management involved concepts, people, institutions and administrations articulated in complex ways and themselves a product of processes of circulation and translation at different levels. We will explore the creation and activities of institutions such as the prestigious Manila Observatory or the massive Culion leper asylum; the deployment of a public health administration comprising from quarantine stations to balneotherapy centres and the medical discourses produced in them; the measures taken to fight the local ravages of global cholera epidemics and the regional collaboration promoted against typhoons, earthquakes or volcanic eruptions. This will be done, on the one hand, by situating scientific/medical discourses and practices in their local context and taking into account the diversity of the Filipino society and the changing character of Western domination. On the other hand, we will take advantage of methodological perspectives aiming at the de-nationalization of the Filipino past in favor of global, transnational accounts.

P13/1

María Dolores ELIZALDE

(Instituto de Historia, Consejo Superior de Investigaciones Científicas)

Making Science from the Colonies: the Manila Observatory, 1865-1898

The Philippines has always been an especially vulnerable to natural disasters place. Therefore, from a very early date, the study of meteorological phenomena became a priority. In 1863, an earthquake devastated Manila. Two years later, Francisco Colina, a young Jesuit scholastic, professor of mathematics and physics at the Ateneo Municipal de Manila, began

his systematic observations of the weather several times by day. Other colleagues contributed to the same effort and in 1865 the Jesuits decided to create the Manila Observatory.

At the beginning, it was a private centre, contextualized in the interest that has always existed in the Philippines for the establishment of educational institutions in order to improve the condition of the islands -among them stands the founding of the first university in Asia, the University of Santo Tomas, established by the Dominicans in 1611. In the first stage, the Observatory provided significant support

to ships sailing in the area, announcing cyclones in the Philippine archipelago and in the seas around him, as well as analyzing daily and patiently tides, winds, typhoons, tsunamis, earthquakes, volcanic activity...

In 1884, the Spanish government agreed with the Jesuits to turn the Observatory into a public institution, government-funded, dedicated to the study and prevention of the weather in the Philippines. Soon, it would also begin to develop astronomical studies. With several divisions oriented to scientific research and providing public services, the Manila Observatory became a globally recognized center. The centre advised other countries, and its members participated in international conferences and committees devoted to these subjects.

This paper proposes a review of the history of the Observatory, underlying how from a colony in the Pacific also contributed to the development of Science. It will analyze the trajectory of the institution, its scientific objectives and its main contributions; the staff who composed the Centre and the activities carried out; the effect of this institution on the islands and the Philippine involvement in it; relationships established with other international scientific institutions; the productions of reports and publications; the generation of documents, maps and photographs. Dismissing the traditional lethargy attributed to the Philippines, this paper will emphasize the scientific interest of the Manila Observatory, contextualizing it in the reality of the archipelago.

P13/2

Xavier HUETZ DE LEMPS
(Université Nice Sofia Antipolis)

Spanish colonial responses to cholera epidemics in the Philippines (1854-1898)

During the second half of the 19th century the Philippine archipelago was stricken by a series of severe cholera epidemics: 1854-1855, 1863-1865, 1882-1883, 1888-1889. With a special focus on Manila region, this paper will address the Spanish colonial responses to these major sanitary crises. Even after the discoveries in the etiology of cholera in the 1880s, the medical discourse on cholera and public health remained remarkably unchanged and focused on the role of environmental conditions. Nonetheless, Spanish colonial authorities learned from the 1860s cholera outbreak and, in the 1880s, implemented a much better monitoring of cholera epidemics, at least in Manila. Yet, medical supervision and sanitation efforts were limited by financial and human resources shortage. These first, timid and uncoordinated affirmations of a colonial "biopower" had also to cope with people's autonomous response to cholera and accommodate to the essential social brokerage of the colonial clergy.

P13/3

Sandro JIMÉNEZ MÍNGUEZ
(Instituto de Historia, Consejo Superior de Investigaciones Científicas)

Cool the Archipelago down: colonial state anxieties and responses towards tropical climate in the Spanish Philippines, 1885-1898

Along the nineteenth century, Spanish colonizers in the Philippines had feared the reputed harmful effects of tropical latitudes on their European temperate bodies. In

Spain, as much as the rest of Western territories, water and altitude had been largely credited by their corrective benefits over body unbalances. By contrast, in the Philippines, it was not until the late 1880s when Spanish colonial authorities ordered the creation of special commissions to, firstly, research the healing properties of the subterranean waters of the archipelago; to build the facilities required for their consumption, and to decide the most adequate places for the construction of hill stations. During the next decade two thermal spas were built in the provinces near Manila, several water springs were targeted for their special mineral properties, and a project for a high-altitude resort was planned in the site of future American Baguio City. The objective of this talk is to analyze why hydrotherapists' and climatologists' theories found their way into the colonial ground through an enthusiastic statal sponsorship at the end of the century. We are aiming to understand firstly, how colonial physicians and statesmen perceived the effects of the archipelago's climate over their bodies, secondly how they foresaw the possibilities that these medical theories could improve European health in the tropics, and more importantly how they considered that establishment of new hygienic spaces, consumption practices and health regulations would assist the imperial project over the territory.

P13/4

Francisco Javier MARTÍNEZ

(Laboratoire SPHERE, CNRS-Université Paris Diderot)

Empire in disease: cholera and pernicious fever in the Philippines (1820-1898)

Diseases have been used by historians as tools for exploring multiple issues in

relation to imperialism and colonialism. For example, it has been studied how relations of domination originated a surplus mortality and morbidity of the colonized, which were also often exposed to diseases previously unknown to them or only in milder, non-epidemic forms. Conversely, Europeans experienced more or less difficulty in coping with "tropical" or "exotic" diseases, a fact which usually led them to elaborate climatic and racial theories that pathologized local populations and territories. In this paper, we will use diseases as a form of assessing the singular nature of the imperial bond existing between the Philippines and peninsular Spain during the 19th century and also the shortcomings of the local state apparatus developed by Spanish authorities.

Regarding the first question, the pattern of cholera diffusion in the Spanish empire as a whole suggested a singular relation between its various components, including the Philippines. Although such relation changed over time it remained different from other European empires. Regarding the second question, cholera gave rise to a local system of quarantines comprising administrative divisions and sanitary stations which marked the outer borders and inner boundaries of the Philippines. The 19th century saw the progressive creation of a pan-Philippine state which re-defined what the Filipino territory was supposed to be and how it was to be structured for governance purposes. Quarantines showed the extent of that attempt but also exposed its shortcomings, i.e. the fracture existing between the Northern and Southern parts of the archipelago and the porosity of each of them towards nearby foreign territories (Singapore and Hong-Kong; Borneo).

Finally, the greater importance given to epidemics over non-epidemic diseases revealed the predominant military

nature of the local state over civilian administration and showed its stronger concern for avoiding external interventions rather than promoting the articulation of Filipino society. The so-called “pernicious hyperthermic fever” is useful to analyze the modest degree of articulation of the civil state administration in the Philippines, incapable of prevailing over the provincial and municipal levels beyond Manila itself.

P14

Crossing Epistemological Landscapes: On the Global Circulation of Therapeutic Objects and Practices

Organisers: Laurent Pordié & Jean-Paul Gaudillière

Circulations lie at the core of recent attempts to explore the making of 'global' knowledge and the encounters between socially and culturally distant worlds. This notion has been instrumental in analyzing processes of hybridization beyond essentialist or structural claims of heterogeneity. A problematic issue with the circulation paradigm is that it tends to mask uneven and power-laden relationships. This problem is, however, partially addressed in postcolonial science studies, a subfield that examines the relationship between techno-scientific knowledge and postcolonial orders. In this way, issues of mobility, asymmetries and power relations are revealed. This panel proposes to go a step further. It will examine the circulation of medicine in a way that builds upon – but does not limit itself to – the concept of hybridity so dear to science studies, and that of hierarchy and power so central to postcolonial studies.

We thus aim to add complexity to the current understanding of Asian medicine by focusing on the changing epistemological landscapes that a therapeutic product or practice passes through as it circulates globally. These shifting environments are instrumental in forming hybrid objects and they also modify expressions of power and bring about new hierarchies. Our primary interest, however, lies in the fact that this reordering produces therapeutic knowledge since it (re)defines, even determines, what a therapeutic object is, how it changes attributes and relates to others. Focusing on the tangible trajectories of drugs and healing practices, the participants in this panel will examine the way epistemological frameworks and local environments of use create or transform the meaning, value, agency and power of specific therapeutic materials and practices. In order to foster comparative study, this panel will gather together historians and anthropologists working in the Chinese, Tibetan and Indian worlds.

P14/1

Kapil RAJ
(EHESS)

How to Make Medico-Botanical Knowledge Circulate between South Asia, the Indian Ocean and Europe, 16th-18th Centuries

Most knowledge and knowledge-related practices, instruments, objects and skills need significant efforts to make them move. These range from creating networks of common interests, techniques of manipulation and forms of use. They also include finding or even creating

overlapping languages for knowledges and objects to move between socially and culturally distinct milieus. By examining three attempts at expanding the spaces of circulation of Asian local and regional medico-botanical knowledge to include the Indian Ocean and Europe between the 16th, 17th and 18th centuries respectively, this talk will attempt to identify the multifaceted social, political, material, philological and editorial investments and controversies mobilised in the process.

P14/2

Jean-Paul GAUDILLIÈRE

(Cermes3)

Laurent PORDIÉ

(Cermes3)

***The New Ayurvedic Menopause:
Aging Women, Clinical Targets and
Poly-herbal Pharmaceuticals***

Taken broadly, this paper is about the global circulation of menopause both as a biomedical concept and as a target for pharmaceutical intervention. In western industrialized countries, menopause has since the 1970s become an important medical issue defined in terms of hormonal deficiency, symptoms like hot flashes or insomnia and increased risks of depression, osteoporosis, cardiovascular disorders; all of which are handled through the prescription of steroids. In India, however, considering the cessation of a woman's reproductive ability as a medical problem is uncommon, especially in rural areas. Hormonal change does not qualify the end of the fertile phase of a woman's life either. Moreover, the conception of menopause prevailing within the epistemological landscape of biomedicine finds no equivalent in Ayurveda, which rather frames the problem in humoral terms. Given this context, creating and marketing an ayurvedic drug that addresses the post-menstrual life of Indian women using the biomedical idiom implies serious challenges. This is nonetheless what a leading multinational ayurvedic firm headquartered in Bangalore has attempted. This paper thus examines more specifically the creation and trajectory of Menosan, a poly-herbal drug introduced by this firm in 2002 on the Indian market. Menosan is a typical example of the shifts and translations involved in the contemporary reformulation of ayurvedic knowledge: it

is an innovative industrial product which stems from classical ayurvedic catalogues; it targets a biomedical problem but provides an alternative, herbal response to the practice of hormonal replacement therapy (HRT). However, in spite of a fortuitous but timely launch at the peak of the medical critique and public contestation of HRT, Menosan has not fulfilled the manufacturer's expectations. The sales of this pharmaceutical compound are low. To face this situation, the firm developed aggressive scientific marketing to make of menopause a medical issue and to create a specific pharmaceutical market. This paper discusses the emergence of contemporary ayurvedic menopause by focusing on the epistemological heterodoxies involved in the studied pharmaceutical product and in the construction of new clinical targets.

P14/3

Arielle SMITH

(Cermes3)

***From Field to Fork: Transnational
Negotiations of Chinese Medicine***

Differing social, political and economic conditions facilitate localized, emergent practices of Chinese medicine around the world; hence, the global authority and 'value' of Chinese medicine is presently negotiated vis-à-vis post-national and transnational processes. For instance, Chinese medical producers, physicians, entrepreneurs, researchers and consumers often rely on materials (raw, or in various stages of processing) produced in the People's Republic of China and various sites in Southeast Asia. They must therefore negotiate—and in some cases help to establish—import, export, authentication and Good Manufacturing/Agronomic Practices within a transnational field of operations, carefully balancing profit and

private interests with the public good. Tracing the flow of one or more items from the Chinese materia medica from field to fork in East and Southeast Asia, this research analyzes the emergence of Chinese medicine within 21st century political economy and techno-scientific epistemology. Its central concern addresses the extent to which the globalization of Chinese medicine—often described in terms of standardization and industrialization—is facilitated by enduring Euro-American notions of ‘modernity’, scientific discourses, neoliberalism and global health priorities.

P14/4

KUO Wen-Hua

(National Yang-Ming University)

Globalization through Trials: Regulatory Pathways Toward Modernization and Greater Adoption of Medicinal Herbs

This paper aims to investigate a technical yet crucial aspect of herbal medicines as they spread beyond national boundaries—specifically, clinical trials. Representing three pathways through which herbal medicines are incorporated into global biomedical systems, three drugs—*Diao Xin Xue Kang* capsules, *Tian Xian (Tien Hsien)* liquid, and PHY906—are chosen for our investigation. Originated from plants believed to heal discomforts in the context of traditional Chinese medicine (TCM), these herbs have their therapeutic characteristics and positions in its “web of knowledge”. As the trend of using herbs as complementary to biomedicine, these drugs have experienced various transformations in preparation, forms, and, as a part of the modernization of TCM, standardization in dosage and usage. Clinical trials, in this sense, complete such transformations by turning these herbs into

“adoptable” products for global use. This study is not interested in whether these drugs really work, neither is it in how these herbs are “relocated” from the knowledge web of TCM to that of biomedicine. Rather, it traces the “biography” of these herbs and focuses on how clinical trials facilitated their travel beyond their medical cultural. From the perspective of science, technology and society studies (STS) that pays attention to the political economy of artifact and knowledge, this study will reveal the heterogeneous networks that consist of herbs, markets, developers, and regulators to determine the role that clinical trials play in the expansion and transformation of those networks that cross national boundaries. In constructing these biographies, TCM and biomedicine are not always in contraction thus “symmetrical” discourses are favorable. Paying respect to the multi-aspect of medicinal plants as food/poison/cure, this paper demonstrates the materiality of these herbs, tracing the changing constitution of medical traditions in terms of modernization and regulations on botanical drugs in biomedicine while incorporating them into clinical practice. Through these biographies, this paper expects not only to achieve a better understanding of the history of these drugs; it will also enable historians of medicine to capture the meaning of globalization by herbs that connect, intellectually, history and STS studies.

P14/5

Mona SCHREMPF

(University of Westminster)

Olaf CZAJA

(University of Westminster)

Between Standard Substitution and Reformulation Regimes - Continuities and Changes in Values and Meanings of Substitution in Tibetan Medical Formulas in Past and at Present

The substitution of medical substances has a long tradition in Tibetan medicine. There were various reasons for a need of substituting certain ingredients of medicaments. Depending on the local environment and time, some ingredients could be very rare while other substances were traditionally imported from regions adjacent to Central Tibet, which could make them rather expensive or inaccessible. Today, national food and drug regulations as well as global regulatory regimes of safety and quality impact on the way in which substitution, safety and efficacy are understood and practiced. In this paper, we present and discuss characteristic features as well as changing epistemologies and regimes employed by Tibetan doctors in the past and also by private pharmacists and factories at present, based on a choice of specific formulas in Tibetan texts and ethnographic fieldwork on different production styles and regimes of value of Tibetan medicine in Qinghai Province, China. Several relevant Tibetan sources will be used, among them the *Tshab yig yongs kyi bcud bsdus sman dbul sel ba'i nor bu* by De'u dmar Bstan 'dzin phun tshogs and the *Blun po gso rig la 'jug pa'i sgo byis pa dga' ba'i bstan bcos bzang sman rnyed par dka' ba'i tshab tu sngo sman gtong rigs dang ngos 'dzin phran bu bcas* by Padma bstan 'dzin.

P15

Military Medicine in East-Asia: Local and Global Contexts

Organisers: Reut HARARI & Ken DAIMARU

References to the history of military medicine are traditionally found within works in the field of military history. Yet, in the scholarly literature of the history of science and medicine, military medicine remains relatively unexplored territory.

Its under-representation is especially striking within the scholarship that deals with the various fields of East Asian history. This situation requires addressing, given the rich archives and narratives of East Asia's involvement in modern wars, and the region's relationships with American and European political, technological and cultural dominance from the late nineteenth to the late twentieth centuries. The legacies of military medicine in modern East Asia, including its controversies, still linger even today.

During the past few years, however, there has been a fortuitous growth in the number of works seeking to fill the gaps in historical studies of military medicine in East Asia. This panel aims to contribute to this budding field by demonstrating how studying the history of military medicine provides a wealth of opportunities for rethinking, not only the history of armies as institutions and the history of warfare, but also the social, cultural and political histories of the countries that make up East Asia. Our panelists thus present an array of studies situated in the Japanese, Chinese and Korean contexts across the twentieth century. Taken as a whole, the various papers gesture towards questions of the roles that military medicine played in shaping not only what is commonly thought of as the era of "modern history" and its attendant phenomenon of "modern war", but also what history and modernity themselves constitute. Our papers pay attention to how modern warfare became an increasingly global affair, with each one exploring a different aspect of military medicine while positioning its narrative in a global and comparative framework.

P15/1

DAIMARU Ken(Université Paris Ouest Nanterre La
Défense)***The Japanese Army Medical Corps
and International Observers at the
time of the Russo-Japanese War,
1904-1914***

This presentation aims to complicate the history of Japanese military medicine at the time of the Russo-Japanese War (1904-5) by situating it in a global context. Historical accounts on the topic thus far

have elucidated how interactions between the "West" and Japan played a significant role in molding military medicine in modern Japan.

However, military medicine in turn-of-century Japan was also shaped by exigencies of modern warfare arising from development of a mass army, and technological changes in weaponry. From this point of view, the Russo-Japanese war represents a major step, as it was one of the first large-scale modern conflicts during which combat fatalities incurred during the

war were twice as high as disease fatalities.

For this presentation, I will analyze interactions between the Japanese and their Western observers during the Russo-Japanese War in order to contextualize them in term of transnational efforts to respond to the concern over the “modernization” of warfare. Secondly, I will focus on some Japanese military surgeons linked to the transnational enterprises. Specifically, I will examine how the Japanese Army Medical Corps and Eijiro Haga embedded themselves in global networks of military medicine in close relationship with the field of wound ballistics and of international humanitarian law.

In this way, my findings will shed light on some transnational elements in the history of Japanese military medicine in the decade preceding the advent of the First World War. By studying the mechanism of organizing knowledge as well as framework for war-time medical practice, I will argue that the Russo-Japanese War gave to Japanese experiences a new prominence as an object of investigation, and that Japanese medical officers acted not only as a taker but a maker of transnational knowledge at the critical junction of the world history in which the principles of the civilization and the destiny of the humanity were seen as threatened.

P15/2

Wayne SOON
(Earlham College)

The Transnational Politics of Military Medical Education in Wartime China, 1938-1945

This paper explores the persistence and growth of medical education in WWII China, despite significant constraints in resources. This paper argues that the transnational financial, material,

and medical support by American aid organizations and the Overseas Chinese was critical to the development of medical education in Wartime China. Led primarily by Dr. Robert Lim and the Emergency Medical Services Training School (EMSTS), they oversaw the training of more than 15,000 doctors, nurses, and medical personnel, contributing to the saving of more than 3 million lives during the war. Besides providing medical training, the EMSTS created the first branch medical schools, and the first large-scale orthopedic center in China.

Underpinning the growth of the school were the growing tensions over the philosophy of medical education. Lim wanted to move the direction of the school towards educating fewer students for longer periods to aid in the postwar reconstruction of China, while opponents such as the New York based United China Relief wanted to keep the school as a wartime organization that churned out medical personnel quickly for relief efforts. To that end, the United China Relief sought to wrest control of the EMSTS from Lim by withholding financial and medical support and by mobilizing transnational opposition to Lim in China and the United States. As a result, Lim left the school in late 1944.

Even though Lim's departure diminished the growth of the EMSTS, the organization provided important organizational and philosophical legacies for medical education in post-war China, and later Taiwan.

P15/3

Reut HARARI
(Princeton University)

Medicine on the Battlefield: The History of Military Medics in Modern Japan

The rise of nation states and large collective militaries in the “Modern Era” was accompanied by the development of medical corps. At the forefront of the latter stood high-ranking military physicians, who made the decisions, were in charge of military medical research, and in many cases, carried the innovations they have developed and/or practiced into civilian life. As such, it might not be surprising that the historiography of military medicine has focused mainly on these “men at the top.” In my paper, I examine the history of military medicine in the Japanese context, through the eyes, knowledge and expertise of those who were placed lower in the hierarchy – military medics. My paper provides an overview of the development of the role from a transnational perspective. It begins with its official establishment in the 19th century, corresponding with similar developments in Europe and North America, and with the development of another medical field – nursing. It ends with the Pacific War, the apex of the expansion of the Japanese empire, which created unique medical needs and affected the means with which they could be addressed.

My paper argues that this expansion turned medics into transnational entities themselves, since it required them to be trained in a variety of geographically specific medical skills. They were then sent to different locations to practice, what they’ve learned in a very short period of time. Though not limited to the Pacific War, this quality grew to a much larger scale during it.

The leading question of my paper concerns the complicated and seemingly paradoxical relationship between medicine and war. How does the individual, embodying these complexities, become the link between the two? I argue that medics provide a special perspective on

this question in the Japanese context, since contrary to military physicians and nurses, they did not choose their role, nor did they generally have prior medical experience. Rather, the military assigned the role to “simple soldiers,” according to criteria that changed over time. While many military physicians continued their medical career after being discharged, for many military medics, their interaction with medicine was limited to their military service. Finally, the Japanese case provides insight on the significance of the medic role in a winning war versus a losing war; two very different situations that affected medic training, their access to resources and their service conditions.

P15/4

LOH Shih-Lin
(Harvard University)

***Instruments of Modernity: Rentogen
in Pre-war Japan***

X-rays are widely considered a landmark in the history of radiation science and technology. They revolutionised the relationship of human bodies to the practice of medicine, as well as the popular understanding of electromagnetic radiation. Using Japan as a case study, this paper examines the development of X-rays in Japan - or *rentogen*, their more common name in Japanese – from the perspectives of military medicine and state regulation. It focuses on the end of the nineteenth and the first decades of the twentieth century, exploring why and how the emerging medical specialty of radiology, X-ray equipment and X-ray screenings became part of military institutions. From a broader perspective, the paper considers how early X-ray machines changed the ways in which human bodies were understood in this period, and the ramifications of those

changes on the level of policymaking and public health. In the Japanese context, changing views of how physical bodies were linked to the national polity (*kokutai*, lit. “national body”) in part depended on these shifts in science and technology. The paper ultimately suggests that the creation and use of X-ray or *rentogen* technology was a crucial phase not only in the history of radiation, but also in creating the phenomenon of ‘scientific modernity’ within Japanese society.

P15/5

Jane S. KIM
(UCLA)

Black Syphilis, Military Hygiene and the South Korean Participation in the Vietnam War, 1964 – 1973

This paper examines venereal disease control of the South Korean military during the Vietnam War. During the war, the South Korean government dispatched over 300, 000 soldiers to aid the United States in its fight against the communist takeover of the former French colony in Asia. Responding to the request from the Lyndon Johnson administration, the Republic of Korea’s participation in the Vietnam War was the very first and the largest overseas military dispatch in the history of the Republic of Korea Armed Forces (ROKAF). Taking place just decade after the end of the Korean War (1950 – 1953), the Park Chung Hee regime’s decision to join the war, placed the South Korean military in a unique sub-imperial position over fellow Vietnamese brothers. The latter were now undergoing what the South Koreans already underwent in their fight against the invading North Korean communists. This sub-imperialist position as experienced by the ROK military was most visible in the sexual relations

between South Korean male soldiers and Vietnamese women. Prohibited from bringing their spouses overseas, for most South Korean soldiers, sexual needs were met through prostitution or establishing long term relations with local women, many of whom they ended up abandoning upon the end of their service in Vietnam. Due to the Vietnamese government’s preference for the pursuit of *doi moi* (reform) and the official endorsement by the Vietnamese president Tran Duc Luong “to put aside history” in 2004, the public and scholarly discussions of this history have been intermittent and subdued in South Korea. However, what has been emerging over the years, thanks in part to the NGO efforts to uncover issues such as the civilian atrocities committed by South Korean soldiers and ‘*Lai Dai Han*’ (offspring born to Korean fathers and Vietnamese mothers), is that venereal disease control of the ROKAF was of serious concern for the Park Chung Hee government. By examining the venereal disease control of the South Korean military in Vietnam War, this paper hopes to draw attention to the continuity between the South Korean venereal diseases control in Vietnam and the earlier forms of STD control as practiced by the American forces during the Korean War. By showing the striking similarity between the two, this paper hopes to draw attention to the reproduction of colonizing practices such as the venereal disease controls in Cold War East and Southeast Asian context.

P16

Science and Modernity in 20th Century China: The Renaissance of “Traditional Knowledge and Practice” Revisited

Organisers: Marc MATTEN & SONG Xiaokun

The aim of this panel is to shed a light on the conceptualization of science in China in the latter half of the 20th century. Existing research of the past has argued that science - primarily conceived as a means to strengthen the country - was supposed to be taken over from the advanced nations in order to imitate the Western model of modernization. This eventually resulted in the judgment that modern sciences cannot but mean “Western science”.

This panel is going to demonstrate that the conceptualization of science after the foundation of the People’s Republic of China experienced a fundamental transformation that questions the universality of Western science. Despite the highly ideological handling of historical materialism in both political and science discourse during the Mao era, the discipline of science (and especially natural science) was rather used pragmatically in modernization, which also led to a renaissance of traditional forms of knowledge both pre- and after 1976.

The papers of this panel analyze several discourses of knowledge and science in the last four decades of the PRC. Focusing on the questions of how scientific knowledge is produced, how it is justified politically and communicated socially the papers intend to show how the renaissance of non-Western knowledge observable today occurred in fact already during the Maoist period, so that the co-existence of traditional forms knowledge such as traditional Chinese medicine, feng-shui and mantic practices with the so-called “modern sciences” is not just a phenomenon of the post-Cultural Revolution era.

P16/1

Marc MATTEN

(Dep. of Chinese Studies, University of
Erlangen-Nuremberg)

Promoting scientific thinking in Communist China – the conceptualization of science in Maoist China and beyond

This paper discusses the strategies and methods of propagating science and scientific thinking in post-1949 China. By focusing on the modernization and introduction of new knowledge I argue that the dissemination of science (*kexue puji*) was a highly complex process that owed its success to a great deal of creativity in defining and legitimizing both modern and traditional, foreign and indigenous

forms of scientific knowledge. This allowed for a greater plurality of acceptable forms of science in Chinese society, which was due to a different epistemology of science. In this paper I analyze the origins of this epistemology, its interaction with the “modern” European/Soviet epistemology of science and the consequences thereof for the process of (capitalist) modernization in 20th century China.

By analyzing reproductions of classical writings on veterinary medicine (most prominently *Zhongguo xumushi ziliao* 中国畜牧史资料, 1958; *Yuan Heng liaoma niu tuo jing quanji* 元亨疗马牛驼经全集, 1963), agricultural journals (*Agricultural Knowledge* 农业知识, 1951-83; *Agricultural Technology* 农业技术, 1957-68;

Agricultural Science Communications 农业科学通讯, 1949-1959), Chinese and Soviet textbooks of veterinary medicine published or translated during the 1950-60s, and finally nation-wide publications focusing on science dissemination (*Science and the Masses* 科学大众, 1937-50; *Science Dissemination Work* 科学普及工作, 1951-58; *Science Illustrated* 科学画报 1933-66) I show that the socio-political process of knowledge production in that era resulted in the creation of different systems of knowledge that both claimed to be scientific, but surprisingly did not contradict each other. Thus, instead of reproducing the problematic dichotomy of West vs. East, or modern vs. tradition, this paper demonstrates other ways of justifying scientific methods and scientific ways of thinking. By doing so it is hoped that the history of science in both East and West will be able to take local practices serious and integrate them into the global process of knowledge production more adequately than before.

P16/2

Rui KUNZE

(Dept. of Chinese Studies, University of Erlangen-Nuremberg)

Learning from the Masses: Traditional Knowledge in the 1950s and 1960s

This paper will examine the definition and use of “traditional knowledge” in 1950s and 1960s People’s Republic of China (PRC). While following the Soviet model to imagine its future of communist modernity, the PRC witnessed a surge of sorting out and promoting knowledge such as traditional Chinese medicine, Qigong, Chinese ceramic and silk manufacturing crafts, etc. in the 1950s and 1960s. This paper looks at the case of the development of the Eight-Character Policy of Agriculture

(農業八字憲法) at the end of the 1950s and its dissemination in the 1960s within this context. In this case, old farmer sayings – a form of traditional knowledge from the masses – were promoted and integrated into the official agricultural policy in order to develop a modern, scientific agriculture. By looking at a variety of primary sources – the major newspapers (e.g. 人民日報), popular science magazines (《科學大眾》《科學畫報》, 《農業知識》, etc.), school textbooks for general science education (《自然》, 《常識》 and 教學參考資料, 《上海市農業中學, 農業八字憲法教學參考資料》), science documentaries (e.g. 《水》, 1961), and a series of pamphlets and books (《八字憲法的農諺解說》《正確貫徹農業“八字憲法”》, etc.), this paper examines the case in view of the notions of “practice” (實踐) and “experiment” (試驗) in Mao Zedong’s writings and proposes to understand the case as an example of negotiating between indigenous knowledge and modern (presumably universal) science out of the following three reasons: 1) the practical concerns of financial, natural, and human resources; 2) the need to bridge the epistemological gaps between the urban and the rural, the educated and the illiterate; 3) the ideological necessities of emphasizing the Chinese identity to cement nationalism in a hostile global context and of demonstrating the goal of realizing a classless society.

P16/3

SONG Xiaokun

(IKGF, University of Erlangen-Nuremberg)

Redefining Fengshui: Academic Discourses in the PRC from the 1990s to the Present Day

Since the late 1980s and the early 1990s, *Fengshui* has been a research subject in Chinese universities. Initiated by scholars

in departments of architecture, discussions of *Fengshui* appear now within many disciplines in the Chinese humanities and social sciences. However, this development has a side effect: *Fengshui* must be made compatible with science in order to be suitable for academic research.

My paper introduces the academic discourse on *Fengshui* in the PRC since the 1990s. It aims to show two points: (1) How the Chinese scholars' views on this subject have been influenced both by the Western understanding of *Fengshui* (“New Age”, environmental movements, etc.) and by the Western understanding of Chinese science (e.g., Needham's concept of Chinese science and especially his view of *Fengshui*). Since different disciplines have particular positions and approaches towards *Fengshui*, my analysis will focus on the views of three scholars who belong to different disciplines: Prof. Wang Qiheng 王其亨 (architecture), Prof. Yu Xixian 于希贤 (geography) and Prof. Wang Yude 王玉德 (history). (2) How, based on the modern understanding of *Fengshui*, Chinese scholars attempt to “redefine” and even “recreate” *Fengshui*, in order to integrate it into the academic disciplines and to support their discourses on the history of Chinese science. For this purpose, my paper will present a case study concerned with the attempt to establish a new discipline, namely, “Architectural *Fengshui*” 建筑风水.

P16/4

Renée GRINGMUTH

(Dept. of Chinese Studies, University of
Erlangen-Nuremberg)

Traditional Chinese Veterinary Medicine in Maoist China - Horse Health Care between 1949 and 1966

This paper will discuss the development of Traditional Chinese Veterinary Medi-

cine (TCVM) during the first two decades of the PRC and the extent to which TCVM was used for the treatment of horses. It will show how TCVM was defined and established as a science just like Western medicine through the founding of institutions and an educational system as well as the distribution of knowledge, such as via scientific papers, research projects and efforts of state-sponsored science dissemination. In this context the paper will talk about Mao's idea of creating a “new (veterinarian) medicine” 新式中 (兽) 医 by combining TCVM and Western medicine, thus creating a new system of knowledge that was meant to help the Chinese farmers to cure animal diseases and improve animal husbandry. By focusing on some explicit examples of the treatment methods used for horse diseases I will show how TCVM practitioners and veterinarians chose and implemented their preferred methods of treatment, and analyze what impact their choices had on the definition of the scientific character of veterinary medicine.

P16/5

Philipp HÜNNEBECK
(IKGE, University of Erlangen-
Nuremberg)

***Prefaces as Sources of Legitimation:
Modern Views on the Physiognomic
Manual “Bingjian” 冰鑑***

The *Bing jian* 冰鑑, Mirror of Ice (attributed to Zeng Guofan 曾國藩, 1811-1872), is among the titles on the ancient Chinese art of deducing individual fate and personality from physical appearance, *xiangshu* 相術 (often translated as “physiognomy”), regularly published and republished in the PRC for the mass market. This paper aims to show that the arguments the authors of those books

(recent publications on *xiangshu*, published 1990 and later in the wake of the so called “Zeng Guofan fever” 曾国藩热) still strongly feel the necessity to bring forth arguments to justify their interest in such kind of techniques - techniques which are often labeled, at least, “unscientific” or “pseudo-scientific” and which are situated in a field between the two poles of “traditional knowledge” and “superstitious belief”. The stated arguments are often based on the assumed usages and benefits of those techniques for the everyday life of reader, and some authors try to find the scientific character of physiognomy. The argumentation of the authors also shed light on the underlying assumptions of function and use of physiognomy for social interaction and the understanding of such kind of traditional knowledge like *xiangshu* in the public perception of a twenty-first century society. In short, the paper uses the prefaces of publications on the text *Bing jian* published in the PCR after 1990 to show how the authors justify their interest in such a publicly ambiguous perceived topic as “physiognomy”, focusing on the question which definition of science is used by the authors and how they connect *xiangshu* with the concept of science.

P17

Knowledge Making in the Colonial Field: Localized Expertise for the Empire, Comparing Taiwan and Korea

Organiser: LEE Jung

In its constant growth, history of colonial science has shifted its focus from metropolitan centers to colonial peripheries as the primary site of not just colonial but imperial knowledge practice. This panel juxtaposes five case studies that deal with knowledge practices in two colonies of the Japanese empire, Taiwan and Korea, to assess what we have learned from this shift into the colonial field and to inspire comparisons between different colonial sites and disciplines. Ku's story of the development of Kina-ology, knowledge about cinchona cultivation, highlights the roles played by private companies in producing more localized and practical knowledge for cinchona cultivation in colonial Taiwan, which allowed the colonial government to resume its failed project of cinchona cultivation. Lee Taehee's discussion of geological surveys in colonial Korea during the 1910s demonstrates how colonial experts had woven their professional as well as complex imperial concerns into their colonial survey. They promoted Korea as a lucrative mining site for Japanese imperial development while thus emphasizing the value of their colonial surveys. Shen explores the history of serums and vaccines in colonial Taiwan. By examining the local production and implementation process, Shen discusses various localizing measures taken by the colonial experts as well as the successful outward travels of this locally produced knowledge. Miyagawa examines the making of flood measure knowledge in colonial Korea before and after the record flood of the Han River in 1925. He shows how Japanese colonial researchers systematized the flood measure knowledge utilizing the colonial disaster experience in producing a model flood measure system for the Japanese empire. Lee Jung discusses Japanese colonial naturalists' politicized localization by looking at the regional studies movement in colonial Korea, which was popularized owing to their collaboration with Korean naturalists. Through the charged collaboration, Japanese naturalists produced Japanized studies of Korean plants in asserting Japanese values for uncivilized Koreans. Our cases collectively illustrate various contingencies of colonial knowledge practice induced by the unfamiliar colonial land and the skeptical colonial peoples, which more hardened than weakened the imperial concerns of Japanese colonial experts. They made this colonially seasoned knowledge travel within and without the empire in strengthening the Japanese imperial venture, just a phenomenon of the post-Cultural Revolution era.

P17/1

KU Ya-wen

(Institute of Taiwan History, Academia Sinica)

The Development of "Kina-ology" in the Japanese Empire

This paper examines the development of Kina-ology— the knowledge of cinchona acclimatization and cultivation— in the Japanese Empire, focusing on the period between WWI and the end of the WWII. Previous studies on British and Dutch cinchona cultivation have shown the

symbiosis of science and empire. This study of Japanese cultivation of cinchona tree in Taiwan presents a picture of greater complexity, especially by illuminating the decisive roles of private companies in this allegedly governmental project of transplanting cinchona trees into Taiwan. The government officials intended to duplicate Dutch success in Taiwan, by copying Dutch cultivation methods as well as its science-based planting system, but ended their project in failure by the 1920s. Meanwhile, Tashiro Yasusada, the chief advisor hired by Hoshi Company, had created a new mode of cinchona cultivation based on his long-term observation of environment and experience of transplanting trees in Taiwan. His hybrid of western and local knowledge ensured a temporary success of cinchona acclimatization, resulting in the restart of cultivation programs by the government as well as other companies in the 1930s. I will argue that it is the private companies that promoted and completed Kina-ology, and furthermore that this scientific institute's alliance with private companies made the Kina-ology more localized and practical in Taiwan.

P17/2

LEE Taehee

(Seoul National University)

***Between the Colony and the Empire:
Colonial Geologists' Construction
of the Geological Survey in Colonial
Korea***

This paper investigates the geological survey project administered by the Japanese Government-General of Korea during the 1910s. Moving beyond the previous studies that regarded the survey as a mere means for Japan's exploration and exploitation of colonial resources, this study focuses on the interests of Japanese colonial geologists,

revealing their true motives for the work. The surveys had been conducted from 1911 to 1917 throughout the Korean Peninsula. According to its public announcement, the goal of the colonial government was the development of mining industry in Korea by providing businessmen with practical knowledge. Writings of the survey researchers, all young Japanese geologists trained for field works at imperial universities in Japan, reveal a more complex interpretation of this goal. By analyzing survey reports, this study demonstrates four characteristics regarding the survey. First, the researchers expected that their survey would help export more minerals from Korea to Japan. However, instead of being a simple exploitation scheme by the Japanese imperial government, this was the solution for the colonial government's chronic trade deficit against Japan. Second, they wanted to highlight the usefulness of Korean resources, in painting a positive image of Korea for Japanese investors. Third, in line with that purpose, the colonial geologists evaluated the quality of Korean minerals largely based on whether they were useful for Japan or not. Koreans were rarely considered as potential beneficiaries of their surveys or Korean mineralogical riches from their point of view. Fourth, the researchers' promotion of Korean resources was a political attempt to enhance their status as well as the influence of the colonial government among the Japanese empire. In conclusion, I will argue that through the active engagement of colonial geologists the geological survey project came to produce scientific knowledge that attracted the public attention to geological riches of colonial Korea, enhancing the position of the colonial government within the Japanese empire while helping the stability and the development of the Japanese empire as a whole.

P17/3

SHEN Chiasan

(Research Center for Humanities and
Social Sciences, Academia Sinica)

***Continuation and Regeneration:
Bacteriology in Colonial Taiwan***

Medicine can be globalized and localized at the same time. This is especially true for bacteriology, a discipline confirming its success by its global practice. This paper investigates immunological applications in 1895-1910s Taiwan, exploring their development and transformation during the local implementation, and their overseas expansion. It seeks to show how the bidirectional nature of medicine worked, and how the application of immunology was continued and regenerated afterwards. The findings are:

First, bacteriology and immunology, flourished since the late 19th century in Western countries, was brought to Taiwan around the same time. Their practice was strengthened during the Japanese era in part due to the famous efforts by Goto Shinpei and in part due to the universal enthusiasm for such development.

Second, during the cowpox and plague vaccination in the 1900s, government adopted various localization efforts for successful implementation of vaccines. Officials recruited local *Baojia* 保甲, Chinese physicians, and used temples as “symbols” while providing free treatment, adjusted timing, various publicity measures to attract and educate Taiwanese. However, after securing people’s enthusiasm, the government transformed this localized approach into compulsory and paid vaccination.

Third, Taiwan started to make serums in the 1900s. Those products had universal bases but were also localized for Taiwan. They were tailored for Taiwan’s

environment, adopted faster production time, had provisions for overseas locations like China and Southeast Asia, and adjusted injection products and methods for rabies and cholera vaccines. These policies were produced from the reaction of the local people and specific circumstances.

Finally, much of the Taiwanese implementation process was reported back to Japan’s central governments, or published in academic journals to affect the immunological and bacteriological knowledge in Japan. For instance, confirmation of the real strain of *Yersinia pestis* and the discovery of different types of disease bacteria in Taiwan are famous. Taiwanese experience was also applied overseas since the late 1910s, which produced a nice feedback and regeneration cycle between different sites.

This case study shows how the bacteriological development made in a less advanced region like 1900s Taiwan can also make a kind of mainstream medical trend through the constant travels and growths in the wider world.

P17/4

MIYAGAWA Takuya

(Seoul National University)

***Systematizing Disaster Experiences:
From the Han River to the Empire***

In July 1925, disastrous floods swept over colonial Korea. The consecutive overflows of the Han River penetrating Keijō (Seoul) brought about record casualties and terrible economic damage. The floods, caused by the huge rainfall during the rainy season and a typhoon, showed that the disaster prevention system built by Japanese meteorologists and technocrats of the Government General of Korea (GGK) did not function as they had expected. As soon as securing the colonial regime in 1910,

GGK had conducted a comprehensive investigation to devise a flood measure. For instance, in estimating the maximum flooding level of the Han River, it not only utilized observation records made by the Japanese meteorologists but also historical records of floods made by the previous Chosŏn dynasty and the data of the last big floods several decades ago by interviewing the indigenous people who had experienced them firsthand. After the record floods struck Keijō in 1925, however, the Japanese meteorologists and civil engineers in GGK had to revise the flood alarm system of the Han River based on the updated data. In addition, they tried to devise a model flood measure with the Han River as a sample, which could be applied to rivers not only in Korea but also in the entire Japanese empire. This paper examines how the Japanese colonial experts used the systematized experiences and knowledge about disasters in the colonial field in producing knowledge useful for the disaster management in the whole Japanese empire.

P17/5

LEE Jung
(Hanyang University)

Political Regionalization: Japanese Naturalists in Colonial Korea

This paper looks into researches and activities of Japanese natural history teachers at public schools in colonial Korea, who made their colonial posts launch pads for serious scientific careers while not neglecting their imperial mission for the uncivilized land through their politicized “regional studies (郷土研究)” of Korean nature. It highlights two aspects of their “regionalization” in light of their allegedly open but guarded and charged collaboration with Korean naturalists who shared the

similar aspiration for scientific research. First, the regionalization of their studies in collaboration was a wise strategy for the colonial Japanese teachers who were interested in original scientific researches because under-studied natural objects of Korea offered a better opportunity for such research. By organizing various professional and research societies in Korea such as the Korean Association of Natural History and the Korean Association of Natural History Teachers, some of these Japanese teachers in elementary, middle, and high schools became quite established naturalists based on their research of Korean plants and animals. Their research activities were not limited in producing scientific reports. Their natural history textbooks in Korea were noted for their exemplary regionalization throughout the Japanese empire, partly due to their proud promotion. However, a closer look of their regional studies and textbooks reveals quite a puzzling truth. That is, their regionalization was more like a Japanization than a Koreanization. This Japanization at times appeared an effort to correct the Western-orientation of natural history in Japan with the plants or animals commonly familiar to both Japanese and Koreans. However, it more often revealed a very political concern to Japanize Koreans through the introduction of Japanese way of appreciating, cultivating, and utilizing plants. This paper explains this politicization of natural history in Korea by illuminating the contested and competitive nature of their collaboration with Korean naturalists. In thus delineating works of obscure researchers in colonial outposts instead of renowned imperial scientists, and their close interaction with colonial land and the people, this paper demonstrates the importance of colonial interactions in shaping colonial science, joining the current focus in the field.

P18

Emerging disciplines and dialogue with traditional knowledge in 19th and 20th century China

Organisers: Jiří HUDEČEK & HU Minghui

Histories of science in late imperial and early modern China often focus on the foreign imports for the development of specific fields of knowledge retroactively defined by modern academic disciplines. Although such impulses are crucial, they are not sufficient to explain the rich spectrum of approaches to and forms of knowledge production in the nineteenth- and twentieth-century China. Changes and developments in what would eventually become modern academic disciplines were taking place against the totality of Chinese traditional scholarship and its associated classification. The roles of traditional knowledge and the forms of its influence were however diverse. It originally provided the established paradigm of intellectual enquiry, in which new fields of knowledge germinated to, eventually, form separate disciplines when fully fertilized by new Western knowledge. At other times, ancient knowledge served as authoritative model for reinvigorating existing scholarship. In later phases of China's intellectual transformation, its intellectual heritage was updated and integrated into disciplines, especially humanities, fundamentally based on Western models. Insistence on the intellectual quality of Chinese traditional scholarship was also a source of self-confidence in the intellectual potential of Chinese civilization. This led to an interest in the history of Chinese science and its use in the popularization of modern disciplines in educational as well as public settings.

In this panel, we intend to explore a range of Chinese sources from late Imperial and early Republican period to show how important actors of disciplinary modernization negotiated the keenly felt connection to traditional scholarship on the one hand, and the increasingly prominent universal epistemic criteria and objectives on the other hand. This perspective challenges the distinction between figures seen as "last Confucians" versus those who became "fathers of modern scientific disciplines". By putting together papers on scholars firmly embedded in the nineteenth-century "traditional" forms of enquiry with exploration of the new intellectuals of early twentieth century, we try to capture the pervasive interconnectedness of tradition and modernity throughout the transitional period of Chinese intellectual history.

P18/1

HU Minghui

(University of California at Santa Cruz)

Before Western Learning: Xu Youren (1800-1860) and His Network of Mathematical Astronomers

Jesuit mathematical astronomy had become a routine practice in the Qing

court and provincial governments since the publication of the imperially sanctioned Compendium of Observational and Computational Astronomy (*Lixiang kaocheng*) in 1723. It was neither Jesuit nor Chinese but simply a bureaucratic practice adopted by the Qing state. The cultural campaign to compartmentalize

it as “Western” was launched by a prominent group of Suzhou scholars who also compartmentalized the imperial orthodoxy—Neo-Confucianism—as “Song Learning”. We should note that both Jesuit mathematical astronomy and Neo-Confucianism were standard and normal practices in the eighteenth century. The Suzhou scholars and their academic network campaigned aggressively to promote Han Learning as equivalent of, if not superior to, Neo-Confucianism. At the same time, the same scholars were also promoting a version of Jesuit mathematical astronomy, framed in technical terms taken from the Classics, to rival Jesuit mathematical astronomy. Their rigorous campaign, however, did not change the routine use of Jesuit mathematical astronomy in the Qing bureaucracy. The unintentional consequence of their campaign was to transform the category “Western Learning” in the post-Taiping world. Zhang Zhidong (1837–1909), who adopted Neo-Confucian terminology by calling Chinese knowledge the essence (*ti*) and European knowledge a mere application (*yong*), represented this intellectual outcome.

In this paper, I will investigate the life and career of Xu Youren (1800–1860) to demonstrate that Jesuit mathematical astronomy remained a routine and pervasive intellectual and bureaucratic practice until Xu’s death in 1860. I will detail the network and practices of mathematical astronomers centered on Xu’s career and argue that, in practice, these mathematical astronomers did not operate with the great divide between Chinese and Western learning. The Suzhou scholars’ aggressive campaign in the eighteenth century later served as the intellectual resource for Zhang Zhidong in the post-Taiping world. The meaning and content of Western Learning was, once again, categorically

reinvented in the 1870s.

I want to show the contrast between what Xu was and how he was remembered, which was also a disjunction between politics and science in Late Qing China.

P18/2

Olga LOMOVA

(Charles University in Prague)

Wang Guowei – science and foundations of Chinese aesthetics

Wang Guowei (1877–1927) is generally regarded as a key figure in the creation of modern Chinese historiography. He also holds an important position in the new discipline of literary history with focus on “low” genres and formulation of the law of literary evolution later adopted by the May Fourth generation and influential even today. His early published essays were also dedicated to western philosophy and to literary criticism informed by Kantian aesthetics. These writings are however mostly regarded obsolete today, with the exception of *Renjian cihua*, a short treatise on literary aesthetics (written and published between 1906–1908). Thus Wang Guowei is also regarded as the creator of aesthetics as a new discipline in modern Chinese scholarship.

Despite the popularity of the *Renjian cihua*, the true meaning of this short text is still a matter of controversy. The main controversy is between interpretation of Wang Guowei’s aesthetic ideas as basically informed by western philosophy and departing from the domestic tradition (Kogelschatz, Fo Chu, and Ko Ch’ing-ming to some extent), and diminution of the importance of western models, with new emphasis placed on the heritage of Chinese traditional aesthetics (Golygina, James Liu, Florence Yeh Chia-ying).

Scholars approach Wang Guowei from

the perspective of further development of his scholarship in the direction of humanities. However Wang Guowei in his pre-Xinhai revolution period intensively studied mathematics and physics as well as psychology and other social sciences, and published pioneering essays on these topics. He was also interested in logic, and prepared a Chinese translation of Elementary lessons in logic by W. S. Jevons. These interests from the formative period of Wang Guowei's scholarly life are mostly skipped over as a minor biographical detail. This paper will reexamine Wang Guowei's early writings with new emphasis on his interest in the sciences, including aspects of translation of the new knowledge. This will make possible a new reading of the *Renjian cihua* contextualized in the period when it was created as a radical departure from tradition, at the same time exploiting and adapting traditional methods of text construction and reading. It will also elucidate how Chinese intellectuals at the time understood scientific truth and the place of science in the totality of knowledge.

P18/3

Jan VRHOVSKI

(Charles University in Prague)

From Western science to paradigms of tradition: Zhang Shenfu's notion of mathematical logic in cohesion with traditional thought (1920-30s)

Zhang Shenfu 张申府 (or Zhang Songnian 张崧年, 1893-1986), one of the most passionate proponents of Western science among the May Fourth intellectuals, was instrumental for the introduction of mathematical logic – through B. Russell's work – to the Chinese readership. He embodies the post-May Fourth search for a new socially applicable scientific objectivity which could transgress the “inner turf” of formal sciences and serve also as a

tool for a universal revolution in society. Reflecting contemporary developments in philosophy and structural formal sciences, mathematical logic was presented to the Chinese audience as representing the peak of Western scientific search for universal laws.

Apart from describing Zhang's role in the introduction of mathematical logic to China, this paper shows how mathematical logic was perceived and further developed by Zhang in his model of objectivity, encompassing Western science (mathematics, logics, physics and epistemology) on one hand and Chinese culture on the other. Chinese traditional concepts (e.g. universal structure *li* 理 embodied in the phenomena, the laws of complementarity, binary oppositions etc.) and philosophy (the doctrine of the mean and the onto-moral application of concepts such as *ren* 仁 - humanity) shaped the process of Zhang's understanding of mathematical logic, which was also a significant part of his search for the sense of scientific modernisation. Western science and traditional Chinese paradigms were “merged” by reinterpreting mathematical concepts and putting them in use in socially applicable discourses on universal laws and objectivity. In this way, Zhang hoped to eliminate the blind-spots of tradition as well as modern science and construct a system of objectivity where both of them coexist in a mutual inclusion. This reflects Zhang's view on Chinese modernisation-related crisis and the role of science in the search for its remedies.

I conceptualize the borderline gap between Western science and Chinese identity as a grey area of contested “objectivity” (borrowing from L. Daston and P. Gallison), in Zhang's case mechanical objectivity. As the objective in the Chinese identity and Western science are set further

apart, naturally developing individual intellectual identities emerge as the main elements in the process of modernization.

P18/4

Jiří HUDEČEK

(Charles University in Prague)

***History of Chinese mathematics in
Republican journals***

China only adopted modern Western mathematics at the start of the twentieth century. The interest in mathematics as the basis of modern science gave rise to frequent discussions of mathematical topics in Republican-era journals for wide audiences as well as in more specialized academic publications. Much inspiration was drawn from Japan, which successfully established modern mathematics prior to China; one of the points of inspiration was the historical study of Chinese and Japanese mathematical traditions, initiated in Japan by Yoshio Mikami (1875-1950). His most famous Chinese followers were Li Yan (1892-1963) and Qian Baocong (1892-1974), but there were many others who studied ancient and more recent Chinese mathematics and referred to the tradition to make wider points about Chinese intellectual history. Sun Wenqing's thorough study of the *Nine chapters* (*Jiuzhang suanshu*) in 1931-2 was a demonstration of rigorous history applied to traditional mathematics, incited in part by less well informed attempts to portray the *Nine chapters* as an import from India. Others used the same ancient text simply as a source of "curious problems" (*qu ti*) for a classroom setting and as a proof of the remarkable mathematical competence of the ancient Chinese.

References to Chinese mathematical tradition occupied a relatively minor niche in a large body of popularizing literature

on mathematics, its teaching, philosophy and relations to major social questions. The impact of this historical writing on the self-perception of Chinese mathematicians and the perception of mathematics by ordinary Chinese was however quite significant. This can be illustrated on the readiness with which Chinese mathematicians who grew up in the Republican period, e.g. Hua Loo-Keng (1910-1985), used historical references in their writings in the post-1949 era. The global phenomenon of mathematisation, the promotion of mathematics as the crucial component of the scientific way of life, thus found a special expression in China due to this interest in Chinese mathematical history.

P18/5

Václav LAIFR

(Charles University in Prague)

***Historiography of Traditional
Chinese Astronomy in Early 20th
Century China and in the Early PRC:
Different Origins and Influences***

Before the 1920s, Chinese astronomers with modern Western education showed almost no interest in their own astronomical tradition. In 1922, when Chinese Astronomical Society and its historical section were established, Gao Pingzi 高平子 (1888-1970) first formulated its principles for research on history of national astronomy based on scientific methods and scientific needs. Zhu Wenxin 朱文鑫 (1883-1939) was the first Chinese to publish a substantial book on history of both Western and Chinese astronomy, entitled *Short History of Astronomy* (*Tianwenxue xiao shi* 天文学小史), in 1935.

Historiographical interest in traditional Chinese astronomy re-emerged in different quality and quantity in the early People's Republic of China in the 1950s, teaching

the masses the Marxist-Leninist worldview and following the Soviet model, and also much more than before being the tool for encouragement of patriotism. The Vice-President of the Chinese Academy of Sciences Zhu Kezhen 竺可桢 pushed forward the idea of institutionalization of history of natural sciences. In the field of history of traditional astronomy, he appointed then young astrophysicist Xi Zezong 席泽宗 (1927 – 2008) to conduct research on records of novae and supernovae (1954 – 1955) in Chinese historical sources. In 1957, after establishment of the Cabinet for Research of History of Natural Sciences, Xi became a member of its small astronomical section.

This paper will focus on how social, political and foreign influences on historiography of traditional Chinese astronomy differed in these two periods, taking into account relevant historiographical articles in the magazines *Yuzhou* 宇宙 (*Universe*, till 1949), *Kexue dazhong* 科学大众 (*Popular Science*, in the 1950s) and also the published works of Zhu Wenxin and Xi Zezong. The paper will also discuss what was the motivation for the new systematic interest in history of traditional astronomy based on scientific approach and also on the needs of modern astrophysics during the 1920s and 1930s in contrast with the later period in the early People's Republic of China.

P19

Recovery of Traditional Technologies: A Comparative Study of Past and Present Fermentation and Associated Distillation Technologies in Eurasia and Mexico

Organisers: PARK Hyunhee & Paul D. BUELL

The present panel brings together four experts from the United States, Korea, Mongolia and Mexico to discuss the history of distillation, its raw materials, and how the technology of distillation spread and was adapted. The Buell paper looks at the key role of the Mongols in taking a pre-existing Chinese technology, improving on it in large part by producing easily portable apparatus, and not only widely disseminating this improved technology but creating an environment in which a variety of cultures could produce their own distilled liquors using what was locally available.

This theme in turn is picked up by Hyunhee Park who provides a case study illustrating what took place, tracing the introduction of distillation technology to Korea by the Mongols and its use by Koreans to produce soju, from fermented rice. Soju even was once called arakhi, by the general Eurasian name for a distilled liquor widely used across Eurasia. The Mongols were able to have this kind of influence on Korea as its occupiers for nearly a hundred and fifty years during which they exerted a major cultural influence on the Koreans, including soju, but many other foods as well and even the Korean national dress.

Batjargal Batdorj in her paper returns us to basics by looking at the fermented beverage that lay at the basis of the Mongolian distillation effort, kumiss or airag, fermented mare's milk. Airag was the great cultural food of the Mongol age as now but would not keep even if clarified. Distillation was the only way to make sure that airag, generally available only at certain times of the year, e.g., during high summer, was available in a preservable form for the whole year. Her effort is part of an on-going team effort in Mongolia to study the biology of various native foods, including raw mare's milk and kumiss.

Finally, Ana Valenzuela's paper looks at distillation in her native Mexico where mezcal is made at the folk level largely using an introduced technology, stills, in fact, that were propagated in Eurasia by the Mongols and finally made their way to Mexico thanks to the Manila Galleon and its Pilippino sailors. She also looks in passing at a meeting of technologies, a parallel introduction of European distillation technology based upon Middle Eastern and Greek traditions, and at possible pre-Columbian distillation.

P19/1

Paul D. BUELL

(Max Planck Institute)

Mongol Empire and Distillation: Technology and Popularization

The Mongol Empire and its successor states are associated with substantial cultural and technological exchanges across Eurasia and among them was the spread of portable and easily usable distillation technology, using types of stills still found today to make “moonshine” and occurring as far afield as Iceland and western Mexico. Appearing along with this technology were entirely new categories of alcoholic beverages, including fortified wines (particularly distilled kumiss), distilled brandies, and vodkas, almost universally called *arakhi* (or *arkhi*) after an Arabic word first popularized by the Mongols. These included the first Japanese and Korean distilled liquors, also initially called *arakhi*. The new technology was based upon previously existing Chinese technology of long standing but substantial improvements were made to it during the 13th and 14th centuries when stills became lighter and simpler. The proposed paper will trace the origins and history of this new technology, from its Chinese roots until taken up by the Mongols and survey the kinds of distilled beverages that came into use and their implication not only for food and cuisine but even for cultural and religious and expression. Most shaman, for example, in recent times have required stiff doses of just the kind of distilled liquors introduced by the Mongols to work up to a trance and have intercourse with the spirits, this before the use of any other narcotics and hallucinogens. Sources for the present study will include primarily Chinese-language technical treatises, standard histories, literary works, medical

treatises, cookbooks, and dietary manuals including the *Yinshan zhengyao*, “Proper and Essential Things for the Emperor’s Food and Drink,” presented to the Mongol court in China in 1330. Also used will be travelogues in a variety of languages and art and archaeological finds, such as actual stills from the period.

P19/2

PARK Hyunhee

(City University of New York, John Jay College)

The creation of Soju: Transfer of Distillation Technology from Yuan China to Koryo Korea

Soju, the Korean national alcoholic drink, has now become one of the world’s most popular drinks as well. It has an interesting history that involved large-scale Eurasian cultural contacts and technology transfers. *Soju* distillation technology was introduced from China to Korea during its Mongol period (early 13th to late 14th century), as part of a first era of globalization, and out of the cultural interactions involved the *soju* of today has developed. Like many other distilled alcoholic drinks appearing at the time, *Soju* was often called *araki* during the Mongol era, using an Arabic word meaning “brandy” popularized by the Mongols, although not all the *araki* drinks of the time were “brandies.” The exchanges involved have been little studied, but were particularly important for Korea and, most important, are particularly well documented in a variety of sources that credit explicitly the role of the Mongols. These exchanges demonstrate how transfers of foods and medicinal technologies in premodern Eurasia could have significant impact on people’s lives in a broader social context. The present paper examines in detail the ways in which a transfer of distillation technology from the Yuan

China to Koryo Korea took place and the influences present in the processes involved. It examines available documentary and archaeological sources including surviving artifacts. Written sources include Chinese official histories such as the History of Yuan (*Yuanshi*), the *Koryosa*, History of Koryo, the Korean equivalent, and literary works in Chinese by Chinese scholars and by leading Koreans of the time. These primary sources will be supplemented by recent secondary studies as well the results of examination of actual stills dating back to the fifteenth century still found in the Korean National Museum, and in Chinese archaeological collections.

P19/3

Batjargal BATDORJ

(National University of Mongolia)

Isolation of Lactic Acid Bacteria with High Biological Activity from Mongolian Fermented Dairy Products

Fermented products are an integral part of Mongolian heritage developed over a long period and have great social, religious, cultural, economic and medicinal importance. They include a wide variety of fermented milk products in Mongolia reflecting a variety of raw materials, and different processing methods including distillation in some cases. The most common fermented milk product of Mongolia is *airag* (kumiss), traditionally made from mare's milk. Another kind of fermented milk is *tarag* (yoghurt), which is prepared from cow, goat and sheep milk. A third indigenous dairy product is *khoormog* (kefir), which is prepared from camel milk. Fermented products have probiotic effects as they contain live microorganisms. Lactic acid bacteria play a vital role in the fermentation of Mongolian traditional dairy products and produce different

antibacterial substances including organic acids, hydrogen peroxide and bacteriocins. These substances are used as bioconservants in food preservation and improve the taste and quality of dairy products. Bacteriocins are ribosomally synthesized substances of proteinaceous nature appearing during the growth of lactic acid bacteria. These bacteriocins protect host organisms by killing or inhibiting the growth of other bacteria. It been shown that bacteriocins can not only be used as biopreservatives, but also as medicine during prevention of different diseases as an alternatives to antibiotics. In the present paper I will look Mongolian fermented milk products and their properties and natures but also at the specific traditions of distillation involved in the production of *arkhi* from different milk species, which may also have its own special benefits. The study will be based upon laboratory research but also, where appropriate, upon written sources that well describe the traditional dairy culture of Mongolia in its many local variations. Much of this material still remains in manuscript and is held by the Mongolian National Library.

P19/4

Ana G. VALENZUELA-ZAPATA

(Horst-Görtz-Institut)

Mezcal production by Alchemists and Arakimists: East Asian distillation influence in Mexico

Today, Mexico is one of the most interesting places in the world for research into alcohol distillation technology. Modern distillation in Mexico uses not just the conventional alambics, but also devices showing Asiatic influence. The so-called East Asian stills come in two types as classified by Joseph Needham: Mongol and Chinese differing in terms

of the technology. They are coexisting for the national liquors. Agave spirits are Mezcal and Tequila produced in a wide ecological and latitudinal range of territory. Multinationals, national investors, traditional populations, and ethnic groups are all distillers of agave ferments. Distillation devices were adapted, adopted and recreated by Mexicans, to produce a local variant of *arakhi*, an Arabic word popularized by the Mongols who distilled and continue to do so with their own Mongol and Chinese-type stills as described by Pallas. But there may be more than external influence in Mexican distillation history. Pre-Columbian Capacha pots have now been proposed as possible ethanol stills. In the present paper, we propose the term Arakimists to designate and differentiate distillers who use Mongol and Chinese types of East-Asian still devices. Arakimy we define as an important ancient alcohol distillation, based on evaporation and condensation in a one-body container. Both East-Asian devices are now used by small producers in Eurasia and Mexico. Also used are alambics, the more conventional stills of today, also named "Arabian stills." They include serpentines where cooling takes place outside the boiler body. Alcohol production with Agave plants in Mexico is part of traditional knowledge, with a high diversity and many technical adaptations made by the Mexicans Arakimists. The present study is based upon field work in Western Mexico among indigenous producers and an examination of a variety of written sources including descriptions by early observers, some dating back to the time of conquest.

P20**Conveying “Care” to East Asia:
Nursing Theory and Practice in China, Hong Kong, and Taiwan****Organisers: CHANG Shu Ching & Jong Hyuk David KANG**

If medical science is an important catalyst of modernization, then nursing is both an agency and a product of modernity. In the 19th Century the combination of the advancement of medical science, the rise of the missionary movement, and the expansion of colonial governance resulted in the introduction of western medicine to East Asia. Under the influence of Florence Nightingale, the development of care in coordination with cure became an important breakthrough in western medical science. The missionary movements then relied heavily on care to acquaint local people with western medicine as a means to carry out their mission. The colonial governments also used care to colonize the bodies of local people in order to consolidate their governance. Through the process, care officially became “nursing” by way of standardization, institutionalization, and professionalization. In the 20th Century, however, there is more to story of nursing in East Asia than the influence of the “west” via imperialism, globalization, and international cooperation. While East Asia shared a certain aspect of its root, heritage, and culture, the national and regional characteristics of their development in science, technology and medicine also affected how nursing practice took form locally.

Taking into account the aforementioned international influence and regional features, this panel will focus specifically on the development of nursing in China, Hong Kong, and Taiwan by placing nursing into the medical, cultural, and feminine discourses of the 19th and 20th Century. Zhen Cheng’s paper provides an overview of how nursing was introduced to China, and examines how Chinese women embraced nursing both as a feminine profession and a new form of medical technology. Under these contexts, Li Shenglan’s paper focuses specifically on nursing during wartime in China, analyzing how nursing transformed the social and gender norms. Angharad Fletcher then shifts the focus to Hong Kong by examining the early development of nursing in colonial Hong Kong during the plague epidemic. David Kang continues the story of colonial Hong Kong by discussing the 30s and the 40s. Chang Shu-Ching then shares important insights into nursing in post-colonial Taiwan, and explains how globalization and international cooperation have shaped “modern” nursing theory and practice after WWII.

P20/1

ZHEN Cheng
(Peking University)

Women and Science: Introduction and Affection of Nursing in China

When nursing became an independent discipline under the influence of Florence Nightingale, the nursing practice was introduced to China by medical missionaries in the 19th Century. While western doctors established hospitals to provide medical treatments, they often relied on nurses to deliver care. As nursing became one of the best ways for missionaries to reach the local populace, it created opportunities for women to get into the mission field. As a result, mission, medicine, nursing and women banded together under a special context. In the early period, main focuses of nursing in China consisted of founding the school of nursing training, formation of nursing organizations, and publishing of nursing journals. At the same time benefits such as free tuition, provision of room and board and free nurse's uniforms were given in order to attract Chinese girls to study nursing.

Under the influence of foreign female nurses, Chinese girls were given the opportunity to pursue this new form of medical science and technology. They also discovered their potentials through the process. This opened the door for some Chinese girls to leave home and achieve financial independence by starting their career as nurses. Some pioneers of Chinese nurses, such as Yamei Kin, Mary Stone and Hu King Eng, went abroad to further continue their study of medicine and nursing, setting an example for others to follow. All three nurses founded nursing training school or medical school after their return to China. By mastering this

new scientific theory and practical skill, these Chinese nursing leaders helped nursing to take root in China.

Through the process, the concept of nursing was challenged by traditional Chinese medicine. In the long history of traditional Chinese medical, there was no distinction between treatment and nursing. After 1950's, however, more Chinese medical institutes and medical universities were established. Traditional Chinese doctor began to provide treatments in hospitals. Under such transformation, Chinese medical university incorporated nursing practice and founded nursing school based on the model in western medicine.

P20/2

LIU Xisong
(Beihai People's Hospital)

A Brief History of Hundred-year Nursing in Pakhoi Po Yan Hospital

The Church Missionary Society sent Dr. Edward George Horder to China in 1886. He was known for establishing the first western medical hospital in the southwestern area—Pakhoi Po Yan Hospital. He then solicited funds from the society and set up the first leper hospital in China—Pakhoi Leper Hospital—in 1889. On November 8th 1897, the first nurse practitioner Amy Agnes Bolton arrived in Po Yan Hospital, officially introducing western nursing practice from England to China. In the subsequent century twelve more foreign nurses from English and Australian, came to Pakhoi in succession. As a result the general nursing theory, the nursing science of lepers, and the hospital nursing education were established in southwest China. There are three significant influences of nursing in Pakhoi Po Yan Hospital.

First of all, the hospital incorporated the nursing philosophy of “Nightingale” and offered meticulous nursing care for patients. Consequently the nursing practice reduced the mortality rate of the sick and the wounded, pregnant women and neonates. Secondly, local nurses were trained professionally—the training not only promoted nursing practice, but also raised the social status of Chinese women by providing opportunities for them to work and a means to achieve financial independence. Thirdly, the development of Nursing Collaborative, Community Care, Specialized Nursing, Nursing Education and Nursing Professionalism in Po Yan Hospital exemplified the progress of nursing science in China, offering a new angle to comprehend the nursing history in local context.

P20/3

LI Shenglan

(State University of New York-
Binghamton)

***“Perhaps China’s Greatest Need is Here”:
Wartime Public Health Nursing
Training in China, 1937-1945***

By the time of the Second Sino-Japanese War, public health nursing in China had undergone remarkable growths after western missionaries introduced Chinese nursing as an occupation about half a century earlier. According to the Peking Union Medical College pamphlet circulated within Republican China, “a public health nurse teaches disease prevention and health conservation to school children, to young mothers, and to the people at large. Perhaps China’s greatest need is here.” To illuminate the significance of wartime public health nursing, this study has selected the Hunan Yale-in-China Nursing School as a primary case. It not only offered prominent nursing programs, but

also exemplified a typical nursing training pattern in China that adopted an American model. As one of the few nursing programs that systematically functioned throughout the period of turmoil, the Hunan Yale-in-China Nursing School and its nurses demonstrated significant visibility in the battles against Japanese and germs. By focusing on three critical themes: national health and disease control, midwifery and child welfare, as well as the rural services, this study examines the ways in which public health nursing training and practice intertwined with the wartime agendas of political authorities. I argue that while the Second Sino-Japanese War inflicted drastic changes for Chinese nurses, civilians, and governments, wartime public health nursing also profoundly impacted the gendered social norms, and multiple visions for modernity in China.

P20/4

Angharad FLETCHER

(King’s College)

***“The Benefit Would be Incalculable”:
Disease, Crisis and Nursing in Colo-
nial Hong Kong***

The outbreak of the Third Plague Pandemic has been traced to Yunnan Province in southern China, some time in the 1850s. By the time the disease finished ravaging Hong Kong in 1894, it had killed over 100,000 people, disrupted the city’s status as a vital trade hub, spread panic throughout other colonial outposts and revealed deficiencies in the port’s disparate and divided healthcare system. One of the most frequently noted issues was the need for professional nurses, sent from Britain or other outposts to replace unskilled labour and help alleviate unnecessary patient suffering.

Utilising the 1894 plague outbreak in

Hong Kong as a case study, this paper discusses several ideas including the extent to which nursing developed differently in different colonial outposts, the potential emergence of a transnational nursing profession, how the governmental structures of various societies, and their priorities, altered the development of professional nursing, the impact of racial mixing within the port city, what influence the global circulation of nurses had on the development of local professional self-identity, the relationship between the development of nursing education and practice in the metropole and colonial "peripheries", and finally, the role of crisis, specifically disease outbreaks, in the expansion and export of nursing as an institution. This paper will attempt to explore such questions in relation to a changing understanding of healthcare provision within the British Empire, transnational developments in biomedicine, shifting economic priorities and broader social change.

P20/5

Jong Hyuk David KANG
 (The Hong Kong Institute of Education)
"The Golden Years": The Development of Nursing in Colonial Hong Kong (1931-1945)

The art/theory of nursing became an important aspect of western medical science and practice in the Modern Era. This modern nursing profession was then introduced to East Asian Societies in the 19th and the 20th Centuries, and scholars have identified 1930s as the "Golden Years" of nursing development in China. Similarly, in Hong Kong, a city in Southern China and a British colony, the nursing profession also experienced such maturation during this period yet in a very different way. So

did the nursing vocation in Hong Kong progress in coordination with the situation in China, and was the circumstance in Hong Kong a microcosm of the "Golden Years" of nursing development in China? At the same time, what was the uniqueness of the nursing development in Hong Kong during this period, and how did the colonial identity of Hong Kong contribute to such distinctiveness? Finally and more importantly, how did the overall nursing development in East Asia influence Hong Kong in the 1930s and 1940s, and in what ways did the nursing practice in Hong Kong reflect the characteristics of nursing in East Asia during this period? These are the questions this paper attempts to address.

This paper will place the development of nursing in Hong Kong in the context of China as well as East Asia. By analyzing the medical, cultural, and political factors behind the nursing development in East Asia during this period, this paper attempts to examine how the history of nursing took shape in Hong Kong during the so-called "Golden Years." This paper argues that colonial Hong Kong absorbed much British influence during this period, especially when the colonial government decided to play a greater role in implementing state medicine and public health care. However, the rapid advancement of the theory and reputation of nursing in China during this period also had profound impact on Hong Kong, particularly when Chinese nurses in the colony started to take up leadership position in different hospitals. In addition, Japanese influence was also an important factor during the Occupation in the early 1940s when many Chinese nurses were under the management of Japanese doctors.

P20/6

CHANG Shu Ching
(Chang Gung University)

International Aid and the Globalizing Nursing Profession in Taiwan 1945~1970s

This study focuses on the development of nursing profession in Taiwan, examining the modern nursing theory, training and dissemination between 1945 and 1970s. Before the Japanese occupation, the main source of nursing knowledge came from medical missionary, dominated primarily by the Presbyterian Church. In order to carry out their mission, female western missionaries implemented the western nursing practice in mission hospitals. After 1895, western medical system was further introduced to Taiwan under the Japanese colonial governance; more women were also trained to provide assistance in medical treatments. Nurses during this period have gradually evolve into a specialized industry, yet often these nurses were faced with adversities such as ethnic discrimination. In 1949, accompanying the KMT government to Taiwan was the "American-style" healthcare system. ABMAC, JCRR, and other US aid offered grant to Taiwanese to study in the United States since 1951. WHO, UNICEF also provided scholarships and technical assistance. The nursing education and practice thus took important steps toward "modern nursing".

With the aid from oversea, Taiwanese government selected nursing leaders and educators, sending them to go abroad to pursue further nursing education. At the same time, scholars of nursing from overseas had been recruited to Taiwan for consultation and instruction. The modern American-style nursing gradually replaced the nursing system implemented by the

Japanese government.

This study will use materials from the Archive of Council for U.S. Aid, the Sino-American Joint Commission on Rural Reconstruction, Taiwan Provincial Health Department, Taiwan Provincial Government Department of Education, Rockefeller Archive Center, National Archive Bureau, as well as other relevant nursing journals and private nursing school archives. Taking policy and dissemination of nursing knowledge into account, this study will retrospectively examine how Taiwanese society reacted to the new nursing systems and concepts during this period.

P21

Letters from Scholars and Scientists concerning Historical Materials in East (or South) Asia

Organisers: LIU Dun & Efthymios NICOLAIDIS

As mankind enters the internet age, traditional correspondence is gradually being replaced by electronic messages, Twitters, Facebook, WeChat and the like. Many young people don't even know the norm of letters. The breathtaking development of communication technology has in the transition period (at least 30 years in duration, conservatively speaking) changed a great quantity of valuable correspondence into Bit-Signal that is hard to be caught and restored to its former medium. If this trend continues, a disaster will ensue, at least as far as historians of science (and most general historians) are concerned.

Historically, many technical inventions and significant scientific thinking are passed on through letters, the most famous example being a letter by Archimedes (287-212 BC) to Eratosthenes (c.276-c.194 BC), then librarian of the Alexandria Library, in the third century BC. The letter has survived millenniums to the present day and is known as The Method. In recent years, some historians of science have obtained invaluable historical literature from correspondence between scholars, examples being the discovery by Zhang Dianzhou of the correspondence between Li Yan (1892-1963) and David Smith (1860-1944) proposing to write the history of Chinese mathematics, and subsequent studies by others about the correspondence between David Smith and Yoshio Mikami (1875-1950), and between Li Yan and Yan Dunjie (1917-1988), among others.

In line with the theme of this conference, namely Sources, Locality, and Global History: Science Technology and Medicine in East Asia, there are seven participants and six papers on the panel. Spanning over three centuries, their papers are related to the academic correspondence about science and culture in East (or South) Asia. The letters in this panel are a combination of exchanges between scientists, between historians of science, and even between a missionary and a monarch. They prove once again that science and culture transcend geographical and national boundaries and they belong to whole mankind. The correspondence between scholars and scientists is a valuable literature on the history of science, and needs to be discovered, saved, and studied.

P21/1

PARK Kwonsoo

(Chungbuk National University)

Correspondence between João Rodrigues and Korean envoys in 1630

In 1630, Jeong Duwon (1581-?), an ambassador of the Joseon dynasty and his

entourages were sent to the Ming China, where they met a Jesuit missionary João Rodrigues (1558-1633) in Dengzhou of Shangdong peninsula. Yi Yeonghu, one of Jeong's followers, exchanged correspondence with Rodrigues about Western astronomical knowledge. A detailed description of this event was

written in Jeong's official report to Korean government, and their correspondence has remained until now. The focus will be the astronomical questions raised by Yi and Rodrigues' reply, as well as the effects of their correspondence on the Korean literati after the 1630s. In general, this paper will show that two cultural traditions interacted with different intentions through individual correspondence.

P21/2

Noël GOLVERS

(Faculty of Arts-FerdinandVerbiest
Institute, KULeuven)

Efthymios NICOLAIDIS

(National Hellenic Research Foundation
and Syrte-Observatory of Paris)

***F. Verbiest's two 'Tartary letters'
(Beijing, 1682 and 1683) as a source
for history of science***

These two long letters arrived in Europe in 1684 and circulated through the continent in many forms: manuscripts, Latin print and French & English translations. They contain the very first description by a Westerner of Mongolia. The letters are excellent testimonies, with sharp anthropological observations but also an accurate as possible topographical description: their success was especially based on this 'exotic' information. Almost unknown is that, during the 2nd journey, Verbiest - on the Emperor's order - started with a series of geodesic measurements, which are in fact the very first attempts to map Tartary, a work which was resumed as a systematic mapping project. This particular aspect is put more in evidence in another source, viz. a letter of Verbiest (1684) to Antoine Thomas in Macau, who himself contacted Alexandre de Bonmont in Douai, himself connected through Gouye with the Académie des Sciences in Paris. In this letter, Verbiest explains how

he measured the height of mountains on a distance, the meridian line etc., through a complex geometrical argumentation and asks Thomas's opinion. This contribution will focus on Verbiest's mathematical reasoning, a unique source to get a closer insight in his mathematical thinking.

P21/3

HUANG Rongguang

(Institute for the History of Natural
Sciences, Chinese Academy of Sciences)

***Correspondence between Li Yan and
Yoshio Mikami***

The correspondence between American historian of mathematics David E. Smith (1860-1944), and Japanese historian of mathematics Yoshio Mikami (1875-1950), the correspondence between Smith and Chinese historian of mathematics Li Yan (1892-1963), both have been revealed by researchers. Nevertheless, the correspondence between Li Yan and Mikami was rarely known in the past. The 45 letters addressed to Mikami by Li Yan throw a light on issues of their mutual concern, in other words, collecting and sorting through classic mathematical literature, and the relation between Chinese mathematics and Japanese mathematics, among other topics.

P21/4

LIU Dun

(Tsinghua University)

***Correspondence between Joseph
Needham and J. B. S. Haldane***

On 24 July 1957, the British geneticist J. B. S. Haldane (1892-1964) boarded a plane bound for India, where he intended to settle down. Before his departure, he declared to journalists at Heathrow Airport his intention to abandon Britain and everything in it, saying that his departure

was in protest at the invasion of Egypt by Britain and France in October the previous year. Through the correspondence between Joseph Needham (1900-1995) and Haldane at the Cambridge University Library, the speaker discovers that Haldane's immigration to India was long in planning, and that in fact it was the diversity of Indian culture and species that propelled him to make the move. In addition, the success in China of his old friend, Needham, convinced Haldane of being able to complete on his own a Science and Civilisation in India when there.

collaboration". While conducting scientific research, they were quite mindful of scientists' social responsibilities. When the World Federation of Scientific Workers was founded in 1946, Powell and Joliot-Curie became president and vice president of the organization, with Tsien also participating in its activities.

P21/5

LIU Xiao

(Institute for the History of Natural Sciences, Chinese Academy of Sciences)

Nuclear technology, scientific cooperation and world peace: a study based on the correspondence between Tsien San-Tsiang and C. F. Powell

Through the correspondence between Cecil F. Powell (1903-1969) and Tsien San-Tsiang (1913-1992) at the Archival Collections of Bristol University Library is revealed the relationship between the two in multi-faceted ways. In the latter half of 1945, sent from Paris by his teacher Jean Frédéric Joliot-Curie (1900-1958), Tsien San-Tsiang went to study nuclear emulsion under C. F. Powell at the University of Bristol. Tsien brought the technology to France and later ushered in the development of nuclear emulsion technology in China. In 1946, at a conference in Cambridge, Tsien noticed the ternary fission of nuclear emulsion. With pictures provided by Powell, he studied the mechanism of the phenomena after returning to France, where his wife He Zehui (1914-2011), and two junior French scholars joined him in the research, leading to the discovery of quaternary fission, which Powell called "the product of international

P22

Scientific Institutions and the Government in Japan and South Korea

Organiser: MOON Manyong

In comparison with the West, the role of the government has been far more important in the development of contemporary science and technology in East Asian countries. The role of the government has differed for each nation and period, however, because the historical experience of each country served as the basic condition and a variable. This panel will trace the relationship between the development of science and technology and the governments in East Asian nations, through the history of policies, institutions, and institutes related to science and technology in Japan and South Korea during the mid- and late 20th century. First, the role of the Japanese government in the process of establishing and developing national research institutes will be examined, using the National Laboratory for High Energy Physics (KEK) in the Tsukuba Science City in Japan. Second, through the trajectory of the establishment of Research Institute of Theoretical Physics (RITP), Research Institute for Fundamental Physics (RIFP), and Institute for Nuclear Study (INS) in wartime and postwar Japan, the paper will scrutinize the influence of a series of institutes on the following establishment of other research institutes in the S&T policy of Japan in the 1950s-1960s. Third, the policy efforts made by latecomer nations to develop state-of-the-art industries quickly will be explored through South Korea's genetic engineering promotion policy in the 1970s. Finally, the early history of the Daedeok Science Town, a representative science park in South Korea, will be compared with research complexes in Japan and Taiwan to trace the differences among them, considering the backgrounds of the representative research complexes in the three countries. These presentations will thus elucidate how policies related to science and technology were decided and implemented in East Asian nations and how, in the process, the relationship between the government and science/scientists and technology/engineers was shaped. This review is intended to provide a way of understanding the compressed development of science and technology in East Asian countries, and a new approach to the relationship between science and technology and the government.

P22/1

TAKAIWA Yoshinobu

(High Energy Accelerator Research Organization)

HIRATA Kohji

(Graduate University for Advanced Studies)

The National Laboratory for High Energy Physics and the Formation of High Energy Physicists Community of Japan

The accelerator for high energy physics (HEP), the essential instrument for experimental particle physics, is a typical big and expensive facility which may not be built without substantial contribution by the governments. Due to this fact the process to establish research institutions having such big facilities necessarily involves intense discussions within and between various groups of people and

agents. For the first Japanese high energy accelerator laboratory some negotiations within physicists of nuclear physics in a broader sense which consists of sub-groups of (low energy) nuclear physics, cosmic ray physics, and theoretical physics, whose authorities came from the Special (ad-hoc) Committee for Nuclear Science (KTI, *Kakutokui*) of the Science Council of Japan (SCJ, *Gakujutsu-Kaigi*), and thus formed HEP community played an important role at the final stage of the negotiation. This paper reviews the process of emergence of this HEP community in the course of studying and discussing designs of the accelerator and roles taken by it for establishing a new laboratory in Tsukuba Science City in 1971. The discussions within nuclear physicists focused on issues such as accelerator designs, the organizations and operations of research institutes and research projects. The atmosphere of the discussions may be characterized by social and political background of the day, that is the mood of democratization geared up by socialists philosophy and the Western cultures brought by the occupation forces, in particular of America. Later, the government officials were gathering energy to plan their own policies for science when economic situation improved. On the other hand, the KTI abandoned further negotiations for the new facility, and that only left the HEP community which ultimately decided to embark on a plan to develop the science city in Tsukuba district. As a conclusion, the years of planning of the Tsukuba Science City, of which KEK is one of the earliest laboratories, coincide with those in which the coordination of science research policies changed from SCJ initiative to the initiative by the government for policy making. And a change of characteristics of scientists' communities may be seen by comparing

SCJ/KTI nuclear physics community and the HEP community during this period.

P22/2

KONAGAYA Daisuke
(Ryukoku University)

Physics Research Institutes and their Influence on the Establishment of the National Institutes in Postwar Japan

In 1950, the last year of the first half of the twentieth century, there was only one small national research institute for physics study in Japan. This institution was the Research Institute of Theoretical Physics (RITP) established at Hiroshima Bunrika University in 1944. After that, the Research Institute for Fundamental Physics (RIFP) was established at Kyoto University in 1953, and the Institute for Nuclear Study (INS) was founded at the University of Tokyo in 1955. In the trajectory of the establishment of the three institutes, the system of founding the national research institutes of the universities was mostly built up and disseminated in the academic community in Japan, and consequently the research institutes of a wide range of fields were established in the Japanese universities in the 1950s-1960s. The main procedure of the establishment was related to the recommendation of the Science Council of Japan (SCJ) to the government. The procedure was functioning up to the 1960s, but then the government and the Ministry of Education, Science and Culture took on the initiative in making the national research institutes in Japan. This paper will reconsider the trajectory of the establishment of RITP, RIFP, and INS in wartime and postwar Japan, and it will examine the influence of a series of institutes that followed the establishment of other research institutes in the S&T policy of Japan in the 1950s-1960s.

P22/3

SHIN Hyangsuk
(KAIST)

***The Emergence and
Institutionalization of Genetic
Engineering Policy in South Korea
in the 1980s: A Focus on the Gene
Engineering Promotion Act***

In the 1980s, the field of biology in South Korea was diverted from traditional basic research centering on taxonomy, morphology, and embryology to state-of-the-art applied research centering on molecular biology, biochemistry, and bioengineering. Out of these topics, genetic engineering, which is part of molecular biology, came to be acknowledged for its economic and industrial value. This acknowledgement led biology to be included as an object of national science and technology policy for the first time. In South Korea, genetic engineering policy emerged with its inclusion in the National Research and Development Project (1982), a state-sponsored R&D project. With the subsequent implementation of diverse policies to foster genetic engineering, the discipline came to be institutionalized in the country during the 1980s.

In South Korea, the emergence and institutionalization of genetic engineering followed a path different from that in advanced countries. First, while the genetic engineering policy of advanced nations was pursued based on scientific achievements accumulated over a long period, South Korea started examining genetic engineering when even the term "genetic engineering" itself was unfamiliar. Second, if the focus of advanced countries' genetic engineering policy was on the development of genetic engineering technology through existing universities and research institutes, South Korea's genetic engineering

policy was based on institutionalization. Unlike advanced countries, South Korea had nearly no basis for biological research, including genetic engineering. Consequently, the focus of the nation's genetic engineering policy in the 1980s was on the construction of infrastructure for genetic engineering research. As a result, the comparatively short period from 1982 to 1985 witnessed the legislation of the Gene Engineering Promotion Act (known today as the Biotechnology Support Act), the establishment of genetic engineering departments, and the foundation of genetic engineering research institutes. In particular, the Gene Engineering Promotion Act, legislated in 1983, is unique and unprecedented, even by international standards. With a focus on the Gene Engineering Promotion Act, this study seeks to analyze the emergence and institutionalization process of the genetic engineering policy in South Korea, thus elucidating the nation's strategies for compressed scientific and technological growth.

P22/4

MOON Manyong
(KAIST)

***"Invented Science Cities" in East
Asia: Focusing on Daedok Science
Town in Korea***

Many advanced countries build research complexes or science parks to achieve synergy among research organizations by gathering institutes involved in R&D in certain areas. Several East Asian countries have such research complexes: Tsukuba Science City of Japan, Hsinchu Science Park of Taiwan, and Daedeok Science Town (DST) of South Korea. These research complexes have their own features and affect each other. Construction of DST

started in 1973 and was completed in 1992. The town was modeled after Tsukuba, Japan and had an indirect influence on Hsinchu, Taiwan. Initially, DST focused on serving as a research and education city and excluded the industrial sector, but after completion, it evolved into a technology-intensive cutting-edge industrial complex stressing networks of industry, academia, and research institutes. However, Hsinchu was aimed as a research-industry cluster from the beginning and has been evaluated as the “Silicon Valley in Asia”. This paper traces the construction history of DST, addressing the following questions. Why was this science city created? What was the major intended function of DST? What are the main reasons for the differences between DST and Hsinchu? How were relations between scientists and the government? Tracing the history of DST, I will answer these questions. In particular, I will analyze the features of DST in the context of a comparative study with other research complexes in East Asia.

P23

Localism in Qing Medicine: Inquiries on Materia Medica and Domestic Healing

Organiser: BIAN He

Historians of medicine have treated the Qing dynasty (1644-1911) mostly as the penultimate stage of a great healing tradition, prior to the “encounter” with Western medicine and rapid modernization in the 20th century. However, the proximity of Qing era to our time also bequeathed a broad range of textual and material sources, which in turn encourages viewing Qing medicine as a heterogeneous system consisting of disparate local practices. To fully engage the unique opportunity requires a critical reexamination of “canonical” texts heretofore considered in an abstract light. At the same time, a more realistic picture of the material and social underpinnings of Qing medicine will emerge as we learn from local sources that appeared to be exogenous to medicine per se, such as account books, stele inscriptions, and personal manuscripts.

In this light, we propose this panel to reconsider Qing medicine “from below.” Our inquiries can be grouped under two specific themes: knowledge and practice concerning materia medica (Bian and Liu), and healing in the domestic sphere (Arıcanlı and Zhang). Bian’s paper examines an important yet much neglected materia medica treatise of the 18th-century, Zhao Xuemin’s Bencao gangmu shiyi, and argues that localism values are key to understanding Zhao’s approach as well as an important aspect of learned experience during the Qing. In contrast to elite discourse, Liu’s study uncovers valuable local sources to illustrate life and aspirations in Qizhou (present-day Anguo, Hebei), the northern hub for materia medica wholesale business during the Qing.

In the second pair of presentations, Arıcan-Li’s paper also starts with a conventional pillar of learned medicine – that of the Qing imperial household – and asks what specific needs and circumstances have molded Qing imperial medicine into a set of highly specialized, even localized practices. Through a close reading of a set of manuscripts with instructions on demon quelling in the domestic space, Zhang’s paper probes into the connection between the imagination of illness and the commoner’s mentalité shaped by local traditions of history writing and collective memory.

In sum, we see Qing medicine not necessarily as expressions of a unified cosmo-ideological order, but bursting with local voices ready to reinvent tradition. We hope that this panel will serve to open up new venues of research, and identify sources that fall outside of the purview of learned medicine.

P23/1

BIAN He

(Princeton University)

***Frontiers of New Knowledge at Home:
Localism and Learned Experience
in Zhao Xuemin's Supplement to the
Compendium of Materia Medica***

In 1765, the Hangzhou-based scholar Zhao Xuemin took the audacious move to compile a corrective “supplement” to Li Shizhen’s dauntingly erudite *Bencao gangmu*, the standard reference for materia medica then in circulation for more than 150 years. The significance of this work, especially the particular ways in which Zhao fulfilled his universal aspiration, has not yet been fully examined. This paper proposes to take a fresh look at Zhao Xuemin and his *Supplement to Systematic Materia Medica* through the lens of localism. I argue that learned experience during the Qing dynasty, as epitomized by Zhao’s method, must be understood in an increased tendency to validate contemporary, local sources, coupled with a more critical stance toward records of the past. The expectation of finding new knowledge at home, an attitude prevalent among eighteenth-century scholars, goes hand-in-hand with the better-documented rise of the so-called “evidential learning” at the same time. The symbiotic relationship between Zhao’s textual and experiential (sometimes experimental) sources not only illustrates a signature attitude toward knowledge in eighteenth century China, but also reveals altered material outlook of everyday life under the expanding Qing Empire.

I make three key observations on localism in Zhao’s work: first, many drugs to which Zhao paid paramount attention were regional varieties newly available from pharmacies, now standing alone as distinct

entities. Essentially, Zhao was arguing that drugs do not appear as “ideal types” with a fixed name, but only as local varieties. Second, Zhao relied heavily on materia medica works composed during and after the seventeenth century, especially passages that drew on the authors’ personal experience, to revise Li Shizhen’s conclusions and oftentimes earlier sources. The weighing of evidence in favor of first-person accounts breaks down the divide between “orthodox drugs” and “herbal drugs,” and forms a coherent system with Zhao’s other extant work, *Chuan-ya*. Lastly, localism remains significant even when Zhao considered marvelous substances from distant lands. The introduction of the famous “summer herb, winter worm”, for instance, involved a careful delineation of “local customs” on the part of indigenous people, as well as local cases of application by Zhao’s fellow Hangzhou gentry. Even at its most exotic moments, the *Supplement* preserves a vivid first-person sense of everyday life in the eighteenth century.

P23/2

LIU Xiaomeng

(Hong Kong University)

***Folk Belief, Medicinal Market
and Local Society: Qizhou in Late
Imperial China***

Qizhou, despite of its location of no significance today and local god of little fame in medical history, served as the “northern capital” of materia medica and one of the major distribution centers for medicinal material in Qing China. In this paper, I explore its local history by collecting twenty-three original stele inscriptions and twenty-seven land contracts collected from my fieldwork, to overcome the dearth of details in the limited official records. The inscriptions provide not only essays

commemorating the renovations of the Temple of the Medicine King, but also give us a wide range of information about the market, such as lists of donors and their contributions on the back of the steles.

Two aspects of my findings are of special interest in understanding the historical making of Qizhou as a medicinal market. First, I track the distinct identities of the Medicine King as they had been recognized and interpreted in different historical context, under demands of local officials, elites, merchants, and commoners. Second, local records indicate that the fall and decline of an indigenous clan of literati and the rise of the merchant families, both local and migrant, testify to the transition of local society and the increasing influence of the medicinal market. The internal competition amongst the guilds of merchants, middlemen and other market participants can be seen from the reconstructions of the Temple of Medicine King, an occasion for actors to make their influence known by contributing to local public affairs.

Lastly, I discuss the modern fate of the market in the twentieth century, and describe how Qizhou faced economical and political crises that turned into an existential one, and how Qizhou's history has been subject to scholarly inquiry and "preservation" of tradition. The medicinal market no doubt still has tremendous impact on local society. We must continue to reconstruct Qizhou's significant role in the medicinal trade during the Qing, and at the same time recognize how folk belief and tales of a prestigious past serve as supports for local identity today, although the old tradition itself had passed away inevitably.

 P23/3

Sare ARICANLI
(Durham University)

***Considering the Local Aspects of
Medicine in the Qing***

What is Qing medicine, is a question that is of great interest to the field. Can we regard medicine in the Qing as one whole, or were there different traditions and local aspects that constituted medicine at that time? One way that this question has been addressed is by examining how divergent bodily constitutions in various geographical spaces played a part in understandings of disease categories in Chinese medicine. This paper aims to examine the question of locality in medicine by providing examples of physical ailments that have arisen due to challenges adapting to new climatic conditions. Attention will be given to the historical contexts within which such arguments are made, while also exploring the range of medical symptoms (such as inability to eat and drink, nausea, insomnia, lack of clarity in one's thoughts, etc.) that could be attributed to it. At the same time that people were facing difficulties acclimating to new places, there were also specialty imperial medicines, manufactured at the court, that were sent to officials in various localities. One kind of such medicine is called *dingzi yao*, and represents particularities characteristic of the center that were then distributed around the realm. These medicines were, at times, highly ornate, and could be used as charms, in addition to being used for medicinal purposes, including topical application. Through these discussions of adjusting to new localities, and the distribution of imperial medicines, this paper aims to shed light on the role of local contextual factors in comprising Qing medicine, a valuable lens with which to examine medicine during the Qing dynasty.

P23/4

ZHANG Ying

(Johns Hopkins University)

Getting Rid of Demons: Imagining Illness in the Domestic Space

In the last three decades, historians of Qing medicine have highlighted therapeutic pluralism in health care system, and considered disease categories as cultural construct, connecting medical history in relation to gender relations, publishing culture, local elite activism, urbanization, and commercialization. They have also creatively investigated the textual overlap between medical writing and other genres of writings, like fiction and legal documents. Indeed, it is the many possibilities of connecting medical history to social history, and of studying medicine as a clinical, social, and writing practice that characterize the study of Qing medical history today.

Building on these previous insights, I propose that the heterogeneity of medical manuscripts in terms of their authorship and content were valuable sources for exploring locality in healing practices and the production and circulation of health-related knowledge. First, I see a manuscript containing miscellaneous information as presenting a locally produced everyday handbook of practical knowledge and consider how did its owner assemble this knowledge including that of medicine in a rural village or a market town. Second, I use manuscripts either prepared by or intended for non-specialists as sources to think about health related practices not as “medical practice,” but as everyday practices that involve the conception and imagination of bodily conditions, which was shaped by religious believes and moral conventions. I pay special attention to how at the local level individuals like common

villagers and vernacular ritual specialists, writing their own handbooks, adopted different therapeutic approaches for the purpose of practical use.

This paper focuses on three late Qing and early Republican manuscripts telling the ways to identify illness-causing demons in the domestic space and how to avoid their evil influence. I argue that these sources reveal a way of imagining bodily conditions on the basis of a domestic order dominated by demons and folk rituals, which was different from the elite view of keeping health through maintaining a morally ordered domestic sphere. From a perspective of the *longue durée*, this was part of the mentality of demonic threat that penetrated popular legends, collective memory, and local historical writing and was frequently invoked for legitimacy in social crisis at least from the Yuan dynasty and through the first half of the 20th century.

P24

New Directions in the History of the Life Sciences in Modern East Asia

Organisers: Howard CHIANG & KIM Tae-Ho

This double-session panel showcases the latest research of an international group of early career researchers whose work opens up new horizons in the history of the life sciences in modern Korea, Japan, and China. The first session, with the subtitle “Diversity of East Asian Life Sciences,” consists of four papers by Victoria Lee, Tae-Ho Kim, Lijing Jiang and Weimin Xiong, and Christine Luk. These papers focus on the development of specific branches of biomedical sciences (microbial technology, embryology, and biophysics) in Japan and China, and related artifacts (vitamin supplements) in colonial and postcolonial Korea. Each paper, albeit dealing with a variety of time and place, illustrates how politics, culture, and collective imaginaries of different East Asian societies shaped the unfolding of the respective subfields. The second session, with the subtitle “State, Politics, and Life Sciences,” delves into the intersections of politics and science as mutually generative social processes, featuring three papers by Howard Chiang, Joon Young Jung, and Young-Gyung Paik. Chiang and Jung’s papers trace the historical origins of specific biological entities (sex and blood, respectively) and their transformations in shifting cultural and political contexts in China and Korea; Paik deals with a contemporary issue to analyze the interplay between nationalism and genomic science in late twentieth-century Korea. In sum, while covering a range of topics, regions, and chronologies, all of these seven papers respond to a common question: “how do politics and the life sciences shape one another across different East Asian cultures and societies?” Through the assemblage of the seven papers, each responding to the common question in its specific way, this panel presents some of the latest developments in the history of biology and biomedicine in modern East Asia, featuring the utilization of fresh methodological approaches and the excavation of new source materials.

P24/1

Howard CHIANG

(University of Warwick)

Visualizing Sex and Gender Politics in Modern Chinese Biology

This paper explores the culmination of new layers of visual evidence that made sex an object of scientific observation in late Qing and Republican China. In late nineteenth-century coastal China, many missionary doctors dedicated themselves to translating Western-style medicine. Their work stamped the first sustained effort

in redefining Chinese understandings of sexual difference in terms of Western reproductive anatomy. Focusing specifically on the first Western-style anatomy text introduced to China, Benjamin Hobson’s *A New Treatise on Anatomy* (1851), my analysis begins with the mid-nineteenth century as a crucial turning point for the modern visual representations of sex. By comparing Western with Chinese-style anatomical studies, I suggest that the visual realm occupied a central role in the reconceptualization of sex and

provided a point of commensurable and universal reference for the modern definition of the body. The reorientation of the visual representation of bodily sex, in other words, provided the ground for the formation of a Chinese body politic on the verge of national modernity.

The gradual spread of the Western biomedical epistemology of sex from elite medical circles to vernacular popular culture reached a crescendo in the 1920s. After a close reading of Hobson's text, I turn to Republican-era vernacular literature in the life sciences. In the years surrounding the New Culture Movement (1915-1919), Chinese biologists learned from their Euro-American colleagues in promoting a popular understanding of sex dimorphism. Their writings strengthened the visual evidence of anatomical drawings that first appeared in the work of late Qing missionaries. Refining the older drawings with more "accurate" translations and more diffused apparatuses of observation, they construed the bodily morphology and function of the two sexes as opposite, complementary, and fundamentally different. Republican-era life scientists also provided the first topographic drawings that divided all life forms into *ci* (female) and *xiong* (male) types. They established epistemic connections between what they called "primary," "secondary," and "tertiary" sexual characteristics. Like Western biologists, they extended these connections to all organisms across the human/non-human divide, attempting to explain hermaphroditism with genetic theories of sex-determination.

By the 1940s, three techniques of visualization operated conterminously in transforming sex into a scientific concept, the essence of life, and a fundamental object that can be seen and identified by everyone: the anatomical aesthetic of

medical representation, the morphological sensibility of the natural history tradition, and the subcellular gaze of experimental genetics.

P24/2

JUNG Joon Young
(Seoul National University)

***The Interpretation of Blood:
Blood Group Anthropology to Place
Koreans within the Racial Order of
the Japanese Empire***

This paper explores the studies on human blood type in Japan proper and its colonies, concerning the racist characteristics of the colonial medicine in the Japanese Empire. It especially focuses on the "blood group anthropology studies" by the Department of Forensic Medicine at the Keijo (京城, currently Seoul) Imperial University.

The ABO blood group system, which had been discovered by Landsteiner in 1900, began to attract attention from anthropologists since the World War I, for it was discovered not only that blood groups were inherited according to the Mendelian law, but also that their distribution among the population varied across the world. In 1919, Hirschfeld tested soldiers of the Allied Armies in Macedonia, and showed that agglutinin A predominated greatly over agglutinin B in the population from northern Europe, while agglutinin B predominated in Asian and African groups. Finding remarkable differences in the distribution of the blood groups in different races, he classified the races in three types on the basis of what he called the "Biochemical Racial-Index," the ratio of A to B in the population. In the 1920s, his discoveries sparked the racial imagination of anthropologists and led to "scientific" researches which estimated the BRI by examining the blood type distribution among various races or ethnic groups.

Japanese scientists remained ambivalent towards these “scientific” researches by the western anthropologists. Belonging to a non-white imperial power, they felt uncomfortable about racist or Western-centric implications of the blood group anthropology. Simultaneously, however, Japanese needed these researches to justify the racial order within the Japanese Empire in the name of “objective” science. Thus the blood group anthropology studies flourished in colonial Korea, not in Japan proper.

Since 1930, Department of Forensic Medicine at Keijo Imperial University became the center for blood group anthropology studies. Medical scientists gathered blood type data from Korean people, estimated their BRI, and inferred racial relations between Korea and Japan from the perspective of the racial order. On one hand, they wanted to place Korean people below Japanese people in the racial hierarchy; on the other hand, however, they considered Korean as a “missing link” between Mongolian and Japanese, to complete the Japanese colonialism based on assimilationism. Compared with the contemporary medicine in the West and the metropole Japan, this case study might illuminate the characteristics of the colonial medicine in Korea.

P24/3

PAIK Young-Gyung
(Korea National Open University)
The Search for Korean Origins in a Molecule: Biology and Nationalism in the Age of Genomics

This presentation intends to examine the interplay of biology and politics in the age of genomics, by closely examining the ways the emergent domain of genomic research has sought to track histories of

Korean origins and migrations. Originally started as a medical project to identify the “Korean genome,” the main purpose of the research was to promote personalized medicine and medical tourism. At the same time, however, the process of identifying the Korean genome was to inquire into the origin of the Korean nation and to judge its genetic affinity to the neighboring nations. Besides, the North East Project of China and the following disputes over the ancient history of the North East Asian region contributed to the growing popular and scientific interests in the debate around Korean origins and the evidences provided by genomics. In this context, by analyzing the scientific publications and practices on Korean origins as well as the evidentiary assumptions and logics behind them, this paper will identify shifts and continuities in the ways the Korea people and the Korean-ness are (re-)imagined in the age of genomics.

P24/4

Victoria LEE
(Max Planck Institute for the History of Science)

Screening for Gifts: Japanese Microbial Gardens and their Uses

This paper looks at microbial technologies in 1950s and 1960s Japan, as means to intervene in the nutritional and flavoring world. It focuses on the manipulation of the microbial sphere for commercial amino acid and nucleotide manufacturing, beginning with MSG in 1956, and centering on corporate laboratories in companies such as Ajinomoto, Kyōwa Hakkō, and Takeda Yakuhin. These technologies built on pre-World War Two knowledge of microbes as methods of national resource management. In the Japanese food, drug, and alcohol industries, for example, prewar

scientists collected molds and yeasts and invented chemical sake and soy sauce, in order to redistribute agricultural and industrial constituents of nutritional and economic value. This paper looks at how that landscape of microbial mediation changed in post-World War Two Japan.

Microbial technologies reflected the inseparable knot of science, technology, capital and the state, in the context of increasing globalization of scientific knowledge and a shift in the primary sites of microbial technology from university to corporate laboratory. Life scientists considered microbes as productive objects like plants, and thought of microbial type culture collections as being like a garden, which might be kept in anything from a small *moyashi* shop to a national scientific laboratory. These were objects that played a role in the politics of communication between sites of knowledge, drawing species boundaries for classification, patents, and biotechnological regulation and conservation.

In exploring the uses of Japanese microbial gardens in the 1950s and 60s, this paper focuses on two questions. The first is to do with ecologies of knowledge and skill. What does the craft continuity suggested in scientists' specific approaches to the toolkit of microbial world imply about the globalization of knowledge; or in other words, what did *nattō* making and drug development have in common? Secondly, this study uses microbial gardens to explore the interplay between environmental management and commercial competition in the midcentury Japanese life sciences.

 P24/5

KIM Tae-Ho

(Hanyang University)

***Phantom Menace of Beriberi:
Introduction and Twists of the
Vitamin Myth in Modern Korea***

This paper illustrates how Koreans in the Twentieth Century had encountered and embraced commercialized vitamin supplement products, and what was unique with the Korean case in colonial and postcolonial contexts. In the same manner with other modern gadgets, vitamin supplements were introduced to Koreans during the Japanese colonial rule (1910-1945). To justify commercialization of the vitamin supplements, Japanese pharmaceutical companies relied on a variety of discourses on benefits of vitamins, potential or apparent. Beriberi, deficiency of Vitamin B1 (thiamine), was often cited as the major reason to consume vitamin pills, along with other deficiencies such as scurvy, rickets, and night blindness. Warnings of various vitamin deficiencies – usually supplemented by scary images of bleeding gums, thin and distorted limbs, and hunchbacks – floated around the public media in colonial Korea since the 1920s, and Korean people gradually accepted the idea of extra spending for vitamin products, to prevent those dreadful deficiency syndrome, or to preemptively ensure their children's healthy growth. The "vitamin myth" found a new home in the Korean Peninsula and survived the economic growth and industrialization.

The public representation of vitamins and their deficiencies, however, was not a mere copy of its Japanese counterpart. Especially, Beriberi was not as prevalent in pre-modern and early modern Korea as in Japan and Southeast Asia, which marred the effect of the most powerful

image to promote vitamin supplements to Koreans. The relevance of the fear-based marketing was lost in translation. As a result, drug advertisement in the late colonial Korea began to emphasize the potential benefit of vitamin supplements, rather than the eminent threats. This case study could enhance our understanding on how biomedical knowledge and practice change when they travel from one culture to another, even between adjacent and seemingly similar ones.

P24/6

JIANG Lijing
(Princeton University)

XIONG Weimin
(Chinese Academy of Sciences)

Crafting Embryology in Maoist China: Embryologists and Mass Cultivation of Silkworms and Fishes, 1950-1963

In the early 1950s, with Communist Party's emphasis on agricultural development, a number of biologists who had pre-1949 focuses on purely scientific questions migrated to investigate applied science. As Trofim Lysenko's Soviet methods of grafting and vernalization prevailed in seed production and plant improvement in the 1950s, embryologists started to study fish and silkworm breeding. This paper examines the research on cultivation of silkworms and fishes done by Zhu Xi 朱洗 (1900-1962) and his students Zhang Guo 张果 (1912-) and Wang Youlan 王幽兰 (1920-), as well as theoretical elaborations of embryology in terms of dialectical materialism offered by Tong Dizhou 童第周 (1902-1979). It shows the ways embryology was represented and crafted as a socialist science in Maoist state. Both Zhu and Tong studied embryology initially under biologists of French embryological

traditions, and had established themselves as virtuosos of manipulating embryos under the microscope. Both coming from work-study student groups in France and Belgium, they were sometimes at odds with American-trained taxonomists and the KMT government before 1949. This paper shows how these embryologists utilized their particular stripes of international trainings and interpretations of science to neutralize state suspicions and to promote their own science locally.

Before 1949, both Zhu and Tong emphasized the malleability and manipulability of the embryo and paid special attention to environmental influence in their investigations. Having studied with Jean Eugène Bataillon (1864-1953) at Montpellier, Zhu investigated the fertilization processes and early developments of silkworms, amphibians, and the goldfish. He also used such knowledge to write a number of science popularization books on sex determination, evolution, and death that cited Kropotkin's anarchist argument of mutual aid. However, his scientific popularization efforts were muted after 1949 under the strong government hostile to anarchism. With state funding, Zhu nevertheless organized teams of researchers investigating the conditions for mass cultivation of the eri-silkworm and for achieving fertilizations of foodstuff fishes in family farms so that farmers could raise them without having to catch young fishes in Yang-tze River. Zhu's methods of raising fishes were greatly promoted during the Great Leap Forward. Tong, on the other hand, often emphasized cellular manipulation of embryos and resulting changes in adult characteristics. In the 1960s, Tong cited his research results to support the theory of change in dialectical materialism and crafted embryology as a particularly socialist science.

P24/7

LUK Yi Lai Christine
(Arizona State University)

***From Biophysics to Radiobiology:
How the Atmospheric Nuclear
Weapon Tests Shaped the Expansion
of Radiobiology Research in the
People's Republic of China***

Biophysics is a relatively new field in life sciences with complex origins and contested definitions. A growing body of scholarship in the history of biology suggests that the rise and fall of particular biophysics programs was often deeply intertwined with national history and the cultural understandings of scientific knowledge of its time. However, not much has been done on the development of biophysics in non-Western historical settings. It is necessary to examine the growth of biophysical science in societies with strikingly different political traditions and historical circumstances in order to obtain comparative lucidity on the extents of the social and political embeddedness of scientific knowledge.

This study investigates the history of the disciplinary formation of biophysics in twentieth-century China. The story of building a scientific discipline in modern China illustrates how a science specialty evolved from an ambiguous and amorphous field into a fully-fledged academic discipline in specific socio-institutional contexts. The focus of the study is on archival sources and historical writings concerning the constitution and definition of biophysics in order to examine the relationship between the particular scientific styles, national priorities, and institutional opportunities in China. I argue that biophysics as a scientific discipline flourished in China only where priorities of science were congruent with political and institutional imperatives.

Initially consisting of cell biologists, the Chinese biophysics community redirected their disciplinary priorities toward rocket science in the late 1950s to accommodate the national interests of the time. Biophysicists who had worked on biological sounding rockets were drawn to the military sector and continued to contribute to human spaceflight in post-Mao China. Besides the rocket-and-space missions which provided the material context for biophysics to expand in the late 1950s and early 1960s, Chinese biophysicists also created research and educational programs surrounding biophysics by exploiting the institutional opportunities afforded by the policy emphasis on science's role to drive modernization.

The case study of biophysics reflects how the politics of Mao's China in the 1950s and 1960s created both opportunities and obstacles that distinctively shaped the disciplinary landscape of life sciences. The way Chinese politics played out in the discipline of biophysics at the University of Science and Technology of China, and more generally in China as a whole, is an example I wish to use in exploring the broader question of how to sufficiently integrate the particular history of East Asian science into the general historiography of science.

P25

**Art, Technology, and Knowledge:
Transmission and Transformation of Ming-Qing Chinese
Printing in a World Context**

Organisers: LIN Hang & WANG Lianming

The increases in China's interactions with far-flung regions of the world and the import of Western ideas and knowledge brought by European missionaries in the late Ming and early Qing gave the Ming-Qing Chinese a stronger sense of sharing a sophisticated and cosmopolitan vision of the world. This was also a time when commercial woodblock printing in China attained unprecedented diversity and popularity and also impacted Chinese cultural life in profound ways. The technological and cultural exchanges between China and Europe and the growing knowledge of the Chinese about the outside world found their expressions in the growing corpus of contemporary Chinese prints. In this panel we attempt a fresh look at a selection of Ming and Qing publications through an examination of motivations and strategies of production, promotion and circulation, and consumption to observe a lively and colorful printing landscape driven by a burgeoning and diversified marketplace for a bewildering variety of woodblock prints. Employing a combined approach of historical, art historical, and technological studies, we start from the imprints themselves to recapture the varieties of the remarkable impact of European printing on their Chinese counterparts. By situating these imprints within the context of their production and circulation in China and beyond, this panel analyzes the ways in which they became technologically and culturally meaningful in the specific historical setting of China in the sixteenth and seventeenth centuries. In our effort to examine the multifaceted printing landscape of the period, this panel starts with a general observation of differences and similarities between Chinese and European printing. Each of the following papers takes on a discrete aspect of the tangible impact of European printing technology and designing on Chinese woodblock printing, beginning from the images of Salvador Mundi and working outward to delineate the circulation of "Western Images" in China Mission and the European impact on eighteenth-century Suzhou prints. excavation of new source materials.

P25/1

LIN Hang

(Centre for the Study of Manuscript
Cultures, University of Hamburg)

***The Late-Ming Printing Boom vis-
à-vis the Gutenberg Revolution:
Rethinking Chinese Printing Through
European Comparisons***

Printing in late-Ming China was distinguished by the flourishing of private

commercial printers, especially those in Jianyang in North Fujian, who adopted technical innovations for woodblock and produced imprints for a mass market by extending the scope of subject-matter and building up far-flung distribution networks. The unprecedented boom of commercial publishing gave rise to a drastic increase in both numbers and varieties of texts published from the early sixteenth century

on and they exerted a socio-cultural impact much greater than ever before—declining prices of printed books enabled a wider access to knowledge; well-edited printed texts established a new standard of scholarly accuracy reference. In many respects this remarkable transformation of printing in China is comparable with the roughly concurrent Gutenberg Revolution in early modern Europe—from enthusiasm for printed books and educational use to fears of subversion of textual quality. However, those and many contextual similarities should not obscure the differences between China and Europe. Printing and book culture in late-Ming China were inevitably shaped by specifically social, political, economic, cultural, and technological conditions, many of them quite different from their European contemporaries. This paper probes into the specific issues that distinguish the unique history of printing and book culture in China in the sixteenth and seventeenth centuries. Particular attention will be given to a comparative investigation of technological specifics of woodblock and moveable-type printing technology, economic considerations, attitudes towards calligraphy, motivations for printing, language conditions, interaction between manuscript and print, as well as reading traditions and cultural attitudes in both China and Western Europe. This examination shall also demonstrate that a comprehensive comparison situated within Chinese and European contexts can help not only assert the independence of the study printing and book culture, but also provide a new way of appreciating their enormous impact on issues such as history of literacy, changes in transmission of knowledge, and literary production.

P25/2

QU Yi

(Nanjing Arts University)

The Images of Salvador Mundi in the Print Culture of 17th Century China

When the *Tianzhu jiangsheng jilüe* (Compendium about the incarnation of the Lord of Heaven) was published in Shanghai in 1887, it became the largest woodcuts-project in the Chinese missionary history, surpassing its two predecessors, the *Tianzhu jiangsheng shengxiang* (Holy Image of the Incarnation of the Lord of Heaven) published in 1637 and the *Tiandi zonggui yizhu xiang* (Image of one Lord, to whom Heaven and Earth belong) published in 1738. Although these works all modelled upon the *Evangelicae historiae* imagines published in Antwerp in 1593 by the Jesuit Jerónimo Nadal, it is worthy to note that they were all printed from engraved woodblocks instead of copper plates, as their European model was. While almost all European models of the publications produced by Jesuit missionary in China were printed from engraved copper plates, printing from woodblocks remained the preferred method among the Jesuits in China throughout the Ming and Qing periods until the late nineteenth century. It remains therefore a question of why woodblocks were chosen to print the Jesuit publications in China, many of them consist of extensive illustrations, but not copper plates, as with their European models. It entails another question as how did this choice of printing technology impacted the artistic expression of the texts and illustrations in these works. This paper provides a case study to encounter these questions by focusing on the woodblocks and their imprints of the three Chinese editions of the illustrated life of Christ produced in 1637, 1738, and 1887,

respectively. Based on a comprehensive comparison of their artistic characteristics and their engraving techniques with their European model of 1593, this paper aims to examine what factors together contributed to their material preference of using woodblocks rather than copper plates. By situating them in the broader context of Chinese printing and the history of the Jesuits in China, I shall depict the general pattern of the circulation of European printings in Ming and Qing China and then delineate how they were adapted to the Chinese circumstances of the day, not only by means of printing technology, but also of artistic and religious representation.

P25/3

WANG Lianming

(Institute for East Asian Art History,
Heidelberg University)

***The Wierix Brothers and the
Circulation of “Western Images” in
Late-Ming Printing***

In early modern Europe, the way of transmission of knowledge was profoundly shaped by the upswing of print industry in many parts of the lower countries, in particular in the city of Antwerp which has developed into a leading printing center in the vast region north of the Alps. Numerous illustrations and images by “old masters” of the humanist tradition, such as Raphael and Dürer, were continuously rediscovered, reinterpreted, and reproduced in copper engraving, replicates in a “portable” format which were in comparison to their originals smaller in size, lighter in weight, and lower in price. Among the most prolific printmakers active in Antwerp were the three Wierix brothers who produced thousands of such copper engravings for the Jesuit missionaries. The majority of their products, which concerned the field of visual representation (both the

devotional and emblematic prints), were introduced, to the Asian countries through the distribution network of the De Prince family, a leading publisher in Antwerp. Many of these engravings arrived at China and became known to late-Ming commercial publishers in printing centers along China’s southeastern coast cities, including Fuzhou, Zhangzhou, and Xiuning. Interestingly, the European images and illustrations were re-categorized, copied, modified, and (dis-) and (re-) assembled by local printers through employment of Chinese woodblock carving techniques and layouts. Placing these copper engravings and their Chinese replicates within the broader context of global flows of artistic design and technological knowledge in the sixteenth and seventeenth centuries, this paper concentrates on specific routes of the circulation of selected “Western images” produced by the Wierix brothers, including portraits, animals, stillben, battle scenes, and sacred images. Particular effort will be made to comparatively examine these works in the late-Ming printing landscape and analyze how they were adapted to the long established Chinese print tradition which was dominated by technical sophistication and aesthetics.

P25/4

WANG Ching-ling

(Rijksmuseum)

***Micro-Meso-Macro: Eighteenth
Century Chinese Suzhou Prints in the
Global Context***

This paper deals with the issue of European impacts on the Chinese print in the late seventeenth to eighteenth century, especially on the woodblock prints produced by a number of printing workshops in Suzhou. By revealing a newly discovered type of Suzhou prints, this paper

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aims to demonstrate the “direct” influence of European engraving technique on Chinese woodblock printing of illustrations. Firstly, I would identify the content (the European iconography) of this newly discovered type of Suzhou prints. Secondly, I would discuss how the workshop craftsmen transformed European engraving techniques into Chinese ways of woodblock print. Last I would address the issues within the framework of the global art and technological context, how this European iconography was transformed into its own Chinese context and the meaning of this newly discovered type of Suzhou print in the fields of not only Chinese and global art history but also the history of science and transfer of knowledge.

P26

Multilingualism and the construction of knowledge in late imperial China

Organiser: Catherine JAMI

In the field of history of science, technology and medicine, “East Asia” is mostly defined as the geographical zone in which classical Chinese has been the main vehicle of elite learning for more than two millennia. Materials in other languages have indeed been taken into account, mainly as part of studies on the circulation of knowledge between East Asia and other parts of the world. This is the case, for example, with the history of astronomy, in which sources in Sanskrit, Arabic and Persian, and European languages are used to account for the “Eastward flow of Western learning” (xixue dongjian 西學東漸) from the Tang dynasty to the end of the Chinese imperial era.

However, recent developments in the historiography of late imperial China suggest that it is time to take into account the full range of languages in which the historical sources produced in East Asia were written. For the Qing dynasty period alone (1644-1911), a wealth of materials in Manchu, Mongol and Tibetan provide evidence of the importance of all the official languages of the Qing Empire for the construction of knowledge, including knowledge relevant to the history of science, technology and medicine understood broadly.

The purpose of this panel is to bring together studies that take such sources into account in order to discuss the issues they bring out, and in particular to assess their role in the construction of knowledge in East Asia during that period. It is also our hope that taking multilingualism into account will contribute to a redrawing of the map of “places of knowledge” (“lieux de savoir”, as understood in Christian Jacob’s project) in late imperial China, and more broadly in East Asia. Several fields of knowledge will be considered, including some that are commonly regarded pertaining to the sciences, such as geography and astronomy, but also fields pertaining more broadly to elite learning, such as the study of languages.

P26/1

Lobsang YONGDAN

(Department of Social Anthropology,
University of Cambridge)

Tycho Brahe in Tibet: A brief history of the Jesuits’ science in Tibet

The European Jesuits’ mission to China between the seventeenth and eighteenth centuries is considered a world-historical event that played an important role in the transmission of cultural knowledge between the East and the West. As one

consequence of the Jesuits’ efforts, the Manchu imperial court reformed its calendar according to the system of Tycho Brahe, mapped the empire and provided new geographical information to the Chinese. It is now well-documented that the Europeans introduced advanced European calendrical mathematics and cosmology, as well as geographical information through translating their scientific works into Chinese and Manchu, both to promote the new knowledge and to spread their religion.

Seemingly unrecognized, however, is the fact that the works of the early Jesuits and other Europeans had a profound effect on the Tibetan knowledge traditions. This came about partially with imperial sponsorship and partially on the Tibetans' own initiative, sometimes even in a low-key and secretive way. By the late eighteenth century, the Jesuit-influenced calendar and European geographical knowledge became one of the dominant knowledge systems in Tibet. This aspect of Qing history, however, is very much neglected both by historians of the Qing and the historians of science. As a matter of fact, there is no work that deals with the impact of European Jesuits and their works on the Tibetans and the Buddhist world in general. This paper is the first attempt to show how Tibetan scholars translated and studied European mathematical and geographical knowledge and its impacts on the Tibetan Buddhist world.

P26/2

Jonathan SCHLESINGER
 (Indiana University Bloomington)
An Otter is an Otter is an Otter

A *suusar*, a *saoxue* 掃雪, a *harsa*: in the 18th century, Qing scholars confirmed that these words referred to a single creature, which may be identified as the animal known in English as “the marten.” The words belong to different languages: Mongolian, Chinese, and Manchu. How, then, does “the marten” become one? How did Qing scholars establish equivalence? In 1683, nearly forty years after the Qing conquest of Beijing, Shen Hongzhao tackled the problem in his *Daqing quanshu* 大清全書, an early Manchu-Chinese dictionary. His motive was entirely practical. Running the Qing empire required translation: China's ruling elite spoke and wrote in Manchu, but

their subjects lived and worked in mostly Chinese or Mongolian. But the marten proved too obscure and inessential, and Shen Hongzhao 沈弘照 ultimately had to pass on the challenge; in his dictionary, he included the Manchu word, *harsa*, but left the Chinese blank.

By the mid-eighteenth century, however, “the marten” had acquired a new, common, and standardized identity, across all three imperial languages, together with a host of other fur-bearing animals: sea otters, river otters, marmots, corsac foxes, beavers and squirrels. Amidst the globalization of the fur trade, booming consumer demand in China, and the consolidation of Qing rule, Qing scholars began to elaborate complex and unprecedented statements on the nature of these creatures: their original provenance, instincts, and material properties; their common Manchu or Mongolian names; and stories about how they were trapped. Frontier experts and shop owners published guides for classifying and appraising new types of animal pelts; shoppers, merchants, and pawnshop brokers became fluent in the new typologies.

This paper draws on government archives, pawnshop records, travel accounts, journals, and other sources to document the unfolding of Qing fur-science. Processes of translation, I argue, were central to its history. To understand and appraise a pelt was to navigate a complex and multilingual world; commercial and imperial networks extended from the Chinese interior to Manchuria and Mongolia and, from the early 18th century, to the wider world of the Pacific: Siberia, Hokkaido, Alaska, and California. Using Manchu, Mongolian, and Chinese sources, the paper reconstructs these networks, explores the language of consumer expertise, and reveals how standards of identification and natural

history became fixed across ethnic lines.

P26/3

Mårten SÖDERBLOM SAARELA
(East Asian Studies Department,
Princeton University)

***Multilingual Lexicography in Beijing,
Seoul, and Edo following the Qing
Conquest of Inner Asia***

China under Qing rule progressively came into more intimate contact with Inner Asia, which led to new languages appearing in writing in the imperial capital of Beijing. The banner armies' push westward in the 18th century brought new groups of people into the Qing polity. Administrators and scholars related the languages of these peoples to the Manchu language of the court by compiling and publishing dictionaries and thesauri in which the number of languages grew in pace with the expansion of the realm. The flow of lexical material to Beijing continued eastward as a trail of dictionaries on the overland and maritime routes to Korea and Japan, where they were integrated into new contexts and mined for information on the maturing continental empire. This paper proposes to explore both ends of this traffic of words: the study of new languages by imperial scholars in the Inner Asian theater and the reception of the resulting dictionaries in Seoul and Edo. By comparing several examples, the paper will investigate what kind of knowledge—and how much of it—the multilingual thesauri were capable of transmitting.

The three foci of the paper are (1) Fūgiyūn 富俊, a Mongol official and gentleman lexicographer who inherited his father's project of an alphabetically organized Manchu-Mongol dictionary and expanded it to include Oirat after serving in the newly conquered western territories. Two sources for Fūgiyūn's work on Oirat

are extant: marginalia in his dictionary from 1792 and a manuscript compilation from 1797. (2) The Korean interpreters and scholars, mainly Hong Myōng-bok 洪命福 and Yi Ūi-bong 李義鳳, who compiled multilingual thesauri on the basis of Chinese originals. Hong's thesaurus of five languages was presented to the throne by his superior Sō Myōng-ŭng 徐命膺 in 1778. Yi Ūi-bong compiled his extensive collection of historical and contemporary languages, which was finished in 1789, partially to facilitate his son's literary studies. (3) The Japanese polymath Takahashi Kageyasu 高橋景保, who annotated and rewrote Qing collections with a clear purpose of learning not just about words, but also about things. Kageyasu studied imported thesauri in conjunction with political chronicles and travel reports. This paper asks: Did the Qing expansion lead to a better knowledge of Inner Asia in Beijing, Korea, and Japan? Or did the increased exposure to new languages fail to go beyond shallow exotism focused on foreign words?

P27

Japanese Imperial Science and its Networks: in Memoriam Nakayama Shigeru. Part 1: Geo-sciences in Imperial Japan

Organisers: TSUKAHARA Togo & SHIN Chang-Geon

This session will discuss the Japanese network of knowledge in its colonial context. For this, there are variety of aspects to discuss Japanese colonial science and its networks.

Late Dr. Shigeru Nakayama (1928-2014) is known as a prominent historian of science in Japan. He was also regarded as a representative figure of the first generation of Japanese historians of science/technology who paid attention to the colonial sciences. In the field of the so-called "Science and Empire" project, Nakayama can be seen as the earliest historian who pointed out Japanese Imperial characteristics in the history of Japanese science and technology. His work, "The birth of the Imperial University" (『帝国大学の誕生』, 1978) was a remarkable achievement to enhance Japanese historians' attention to the relationship between science and empires, also between technology and colonialism, and between knowledge and power, in the Japanese so-called modernization process. This series of three panels will therefore contribute to the memory of Nakayama's achievement in this area of research on Japanese colonial science, technology and medicine.

The purpose of these panels is multifold. This first panel especially focuses on geo-sciences in Imperial Japan. Panel 2 focuses on networks of knowledge in the Japanese colonial empire, while Panel 3 discusses agriculture and food in the context of cultural changes and colonial industrialization.)

P27/1

KIM Boumsoung

(Hiroshima Institute of Technology)

***Recognizing Terra Incognita:
 Japanese Geological Surveys of Hot
 Springs in Colonial Korea***

In this presentation, focusing on geological hot spring surveys conducted by the Japanese Empire on colonized Korean soil, I would like to investigate how the imperial scientific regime transformed the geographic and cultural landscapes in the Peninsula. Enjoying hot springs is a compound of scientific knowledge provided by medical doctors and other

experts, expansion of the railways and tourism, management of local hotels and regional development, et cetera. Thus, being a scientific and/or technological project, the surveys simultaneously represented a socio-cultural movement that was aimed at "modern" nation/empire building. While those surveys could be understood on one level as underground resource investigations, their usefulness should, from the beginning, have been discovered and evaluated by mobilizing both "traditional" and "modern" knowledge. Technological and socio-political momentum, interacting with each other, continued to deploy their investigation practices within the Japanese

“inland” and outside. On the Korean Peninsula, the Office of Geological Survey, under the jurisdiction of the Japanese Government-General of Korea, and since the 1920s in particular, conducted extensive fieldwork and published comprehensive reports. Those booklets and articles were interdisciplinary and intercultural: they sometimes included Chinese poems written by Korean literati in addition to geological, chemical, and physical analyses. More often than not, the “scientific” literature described the accessibility of springs by train and automobile, accommodations, and amenities. In this context, these local scientific reports could also be read as consultation papers. Why were these practices carried out in colonized Korea? What meanings did they have for the Japanese and Korean communities? How did experts, laborers, merchants, and the areas’ inhabitants reciprocally produce knowledge of the hot springs? How did those activities transform the geographic and cultural landscapes of the Korean Peninsula? By paying attention to the hierarchical structures of knowledge production, within and beyond the Empire, I would like to investigate the socio-cultural and techno-scientific terrains within which the quests for hot springs evolved.

P27/2

KATO Shigeo
(Waseda University)

Japanese Imperialism and Geological Surveys of Mineral Resources in China

In this presentation I explore the relationship between Japanese imperialism and geological survey on mineral resources in China after the Russo-Japanese war until the end of the WWII. In 1905 immediately after the Russo-Japanese war, Japanese government launched on comprehensive

scientific investigations in the north east China which included agricultural survey, forestry survey and geological survey on mineral resources. Since then, various organizations such as the the Geological Survey of Japan, the Ministry of Agriculture and Commerce, Japanese army, the South Manchurian Railway Company, the Institute of Scientific Research in “Manchukuo”, the Shanghai Science Institute, Mitsui Mining Company and Mitsubishi Mining Company investigated mineral resources in China. Organizations which made survey on mineral resources spanned all sorts of sectors, that is, the military sector, governmental sector, academic sector and industrial sector. That tells us the importance of elucidating the relationship between Japanese imperialism and geological surveys of mineral resources. This history is studied not only from the perspective of history of science but also from the viewpoint of economic and military history. Japanese geological surveys of mineral resources are situated in the network of Japanese colonies. And it is understood as a part of the global exchange of information and scientific theories.

P27/3

TSUKAHARA Togo
(Kobe University)

Chinese Coastal Meteorology since the 19th Century and Japan’s Wartime Meteorological network

This paper will report how nineteenth century climate data were observed and collected, and how the (British) Imperial legacy surpassed the others and survived, and was finally reorganized by the Japanese wartime meteorology.

In the first part, the reconstruction of the 19th century colonial meteorological network is based on historical records

reported in the English newspapers in the Chinese-Japanese coastal (colonial port) cities. Most of those Chinese coastal cities, known as colonial port towns, were controlled by the British and in most places, English language newspapers were published by the British as the medium for their commercial and public communication. These newspapers were part of the so-called “(British) Imperial media network”, which once has spread all kinds of news, foremost financial and trade data, all over the world, in the British Empire “on which the Sun never set”. Our research project is intended to collect meteorological information and data which appeared in those newspapers in Chinese and Japanese coastal cities, such as Hongkong, Amoy, Shanghai, Nagasaki, Kobe and Yokohama, as well as one of the most important meteorological stations in the East Asia, Manila. The time-span is targeted mainly before 1873, the year of the establishment of CCMR (China Coast Meteorological Register), with special reference to the period around the Opium war 1840-42 and when the five Chinese ports were opened by the Convention of Tientsin in 1884. This time period is comparable to meteorological observation by the Japanese open ports in the 1850s-60s.

In the second part, I will discuss Japanese wartime meteorology, especially focusing on Hongkong. I will describe how Japan extended its meteorological observation to the so-called “Great East Asian Co-Prosperty Sphere”, even though the lack of central agency made it a patch-worked ad-hoc job with constant conflict between Army meteorological cadets and Navy climate teams.

P27/3

SENSUI Hidekazu
 (Kanagawa University)

American Research on Colonial Geographies of Japan: With a Particular Focus on the Naval School of Military Government and Administration, 1942-1945

At the outbreak of the Pacific War, the United States Armed Forces, especially the Navy, had virtually no experience of governing civilians in occupied territories, nor any preparation for it. Among wartime mushrooming special training courses was the Naval School of Military Government and Administration established at Columbia University in 1942. It not only produced some 350 advanced information officers but also promptly gathered regional information, including geographic charts, basic meteorological data, hazardous animals, survey of hygienic conditions and medical facilities, population and economic statistics, the outlines of political institutions, a list of social issues and who's who in local communities, all necessary to plan and execute civil affairs operations. This was made possible by extensively mobilizing academics, but few had studied Japan's Pacific possessions before. Vital information came from Japanese works only. If the knowledge to be made available for use by a liberating forces actually had its source in that used for colonial undertakings, a possible pitfall would be that it could serve yet another “colonial” interest. Drawing on previously unexplored archival materials on a planned military government of Taiwan, this paper provides an account of who the researchers in the Naval School were in terms of academic backgrounds and how they efficiently organized research data despite time pressures, limited available resources

and great linguistic difficulties. A particular focus is given to those Japanese books and articles which the researchers selected to translate to cite or paraphrase in their outputs, in most cases in the form of Civil Affairs Handbooks and Civil Affairs Guides published by Office of the Naval Operations. It is examined whether their descriptions were unconsciously influenced by Japanese negative views of the people and land described, and yet elsewhere whether they deliberately recommended the use of native institutions that Japanese had discovered and exploited to stabilize colonial rule. By this bibliographical comparison, the paper will depict a transfer of the knowledge to rule in the critical historical juncture in East Asia.

P28

Japanese Imperial Science and its Networks: in Memoriam Nakayama Shigeru. Part 2: Knowledge and Human Resources

Organisers: TSUKAHARA Togo & SHIN Chang-Geon

In this panel, we aim to discuss Japanese colonial science and empire, and the formation of particular networks of knowledge.

The presentations will mostly discuss knowledge production in the periphery and human networks that supported and were exploited by the system and institutions of Japanese colonialism.

The first two papers discuss anthropology as Japan's imperial tool. Nanta and Sakano's approaches to the history of anthropology in colonial Japan reveal its political context in terms of its justification of scientific research. Both Nanta and Sakano shed new light on rare and so far unknown research conducted in the periphery of the Japanese empire. Knowledge production will be contextualized in each case that they discuss.

While Nanta and Sakano focus more on knowledge, Jin and Shin will emphasize human aspects. They will also stress the more complicated aspects of Japanese colonial realities - that it was not simply a case of oppressor and subordinate, but sometimes that of collaborator and the local exploitation of human resources. From this view point, Shin will analyse Korean medical students who constituted a colonial elite of Korea, and how they faced their local compatriots. Jin's case study reveals a multi-layered colonial structure, and hierarchical order and competition between the colonies under Japan's control. She investigates histories of Taiwanese medical doctors, the most prominent elite class in Taiwan under Japanese rule, and discusses such complexities in the context of Japanese claim of the pursuit of "co-prosperity".

P28/1

Arnaud NANTA

(CNRS - Maison Franco-Japonaise)

Physical Anthropology in Colonial Korea: Science and the Colonial Order (1924-1940)

Colonial Korea, first a Japanese protectorate in 1905, then annexed to Japan in August 1910, was – as all modern colonies – the place of a social hierarchy based on one's ethnic affiliation. If, following the annexation in 1910, Koreans became de facto Japanese nationals, they were nonetheless differentiated from Japanese proper through various legal means such

as the lack of *koseki* – the family register proper to Japan. Nevertheless, Japanese colonial domination was conducted under the banner of assimilation. In 1910, at the time of annexation, the Korean people were considered to be of the same genealogy as the Japanese (*nissen dōsō ron*): the discourse asserting such an identity of "race" – a true negation of history – would be supported in order to legitimize foreign domination. The idea that the Japanese nation could embrace two (or more) peoples would then constitute a well-accepted idea between 1910 and 1940.

Science would also be used to justify

discourses of modern imperialism via physical anthropology which would be used to demonstrate that Koreans and Japanese were of the same “race”. First constituted within the Imperial University of Tokyo with the establishment of the Anthropological Society (1884), physical anthropology would grow quickly to become a well-respected field of anthropology and medicine in Japan, in the same way that it emerged in France and Germany at that time. In the nine imperial universities which existed in metropolitan Japan and in the colonial empire at that time, only the Faculty of Medicine of the Imperial University of Keijō (the Japanese name for Seoul), which was established in 1924, were there two professorships in physical anthropology. Doctors UEDA Tsunekichi and IMAMURA Yutaka conducted studies of the Korean population from the mid 1920s till the beginning of the Asia-Pacific War (1937-1945). They made comparative studies with other populations from north-east and south-east Asia, and produced scientific reports to conclude that Japanese and Koreans were of the same “race”, thereby proving that the annexation was legitimate.

We will discuss the history of the Imperial University of Keijō and its Faculty of Medicine, then analyze the work of UEDA and IMAMURA in physical anthropology in the 1920s and 1930s, which constitute a model example of links between science and politics. In our conclusion, we will discuss about their continuing legacy that can be seen in Japanese debates in paleoanthropology.

P28/2

SAKANO Toru

(Nihon University)

Investigating “the Islanders”: On Fieldwork in Micronesia before World War II

This presentation aims to consider fieldwork conducted by Japanese anthropologists and archaeologists in Micronesia (*Nanyō*; the South Sea Islands) before WWII and its political context.

The activities of the Japanese scholars in this region began soon after the occupation by the Japanese navy in 1914 during WWI. The extensive investigation started when the South Pacific Mandate (*Nanyō-chō*) was founded in Koror Island and many Japanese began to immigrate to Micronesia. Since then Japanese fieldworkers began to investigate the animals (especially coral leaf), plants, minerals, and natives etc. in earnest in the area. Around 1940, the Japanese government shifted toward the ‘southward’ policy (*Nanshin*). Japanese scholars who specialized in Micronesia hoped that the increased attention to the South would contribute to the promotion of Micronesian Studies. In this presentation, I would like to examine how the policy of Japanese governments influenced the fieldwork of Japanese anthropologists and archaeologists.

Concretely, I pay attention to three famous fieldworkers who investigated in Micronesia from the 1910s to the 1940s. (1) HASEBE Kotondo (1882-1969) was a natural anthropologist. His first visit to Micronesia was as a member of the research group of Educational Department in 1914. He began the project of ‘racial relation of the South Sea Islander’ in 1927 and measured the bodies of over 1700 Micronesian. We will analyze HASEBE’s study in constitutional anthropology

Japanese Imperial Science and its Networks: in Memoriam Nakayama Shigeru.
 Part 2: Knowledge and Human Resources

comparing Micronesian and Japanese. (2) YAHATA Ichirō (1902-1987), a prehistoric archaeologist, investigated the ancient ruins in Micronesia (Nan Madol in the island of Pohnpei etc.) from 1920s to 1930s and developed up a new field of Pacific Ocean Archaeology in Japan. We will consider how YAHATA operated the research of the ruins and what he thought of ancient culture of Micronesia. (3) HIGIKATA Hisakatsu (1900-1977), an amateur ethnologist and engraver, immigrated to Micronesia in 1929 and investigated the social structure of Satawal (a remote little island of Yap, whose population was only about 280) from 1931 to 1938. His intensive ethnographical research in Satawal had an impact to many cultural anthropologists in Japan. We consider how HIGIKATA observed the social change of Micronesia under the Japanese rule.

P28/3

JIN Jungwon
 (Academia Sinica)

***Seizing Opportunities in the Empire:
 Taiwanese Medical Students in
 Colonial Korea***

Imperialism loomed over the entire region of East Asia in the first half of the 20th century, with Japan being the major power in the Asia Pacific. Soaking up all the networks of its colonies, Imperial Japan established its predominant status and imposed stringent regulations on the interflow among its colonies in the region, with Taiwan and Korea being no exception. In other words, the strict colonial rule of the Japanese severed the mutual interaction and the free population flow between Taiwan and Korea. The seemingly active interchange of people within the Japanese empire was mainly “the flow of administrators under colonial bureaucracy”. There was no direct transportation route between Taiwan and

Korea. Apart from the few openings for overseas studies or industrial colonization offered by the imperial empire, there was no interflow of people among the colonies. Hence, one could hardly find Taiwanese in Colonial Korea or Koreans in Colonial Taiwan; and this situation persisted till the end of Japanese colonial rule.

Nevertheless, beginning from the 1930s, a small number of Taiwanese were found pursuing medical studies at the Keijo Medical College, Heijo Medical College, Daikyu Medical College and Keijo Imperial University in Colonial Korea. Though these Taiwanese medical students were few, never more than a hundred, they were indeed rare and exceptional cases in the medical education system under the Japanese Colonial Government of Korea. These Taiwanese medical students were also the only group who had first-hand experience of life in Colonial Korea in that era.

This research aims to explore why and how these Taiwanese chose to pursue medical studies in Colonial Korea. Depicting their life and experience in this foreign land also shed light on the encounter of Taiwanese in another East Asian colony during that time. In addition, by examining how these Taiwanese medical students got involved with Korea in the postwar era, we can catch a glimpse of how imperialism and colonialism penetrated and assumed control over and beyond the colonial era.

P28/4

SHIN Chang-Geon
 (Tokyo University of Science)

***On the Frontiers of Japanese Imperial
 Medicine: The Return of Korean
 Medical Students to Korea***

In this presentation, I would like to discuss about the formation of colonial modernity in Korea under Japanese

rule from the perspective of the history of medicine. Many recent studies on modern history of Korea have emphasized the diffusion of modernity, specially the progress of medicalization in the colonial context. But what exactly does it mean? Investigating this problem, I will focus on clinical medicine on the frontiers of Japanese imperial medicine. There were a few Korean physicians who went to an agricultural town, examined the inhabitants, and carried out a social hygiene study in the mid-1930s.

At the heart of these medical endeavors stood the Investigative Committee on Social Hygiene in Rural Korea, established in 1936. The Investigative Committee consisted of twelve Korean and Japanese medical students from Tokyo Imperial University, the Tokyo Women's College of Medicine, and the Tokyo Women's College of Dentistry. The leader of this Committee was Choe Ung-sok (崔應錫), who planned fieldwork and wrote the closeout report. Korean medical students studied medicine in Tokyo Imperial University, and tried to utilize the knowledge in the agricultural town. They examined Korean residents by using Korean, and female medical students asked female inhabitants about their symptoms.

When these Korean medical students returned to Korea and examined Korean people, they discovered some facts, and at the same time missed other facts. My presentation will reveal the reason why Korean physicians on the frontiers of Japanese imperial medicine could not sometimes detect certain diseases in rural Korea. I would like to discuss about Korean people's physical culture which was not included in modern medicine.

*Japanese Imperial Science and its Networks: in Memoriam Nakayama Shigeru.
Part 3: Agriculture, Food and Industrialization in the Japanese Empire*

P29

**Japanese Imperial Science and its Networks: in Memoriam
Nakayama Shigeru. Part 3: Agriculture, Food and
Industrialization in the Japanese Empire**

Organisers: TSUKAHARA Togo & SHIN Chang-Geon

This is the third part of a research presentation organized by a Science and Empire research group.

In this panel, we aim to discuss Japanese colonial Science and Empire, and its formation of a particular network of knowledge.

In this session, agriculture and food in colonial Japan will be in focus, and this topic will also be analyzed from the perspective of industrialization of mainland Japan and its colonial empire.

Aaron Moore discusses this issue from the perspective of techno-bureacracy of Japan's war-time era, and gives a broad context of the other three presentations, which are more specifically concerning food stuffs, such as milk and yogurt, traditional conservation foods of fermented vegetables and sugar. As Moore investigated in his "Constructing East Asia: Technology, Ideology, and Empire in Japan's wartime Era, 1930-1945", it is argued that Japanese colonial science is embedded in the context of technology-based-ideology.

This series of panel 1-3 organized by Tsukahara and Shin is supported by JSPS Kakenhi Grant Number 24240108 [Grants-in-Aid for Scientific Research (A), "Historical Studies on Japanese Imperial Sciences and Its Network", represented by Prof. Shin Changeon, Tokyo University of Science. Our research group related to this JSPS project is working on Japanese Imperial Sciences, and sheds new light on its "Networking" in and around the former Japanese Empire, so-called "East Asian Co-Prosperity Sphere". In this research group, through monographic research by each 14 specialist members into disciplines, like imperial climatology/meteorology, interface of local and colonial medicine in colonies, Japanese overseas anthropology/ethnography, colonial biology and agriculture, mathematics and physics in Manchuria, seismology and geo-sciences of extended Japan, we carry on comparative research with other colonial powers.

P29/1

NOSAKA Shiori
(EHES)

Industrialized Health: Dairy Products of Meiji and Taishō Japan

The maintenance and the promotion of health are fundamental conditions of human life. In order to keep a good condition of one's body, it is considered necessary to take something good for health, whose effects are discovered and proved by "science." However recent science studies show that the scientific facts are neither totally objective nor unchangeable, and that they depend on certain situations or activities of humans.

From such perspective, this paper deals with the historical process by which the food industries of Meiji and Taishō Japan managed to produce "modern" dairy products, through the importation of Western knowledge and instruments. After the return of political power to the Emperor in 1867, the new Meiji government authorities promoted dairy industries in order to advance the civilization in Japan, called *Bunmei kaika* on one side and to improve the bodies of people on the other. In this sense, the health and dairy foods were always related, by Japanese authorities, to catch up with the level of the Western countries and their culture. When people were reluctant to drink raw milk and then dairy industries needed to the innovation, the position of the health and dairy foods changed epistemologically. After a temporal boom in 1914 of "modern" yogurt, of which E. Metchnikoff, a Russian biologist, had proved the effect of lactic acid bacteria against the aging process, K. Mishima, a Japanese business person, introduced Calpis in 1919. It was the first invention of a lactic acid drink in Japan and this drink is still popular. This new product

gained popularity not only for the sake of health, but also beauty and taste. Dairy products were installed into the culture of the urban city as a commodity, while health became a precondition of modern culture, which reflected the Western culture.

Although this paper is historically oriented, it also has an implication for understanding of the current situation such as the nutritional supplement foods boom, because health is embodied when a certain intention "to improve" is mobilized. This study illustrates that the pursuit of health, a reflection of norms of the structure of politics, economy and sciences, appears clearly as a product.

P29/2

Aaron MOORE
(Arizona State University)

Constructing the Continent: Japanese Technologies of Comprehensive Urban and Regional Planning in China, 1937-1945

From the early twentieth century, Japanese urban planners designed cities throughout its growing empire as part of an overall ideology of modernizing East Asia. This paper examines the cases of urban planning in Dadong in Manchukuo and Beijing in North China (1937-1945) as examples of Japan's wartime ideology of "constructing East Asia" (*Tōa kensetsu*). It focuses on how urban planning technologies operated as a system of power and mobilization for Japan's imperial endeavor. Japanese urban planners asserted that they were "systematizing" and "rationalizing" China's "chaotic" cities through the introduction of the latest techniques of urban planning. However, I will demonstrate how these projects did not simply spring from the rational blueprints of Japanese planners, but also emerged out of the clash of different visions

Japanese Imperial Science and its Networks: in Memoriam Nakayama Shigeru.
Part 3: Agriculture, Food and Industrialization in the Japanese Empire

and interests, the contingencies of war, and the particularities of each area. Lastly, I will discuss how colonial urban planning was beginning to shift towards a conception of regional and “national land planning” (*kokudo keikaku*)—two conceptions that gained particular prominence in post-war Japan.

P29/3

FUJIHARA Tatsushi
(Kyoto University)

Pickles and Science: Modern History of a Preserved Food in Japan

This presentation aims at describing the modern history of Japanese pickles (*tsukemono* 漬物) from the perspective of their style of production and consumption. *Tsukemono* is one of the typical fermented foods in Japan, including *umeboshi* 梅干, *takuan* 沢庵, *fukujinzuke* 福神漬 and the like. Japanese people used to pickle vegetables themselves at home, like German *sauerkraut*. However, both their production and consumption responded to changing times. Not only urbanisation, but also armed forces mess halls and factory cookhouses for employees at all kinds of enterprises brought about the mass production of *tsukemono*.

Moreover, industrialising *tsukemono* production encouraged to develop new vegetable varieties, especially of *daikon* (大根, Japanese white radish), to standardise their forms. Producers would grow straight vegetables so that *tsukemono* factories could fill their barrels with as many *daikon* as possible.

Besides the plant-breeding technology, dietetics also played an important role in the mass consumption of *tsukemono*. For example, in a specialised cookbook called *Munitions and Home: Research into tsukemono* (1938), the author

stated that *tsukemono* contains plenty of nutritional elements, such as iron, vitamin, calcium, salt, potash and more, and said that according to his scientific analysis, *tsukemono* was useful for reinforcing physiological defence in daily life in wartime.

I will discuss the relationship between modern science and commercialisation of *tsukemono* production from the points of view outlined above.

P29/4

TSURU Shuntaro
(Kyoto University)

Industrialization of Sugarcane Production in Japanese-Ruled Taiwan

The purpose of this presentation is to analyze the process of industrialization of sugarcane cultivation in Japanese-ruled Taiwan, where exploitation of Taiwanese people by Japanese imperialism was thought to be the most intensive.

With the sugar industry in Taiwan connected to the world sugar market and involved in the harsh price competition of the 1900s and 1910s, a great deal of agricultural technologies and knowledge for improving sugarcane production were introduced to Taiwan not only from Japan, but also from Europe and other sugar colonies (such as Java, Hawaii, and Cuba) in order to hold down production costs. Scientists and technologists working in sugar manufacturing companies and the Japanese colonial government, who played an important role in this process of introduction by reading international journals and observing other sugar-producing countries. This process was mostly neglected in previous scholarship in spite of its importance to the sugarcane industry, because preceding studies

focused to a greater extent on compulsory planting of sugarcane by Taiwanese under the Japanese government and sugar companies.

Introducing agricultural technologies for the improvement of the sugar content (*Budomari* 歩留) of sugarcane in the field were particularly important. Although they contributed to a remarkable improvement of productivity in the 1920s and helped the sugar-manufacturing industry overcome the worldwide recession of the sugar market, what should not be missed is their huge influence on the lives of Taiwanese sugarcane cultivators. The introduction of these technologies sometimes resulted in riots by Taiwanese farmers and also changed social relationships in Taiwanese villages.

I will discuss the Taiwanese experience of modernization and the problems of Japanese imperialism from the viewpoint of the worldwide development of the market economy and technology transfers outlined above.

P30

Science as Discourse and Practice in 19th-20th Century Korea

Organiser: Dafna ZUR

This panel takes a critical approach to encounters with science as a normative discourse across Korea's nineteenth and twentieth centuries. These encounters are considered through a range of source texts: an encyclopedic guide to women's daily life from the early nineteenth century; fiction and literary criticism written during the colonial period (1910-45) and under Japanese imperialism; children's magazines of North and South Korea in the 1950-60s; science education texts and curricula from the immediate post-1945 liberation period; and popular magazines from the 1960s through the late 1970s. Each paper focuses on science as a discourse and as a practice—as a mode of understanding and representing the world but also of ordering aspects of that local reality—and the panel members' close readings of such disparate texts serves to both historicize and complicate the notion of reception and integration of normative systems of science, technology and medicine in the region. The sources span two centuries and the geographical/cultural spheres of China-Japan-Korea, cut across literary, cultural, and historical disciplines, and raise questions of the complicity of science as a mode of thought and expression with dominant political regimes. By doing so, they provide insight into the discursive link between science, the rise of modernity and colonialism, the Cold War state, and neoliberal developmentalism, opening each period up to comparison within the history of science globally. While exposing the normative claims made by scientific discourse in a variety of often cross-cultural historical contexts, the papers also demonstrate how local constituents speaking in both private and public voices—men and women, government organizations and professionals, essayists and poets—contributed to and challenged the claims of science, technology, and medicine, and redefined them according to their own political and social needs.

P30/1

Chris HANSCOM
 (UCLA)

Scientific Thinking and the Literary Text in Colonial Korea

This paper considers the reception of scientific thinking in non-Western (and specifically imperial) contexts through the lens of literary critical and intellectual discourse, tracing the advent and critique of empiricism in colonial Korea through the debates around the "fact" in the later colonial period. One way the impact of

the natural or exact sciences on modern literature and literary history has been thought of is through its normalizing power—as a particular and influential mode of apprehending, describing, and explaining the material world. In East Asia as well, science proved an important discourse linked to the rise of modernity and colonialism in the nineteenth and twentieth centuries. At the same time, the absolute authority of science as an arbiter of knowledge was challenged, particularly in relation to the complicity between discourses of science and empire

in structuring the colonial relation. From the perspective of a critical literary methodology, what is crucial is not to repudiate scientific claims but to challenge science at the level of its language, its claim to an objective and univocal mode of address beyond interpretation or ideology. Moving from the earliest example of naturalist fiction in colonial Korea (which understands science as a tool of social analysis), through the critique of a determinate objectivity associated with empiricism (which insists on the distinction between technology and art) and on to the question of the “fact” as susceptible to its particular political and social context (where, in dialectical tension with the nomological truth of science, the role of literature is that of expressing the truth of a particular period or people), the paper questions the relationship between scientific and literary discourse in colonial Korea, draws connections between scientific discourse and political power more broadly, and brings to light challenges—in the context of political domination—in the positivity of science as an ideology of progress and as a privileged means of representing the actual.

P30/2

Dafna ZUR

(Stanford University)

Science and Fiction in North and South Korea

This paper interrogates the role that science magazines played in the formation of ideological identities and the modern subject in postwar North and South Korea. Much in the spirit of the technical and scientific magazines circulating on both sides of the Iron Curtain, North and South Korean writers celebrated the advancements of science and technology

and accorded to these developments great optimism. Even while the Korean people were struggling to recover from the devastation of the Korean War and from the destruction that had been wreaked by the sophisticated weapons developed in the Second World War, both sides delighted in the achievements that atomic energy and long-range missiles promised to deliver: boundless sources of energy for industrial development and the conquest of outer space. All these symbolized the victory of man over nature, and signaled that a greater liberation was at hand—as long as the natural world was understood and controlled.

In this paper, I focus on the emergence of science in children’s magazines, where scientific knowledge figured as more than just numbers, formulas, and hard data. In the same magazines, writers of poetry and fiction were grappling with the question of how to apply the lessons taught by science to creative works. Their response was to insist on a mode of thought and language derived from science, namely: the execution of scientific (i.e. objective and rational) observation, and the insistence that fiction describe only scientifically proven phenomena. This theoretical stance was put to the test in the science fiction genre, which demanded both scientific soundness and a flight of imagination: writers of science fiction were challenged to make sound observations of what has not yet occurred. In my paper, I investigate the degree to which writers navigated these expectations on the level of content and language. I demonstrate that alongside predictable ideological differences, there are similarities between the argument for “scientific” creative expression on both sides of the 38th parallel that can be traced to the shared tradition of realism (and its belief in man’s ability to ascertain

truth with his or her own eyes), as well as to the subscription to science's promise of progress that would lead to social and political liberation.

P30/3

John DIMOIA

(National University of Singapore)

***Mobilizing and Redefining "Health":
 Popular Health Publications during
 the ROK Anti-Parasite Campaigns,
 1969-late 1970s***

With the formation of the KAPE (Korean Association for Parasite Eradication / *Han'guk kisaengch'ung pangmyōl hyōphoe*, later changing its name to KAHP, or Korean Association for Health Promotion) in 1964, the emerging enthusiasm for the "cleansing" of the nation could begin anew, with national Anti-Parasite campaigns kicking off later in the decade. These efforts, although typically associated with the Park Chung Hee period, carried with them numerous echoes of popular campaigns from the Syngman Rhee period (e.g., the eradication of tuberculosis), and possibly, even earlier, referring back to the colonial period. Moreover, they possess a comparative dimension as well, with Ruth Rogaski having documented the ideological enthusiasm for this version of "hygienic modernity" within a newly configured China, not to mention other parts of East Asia.

This paper looks specifically at the two of the most widely available publications, *Health (Kōngang)* and *Health News (Kōngang sosik)*, both distributed under the auspices of the KAPE / KAHP as part of the national effort, and targeting a Korean public undergoing numerous structural transformations. In particular, this period is marked by the rural-to-urban transition that witnessed the move from tightly compact agrarian communities

to the dense urban spaces that make up much of South Korea today, and KAPE/KAHP sought to reach out and inform this public in a number of ways. Equally, the organization sought to shape this demographic by providing not just details of the campaign and its specifics, but rather by offering a much broader take on the appropriate way to engage modern living, asking for the creation of a new type of citizen along with the move. In this respect, its vision of modernity contains numerous parallels with earlier histories, whether for the East Asian region in general, or more specifically, for the colonial relationship with Japan.

P30/4

Sonja M. KIM

(Binghamton University)

***Science in the Home? Teaching Girls
 Science in Korea, 1900-1950***

When the missionary institution Ewha College for Women in Korea started its Home Economics Department in 1929, one of its faculty, Kim Hamna, explained that the home as the "nucleus of society, its center and its heart" was the site where "morality and modesty are taught," a place of refuge and sanctuary. The program drew heavily from the curricula of Home Economics programs in the agricultural colleges of the United States of the early twentieth century. Its purpose was to conserve the home so that it remained, as Kim quoted the famed educator Ellen Richards, "the cradle of the child, the resting place of old age, the retreat in which the worker is to be refreshed spiritually and physically." The home was, in short, to be the "nursery of all virtues."

What such curricula entailed, however, were classes not in morality but highly technical coursework in childcare,

nutrition, textiles, architecture, household physics and chemistry, hygiene and sanitation, and home nursing. Emerging in a colonial context (under Japanese rule) and shaped by American models of science and female education, Ewha set out to provide a science education for girls unprecedented at this time. As Kim continued, "It is our purpose and our right to call upon anything in any civilization which can be scientifically used toward a solution of our problem in Korea." This paper examines this early beginning of Home Economics using Ewha as a case study and its transitions in the immediate post-liberation (1945) period to explore the place, meanings, and gendered application of science in colonial and post-colonial Korea. On one hand, it suggests the scientification of the domestic and medicalization of childrearing prevalent in other parts of the world at this time. On the other hand, it highlights the marginal yet central positioning of women in the sciences under colonial, mission, and US military government contexts.

P30/5

Janet LEE
(Keimyung University)

***Critical Knowledge of Everyday Life:
Gender and the Politics of Care in
19th century Korea***

The interests of traditional Korean medicine (or Eastern medicine) are often drawn to dubious or romanticizing assumptions about superstition and mystical practices. In addition, our perceptions and unconscious beliefs about gender are more likely to associate medicine and science with men than with women. This paper attempts to challenge such extremes of an Orientalist view and gender bias, aiming at a mature and critical appreciation for

practical knowledge of Chosŏn Korea, by exploring *Kyuhap chŏngsŏ* (Encyclopedia for women's daily life), written by Madam Yi (1759-1824). Her encyclopedic work was written in vernacular Korean, and its discussion ranges from cooking, clothing, sewing and textile, gardening, raising livestock, and household management. The variety of topics unravels a variety of major concerns and matters of the inner quarters, but Madam Yi also deals with useful tips and knowledge concerning medical care, centering on pregnancy, childbirth, and first-aid treatment, as an important part of women's tasks. In the process of writing and recording, her writing reveals the internal logic of the knowledge system of articulating her own observation and practice and demonstrates the ground realities of the domestic life. Among the five chapters, this paper focuses on the medical chapter, which supports women and their roles in medical care and provides a venue for a realistic assessment in women's appropriation of domestic authority. In sum, this paper introduces the ambiguity and complexity in defining "science" and "medicine" in local cultures, while prompting a new understanding of gender policy in the domestic sphere.

P31

Knowledge on the Move: Transmission of Medical Knowledge in Pre-modern China

Organiser: *LIU Yan*

Recent scholarship on the history of science, technology and medicine in East Asia has increasingly paid attention to local particularities of knowledge on the one hand, and its resonance in the global context on the other. Most of these studies, however, have focused on the late-imperial or modern period, leaving the pre-modern era unexplored. This panel attempts to fill this significant lacuna by offering five case studies on the transmission of medical knowledge in China from the Six Dynasties to the Song. The panelists examine a wide array of sources during the period. Some are conventional medical sources including texts on nosology, pharmacology, and recipes; others are Daoist compilation of spirit revelations, Buddhist translations, and medical writings of the literati. A close reading of these sources, all of which had strong local features, reveals diverse medical ideas and practices that manifested the concerns and aspirations of medieval Chinese actors. Furthermore, all papers try to situate various forms of knowledge in motion and in relation, rather than taking it as fixed, transcendent production. These papers not just trace the transmission and transformation of knowledge in geographical space – from central to local or visa versa, from India to China, but also explore its dynamic crossing in social and religious spheres. As a result, studying transmission allows the panelists to interrogate the relations between the state and the local, between the elites and the lay community, and between medicine and religion. All in all, by examining knowledge transmission in pre-modern China, this panel intends to achieve three goals. First, it presents the plurality of medical knowledge, deeply situated in local traditions. Second, it shows the embeddedness of medical knowledge in the religious, social, political and intellectual life of the time. Finally, it highlights the fluid flow and transformation of medical knowledge across geographical and social domains based on practical needs and individual ambitions.

P31/1

Dolly YANG

(University College London)

From Local to Central: The Formalisation of Therapeutic Exercises in the Medical Practice of Sui (581 – 618 CE) China

This paper investigates the development of therapeutic exercises, known as *daoyin* (導引 guiding and pulling), during the Sui dynasty (581 – 618 C.E.). It examines how therapeutic exercises became an important

component of state-sponsored medicine during the Sui period and why they were included in *Zhubing yuanhou lun* 諸病源候論 (Treaties on the Origins and Systems of all Diseases), the earliest known nosological text, completed in 610 C.E.

This paper gives an overview of the development of therapeutic exercises from its earliest documentation during the Warring States period (475 – 221 B.C.E.) to its formal recognition by the Sui government in the 7th century C.E. It also gives an

overview of how medical knowledge was transmitted prior to the establishment of state medicine in the Sui period. Central to this paper is an investigation into the contemporary political, cultural and religious circumstances which influenced the Sui government's decision to adopt these therapeutic exercises, popular among various religious sects, into an official medical system. The paper demonstrates that by the Sui period, different groups of people within society were actively engaged in the development and transmission of therapeutic exercises. These groups included the aristocratic elite, Daoist practitioners, Buddhist monks and medical officials. The paper argues that inclusion of therapeutic exercises within the medical educational curriculum and in the state-sponsored medical text, *Zhubing yuanhou lun*, presents firm evidence of state endorsement, enabling the development of *daoyin* to reach its climax.

P31/2

LIU Yan
(Harvard University)

From Central to Local: Transmission and Transformation of Drug Knowledge in Tang China

Tang China (618-907) witnessed the fast development of medical knowledge and expansion of pharmacological substances that had far-reaching influence in Chinese medical history. Several important medical texts were produced during this period including the first state-sponsored pharmacopeia Newly Revised Materia Medica (Xinxu bencao 新修本草, 659) and two recipe collections compiled by the renowned physician Sun Simiao (?-682). These works played a key role in systematizing drug knowledge and guiding therapeutic practice. How did

medical knowledge, once produced at the imperial center, move in various social and geographical domains? To address this question, I probe a collection of medical manuscripts preserved in Dunhuang that have strong local features. Substantially different from transmitted texts in both form and content, these manuscripts offer insight into the transformation of medical knowledge in local practice. I observe that medical practice in Dunhuang often faced the challenge of limited medical resources due to either the geographical distance of certain herbs or the tight control of them by the central government. To tackle the problem, local medicine adopted a variety of strategies, which my study of Dunhuang manuscripts reveals. First, a small manuscript of the Newly Revised Materia Medica (P. 3822) shows a considerable modification of the original text, which prioritizes indigenous herbs, especially those with diverse medical functions. Second, single-drug remedies were abundant in Dunhuang manuscripts. These recipes, with simple ingredients and easy preparation, were often the choice for the poor. Third, in the case of lacking an essential ingredient, drug substitution became a reasonable strategy to make a recipe work. I offer an example of substituting *danglu* 當陸 (phytolacca) for *yege* 冶葛 (gelsemium) in P. 3731 to demonstrate this point. All in all, by examining Dunhuang medical manuscripts and comparing them with transmitted texts, I argue that the rise of authoritative, standardized medical knowledge in early Tang went hand in hand with its fluid transformation upon transmission in society, contingent upon local conditions and practical needs.

P31/3

CHEN Yun-Ju

(University of Oxford)

Song (960-1279) Accounts of Treating South-Endemic Disorders: Changing Readership and Transmission of Medical Knowledge

Historians have observed that Song China (960-1279) witnessed a seminal change in transmission of medical knowledge; that is, a growing number of literati either reading or composing medical writings. Following this observation, within this paper, I conduct further research on how this change specifically informed another change of transmission of medical knowledge in Song China. To approach this issue, I investigate an example of extant Song accounts about the occurrence and treatments of disorders which were considered endemic in most parts of the present-day Guangdong and Guangxi provinces (usually named Lingnan 嶺南 in Song times). The Song accounts analysed throughout this paper encompass medical literature, collected works of individual authors (*bieji* 別集), and miscellaneous notes (*biji* 筆記). As these accounts, all discuss medicine about perceived Lingnan-endemic disorders but are not limited to medical literature as a genre, I call them “medical writings” instead throughout this paper. The analysis in this paper shows how the Song literati—both as readers and as composers of medical writings—circulated their writings to contemporary peers and discussed, if not debated, their different opinions about medicine for treating perceived Lingnan-endemic disorders. More importantly, in this paper, I argue that: those Song literati, in aspiring to convince their contemporary literate readers, cultivated a writing style, in which they not only expounded their opinions,

but also attributed claims of their medical knowledge to their hands-on experience. Through this argument, I indicate that the impact of a growing number of literati as readers and composers of medical writings was more widespread than historians have observed to date.

P31/4

Pierce SALGUERO

(Pennsylvania State University, Abington)

Are Buddhist Scriptures the “Missing Link” in the Global History of Medicine?

It is perhaps well known that a great deal of material concerning healing can be found interspersed in Chinese Buddhist scriptures composed and translated between about 150 and 1100 CE. As might be expected for a source base that was written over such a long timeframe as well as geographic range, this material does not present a unified medical perspective. Chinese Buddhist sources tend to diverge from one another—often dramatically—in explaining even the most basic medical principles, and also to depart from the mainstream ideas of classical Indian and Chinese medicine. My paper tries to make sense of divergences in the Chinese translations of Buddhist medicine, and to determine the value of medieval Chinese Buddhist texts for the study of the global history of medicine. I will present preliminary findings from an ongoing study mapping and comparing the ideas presented in Buddhist scriptures against secular medical treatises from India, China, Central Asia, and Southeast Asia.

My paper begins with a brief overview of the Chinese source base, focusing on discrepancies in the translation of key Buddhist medical concepts. I then discuss four patterns that emerge from the study

of these discrepancies. I suggest that (1) medical doctrines underwent a process of adaptation in order to fit with indigenous Chinese expectations; (2) our source texts conflate different Indian medical concepts; (3) they possibly are preserving pre-Ayurvedic medical ideas from early Indian medical history; and (4) they may be reflective of regional divergences or local traditions from around Asia. In conclusion, I argue that Chinese Buddhist texts about medicine are likely to give us windows onto unique formulations of Indian medical doctrines and networks of circulation we otherwise do not have access to in the standard Indian medical literature, and thus that they are of utmost importance for the history of medicine both in the local and global contexts.

P32

Cross-currents and intersections: EAHSTM's place and roles in the scholarly field today

Organisers: Francesca BRAY & MEI Jianjun

When Joseph Needham published the first volume of *Science and Civilisation in China* sixty years ago, the history of non-Western sciences was generally viewed as an abstruse field without broader relevance. One of Needham's greatest achievements, of which we are all beneficiaries, was to establish EAHSTM as not simply a legitimate but also a significant field of research, bringing new questions and perspectives to the fields of history, philosophy and sociology of science, world history and comparative history, as well as to the history of East Asia. Internally sustained and developed through professional networks like ICHSEA, and legitimised more broadly within the academy by recognition of the usefulness of its contributions and challenges to other fields, EAHSTM has flourished and diversified. Today EAHSTM scholars are among the key players shaping emergent cross-disciplinary fields such as environmental history, global history and the history of knowledge. These exchanges and collaborations, however, are not always smooth or unproblematic. Some forms or expressions of EAHSTM scholarship travel easily, others are "sticky" and resist transplantation; meanwhile, working at the intersections of disciplines inevitably produces risks of mis-communication or distortion.

This panel explores how the terms, questions and methods of EAHSTM have evolved in recent years through its engagement with other fields and disciplines. What have the benefits been, and have there been costs?

In order to generate maximum debate and exchange, the panel is designed as a 2-hour round-table. Four short (10 to 15-minute) presentations on cross-disciplinary engagements of EAHSTM today will be followed by brief remarks from the discussant, leaving maximum time for general discussion among the whole attendance.

P32/1

Catherine JAMI
 (UMR China, Korea, Japan,
 CNRS & EHESS)

EAHSTM and the historiography of "Science and Empires"

"Science and Empires" has one ambition in common with Joseph Needham's *Science and civilisation in China*: both intend to contribute to redressing the Eurocentric bias that has dominated twentieth-century

history of science. When "Science and Empire" studies took off, about thirty-five years ago, they focused on the 19th and 20th centuries and on Europe-based colonial empires. They thus provided an alternative to Joseph Needham's hydrographical metaphor, which posited that modern, universal science, resulted from the merging of the various rivers of scientific traditions: it was the Western powers' military strength that had compelled China

to adopt the science and technology that underlay this military strength.

During the last two decades, new questions have been explored, and the scope of “Science and Empire” studies has broadened, to include what historians of Europe call “the early modern period” (15th-18th centuries). Consequently the many continental empires that dominated the Eurasian continent are now taken into account: the Safavid and Ottoman Empires, the Habsburg Monarchy, Russia, the Moghul Empire, and last but not least, China. Thus the “Science and Empires” project now enables us to view Ming and Qing China as agent rather than as patient, and to reconsider the role of imperial expansion in the construction of knowledge relevant to science, technology and medicine in East Asia.

P32/2

LIM Jongtae

(Program in History and Philosophy of Science, Seoul National University)

Historiographical Dependency and a Prospect beyond it: EAHSTM's Position in Regard to Ever Changing Trends of HPS

As a vibrant subfield of the history of science, EAHSTM in the second half of the twentieth century sought to set its disciplinary positioning by an active engagement with the dominant trends in the history and philosophy of modern Western science (HPS). Examining the ways how EAHSTM scholars made their East Asian cases relevant to ever changing trends of HPS, this presentation attempts to illuminate the shifting patterns of EAHSTM's dependency on HPS—in formulating its historiographical issues, establishing its disciplinary identity, and evaluating its contribution to the world history of science. Particular attention

will be paid to how EAHSTM scholars responded to the challenges posed by a “dynastic change” in HPS of recent decades, characterized by HPS's shifting and diversifying disciplinary alliance—from the philosophy of science to the sociology of knowledge, cultural studies, and STS. This new configuration surrounding HPS no longer allows EAHSTM to maintain its former positioning as a tributary of the philosophically informed history of the Scientific Revolution, and as a consequence, we are now witnessing the emergence of a series of promising new approaches to East Asian science, inspired by new historiographies and methodologies of HPS and other related fields. Is this only a replacement of the objects to which EAHSTM pays its allegiance? Or, is there any prospect that EAHSTM would establish a new relationship with HPS, in which it would become an equal player in the world history of science and make a more creative contribution to the general understanding of (modern Western) science?

P32/3

LEI Sean Hsiang-lin

(Institute of Modern History, Academia Sinica)

EAHSTM, History of Medicine, and Modern East Asia

When viewed in light of Joseph Needham's hydrographical metaphor, which posits the merging of the various rivers of scientific traditions into a “main stream” of universal modern science, “traditional” East Asian medicine appears to be an anomaly in the sense that it has yet to be integrated into this “mainstream”. In spite of a growing interest in the global spread of traditional East Asian medicine, when scholars of the global history of medicine narrate the modern and contemporary period, they

still often un-reflexively exclude the history of “traditional” East Asian medicine from their accounts. Against this common historiography, why and how, if at all, should historians strive to write about the history of “traditional” East Asian medicine as a contributing aspect of the global history of modern medicine?

The history of biomedicine and hygiene in modern East Asia has been a booming field of inquiry in the past decade, the results of which have been much welcomed by historians in general. Nevertheless, these scholars have yet to find medical history—history of science and technology as well—essential in answering the questions that concern them. Given that the development of medicine and techno-science constituted the key historic experience of modern East Asia and is widely considered to be a distinctive feature of contemporary East Asia, it is essential that we elucidate the multiple roles techno-science and medicine have played in the making of modern East Asia.

other historians of technology is densest and most productive, however, when focused on periods or activities where there are obvious and vital connections, influences or points of comparison. The rise of global history has challenged simple East-West binaries and pushed the chronological boundary of these overlaps and encounters back from the nineteenth- and twentieth centuries to the “early modern” world. But investigations of East Asian technologies predating this emerging world-system, or studies that consider technologies outside the framework of cross-regional circulation and exchange, are less easily incorporated into the dialogue. Furthermore, partly in reaction against Needham’s legacy, East Asia scholars engaged in such “local” research often prefer to avoid the troublesome term of technology altogether.

What, then, are the challenges, the gains and the losses for us as historians, and for the history of East Asia, of working within, or apart from, mainstream history of technology?

P32/4

Francesca BRAY

(University of Edinburgh)

EAHSTM and history of technology

Despite its initial bias towards white male engineers and the rise of the West, the history of technology has always been open to taking other histories seriously. Having enthusiastically embraced critiques from feminism, post-colonialism and STS, and engaging actively with the new post-nationalist geographies of regional, global and environmental history, today the mainstream institutions of history of technology, though still predominantly western-focused, are eager to incorporate perspectives from East Asia.

Dialogue between East Asianists and

P33

Translation and Transmission of Western Mathematical Treatises in East Asia

Organisers: *JI Zhigang & GUO Shirong*

From the beginning of the 17th century to the end of the 19th century, numerous western mathematical treatises were translated and thus made available in East Asia. This new wave of Western Learning had a great effect on traditional East Asian mathematics. Translation and transmission of western mathematical treatises throughout East Asia has been a significant issue in the history of East Asia. This panel will focus on the main topics relating to the translation and transmission of texts, hoping to further promote discussion of the following questions:

In undertaking translations, what roles did local scholars play? Or, in the translation method of “dictating-recording” (口譯筆受), what was the contribution of local scholars – were they only passive translators or active interpreters?

As to the translations themselves and their transmission, what kind of impact did western mathematical treatises have on traditional East Asian mathematics? What kind of reactions did local scholars have when they encountered western mathematical treatises?

How did local scholars find a place for western mathematical treatises within the context of East Asian traditional cultures and in response to East Asian conceptions of knowledge?

P33/1

JI Zhigang

(School of History and Culture of Science,
Shanghai Jiao Tong University)

From Latin to Chinese: An Analysis of the Chinese Translation of Book I of the Jihe yuanben

The *Jihe yuanben*, a Chinese translation of the first six books of Euclid's *Elements* (1607), is an outstanding achievement of the first encounter between East and West. Matteo Ricci (1552-1610) and Xu Guangqi 徐光啟 (1562-1633) faced up to the pioneering challenge of translating the original Latin text of the most important work of ancient Greek mathematics into Chinese. The *Jihe yuanben*, which reflects an elegant classical Chinese style of expression, was hailed by Liang Qichao 梁啟超 (1873–1929) as a work in which “every word is like pure gold and precious jade” (

字字精金美玉). Most of the geometric terminology created by Ricci and Xu is still in use today. The *Jihe yuanben* was regarded as providing a new mathematical foundation by Chinese scholars from the late Ming to the end of the Qing dynasty.

It is generally recognized that due to the significant differences in grammatical structure, style, vocabulary, and semantics between Chinese and Latin, translating the *Elements* must have been an almost “impossible mission” for Ricci and Xu. Therefore, how did they overcome the language barrier between them? And furthermore, how was the new western geometry transmitted to and evaluated in Chinese culture? To answer these questions, the first thing is to investigate how Ricci and Xu translated the Latin version due to Clavius's edition of *Euclidis Elementorum Libri XV* into Chinese as the *Jihe yuanben*.

Translation and Transmission of Western Mathematical Treatises in East Asia
 Part 3: Agriculture, Food and Industrialization in the Japanese Empire

By analyzing and deconstructing the geometric terms in the first 36 definitions in Book I of the *Jihe yuanben*, we will show that some old Chinese words, such as 點, 線, 面, 角, 底, 腰, and 對角, were given new mathematical meanings, whereas some new terms, such as 三角形, 直角, 方形, 斜方形, 對角線, and 平行線, were introduced for the first time. We will also analyze how traditional Chinese statements were used to express western geometrical definitions and logical reasoning.

Studies shows that the great efforts made by Ricci and Xu succeeded in achieving a translation with the closest natural equivalents to the meaning of the source language, first in terms of meaning and secondly in terms of style.

P33/2

GUO Shirong

(Institute for the History of Science and
 Technology, Inner Mongolia Normal
 University)

***Loss of Information: A Case Study of
 Chinese Scientific Translations in the
 Late 19th Century***

The Chinese version of the first six books of Euclid's *Elements* was published as the *Jihe yuanben* in 1607. It was a major event in the history of science in China, for it was the first effort to transmit western science to China. The translation was completed by Matteo Ricci and Xu Guangqi. Their cooperation also established a translation pattern in China that was to last for three hundred years. The main point of this translation pattern was a method known as "dictating-recording." In this procedure, the foreign translator explained the text to the native speaker first, who translated the text which was then modified and finalized by the native translator after careful discussion between both scholars. This pattern worked very well undoubtedly under

circumstances in which both translators were not masters of the other language. Actually, the foreign Jesuit translators did not master classic Chinese so well, and their Chinese collaborators knew almost nothing of the foreign languages—either Latin, Italian, or English.

Scientific translations were the most important way of transmitting western science into China. Considering the level of science at this time in China, the difference between the western and eastern scientific traditions, and the quality of translations and translation methods, some information was inevitably lost. When studying the communication and transmission of western science to China, such lost information should be considered as a critical element.

By analyzing the contents of a number of Chinese translated treatises in the late 19th century, and comparing them with their original texts in various foreign languages, it can be confirmed that much information failed to be correctly translated or effectively transmitted to China. The losses mainly resulted from the translation method, by choosing only parts of original texts, or by relying on outline summaries. In addition, some background information that western readers could find in other books was usually not included in the original texts, and thus for Chinese readers there were often deep gaps. The missing background information was mainly scientific, including detailed demonstrations, scientific experiments, definitions of concepts, and so on.

This loss of information resulted in considerable misunderstanding of the western theories and their systems, as well as their incomplete transmission to China.

P33/3

SA Rina(School of History and culture of Science,
Shanghai Jiao Tong University)***A Study of the Transmission of the
Jihe yuanben to Japan***

The late Ming *Jihe yuanben* not only influenced Chinese traditional mathematics, but also the development of mathematics in a number of East Asian countries. This paper focuses on the transmission of the *Jihe yuanben* to Japan. Some precious hand-copied manuscripts of the *Jihe yuanben* have never as yet been examined by Chinese and Japanese scholars. The author has discovered a first-hand valuable copy of an original Ming edition of the *Jihe yuanben* in Japan. A transcription of the second edition of *Jihe yuanben* (1611 edition) is also discussed. At the beginning of this paper, the author gives an outline of the known surviving late Ming transcriptions (hand-copied manuscripts) and editions; then the author explores the background of those transcriptions known to be in Japan. Finally, the author draws a number of conclusions about the historical value and significance of this research.

P33/4

KOBAYASHI Tatsuhiko(Seki Kowa Institute of Mathematics,
Yokkaichi University)***On Some Geometrical Terms in Jihe
yuanben 幾何原本 and Acceptance of
These Terms in Japan of the Edo Era***

Mei Wending 梅文鼎 (1633~1721) is recognized as one of the most influential mathematicians and astronomers of eighteenth-century China. After Mei died, Wei Nianting 魏念庭 published his books in 1723 as a compendium entitled *Lisuan quanshu* 曆算全書 (Collected Works on Calendars and Computation).

The first volume of the *Lisuan quanshu* was *Sanjiaofa juyao* 三角法举要 (Elements of Plane Trigonometry) and the second was *Husanjiaofa juyao* 弧三角法举要 (Elements of Spherical Trigonometry). The former introduces the elements of plane trigonometry, and the latter introduces the elements of spherical trigonometry. These trigonometric treatises concerned mathematics that was especially useful to surveying and astronomy.

Mei Wending defined four basic geometrical terms: point, line, surface and solid, at the beginning of the *Sanjiaofa juyao*, and his explanations of these four terms were based entirely upon their definitions in the *Jihe yuanben* 幾何原本, which was translated by Matteo Ricci (1552–1610) and Xu Guangqi 徐光启 (1562–1633) in 1607.

The *Lisuan quanshu* was introduced into Japan in 1726. Since then, Japanese mathematicians and astronomers have studied the trigonometry in both the *Sanjiaofa juyao* and the *Husanjiaofa juyao*. As a result, they know the definitions of geometrical terms which Mei Wending mentioned in his book. We may consider this as an indirect influence of western mathematics.

In this presentation, we will first introduce Mei Wending's definitions of the four basic geometrical terms, and then examine how his definitions were accepted in Japan during the Edo era.

P33/5

ZHENG Fanglei(Department of History, Fudan
University)***On Ricci and Xu's Translation into
Classical Chinese of the Theory of
Proportion in Euclid's Elements***

Matteo Ricci and Xu Guangqi translated the first six books of Euclid's *Elements* into

Translation and Transmission of Western Mathematical Treatises in East Asia
 Part 3: Agriculture, Food and Industrialization in the Japanese Empire

Chinese as the *Jihe yuanben* in the late Ming Dynasty. This work has long been regarded as the first step in the introduction of western science to China by the Jesuits, and thus was an event of immense importance in the history of cultural transmission between the West and East. Nevertheless, how Ricci and Xu worked to turn the Latin text by the German Jesuit Christopher Clavius into classical Chinese has not been fully discussed. This paper will focus on their translation of Book V of the *Elements*, in which Euclid compiled a theory of proportion with reference to general magnitudes as first developed by Eudoxus. This research has enabled me to draw some interesting conclusions and raise some further questions. First, by comparing the Chinese of the *Jihe yuanben* to the corresponding Latin text, we can easily see that Ricci and Xu did not translate the entire text of the Clavius edition. More precisely, they translated most of the text of formal propositions, but by contrast, only a very small portion of selected scholia by Clavius meant to elucidate the propositions that appeared in the *Jihe yuanben*. Second, by a closer look, we can see that the translation did not always respect the meaning of the original text. For example, some comments made by Clavius replaced the enunciation in the *Jihe yuanben*. Third, the contents of scholia selected for translation are all numerical examples. In other words, abstract discussions are omitted from the Chinese *Jihe yuanben*. Lastly, Ricci and Xu added their own scholia which referred to traditional Chinese arithmetic algorithms. This suggests that the translation's purpose was primarily to transmit knowledge rather than to render the text from Latin into Chinese in a literal, careful, word-for-word, sentence-by-sentence translation. But the result was inevitably that the *Jihe yuanben* is the *Elements* as Ricci and Xu conceived it

to be. This may be seen most clearly in their translation of Book V than in any of the other books, as Eudoxus' ingenious invention was changed from a theory of proportions of magnitudes into proportions of numbers in the *Jihe yuanben*. This fact may be one of the reasons why Ricci and Xu did not continue their translation of the rest of the *Elements*, considering that in Book VII of the *Elements* Euclid handled the theory of proportion in terms of numbers, NOT as particular cases of magnitudes in general.

P34

**Casting Others' Materials into the Mould of My Own Learning:
The Mobilization and Organization of Knowledge and Expertise
in the Production of New Scientific Works in East Asia
(1600 - 1800)**

Organisers: SHI Yunli & KIM Yung Sik

China and its neighbouring countries witnessed a new round of knowledge reconstruction in the 17th to 18th centuries which involved a series of important official and private projects in the sciences closely related to statecraft, from astro-calendar reforms to the compilation of a series of canonical books on mathematical, medical and agricultural sciences. Largely stimulated by knowledge and issues produced in these governmental projects, studies of the related sciences became widespread in nongovernmental circles as well. A great number of books in these scientific fields were produced. This panel tries to bring together a group of papers to shed light on the following questions concerning such a special aspect in the development of scientific knowledge in East Asia during the period: how various knowledge and expertise resources were mobilized and coordinated to serve the goal of the official science projects; what kind of intellectual, political and administrative powers were involved in these processes, how they interplayed with each other, and how these interplays influenced the procedures and results of knowledge production; in which ways officially produced knowledge could become real public and communal knowledge, and how this type of knowledge and its production influenced the non-official experts; for what purposes non-official experts devoted themselves to the study of officially produced knowledge, whether they ever tried to make their intellectual products public and communal, and how if they wanted to; how both official and non-official experts thought about different types of knowledge - old and new, foreign and domestic, and how they handled them in their own efforts of knowledge making; etc.

P34/1

KIM Yung Sik

(Seoul National University)

Intercalary Months and the "Method of Accomplishing the Calendar": The Chosŏn Court's Discussion about the Preparation of the Calendar of 1735

Each year the Chosŏn government underwent a long process of preparing and printing the enormous number of "calendars" to be used by the government and the population in the following year. In this paper I will examine the discussions carried out at the Chosŏn court about

the determination of the intercalary month and the printing of the calendar of Year 1735. I will show how the king, the government and the literati scholars tried to deal with the impending possibility of the Chosŏn calendar choosing a different intercalary month from that of the Qing imperial calendar, and ended up by holding on to what they called the "method of accomplishing the calendar" (*chengli zhi fa* 成曆之法). It is hoped that the paper will shed some light on the significance that the calendar and the calendrical method had for the Chosŏn king and his literati

ministers, and the various different attitudes and different levels of understanding they had about the specialized knowledge and problems of calendrical method and its specialists of “middle people” class.

P34/2

DONG Yuyu

(School of the History and Culture of Science, Shanghai Jiao Tong University)

The Impact of the Kangxi Reign Period Geodesic Survey on the Calendars of Qing Dynasty, Korea & Liuqiu

Geodesic Survey of Kangxi Reign Period in 18th century is an important scientific activity. As vassal states of the Qing government, Korea and Liuqiu were used as control locations for survey in 1713 and 1719. This paper recounts the history of geodesic surveys in Korea and Liuqiu and studies the impact of Geodesic Survey on the calendars of the Qing dynasty, Korea & Liuqiu. Why select Korea and Liuqiu? Who took charge of the survey? Which way was used? How about the course of Geodesic Survey? What were the results? What were the impacts of Geodesic Survey on the calendars of the Qing dynasty, Korea & Liuqiu? The paper draws a conclusion that : The main aims of Geodesic Survey were to meet the need of making maps, making calendars, declaring sovereignty right and government administration. A unitary state, economic strength, Emperor's interest and advancement of knowledge by Jesuit missionaries introducing were important factors that caused the Geodesic Survey. The lunar eclipse method was used. Geodesic Survey showed the results. It's not only useful to make maps, but also useful to make calendars. The results of Geodesic Survey was used in the calendars of the Qing dynasty, Korea & Liuqiu. The calendars were not only political symbols, but also cultural

identification.

P34/3

CHU Longfei

(School of the History and Culture of Science, Shanghai Jiao Tong University)

One Person's Project of Science Reform: "An Integration of Astro-Calendrical Learning" by Xue Fengzuo Revisited

Lixue Huitong 曆學會通 (*An Integration of Astro-Calendrical Learning*) is the most important work of Xue Fengzuo 薛鳳祚 (1600-1680) consisting of three parts: Main Portion 正集, Portion on Tests 考驗部 and Portion on Applications 致用部. In a great sense, it is a result of Xue Fengzuo's efforts in reform the Astro-calendrical Learning 曆學. In this paper, I will perform a further analysis into the structure and contents of the book from the point view of knowledge mobilization and organization. My emphasis will be put on two aspects. Firstly, how the three parts of the book are connected to each other, how such a system serves his project of the reform of Astro-calendrical Learning, and why in a book devoted to the so-called “Astro-calendrical Learning” Xue Fengzuo wants to include a number of subjects which have no directly relation with astronomy and calendar. Secondly, besides works on calendrical astronomy and mathematics, which sources are used by Xue Fengzuo, in what kind of modes that materials from different sources are adapted into each portion of the book, and how they were “integrated” to form a renewed system of knowledge. Since in this book Xue Fengzuo attempts to address some of the major concerns of the central governments of the time, I will also try to show with his case how state interests influenced knowledge activities in private circles.

P34/4

FUNG Kam Wing

(The University of Hong Kong)

Time, Space and Instruments: Fang Zhongtong's (1634-1698) Research on the Book of Changes and Western Surveying

Influenced by his father Fang Yizhi 方以智 (1611-1671) and his grandfather Fang Kongzhao 方孔炤 (1591-1655), both experts on Yijing 易經, Fang Zhongtong 方中通 (1634-1698) showed his great interest in Western mathematics when he studied the subject under the direction of the Polish Jesuit Johannes Nickolaus Smogulecki (1610-1656), who was probably a Copernican, in Nanjing between 1649 and 1653. After assisting Fang Yizhi in the compilation of *Zhouyi shilun hebian* 周易時論合編 (*Combined Commentaries on Critique of Time in Yi Learning*, published in 1660), a joint publication by Fang Yizhi and Fang Kongzhao, Fang Zhongtong wrote his own treatise on Yijing entitled *Zhouyi shenqian shuo* 周易深淺說 (*Discourse on Profoundness and Simplicity of the Book of Changes*). Besides, Fang Zhongtong composed his encyclopedic mathematical work *Shudu yan* 數度衍 (*Development of Calculations and Measure*, 1687) to synthesize traditional Chinese mathematics and Western mathematics. This paper attempts to give a succinct account on Fang Zhongtong's independent mathematical research, his unique concept of "time" related to the *Book of Changes*, and his significant discourse on mathematical instruments such as proportional or sector compasses and quadrant or geometric square.

P34/5

CHEN Ting

(University of Science and Technology of China)

Farming, Real Learning and the Principles of Things: A Study of Agricultural Knowledge in the Wuli xiaozhi

To cope with ever deepening social crises in the late Ming period, insightful literati of the time promoted the idea of Real Learning, which propelled the development of agronomy in the period. As a representative figure of this trend, Fang Yizhi (1611-1671) included a great deal of agricultural knowledge in his *Wuli xiaozhi* 物理小識 (*Notes on the Principles of Things*). Affected by the prevailing fashion of collective compilation in the contemporary scholarship, Fang Yizhi tries to borrow and integrate knowledge from various sources, from Jia Sixie's (賈思勰) *Qimin yaoshu* 齊民要術 (*Essential Techniques for the Welfare of the People*) and So Xu's (宋誦) the *Zhuyu shanfang zabu* 竹嶼山房雜部 (*Miscellaneous Notes from the Bamboo Grove Hermitage*) by Chinese authors to the *Taixi shuifa* 泰西水法 (*Hydraulic machinery of the West*) and the *Zhifang waiji* 職方外紀 (*World Atlas*) by the Jesuits in China. In addition, the book also contains Fang Yizhi's own experience and observations, some of which are good examples of the development of agricultural techniques in the Ming dynasty. On the other hand, agricultural knowledge in the book also reflects a important aspects of Fang Yizhi's investigation of the principles of things, from which we can see an interesting mixture and balance between the theoretical and practical pursuits of his scholarship.

P34/6

ZHU Haohao

(University of Science and Technology of China)

Producing a Book on Astrology for Potential Official Use: A Study of Zhang Zuonan and his Tianxiang Yuanwei

Zhang Yongzuo was an astronomer in the Kangxi to Qianlong period who was appointed in 1738 as a Doctor in the Department for Celestial Patterns (天文科博士) of the Bureau for the Reverence of the Heavens. The *Tianxiang Yuanwei* 天象原委 (*An Thorough Explanation of the Celestial Phenomena, TXYW*) was a 20 volume work on astrology completed in his late years in response to Emperor Qianlong's call for the compilation of a canonical book on astrology. He planned to submit the book to the throne but died before he was able to put it in action. Three fourth of book is devoted to Western astrology from Arabic and European sources translated into China in the Ming and Qing dynasties, but it also contains traditional Chinese divinatory arts such as "wind divination" (風角) and "vapor gazing" (望氣) as well as portent astrology, forming a very special system of astrological knowledge. It is worth to note as well that in the books cited by Zhang Yongzuo we can find a number of Confucian classics such as the *Zhouyi* 周易 (*Book on Changes*) and the *Sishu* 四書 (*The Four Classics*). In fact, Zhang's view on astrology did not stay just on the technical level, and the *TXYW* also reflects the Confucian influence on astrology. This paper will first analyze the sources used by the author and the feature of the different parts of the book. Then, I will try to discuss the organizing principle of the contents of the book. In addition, I will also try to show how earlier astronomers such as Xue

Fengzuo and Mei Wending influenced Zhang Yongzuo, and how he connected his astrology to Confucianism.

P34/7

SHI Yunli

(University of Science and Technology of China)

The Reconstruction of the Official System of Sciences in the Early and Middle Qing Dynasty

Administered by the literate elite, nearly every dynasty in imperial China affixed its personal mark on its era's body of knowledge, not only as an illustration of the feats and authority of the dynasty and its emperors, but also as a bearer of its ideology and values. Of course, this body of knowledge also served as an intellectual toolbox useful in statecraft. The reconstruction used to take place when a new dynasty had seized power and stabilized, but also when an established dynasty experienced new developments and needs. To a large extent, such a reconstruction often involved a reorganization and reinterpretation of knowledge that had already existed as much as innovation. Usually, the most important sciences in the traditional Chinese society were indispensable components of this kind of knowledge reconstruction: calendrical astronomy, mathematics, agronomy, medicine, mathematical harmonics, and so on. This paper will provide an overview on the official projects of book compilation in various sciences in the early and middle Qing dynasty, from the astro-calendar reforms in the 1660s, to the compilation of canonical books under the name of Qing emperors on mathematical, medical and agricultural sciences in the first half of the 18th century. In addition, I will also have a look at the compilation of the volumes on sciences in the two grand book projects of the Qing dynasty, i.e. the compilation of the

Qinding gujin tushu jicheng 欽定古今圖書集成 (*Complete Collection of Books from Ancient to Present Times*) from 1701 to 1707 and the *Qinding siku quanshu* 欽定四庫全書 (*Complete Books in the Four Treasuries*) from 1773 to 1784. The purpose is to show the state mechanisms of collecting, preserving and retrieving knowledge and know-how, to analyze the impact of organisational schemes and power on the making of new scientific works, and to see how the mark of the dynasty was imprinted on the works thus produced.

P35

Science, Medicine, and Popular Healing Practices in Modern Japan

Organiser: Ellen NAKAMURA

What happens when biomedical science meets popular healing practices? This panel takes up this theme with a focus on the local transformation of medical culture in nineteenth and early twentieth century Japan. While the introduction of cosmopolitan biomedicine has long been recognized as an important part of Japan's medical modernization following the official adoption of Western medicine by the Meiji government after 1868, these papers show that this was only part of a complex story. The panel explores the ongoing cultural interaction between new conceptions of medical theory and the body, medical and psychiatric practitioners, a variety of folk and religious healers, and the communities in which they operated. Far from simply dismissing traditional indigenous healing practices, Japanese doctors engaged with, incorporated, and hybridized them.

P35/1

Ellen NAKAMURA

(University of Auckland)

Riding Modern Waves? Sea Bathing as Preventative Health Care in Meiji Japan

During the Meiji era, sea bathing enjoyed a new fashionability and was encouraged as part of Western-style health regimens. Sea and cold water bathing were promoted by a number of Japanese doctors who claimed significant benefits both as a preventative and cure. On the one hand, they couched these benefits in terms of scientific medical discourse and Western writings on the subject, but they also incorporated sea bathing into health manuals reminiscent of the *yōjō* genre of the Edo period. This paper will compare the ideas of two contemporaries who extolled the virtues of sea bathing: Matsumoto Ryōjun (1832-1907), a prominent doctor of Western medicine who was behind the opening of a public beach at Ōiso in Kanagawa in 1885, and Seki Kansai (1830-1912), who revealed his secrets to good health and longevity

in his *The Laundering of Life* (*Inochi no sentaku*) in 1901. For Seki, (who himself was known to plunge into icy cold river water in Hokkaido), sea-bathing was not a foreign practice, but rather embodied the re-discovery of Japan's ancient purification rituals, re-connection with the native landscape, and the re-vitalisation of Japanese bodies gone soft. This paper will explore the preventative health philosophies surrounding sea bathing as an example of the way in which scientific explanations became entangled with deep-seated personal beliefs and popular customs, even among medical experts themselves.

P35/2

DAIDOJI Keiko

(Keio University)

Auto-intoxication: Toxin, Disease and Self in Early Twentieth-century Japan

For the Japanese of the early twentieth century, toxin was not merely a foreign substance, but could be produced within

the body and eventually come to harm the self. This study will examine how the idea of 'auto-intoxication' (*jika-chūdoku*), a Western explanation of intestinal microflora, resonated with the pre-modern Japanese pathology of indigestion and was consequently applied to create a new category of disease in psychiatry.

The idea of 'auto-intoxication' was first introduced to Japan as the translation of the work of Ilya Ilyich Mechnikov (1845-1916), a Russian Nobel Prize winning physiologist, who maintained that toxic bacteria in the intestine was the cause of ageing. Nowadays this theory is hardly remarked upon except in reference to Mechnikov's contribution to the promotion of lactic acid and fermented milk drink for good health. However, during the early twentieth century, the idea of auto-intoxication proliferated among Japanese doctors to explain the pathology of almost all kinds of endogenous diseases from uraemia to the disturbance of metabolism, neurosis, and so on.

This study will firstly point out that the multiple applications of auto-intoxication resonated with the traditional dietary instructions of the Edo period in Japan, during which it was held that inordinate eating may lead to dangerously poisonous results. In particular, people feared that indigestion did not just cause stagnation within the stomach, but that the food itself also rotted and turned into toxins which would eventually cause a myriad of diseases. Secondly, auto-intoxication was employed by psychiatrists to indicate such symptoms as cyclical vomiting and epileptic seizures due to a kind of adjustment disorder. Auto-intoxication was regarded as a part of a person's personal disposition and the toxin generated within the body through rejection of other people and the outer world in general. In this context, it is

possible to say that auto-intoxication was one of the earliest examples in which the modern conception of 'self' was made the core of pathology in Japanese psychiatry.

By interpreting auto-intoxication within these contexts of traditional dietary instructions and a new category of disease which was concerned with the recognition of the personal self, this paper will elucidate the interface between scientific discoveries and Japanese experience of diseases in a modernizing society.

P35/3

SUZUKI Akihito
(Keio University)

***Psychiatry and Supernaturalism
in Japan in the Early Twentieth
Century: Monsters, Hallucinations,
and the Private Self***

This paper reexamines psychiatry and supernaturalism in medical writings, literature, and patients' case histories in early twentieth century Japan, and argues that the relationships between mental sciences and traditional superstitions were less antipathetic than has been commonly believed. It suggests that their coexistence and symbiosis were crucial in the making of the realm of the private self in modern Japan.

Psychiatry and supernaturalism used to be regarded as the binary antipathy that was important in the making of the modern mind. Modern psychiatry has confronted, criticized, and accommodated supernatural themes from traditional culture. In Europe, demonic possession, religious ecstasy, and the voice of God have been reinterpreted by doctors and psychiatrists as the symptoms of mental diseases. A similar sequence took place in modern Japan after the introduction of Western medicine: traditional themes such as fox possession or monstrous apparitions

were pathologized as symptoms of hysteria or visual hallucinations.

This model of the triumph of mental science over traditional culture has been criticized in the Western context by historians such as Ruth Harris and Janet Oppenheim. In late nineteenth and early twentieth century Japan, the victory of psychiatric power and the demystification through Westernization explain only a small part of the introduction and establishment of psychiatry into modern Japanese society and culture. This paper suggests that psychiatry and related disciplines created a new private mental space to accommodate visions, concepts, and stories about supernatural themes and contributed to the making of the Japanese concept of the private self.

an intangible element identified variously as “spirit” and “energy” (rei, sei, ki), which was often explained in wholistic terms as something that infused not only the human body but also the natural world. This paper explores the psychiatric disciplines response to “mental healing.” Although one might expect that academic psychiatrists would be skeptical of the commodified and commercialized world of mental healing, in fact, in the 1920s several of the most important figures in the field of psychiatry, including Kure Shuzō, Professor of Psychiatry at Tokyo Imperial University medical school, and Ishikawa Teikichi, Director of Tokyo’s Sugamo Hospital, the only public asylum at the time, began to explore the phenomenon of mental healing.

P35/4

Susan L. BURNS

(University of Chicago)

“Mental Healing” and Psychiatry in Interwar Japan

An article in the magazine *Popular Medicine* (Tsūzoku iryō) in the late 1920s estimated that there were more than 30,000 people involved in so-called “mental healing” in Tokyo and other urban centers. “Mental healing” encompassed a dizzying array of healing methods, from the exorcisms performed by leaders of such new religions as Omoto-kyo, to various forms of self-help regimes that involved deep breathing, meditation, and other techniques, to the use of hypnotism, electrotherapy, and psychic healing by self-proclaimed professionals. What this heterogeneous and often antagonistic body of practices shared was a skepticism towards somatic or materialistic explanations of illness and disease. Instead, practitioners of mental healing privileged

P36

Health and Environment between Observation, Perception, and Imagination in East Asia

Organiser: Florence BRETTELLE-ESTABLET

The objective of this panel is to analyze how people, in different parts of East Asia, and at different times, have observed, imagined, conceptualized the links between the natural milieu, the landscape, or the environment in which they were living and their health. Since the issue of examining, measuring, and controlling the influences of environment on human health, in the last decades, was intensively put to the fore in scientific and political terms and in different social arenas, it seems of paramount concern to tackle this issue by following an approach firmly anchored in a rigorous analysis of sources. This approach will allow deciphering the very questions that human actors, in all their diversity (physicians, astrologists, geomancians, cartographers, geographers, travelers, merchants, scholars, naturalists), and in different parts of East Asia, formulated about these links, and, to bring to light how, on their own terms, they used to associate the physical elements of their environment to health issues. Particular questions will be discussed in this panel contributing to examine notably what the ideas of milieus, landscapes, and environments refer to in different contexts and times, and how human actors, in particular geographical and chronological settings, conceptualize the physical milieu in which they live, in what terms they speak about it and what kind of content they attach to it. A second issue will consist in examining precisely the relationships that people observe or imagine between their surrounding environment and their body; how and why, in different contexts, the environment was perceived as the provider of good or bad resources for human life, as the source of individual or collective disorders, or as source of redemption and well-being. A third issue will focus on the different ways people, in individual or collective efforts interact with their environment in order to render it more appropriate to their ideal of health. Finally, we will examine to what extent the different conceptualizations of the link between environment and health as well as the various types of human manipulations on environment for the sake of health questions influenced each other, through a circulation of knowledge, doctrines, and practices between different parts of the world.

P36/1

Catherine DESPEUX
(INALCO)

Landscape and Health in Ancient China

This contribution focuses on the perception of the environment's influence on body and health in ancient China. Drawing on ancient medical sources and

on Taoist texts, this contribution will firstly analyze how the self was imagined and represented in ancient China; it will then explore how the links between environment and humans were perceived and what an ideal landscape for human life meant. It will finally analyze the interplay between this observed or imagined ideal landscape and human health, and explore how the

environment, in certain circumstances, could change the course of disease or improve health.

P36/2

Florence BRETTELLE-ESTABLET
(CNRS, SPHERE & U. Paris Diderot)

The Legendary Miasmatic Far South of China Seen by Local Doctors in Late Imperial China

Historically, the Far South of the Chinese empire, including, in late imperial China, the provinces of Yunnan, Guangxi, and Guangdong, was depicted as a very special place by scholars who, in historical sources such as gazetteers, usually reported the prevalence of miasmatic diseases and the existence of other diseases typical of the place. According to scholars and to doctors living in more central areas, this unhealthy climate caused great danger to people, and notably to those coming from outside. This contribution relies on a corpus of some twenty medical texts, written in different social circles and places of the Far South, in late imperial China. It aims at analyzing what local doctors, involved in medical assistance or medical scholarship, have to say about this general belief; how they understood or imagined the particularities of their environment; and how these particularities, according to them, influenced local bodies, diseases, and therapies.

P36/3

William JOHNSTON
(Wesleyan University)

Causes and Conditions: Place and Environment in Nineteenth-Century Japanese Concepts of Disease

At the beginning of the nineteenth century, Japanese medical thought included currents based on Chinese, European,

and nativistic ideas. Each had different ways of conceiving the role of place and environment in the cause of disease. By the end of the century, European medical thought had become predominant in Japan. Yet at this date, European medical thought was by no means uniform in its approaches to the roles that place and environment had in the causation of disease. This paper will examine how medical and some popular ideas of place and environment changed over time with regard to health and disease, with a focus on how cholera introduced an entirely new disease dynamic and Western ideas about it.

P37

Chinese medical discourses inside and outside China**Organisers: Lucia CANDELISE, Matthias SOHR & Angelika MESSNER**

In his seminal volume, "Asian Medical Systems: A Comparative Study", Charles Leslie presented a range of case studies on the cohabitation of different medical approaches (i.e. biomedicine and Chinese medicine in China, biomedicine and Ayurveda medicine in India, and so forth). Since then, the dynamics of Chinese medical paradigms and their global movements have been studied from many different angles, such as from the point of view of the circulation of knowledge and people, the introduction of exogenous practices in contemporary societies, the dynamics of social and scientific networks, the analysis of discourse within the complexity of the socio-cultural context (with regards to science versus belief), the cohabitation of several models of health and diseases as well as the cohabitation of several techniques of healing and care (i.e. pharmacopeia, body healing techniques, gymnastics, etc.), the process of transnational science and technology transfer – only to name a few issues of interest.

On the one hand, we are asking in which ways the circulation of medicines and medical paradigms within Chinese contexts has changed in the past two decades. In particular, we focus on transformations of Chinese medical practices under the influence of discourses as the likes of heritage and western psychology. On the other hand, we consider two different ways of how health techniques coming from China have been transmitted in European countries. For instance, we are having a look at medical practices in Switzerland and taiji quan in France.

P37/1

Angelika MESSNER
(Kiel University)

Changing Chinese medical paradigms inside China

Due to the Chinese governments' financial aid and mental support, Chinese medical practice in China is currently experiencing a new flourishing. Increasing numbers of people in urban environments seek the expertise of Chinese medical practitioners either before, during, or after consulting Western medical authorities. At the same time, newly established "Soul centers" promise to provide relief from ever-growing emotional distress. This paper seeks to explore the ways in which various medical and psychological approaches and practices concomitantly increase their

impact in a highly competitive health market. Focusing on the emergence of discourses of individualism, this paper looks at its blending with a whole range of "psychological" contents of Western origin. Moreover, exploring the emerging contents that are being embodied individually, this paper offers insights into the ways people concretely shape the varying emotionally-related medical knowledge. How do diverse medical knowledge and practices cohabit in terms of new local realities in Chinese urban environments?

P37/2

Lucia CANDELISE**Matthias SOHR**

(Université de Genève)

Chinese medical practices in Switzerland compared to France and Italy

The study of Chinese medical practices outside of China focuses on synergies with, and a hybridization of, Chinese medical knowledge and practice when integrated into local medical environments. These practices in Switzerland are of interest due to their recently gained momentum and their consequently rapid transmission. The historical and spatial developments in Switzerland since the end of the 1960s not only shed light on important social and cultural dimensions of the complex process of knowledge transfer from China to Europe, but also on the status and dissemination of Chinese medicine throughout Europe.

Prompted by oral history, we are making use of tools from the field of medical anthropology (participant observation and visual anthropology) in order to analyze the circulation of key figures that disseminated Chinese medical knowledge in Europe. We describe their individual trajectories inasmuch as they have been of importance to the establishment of Chinese medical practices in Switzerland. Thanks to interviews conducted with “early-adaptors” from Switzerland, other practitioners, as well as with decision-makers in the realm of Swiss public health, we are putting into context the extent to which, and in which phases, Chinese medical practices have become of interest to medical doctors adhering to the Swiss Medical Association (FMH), to practitioners without conventional medical training, and to the Swiss cantonal

and federal governments. Particularly by comparison to other European countries, for example to France and Italy, the ways in which Swiss multilingualism and the cantons’ independency in issues of health and education policy shape how Chinese medical practices were disseminated in history will be demonstrated. Of equal interest will be how Chinese medical practices are exercised and defined nowadays with regards to their boundaries within conventional medicine.

P37/3

WANG Li

(Central-South University)

TCM, between cultural heritage and public health

For many authors, what is nowadays referred to as “TCM” is rather a doctrinal construction of the 20th century in order to justify its status as cultural heritage. Thus, debates about its “scientificity” never stopped. More recently, the attention of the journal *Nature* was even attracted by a polemic whereby a Chinese doctor of “western” training challenges the TCM practitioners to test their traditional methods of pulse diagnosis for pregnancy under a double-blind trial. This event reignited the controversy of a decade – following the scandal of *Aristolochia Fangchi*. This debate takes place between two camps; on the one hand, cultural conservatives, who emphasize the heritage status of TCM by the forces of law and its role in the history of health care in ancient China; and on the other hand, liberals, or supporters of contemporary natural sciences, denouncing the lack of scientific evidence on the efficacy and safety of TCM. Analyses of intellectual and popular discourses on the subject lead us to conclude that, ten years later,

the controversy caused by the dual status of TCM, both as cultural heritage and a tool for public health, is not ready to cease. Instead, since its recognition as “Intangible Cultural Heritage of the Nation” granted by legislation since 2011, TCM seems to take on a new impetus, clearly approximating the notion of cultural identity.

P37/4

Ronald GUILLOUX
(Université Lyon 1)

***Taiji quan from China to France:
ways of transmission and diffusion
(19th c. – 21st c.)***

Originally a martial art, *taiji quan* is nowadays widely associated with health and well-being. Asserting that this evolution is due to the modernization of Chinese society is not satisfying. Indeed, as practitioners in France, we have been wondering how an art of combat has become an art of longevity (Despeux, 1990); and also through which channels our teachers had gained knowledge of their practice. Thus, the following main question is posed: what are the links between the ways of transmission and diffusion of *taiji quan* in China and in France? Firstly, it is necessary to understand the history of transmission of *taiji quan* in China, especially that of Yang style. Far from legends, a social history (Wile 1996, Breslow 1999, Davis 2004, Carmona 2007) enables us to understand this transmission: from an extremely selective elitist practice for restricted circles in the 19th century, *taiji quan* became, under the influence of the West during the first half of the 20th century, a simplified and softened mass practice, codified through handbooks and lessons. Nonetheless, the elitist practice (known as “traditional”) has equally been transmitted until now, which explains why

there are several ways of transmission and diffusion in France from at least the 1980s. Indeed, there are two general currents in France: martially oriented, *taiji quan* (Chen style) and spiritually oriented, *taiji quan* (Yang style). At the risk of reductionism, we can say that the first current – according to what is called the “traditional” method – involves individuals taught by a “master” in China, whereas the second current involves individuals taught in France by intermediary teachers. Furthermore, there are different ways of diffusion according to the structures that organize *taiji quan* (a national federation, associations, schools) and the disciplines represented and offered by these structures (*taiji quan*, *qi gong*, *bagua zhang*, *xingyi quan*, TCM, etc.). Some of these structures include a commercial dimension. Finally, we will see that the ways of transmission and diffusion of *taiji quan* from China to France involve processes of reappropriation, even to a degree that one can speak of the invention of traditions linked to orientalist representations. These processes are fostered, or struggled, with according to the ways by which teachers transmit their knowledge and practice and, thus, the ways of diffusion with which they are affiliated.

P37/4

Sascha KLOTZBÜCHER
(University of Vienna)

***The last myth of the Cultural
Revolution in the West:
the barefoot doctor***

The idea of the successful and efficient health care service in rural China during the ‘Cultural Revolution’ is widely accepted in Western scientific, and popular, literature about China. Locally trained barefoot doctors with herbal drugs were one of the key measures for efficient, affordable

and sustainable access to health care of the Chinese rural population in the 1960s and 1970s. Since 2002, the recent policy changes in China and the glorious past of a Chinese health minister who practiced as a barefoot doctor both fuelled the uncritical revival of the legend of barefoot doctors in academic publications on Chinese health.

Following other recent publications, such as Fang Xiaoping's book, this paper challenges this perception of the barefoot doctors in two ways: Firstly, I problematize the availability of reliable empirical data on the historical practices of the barefoot doctor and, secondly, I will explain the reasons for the continuity of this paradigm for the people inside and outside of China (Western Europe and the U.S.). Based on published oral history interviews and autobiographies, I discuss the importance of the identification with this social role as barefoot doctor throughout the duration of their lifetimes for the post-Mao era in China. Focussing on the Western discourse, I will demonstrate that the discourse concerning barefoot doctors during the Cultural Revolution was more than a especially uncritical reception of medical practices published in Chinese propaganda media. In the search for an "alternative modernity" in capitalistic societies, the figure of the barefoot doctor as a political paradigm in our own political discourse stresses the alienation from our own high-tech and bureaucratic health system as our orientalist human medical utopia.

P38

The Concept of *Tong* 通: Grasping and Circulating Matter in the World, in Society, and in the Body according to Thinkers, Physicians, and Traders in Song, Ming, and Modern China

Organisers: Lena SPRINGER & Volker SCHEID

This panel investigates the concept tong 通 in philosophical depth from different perspectives, both historically and in social context. According to the worldviews of outstanding thinkers in philosophy and in medicine, panelists introduce shifts in the connotations of the concept in Song and Ming China. Furthermore, the panelists exemplify how local officials, physicians, and traders were dealing with the practicalities of moving matter and commodities. Smooth distribution along trade routes, in society, and in the treated body, was regarded as vital to overcome blockages and obstacles.

Specifically, panelists analyse tong in textual contexts and follow the mind-sets of those who try to grasp the connectedness of things in the world, and how they actually deal with the moving of bodily and pharmaceutical substances, and last but not least money.

Curie Virág will show us how the meaning of tong changed, from early philosophers to Neo-Confucian Song dynasty.

Christian de Pee illustrates the debate about tong among other thinkers from Song dynasty China, and he will discuss local officials' attempts to move money through the societal body. The flow of money through society was regarded as the precondition of its political health.

Volker Scheid will take us into 17th century medicine and introduce Ye Tianshi's method of unblocking. Ye was thinking about materiality in a way that differed fundamentally from ideas of his contemporaries as well as from the humanities of today.

Avoiding blockages and understanding fluctuations has also been a major concern in modern China's drug trade, as Lena Springer will explain, giving examples of specific medicinal products traded between regions within China.

P38/1

Christian DE PEE

(University of Michigan)

The Circulation of Money and the Health of the Body Politic

In his panegyric on the Grand Canal, the eleventh-century poet and statesman Huang Shu (fl. 1045) praises that manmade waterway as “the southeastern throat” of Kaifeng, a throat that feeds “the receptive

intestine” formed by the hundreds of thousands of soldiers stationed at the capital. In the closing lines of the poem, Huang extends this metaphor to imagine financial experts as acupuncturists—“adepts with needles of stone”—who will secure the fiscal health of the empire by “dislodging the worms that eat cash and grain.”

Although Huang's expression was individual, many eleventh-century literati-

officials shared his vision of the city and the empire as living organisms, sustained by a healthful circulation of money and goods. The metaphor of the body politic (*guoti* 國體) with its pulsing commercial arteries thus served not merely as a poetic image, but expressed the perception of an ontological connection between the body politic and the body medical, between the circulation of money and goods and the circulation of vital essences. Eleventh-century officials used such ontological metaphors to improve their understanding of the complex economy in which they served. The Song government minted an unprecedented number of coins and issued the world's first paper money to enable and regulate a growing trade in goods and services. The uneven supply of currency and goods, however, caused unpredictable fluctuations in prices and in the value of money. Local officials sought to understand the mechanisms behind these fluctuations so that they might use this knowledge to lower prices, to relieve the effects of bad harvests, and to discourage counterfeiting. Because they were convinced that money was necessary and beneficial—as money encouraged the healthful distribution of goods—they were convinced also that the functioning of money conformed to natural patterns, and that the complex economy of their era could be reduced to a limited set of natural principles. By elaborating the comparison between the workings of the economy and the workings of the body, officials hoped to discover the secret to enduring financial health.

P38/2

Volker SCHEID

(University of Westminster)

Ye Tianshi and the “method of unblocking” 通法 in Chinese medicine: a 17th century perspective

Ye Tianshi (1664-1747) is widely acknowledged as one of the most innovative and influential physicians in late imperial China. He is also known as a master of the ‘method of unblocking’ 通法. In this paper I will outline what this method means in the context of Ye Tianshi’s style of practice. I will show that even as he draws on established modes of describing pathology, he develops a new way of thinking about and treating obstructions to the flow of qi and blood. His method challenges established western models for thinking about materiality, even as it also transforms those models that were used by previous generations of Chinese physicians. To understand these complex challenges I will place them into the context of wider transformations of medicine and society during Ye Tianshi’s life, as well as efforts within the humanities to rethink matter.

P38/3

Lena SPRINGER

(University of Westminster)

Drugs Across Regions within China: A Comparison of Pharmaceutical Circulation Regimes with Policies for Converting Regional Currencies

Pharmaceutical commodities, like currencies, require the recognition of values and qualities in exchange processes across various regions. The circulation of medicinal substances within China faces various coexisting regional, cultural and social regimes of drug production and trade. Using examples of drugs and trade sites from my field and textual work, I

demonstrate that such diverse exchange processes have been partly regulated on spatially and socially separate levels of government and business. In the occupational lives of collectors, processors and traders of Chinese medicines, their qualifications and the reliabilities of their goods have often been recognized only in limited social circles and regions.

These challenges to mobility are quite similar to the obstacles for money-circulation in late imperial China when, instead of just one Chinese currency, a number of regional currencies existed at the same time. Even at the same place, different monetary systems co-existed. It is remarkable that measures were tried and tested to allow the conversion of one currency into another. Similarly, medicinal substances in China have been exchangeable to a remarkably high extent.

Moreover, the medicinal handling of blockages, rest, and even stagnation constitute an analogy between body and society that informs the mindset of drug traders. The means of transport and moving of things in treated bodies, and the procedures of processing medicinal substances are themselves medical or pharmaceutical tools.

In this context, the concept of *tong* 通 has rich connotations in Chinese literature. It may just mark a place name, but in scholarly discourse it has contextualized connotations concerning societal relations and mobility administration. With all its multiple meanings, the concept marked, for example, coins in China continuously until the end of the Qing dynasty (*tongbao* 通宝).

When routes for circulation were opened up in society and territory, political discourse employed medical and pharmaceutical images of mobilizing substances in bodies. Just like physicians

and pharmacists who intervene in organisms, administrators move personnel and goods, and producers and traders of drugs provide the means to heal.

P38/4

Curie VIRAG

(University of Toronto/Central European University)

Cosmic pattern and human intelligence: the senses of tong 通 in early and medieval Chinese philosophy

I am interested in exploring an important ambiguity in the concept of *tong* 通. *Tong* refers, on the one hand, to the pervasive condition of things in the world, their free-flowing force, and their interaction or intercommunication. On the other hand, it refers to a certain optimal or perfected human cognitive, perceptual capacity, characterized by a comprehensive, penetrating understanding. Although both senses of the term can be found in the ancient classics, and continued to be invoked in later writings, the application of the term to human perceptual powers became increasingly developed from the Warring States period onwards.

Early philosophers invoked the term *tong* in describing the penetrating intelligence of sages, which was characterized above all by a capacity to connect things and to grasp their underlying oneness (e.g. Xunzi, Zhuangzi, Huainanzi). The value of *tong*, then, as an attribute of things in the world, and of the intelligent mind and its thoughts, assumes that the cosmos is unified and integrated, and also that human knowledge and perception should be capable of grasping the structured unity of things. It is therefore not surprising that *tong* was a pervasive term in the Han Dynasty, and that it would re-emerge as a key concept during the Song period.

The Concept of Tong 通: Grasping and Circulating Matter in the World, in Society, and in the Body according to Thinkers, Physicians, and Traders in Song, Ming, and modern China

I would like to explore two tensions arising from the ambivalence of the term *tong*. First: the value of *tong* presupposes that human beings are a part of an interconnected cosmos – that they are a thing among things – and yet the fact that our thoughts could penetrate this cosmos and contain its unity in our own minds suggests that human beings, possessing higher intellectual powers, stand apart from the world. Second, I examine a fascinating movement towards a more affective account of how human beings related to the world, as indicated by the use of the term *gantong* 感通 among Song Neo-Confucian thinkers like Cheng Hao. In this context, the human capacity to *tong* becomes not just a matter of unifying intelligence, but of being able to respond emotively to things in the world. This reflects an important strand in thinking about knowledge and intelligence in the Song period – one that may have been closely linked to a more experiential, practice-based understanding of learning and self-cultivation in the eleventh and twelfth centuries.

P39

The Cultural, Medical, and Political Impact of Vietnamese Pharmaceuticals - China and Beyond

Organisers: *Leslie DE VRIES & Annick GUÉNEL*

Looking at the history of pharmaceuticals in Vietnam from the 14th century to the present, our panel will examine how ideas and concepts about Vietnamese medicines, and medicines themselves circulated, were transformed, produced and traded. Although Vietnam throughout its history was nolens volens forced to interact with larger political actors, Vietnamese doctors were always keen to emphasize their “own” indigenous features. C. Michele Thompson will discuss the 14th century physician Tuệ Tĩnh who introduced indigenous Vietnamese materia medica to the Chinese court and wrote a text which situated these medicinal plants within Chinese medical theory. Leslie de Vries examines a Vietnamese physician who did exactly the opposite. He shows how Lê Hữu Trác adopted “warming and supplementing” medicine in Vietnam and explained its formulas as fitting the local climate. The other papers look at local pharmaceuticals in the context of colonialism and post-colonialism. The colonial period did not slow down circulation of Vietnamese pharmaceuticals. However, it introduced dramatic changes. Nguyen Thi Duong discusses the ambiguous stance the French took after their initial exposure to Vietnamese pharmaceuticals. On one hand, French researchers showed genuine interest in local medicines. On the other colonial authorities tried to restrict the practice of indigenous forms of medicine. French colonial scientists conducted pharmaceutical research on Vietnamese medicinal plants in collaboration with Vietnamese pharmacists trained at the University of Hanoi, such as Bùi Đình Sang. Laurence Monnais’ paper on the career of pharmacist Bùi Đình Sang will examine the modernization and hybridization of pharmacology during the turbulent period of the wars of independence. The global political and cultural context is further emphasized by Mitch Aso, who focuses on the “miracle drug” ASLEM. This drug originated from Franco-Vietnamese research. Aso analyzes why this drug became a popular panacea in Vietnam but not in France. The final paper comes full circle and Annick Guénel presents the case of artemisinin, an antimalarial drug extracted from an old Chinese medicinal plant, which the Vietnamese have succeeded in producing and exporting, thus securing their place in medicinal globalization. The common thread throughout the individual papers is an examination of what constitutes “Vietnamese” pharmaceuticals.

P38/1

C. Michele THOMPSON

(Southern Connecticut University)

***The Travels and Travails of
Tuệ Tĩnh 慧靖***

When the Vietnamese monk physician Tuệ Tĩnh 慧靖 (c. 1330-c.1389) was

approximately fifty-five years old he was sent as a living present to the Ming Dynasty by the Vietnamese royal court. Despite the fact that his travels were involuntary Tuệ Tĩnh’s journey to China and the medical text he wrote while living there had a profound impact on the history of

Vietnamese Traditional Medicine. Tuệ Tĩnh wrote his most well known text, *Nam Dược Thần Hiệu* 南藥神效 (Miraculous Drugs of the South), specifically to explain Vietnamese medicine to the Chinese. Tuệ Tĩnh had attracted the attention of the Vietnamese Trần Dynasty (1225-1400) through his work in the medical gardens and clinics attached to most Buddhist monasteries in Vietnam at the time. Through royal land grants and other forms of patronage Buddhist monasteries formed the closest thing to a public health system that Vietnam had and many members of the Vietnamese sangha were healers, pharmacists, and field botanists. Before being sent to China, Tuệ Tĩnh had traveled extensively within Vietnam on a common Buddhist circuit of monasteries. While some of his monastic companions spent most of their time studying and writing religious texts, Tuệ Tĩnh spent his time studying plants and composing texts in *nôm* (an ancient demotic Vietnamese script) on them. He also gathered local knowledge of plants and their properties. In fact some scholars regard Tuệ Tĩnh's work as ethnobotanical in nature. This essay will examine how the geographic mobility Tuệ Tĩnh experienced within Vietnam affected his approach to presenting Vietnamese herbal knowledge outside the Vietnamese cultural sphere to the Chinese. Tuệ Tĩnh was never allowed to return to his beloved homeland but he had a copy of *Miraculous Drugs of the South* sent to Vietnam and this text became one of the most revered of Vietnamese medical texts. Tuệ Tĩnh's knowledge and his medical philosophy made a full circle, from Vietnam to China and back to Vietnam, even if his body did not.

P38/2

Leslie DE VRIES

(University of Westminster)

**'Warming and Supplementing'
Formulas in Lê Hữu Trác's Hải
Thượng Y Tông Tâm Lĩnh**

In the second half of the Ming dynasty (1368-1644), several physicians in the Jiangnan (South of the Yangzi) region of China started to criticize the many followers of the prototypical scholar-physician Zhu Zhenheng 朱震亨 (1281-1358), who related to cold and bitter drugs in order 'to nourish yin and bring fire down' in case of yin depletion. Some of these later Ming physicians agreed that yin depletion was the cause of many disorders. Yet, they pointed out that the internal fire of the body, associated with the 'gate of life' (*mingmen* 命門), should not be harmed by formulas containing cold and bitter ingredients. Instead, they chose for an opposite approach of balancing water and fire through 'warming and supplementing' (*wenbu* 溫補) strategies. For this purpose, Xue Ji 薛己 (1487-1559), the father of *wenbu* medicine, particularly advocated the use of formulas such as the Pills with Six Ingredients (*liuwei wan* 六味丸) and Eight Ingredients (*bawei wan* 八味丸). Later *wenbu* physicians extensively referred to cosmology in order to legitimize Xue's style of medicine.

Although *wenbu* approaches were fiercely attacked by Han learning (*hanxue* 漢學) inspired physicians, who aspired to get rid of all cosmological derailment associated with the Song-Ming period, 'warming and supplementing' formulas remained popular, and not only in Jiangnan China. In Vietnam, Lê Hữu Trác 黎有暉 (1720-1791), who is together with Tuệ Tĩnh 慧靖 (14th C.) acknowledged as the founder of Vietnamese traditional

medicine, was very much inspired by the writings of the early Qing *wenbu* physician Feng Zhaozhang 馮兆張 (17th - 18th C.). Focussing on signature *wenbu* formulas, I will discuss how Lê Hữu Trác adapted Feng Zhaozhang's style of medicine to the Vietnamese context. Although Lê extensively quoted *Fengshi Jinnang milu* 馮氏錦囊祕錄 (Mr. Feng's Secret Records in a Brocade Bag) in his *Hải Thượng Y Tông Tâm Lĩnh* 海上醫宗心領 (Understanding the Medical Lineage of Hai Thuong), I will show how Lê put his own local accents. In the final section of my paper, I will reflect on the importance of formulas such as the Pills with Six and Eight Ingredients (known in Vietnam as *lục vị hoàn* and *bát vị hoàn*) in traditional medicine today.

 P38/3

NGUYỄN Thi Duong
(Han-Nôm Institute)

***Colonial Policy and Regulation of the
"Sino-Annamese" Pharmacopeia***

Without officially recognizing the use of traditional "Sino-Annamese" medicine, the French authorities were, nevertheless, interested in the native pharmacopeia. From the arrival of the French in Indochina, one of their missions was to study Indochina's fauna and flora. The Indochinese materia medica (certain samples of which are currently housed at the Pharmacy Museum of Paris) was sent to colonial and international expositions. This material consisted not only of items for display, but also of products likely to enter into the French pharmacopeia (replacement products and even new medications). For this purpose, the colonial government mobilized specialists and technicians for a study of this pharmacopeia and the growing of Vietnamese medicinal plants.

This pharmacopeia was not only a

potentially exploitable resource, but it was also an instrument of policy vis-a-vis native medicine. Not acknowledged by the colonial government, this traditional medicine, different in its practice than French medicine, could not be a subject of study. This was, at first, one of the reasons for the failure of the colonial government's regulatory efforts. Taking into account the tight links between the exercise of medicine and the delivery of drugs in traditional practice, the French authorities finally intervened in the regulation of the local pharmacopeia (fixing the mandatory conditions for commerce and import, banning poisons...), all while leaving aside the problem of surveillance techniques (although it was, in reality, raised). Thus they were able to limit the exercise of indigenous medicine, and circumscribe and restrain its modernization.

 P38/4

Michitake ASO
(University at Albany-SUNY)

***The Cold War Roots of a Vietnamese
"Miracle Drug"***

Vinphaco, a pharmaceutical company based in Vinh Phuc, currently holds the rights to produce a nonspecific immunostimulant called ASLEM. Marketed as a modern miracle of science, ASLEM is touted as dramatically improving rates of cancer survival when used to supplement other forms of treatment such as radiation, surgery, and chemotherapy. ASLEM, according to the company's website, also treats a range of diseases, including chronic liver disease, renal failure, pneumonia, and HIV/AIDS. Although ASLEM has received little attention outside of Vietnam, the drug owes its presence there to Cold War global networks. In 1958, a French research of Vietnamese origins isolated

glycyl funtumin (GF) from a latex-producing tree species found in Africa. Ten years later, another Franco-Vietnamese researcher Nguyen Dang Tam, used this molecule to synthesize a drug called LH1, later renamed ASLEM. Through his work on Agent Orange, Ton That Tung became interested in the potential of this drug to treat cancer. After the end of the Vietnam War in 1975, researchers at the Hanoi University of Pharmacy were able first to successfully synthesize ASLEM from raw materials imported from Africa, and then to synthesize the drug from more readily available precursors.

In this paper, I ask why ASLEM has had such great success in Vietnam. I argue that the answer has to do with work to treat the victims of Agent Orange, an interest in nonspecific medicines among Vietnamese, and openness to panacea. First, as one of the preeminent Vietnamese medical doctors of the time, Ton That Tung's interest quickly translated into an active research program based in Hanoi in the 1970s and 1980s and gave ASLEM a trusted reputation that is still used to sell the drug. The connection with Agent Orange gave further incentive, and a trial population, to create a body of literature supporting the effectiveness of ASLEM. Second, Vietnamese generally remain more open to panacea, or medicines that treat a range of symptoms, than those in Western countries such as France. In part this openness has to do with the cost of treatment and in part it has to do with ideas about *materia medica* associated with Traditional Vietnamese Medicine (TVM) that, for many reasons, have enjoyed a resurgent popularity. In other words, the inability to tie ASLEM to specific effectiveness has limited its appeal outside of Vietnam, while the Vietnamese public has been willing to spend large sums of money on this panacea.

P38/5

Annick GUÉNEL
(CNRS, CASE)

***Vietnamese pharmaceutical expertise
in the era of drug globalization:
the case of artemisinin***

In 1975, at the time of Vietnam reunification, a new and effective antimalarial drug was much needed for the health authorities. The Chinese were at the point of finalizing a research program, started during the Vietnam War, which had led to the discovery of the high therapeutic potential of an extract from the leaves of *Artemisia annua*, a traditional medicinal plant, known as *qinghaosu* or artemisinin. Before the end of the decade, after Chinese chemists had synthesized artemisinin derivatives - more stable than the original product - the drug could be mass produced. In Vietnam, clinical trials of the Chinese drug were conducted for the first time in a Hochiminh City hospital in 1982. However, the worsening relations between China and Vietnam, as well as the deplorable economic situation of the latter, prevented the drug mass import. In the early 1980s, the government launched the mobilization of Vietnamese scientists in several research institutes. A young chemist of the National Academy of Science was sent to Bulgaria, to study an extraction method of artemisinin and validate it with regard to wild *Artemisia* plants collected in the Northern Vietnamese provinces. Most of the research was conducted in Vietnam. A good deal of the scientific work was performed by the scientists of the Institute of *Materia Medica* in Hanoi. Vast plantations of *Artemisia* were created in the delta, as soon as an industrial scale production of artemisinin started, in the early 1990s. The research focused particularly on the plant improvement, i.e., increasing artemisinin content. In the mid-

1990s, the production of the artemisinin based drug could meet the domestic needs in Vietnam. Without dethroning the Chinese drug production, Vietnam could also rapidly export it to some Southeast Asian countries. The artemisinin based drug recommendation as the first line treatment in all malaria endemic countries by WHO in the beginning of the 2000s was a new challenge faced by Vietnam. The country is the second largest artemisinin producer in the world after China. However, although Vietnamese pharmaceutical companies produced finished medicinal products (Artemisinin Combined therapy as recommended by WHO), the country has conquered the artemisinin international market mainly by the export of raw material. Focusing on the problems that technological advances present for the Vietnamese pharmaceutical industry, we will discuss WHO imposed norms and the role of the Global Fund for malaria.

P40**Industrial Hazards and Public Health Sciences in Contemporary Japan, Taiwan and Korea**

Organisers: Paul JOBIN & CHEN Hsin-hsing

Toxic tort litigation, including pollution, occupational hazard, and product liability disputes, has long been one of the norm-setting mechanisms regulating technology in society since the Industrial Revolution. Litigation has often generated scientific and social debates that helped to publicize the potential hazards of industrial procedures and products. While this mechanism has been significantly set back in the U.S. by the introduction of the Daubert standards in the 1990s, different development in East Asia is taking place. Rampant disasters caused by “late industrialism” (Fortun) urged people to demand the court of law remain an important node where scientific knowledge and social values intersect.

Since Japan’s Minamata disaster in the 1950s, East Asia has become a region where rapid industrialization keeps bringing new health hazards to large populations. This panel explores some major developments in Japan, Taiwan, and South Korea in recent years, and discusses how production of scientific knowledge, in particular epidemiology and other public-health sciences, intersects with social debates in toxic tort litigations in the East Asian context, and how such controversies bring changes in the legal, scientific, medical, and other professional fields.

The first three papers focus on the role of epidemiology and other public health sciences in two prominent occupational hazard lawsuits against electronic companies —the RCA cancer case in Taiwan since 1998 and the Samsung Semiconductor leukemia case in South Korea. Both cases involve large number of volunteers from various professions and initiated wide-spread changes. Lin explores the vital gender aspect of scientific knowledge on health effects of TCE on women workers since the early 1970s to this day. Chen and Kong compares social dynamics bring about by the RCA and Samsung campaigns.

The last three papers focus on the evolution of epidemiology in Japan, from Minamata disease to Fukushima. Hotta raises the possibility of an epidemiological turn. We shall however discuss the difference between this epidemiological approach and the Japanese tradition of ekigaku (疫學), which in the 1970s gave birth to a set of judicial rules of evidence that has quite different orientations from that of the conservative Daubert standards. Jobin and Kojima on Fukushima focus on the legacy of the Hiroshima-Nagasaki surveys in the controversies that have arisen since the March 2011 nuclear disaster.

P40/1

LIN Yi-Ping

(National Yang-Ming University)

***Challenging Mainstream
Science: Trichloroethylene and Female
Electronic Workers' Occupational
Diseases in Taiwan***

For decades, the consequences for human health of trichloroethylene—a powerful solvent—have been neglected by international regulation bodies, which are dominated by American and European academics.

Meanwhile TCE had devastating consequences in Taiwan. In 1972, there were several cases of liver disease and sudden death of young female electronic workers in the Philco and Mitsumi factories in Taiwan. It was believed that these young female workers suffered from the acute intoxication of trichloroethylene (TCE) from their worksites. In 1974, TCE was banned in Taiwan, and the government promulgated a law to protect workers' health and to regulate solvent usages. Twenty years later, in 1994, the RCA (Radio Corporation of America) factory in Taiwan was impeached for polluting groundwater with TCE, perchloroethylene (PCE), and other industrial solvents. Subsequently, former RCA workers, who had been diagnosed with cancers, organized to voice their health concerns and potential exposure to the environmental and occupational hazards. In 1998, the government responded by initiating research in animal experiment, environmental health risk assessment, environmental epidemiology, and occupational epidemiology. However, these public health studies did not sufficiently verify correlation between industrial pollution and health. Up until 2014, the RCA toxic tort remained unsettled.

Following on a feminist epistemology,

I explore what happened historically at the margins of Western scientific medical research on the health effects of TCE. Female electronic workers' occupational health provides a salient example of an area historically marginalized by Western biomedicine and public health. I trace the industrial applications of TCE, the rise of young female electronic workers in Asia and how the scientific evidence of health effects and TCE toxicity was produced. I relied on archives that included news reports, government archives, company magazine, and scientific papers published in Chinese and English. I also conducted in-depth interviews with former RCA workers, members of the labor movement group, government officials, lawyers, and scientists.

P40/2

CHEN Hsin-Hsing

(Shi-hsin University)

KONG Jeong-ok(Korean Institute of Labor,
Safety and Health)

***The Use of Epidemiology in
Litigations on Electronic Workers in
Taiwan and Korea:
RCA, Taiwan & Samsung***

Two seminal campaigns regarding occupational hazards in electronic industries in East Asia - the Samsung leukemia case in South Korea since 2008 and the RCA (Radio Corporation of America) cancer case in Taiwan since 1998—have casted serious doubt on economic growth along the “high-tech” path. Litigation is at the center of both campaigns, but they have also generated widespread changes beyond the courtroom. They have influenced labor and environmental movements, the legal professions and judicial system, and various scientific disciplines, particularly occupational medicine. This article and

the next one try to start comparing how historical contexts and human agencies shape such changes in the two countries.

Taiwan and South Korea share close-linked historical trajectories. Both have civil-law legal systems transplanted through Japan in the late 19th century, and scientific-technological and administrative institutions in both countries are heavily influenced by the United States since the Cold War era. Both countries have undergone rapid industrialization under US tutelage since the late 1960s. Decades of authoritarian rule in both countries ended with political democratization since the mid-1980s; reform movements in the judicial system and the academe developed as part of the democratization process.

In spite of these similarities, South Korea has a much stronger tradition of labor movement and more concentrated corporate powers. Meanwhile, social movements in Taiwan are more dispersed, the environmental movement more visible, and the state and foreign capitals played more dominant roles during industrialization. These factors combined shaped different dynamics of occupational health and safety institutions in South Korea and Taiwan. Within these frameworks, the RCA campaign sues the American corporation in the civil court, but the Samsung campaign sues the government-run worker's compensation services in administrative court.

Both lawsuits have mobilized volunteer activists and professionals in various fields. What those participants experienced in the years of collaborative efforts, in turn, spur various socially-engaged outlooks and practices in their respective fields. Some of the changes can be observed in other science-intensive social controversies such as food safety and pollution. They exhibits potentials for reshaping science-society

interfaces as well as the sciences themselves.

P40/3

Paul JOBIN

(University of Paris Diderot)

KOJIMA Rina

(University of Paris Est)

Fukushima and the Epidemiological Legacy of Hiroshima-Nagasaki: Workers and Displaced Citizens

By the time of the 14th ICHSEA conference, the nuclear disaster that struck Fukushima and eastern Japan will have celebrated its four-year anniversary. Four years is generally a very short span for historians of science. Furthermore, the disaster of Fukushima is not yet history, but rather an ongoing disaster that could have health and environmental consequences for decades—if not centuries—to come, considering the half-life of radionuclides like cesium or plutonium. And this is precisely why we should not wait to address this issue from the perspective of the history of science.

In the controversies regarding the post-disaster consequences of radiation, i.g., over what exposure levels should be considered to be safe or unsafe, the legacy of Hiroshima-Nagasaki plays a tremendous role, much greater than that of Chernobyl. For decades, the surveys on large cohorts of the bomb survivors (*hibakusha*) have remained the main reference for epidemiologists studying other populations exposed to so-called “low levels of radiation” (under 100 mSv). But in post-3.11 Japan, this raises two important issues: first, this model harkens back to the founding trauma of postwar Japan; and second, it is based on the first nuclear bomb tests rather than on the first “level 7” nuclear power plant disaster.

In this two-part paper, we will present the results of sociological field research

among Japanese nuclear plant workers (in particular at Fukushima Daini and Daiichi power plants) started by Jobin in 2002 and continued on since June 2011, followed by separate field research conducted since June 2011 by Kojima among displaced citizens of the contaminated area due to the Fukushima disaster.

Part 1) Jobin will focus on the conflicts of epistemic interpretation related to the legacy of Hiroshima-Nagasaki in the negotiations between labor and environmental groups and the Japanese government (mainly the Ministry of Health and Labor) over the working and safety conditions faced by the workers employed in the cleanup of Fukushima Daiichi and other decontamination jobs.

Part 2) Kojima will focus on the conflicts of interpretation that have torn many families over whether to stay in (or return to) districts that, despite the government's declarations, are still at risk of significant exposure to radiation. The traumatic legacy of Hiroshima-Nagasaki plays a particular role in these conflicts.

P41**Medical Prognostication, Fate Prediction, and the Body in Early Modern China & Japan****Organisers: Marta HANSON & Stéphanie HOMOLA**

The papers in this panel address the related themes of numerology and fate prediction as they intersect with the human body. They will variously discuss four dimensions of these themes – the manual techniques of prognostication, multi-valent levels of meaning such as micro-macrocosm associations associated with such techniques, what various questions did these techniques seek to answer, and what were the intended audiences for the texts in which these methods were published, preserved, and transmitted.

*Physiognomy, for instance, represented a bodily typography from which one could make predictions about an individual's health as in Chang Chia-Feng research on pediatric physiognomy and chiromancy (palm reading) in the Song period. The body was also was a means for "chronomancy" (all divination techniques that take temporal parameters of some sort as their primary variables) and "daktylomancy" (the use of the fingers to make fate calculations based on chronomancy that was positioned in specific ways on the palm). Marta Hanson's research on "daktylomancy" in 16th-century Ming almanacs and encyclopedias, Matthias Hayek's work on "chronomancy" in early sixteenth- to late seventeenth-century "Eight Trigrams divination" in Japan, and Stéphanie Homola's historical and anthropological research on the Buddhist divinatory handbook Damo's Book of the Palm (extant in the Ming and still used today) all discuss the combination of numerology, fate prediction, and daktylomantic practices. Chinese numerology, chronomancy, and fate prediction also became an important dimension of European sinology as Robert LaFleur will show in his analysis of the numerology chapters in Marcel Granet's classic *La pensée chinoise* (1934).*

These papers will also address some of the following questions. What was the range of manual techniques used for prognostication found in their sources? How were they mnemonic, metonymic, and multivalent? What range of problems did these calculations address socially, culturally, psychologically, medically, etc? Related to their multi-functionality and multivalency, what interactions were there between different arenas of use? Were, for instance, chiromancy and daktylomancy related? Are their connections historically among these different manual techniques of prediction and religious practices, such as the Daoist use of hands in rituals to "call down" astral spirits, or even game playing with the hands? Together these papers explore these various issues.

P41/1

CHANG Chia-feng

(National Taiwan University)

***Divination and Diagnosis:
Physiognomy of Children in Chinese
Medical Literature***

This paper aims to examine the art of physiognomy and diagnostic methods of children in Chinese medical literature. From the Jin dynasty onwards, pediatric texts and experts have increased in terms of both quantity and quality, and thus pediatricians started to claim their own domain and gradually clarify and formulate this new medical field. Unlike adult patients, who could speak of their pain, infant and toddlers could only cry for medical attention. In order to help these young, “silent” sufferers, pediatricians not only further developed and innovated the extant technique of *wang* (looking) to determine their client’s health, but also applied physiognomic skills to foretell either healthy or sick children’s current and future health. Physiognomy was used as a diagnostic tool to enhance the accuracy of diagnosis, on the one hand, and to compete with other healers in the open market, on the other. By delving into its technique, doctrines, and practices, we can obtain a better understanding of the close relationship between *shushu* 數術 and medicine, and of the characteristics of pediatrics, the medical culture, and the collective social expectation of children in pre-modern China.

P41/2

Marta HANSON

(Johns Hopkins University)

***Variations in Daktylomancy & Fate
Prediction in Ming Almanacs &
Encyclopedias***

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? Chinese hand mnemonics (*zhangjue* 掌訣) allow one to enter both the minds of those 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 boom, these bodily arts of memory bridged esoteric and vernacular domains of knowledge, particularly in astrological prediction and medical prognostication. Hand mnemonics in Ming almanacs, encyclopedias, 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 focus on the algorithms (or set of rules followed in calculations) that emerge from a study of dozens of illustrations of hand mnemonics and related examples of daktylomancy that circulated in the Ming, such as the *Shilin guangji* 事林廣記 (1325 ed.), *Leibian lifa tongshu daquan* 類編歷法通書大全 (ca 1470s), and the *Miaojin wanbao quanshu* 妙錦萬寶全書 (1612 ed.). I argue that both the spatial orientation of the characters projected onto the palm’s divisions and the corporeal movement of the fingers in these hand mnemonics facilitated memorization & calculation. Furthermore, the range of rules for moving through the established forms of “chronomancy” in the palm of the hand allowed the astrologer (and self-styled soothsayer alike) great flexibility in making fate predictions appropriate for the time, place, and individual.

P41/3

Mathias HAYEK

(Université Paris Diderot – CRCAO)

***Grasping the Cosmos: Hand
Mnemonics and Modular Dialing in
Early Modern Japanese Divination***

Many divination techniques, from the West as well as from the East, use temporal parameters as their ‘primary values’. Such techniques may be referred to as forms of ‘chronomancy’. In the ‘Sinicized world’, we find several of such techniques that, while pertaining to different ‘local’ categories (calendar, Yijing, astrology etc.), show signs of structural and procedural likeness. In that regard, one may wonder if using temporal elements to perform a divination imply a particular framework reflected in the techniques themselves? In this paper, I would like to give some keys for answering this question by looking at three different techniques used in Early Modern Japan (17th-19th century): divination by the eight trigrams (*hakke uranai* 八卦占い), a kind of horoscopy and “calendar astrology”; “Plum-blossom changes in the mind” (*Baika shinèki*, Ch. *Meihua xinyi* 梅花心易), a form of Yijing-based arithmology; and a “fate calculation” technique (*sanmei* or *kanmei*, Ch. *suanming*, *kanming* 算命, 看命) based on twelve ‘stars’.

Although they belong to different categories, they all involve similar algorithms, based on modular arithmetic. What is more, from at least the seventeenth century, these techniques offer similar ways to project tables and circular diagrams onto the practitioner’s left phalanx bones and thus turn the hand into a kind of computing device.

By looking at both the similarities and the differences between these techniques, my goal here is to shed light on the operative processes involved and to try to

understand the nature of relations between data, parameters, signs, and results.

P41/4

Stéphanie HOMOLA

(Collège de France)

***Reading Karma in the Hand: the
Textual History and Present-day
Practices of Damo’s Book of the Palm***

The *Book of the Palm* (*Yizhangjing* 一掌經) is a divinatory handbook retrospectively attributed to the monk Yixing 一行 of the Tang Dynasty that is widely used today in Mainland China and Taiwan. This manual combines the technical device of hand mnemonics with a Buddhist terminology of prognostication. Hand mnemonics consists in helping oneself with the palm of the hand to make various computations by pressing the thumb on the phalanges of the four other fingers. Although lay people can use this method to understand and improve their lot in the repeating cycle of birth, life, and death, the text emphasizes that it was primarily intended for Buddhist monkhood, either to know if one was fated to be a monk according to one’s birthdate or to help monks follow the Buddhist path.

Whereas textual history can help understand how Buddhist and Taoist concepts and practices involving the hand intertwined in this manual, anthropological fieldwork among present-day practitioners can help us understand how the method, that is often described very allusively, actually works and in which particular context it is used nowadays. This presentation will examine how such action-oriented devices are implemented both in daily life and in specialized contexts, including living practices on the Internet. It will focus on the kinesthetic use of the hand in its mnemonic, ritual, educational, and ludic dimensions, as well as on the role

of visual devices such as hand diagrams in the transmission of knowledge.

extraordinarily versatile ways that continue to provide insights eight decades after its publication.

P41/5

Robert LAFLEUR
(Beloit College)

Bodies in Movement: Number and Cyclicity in Marcel Granet's La pensée chinoise

Marcel Granet's (1884-1940) *La pensée chinoise* is one of the classics of twentieth century sinology, and yet the book's influence has not extended as far as some others from his era. The lack of an English translation is part of the problem, but Granet's distinctive role as a social theorist and sinologist is perhaps even more important. A student of both Emile Durkheim and Edouard Chavannes, Granet blends the tradition of the *Année sociologique* school with a close reading of early Chinese texts. Sinologists have often failed to appreciate the social theory in his writings, and sociologists have often been baffled by the complexity of his sinological points.

This paper will examine the rich social theory and sinology in Granet's extended analysis of numbers. The chapter presents an extraordinary array of perspectives on the way the body is situated in—and moves through—time and space. From a reference to hand mnemonics to treatments of divinatory practices, Granet proceeds toward the numbered movements of notes on the musical scale. He concludes with the microcosmic architecture of the *mingtang*. In emphasizing its social and seasonal dynamics, he calls it a “house of the calendar.” I will show that no dimension of Granet's thought should ignore the Durkheimian social theory that underlies all of his work. In turn, the Chinese sources allow him to use that theory in

P42**Compressed modernization and emerging risk society in Korea
- A Socio-Historical Approach****Organisers: PARK Jin Hee & KIM Hyomin**

While Korean society is praised for its rapid economic success based on the nation-state's developmental regime, which subordinated science and technology policy to economic policy, there exist some doubt as to whether this success will be continued in the future. The speedy industrialization and the technical development helped people to enjoy material welfare and high incomes. However at the same time this techno-scientific transition of Korean society invites unexpected risks which might undermine the ground of society. The electrical systems introduced for industrial purposes are highly dependent on nuclear power; this increases the risk of nuclear accidents. The growing digitalization without consideration of social justice makes the digital divide a new social risk. In this way we can find many clues which indicate that Korean society can be named a 'risk society' in the sense of Ulrich Beck's concept. As Tae Gyun Park (2007) or Hyong A Kim (2005) showed, the economic policy during 1970s let "Nebenwirkungen" (side effects) of science and technology ignored and the philosophy of policy remained almost unchanged until now. Those ignorances made it difficult to implement a new risk management policy. The historical context might explain the characteristic of the current risk policy.

In this panel we will discuss about how risks in various fields of Korean society are historically shaped and how relevant risk policies constructed historically. The historical studies of risk society in Korea might refine diagnostic which are now given by sociologists. The first paper will figure out the historical underdevelopment of risk management policy for nuclear power plants in Korea. In the second paper we will discuss how the nuclear waste management policy have been evolved in the social context. The third paper follows the historical development of biopolitics which are involved in women's health risks. This study will show how the governmental mobilization of biomedical resources described by J.P. DiMoia (2013) influenced women's health. The emerging risks in Korean society are related also to food safety. A series of food safety scandals undermined the reliability of the government. The fourth paper will describe the socio-historical evolution of food safety policy in Korea.

All papers will be grounded on the analysis of historical documents mainly produced by the governments and secondary literature on the modern history of Korea.

P42/1

KIM Hyomin

(UNIST (Ulsan National Institute of Science and Technology))

The historical development of risk management policy for nuclear power plants in Korea

With the operation of kori-1 nuclear power plant in 1978 Korea society had set foot in the nuclear age literally. During the 1960s the nuclear power plant was symbolized as high technology for modernization and essential fuel for industrialization. High risks of radioactive materials and environmental hazards of nuclear power plant were ignored and drew no public attention. The first nuclear regime was founded on the institutionalization of promoting body and laws without considering technological risks of nuclear power plant. In the 1970s the safety policy for the nuclear power plants was implemented, but mainly for the successful operation of plants. After the Chernobyl disaster the environmental movement and citizen movement called public attention to the radioactive contamination by the nuclear power plants. This resulted in the institutionalization of nuclear safety policy which allowed the formal separation of regulatory department from the promotion within the ministry.

Since the 1990s, Korean nuclear energy regulatory policies started to change from earlier technocratic policies into open dialogues after several anti-nuclear protests. However, technocratic policies still coexist with the new regulatory orientation towards openness, participation and institutional accountability. With the analysis of newspaper contents and interviews with stakeholders in nuclear issues, this paper analyzes Korean nuclear regulatory policies since approximately 2005 as a

blend of old and new governance. The aim of the paper is not to decide whether new nuclear governance is deliberative or not by completely reviewing Korean nuclear policies after the 2000s. Instead, it provides a historical and empirical account of how seemingly more participatory processes in decision-making have entailed new problems in nuclear regulatory policies while they work with and reproduce social assumptions of the public.

P42/2

LEE Young Hee

(Catholic University)

Politics of risk governance and expertise : focused on the historical evolution of nuclear waste management in Korea

The politics of risk management regarding science and technology in modern societies is closely related to the conflicts between technocracy and democracy, that is in fact "politics of expertise". Nuclear waste management system is a good case showing the politics of risk management and the politics of expertise. The purpose of this paper is to analyze the historical evolution of nuclear waste management system and the politics of risk governance in South Korea from the viewpoint of STS studies on the politics of expertise.

Historically South Korea had suffered from nuclear waste management problems coming from large numbers of nuclear reactors since mid '80s. It has been extremely difficult for the Korean government to secure a stable disposal site for the nuclear waste due to enormous resistance from the local people. Fortunately South Korea barely succeeded in securing low and intermediate level nuclear waste disposal site in 2005 after

tremendous social conflicts. However, it is currently confronted with the much more difficult task of high level nuclear waste (mainly composed of spent nuclear fuel) management coming from 23 nuclear power plants. The Korean government's nuclear waste management paradigm can be characterized as technocratic: it has pursued an elitist approach so far relying exclusively on experts and technical bureaucrats. No significant participation of the civil society has been allowed until recently. However, Korea's anti-nuclear movement has been expanding its influence after Fukushima disaster and strongly demanded a public dialogue program on nuclear waste issues as well as the phasing-out of existing reactors.

One of the responses from the Korean government was the official launching of PECOS (Public Engagement Commission on Spent Nuclear Fuel Management) on October 30 2013. Does this mean a paradigm change from technocratic to participatory risk governance with regard to nuclear waste management policy? However, it has raised conflicts further rather than solving problems after two anti-nuclear activists selected as members of PDC resigned immediately, criticizing that most members nominated were pro-nuclear people. Considering this, I will conclude by discussing the prospects of the politics of risk governance and expertise regarding high level nuclear waste management issues in Korea in the near future.

 P42/3

PARK Jin Hee
(Dongguk University)

***Biopolitics for economic growth:
from family planning to low fertility
policies***

With the development of technology more and more women are involved in the medicalization of their bodies. During the 1960s women's bodies became the object of state regulations which aimed to promote the economic growth by reducing population. Experiments of contraception technology on their bodies were conducted without any obstacles. Due to the lack of a feminist movement, the risks of reproductive technologies were not publicized and the predominance of Confucianism allowed women to accept the state's intervention on their bodies. The ideology of modernization and industrialization which was steadily emphasized by the military regime also persuaded women to play an active role in the medicalization of reproduction. These all sustained the further development of a second generation of reproductive technologies during the 1990s. The political democratization made the government's intervention in reproduction difficult. Although the ideology of familism began to affect women's decision making in acceptance of technologies during the 1990s, the dominant frame of shaping the history of reproductive technologies in Korea was outcome-oriented developmentalism.

Although the social status of women in Korea has improved and the hierarchical structure in the family have been more or less mitigated, the orientation of governmental biopolitics to economic development remained unchanged. The policies of low fertility which concerned

the decreasing birthrate during the 2000s focused also on the medical support of women with infertility. The women-friendly reform of work places and the institutional supports of child care were hardly tried. The medicalization of women's body were preferred.

In this research field, John P. Dimoia's recent book, *Reconstructing Bodies* (2013) explaining how the South Korean government mobilized biomedical resources and technologies to consolidate its desired image of a modern and progressive nation could be a useful reference. In this paper we will examine the history of biopolitics in Korea and figure out how the technoscientific practices of women have been historically shaped and transformed.

P42/4

KANG Yunjae

(Dongguk University)

JEONG Taeseok

(College of Education, Chonbuk National University)

The socio-historical approach to the Korean food safety policy: the co-evolution between expert-knowledge power, citizenship, and governance style

In 1962, the Food Sanitation Act was enacted and opened a new era in the Korean food safety policy. With this act the Korean government began to manage the health risk caused by food safety scandals.

With the rapid industrialization, the mass production and consumption of foods became part of every day life. Manufactured foods demanded a newly organized control system of food safety. During the 1980s the risk management system for food safety was incrementally advanced and the administrative organization; for example, the Korean Food & Drug Administration

was established in 1998.

in the 2005, the clause of food risk assessment was included in the revised Food Sanitation Act and the Framework Act on Food Safety. These two acts appears as a turning point of Korean food safety policy. It has been taken for granted for a long time in Korea that there needs to be a catch-up strategy in food safety policy and that the pressing task is advancement and expertization. Recently, food risk affairs intertwined with foreign countries, such as the BSE affair (2008), the FMD affair (2010), and the imported sea food affair (2013), have broken out repeatedly. According to Beck's idea of a world risk society, the food risk should also be considered as issues involved in the global food system, which is dominated by the multinational food industry. The situation seems to be tricky. While we need a catch-up policy, we also need a the politics of expertise.

In our 2014 survey, it turned out the the food risk issue is the most sensitive one to Korean people. The trust in the food system and government's food safety governance has become worse and worse; the social endeavor for building an alternative food system has become bigger and bigger.

In this historical and political context, we try to outline the history of Korean food safety policy and to find out the context of policy changes and explain the co-evolution between food citizenship and food governance.

S1

Knowledge of China's sea-space by practitioners

S1/1

Stephen DAVIES

(University of Hong Kong)

Routes, rutters, navigational techniques and the development of navigational aids in traditional Chinese seagoing: the case of the compass

This paper will consider magnetic compasses as navigational aids in traditional Chinese seagoing in the light of the history and development of the science and technology of the magnetic compass. It will contend that in principle the magnetic compasses carried aboard traditional Chinese vessels (and equivalently equipped vessels elsewhere) before the late 17th century cannot have been reliable aids to navigation and that no prudent mariner would have used them as such. The most widely accepted pre-17th century traditional seagoing compass water-bowl design will be evaluated in the light of the known, iron fastened, multi-cellular box girder structure of contemporary Chinese seagoing ships and the waters in which they operated. A similar evaluation will be made of the post-17th century, dry pivot design. Both will be compared to the development of the magnetic compass, and of theories of geomagnetism and compass design between the 12th and 19th centuries in the west. Some conjectures will be ventured in the light of the foregoing analysis as to the meaning and practical application of the 'needle paths' associated traditional Chinese route maps and rutters.

S1/2

Paola CALANCA

(Ecole Française d'Extrême-Orient)

Time/distance measures on China seas

In this paper, the author will focus on the terminology related to the notion of maritime distance in Chinese sources in order to appreciate its geographical and professional uses, and in doing so to enhance our understanding of the navigational space within which Chinese mariners moved. This will be done by examining the use of some specific terms – *geng* 更 (distance covered during a watch), *ri* 日 (distance covered during a day), and *chao* 潮 (distance covered between two tides). She will also analyze how Chinese mariners used these measures, and probably also what seamen observed in order to determine them, particularly in the case of *chao*.

Finally, she will compare sea pilots' guides and rutter instructions for the same route, and their use of these terms (*geng*, *ri* and *chao*) to verify if they provide the same distance. This should be done by examining, as far as possible, this terminology in the same nautical context. This research will rely both on literary sources, thanks in particular to the discovery of many "sea pilot guides" (*genglubu* 更路簿 or *shuilubu* 水路簿) in Guangdong and Fujian, and on field research conducted with fishermen in the Taiwan Strait.

S1/3

Léonard BLUSSÉ

(History Department, Leiden University)

Seventeenth century Dutch navigational aids for the China coast

When during the seventeenth century Dutch sailors began to explore the tricky waters of the South China sea with its many rocks, shoals and reefs, they first used Portuguese *roteiros*, which provided sailing directions and indicated distances between the most important landmarks along the traditional shipping routes. Most likely they also acquired sketched coastal profiles and maps, so useful for sailors who did not know the coast along which they were sailing. In this paper I shall describe and analyze the extraordinarily detailed *Nieuwe Stuxwijze beschrijving van de Indische Noord* (Piecemeal description of the routes to the Indian North), a compendium of maps, coastal profiles and sailing directions made from 40 ship journals which once belonged to a certain Claas Bichon, a navigator in the service of the Dutch East India Company (VOC). A closer look reveals that much local knowledge from Chinese pilots was included in this navigational aid. The album was compiled for the expeditionary fleets of Admiral Bort in the early 1660s when, during the expeditions against the Ming loyalist Zheng Chenggong, alias Coxinga, many reconnaissances of the Chinese coast had to be carried out. In addition to land sightings, sailing directions and coastal profiles, this portfolio contains 8 very well executed navigation charts which deserve further scrutiny.

S1/4

CHEN Kuo-tung

(Institute of History and Philology, Academia Sinica)

Sailing along the Coast of Taiwan: About Geographical Knowledge and Landmark-sighting of the Junk Passage in the 17th-19th Centuries

The Island of Taiwan came into notice not longer than 500 years ago. At that time, both China and Europe - where its discoverers came from - has owned highly developed navigation skills. Europeans noted down some of their observation while sailing along the Taiwan coast, but the Chinese themselves, who plied frequently between Taiwan and the Chinese Mainland, left more records. However, these records are not kept by the navigators. Instead, the Island of Taiwan came into notice not more than 500 years ago. At that time, both China and Europe - where its discoverers came from - had highly developed navigation skills. Europeans noted down some of their observations while sailing along the Taiwan coast, but Chinese navigators, who plied frequently between Taiwan and the Chinese Mainland, left more records. However, these records were not kept by the navigators themselves. Instead, this kind of information was observed, collected, and written down by Chinese literati-officials. This paper intends to use these records in order to reconstruct and extend our knowledge about the junkmen's geographical reckoning and their ways of identifying specific locations while sailing.

S1/5

CHENG Weichung
(RCHSS, Academia Sinica)

***Sailing from the China Coast to the
Pescadores and Taiwan: A Case Study
on Sino-Dutch Nautical Knowledge
Transfer (1622-1636)***

The Dutch East India Company (VOC) controlled the southwestern coast of Taiwan for thirty-eight years as an entrepôt within its trans-Asian trading network. This began when, in 1622, the VOC'S attempt to capture Portuguese Macau misfired.

Consequently the Dutch discarded the plan to use Macau as a gateway to China trade, and instead anchored in the Pescadores to launch a parley to the Chinese authorities for free trade. After two years of negotiation and conflict, the VOC were forced to leave. They therefore moved to Taiwan, which is one day's journey away from the Pescadores, and thereafter initiated a colonial enterprise. As a latecomer in East Asian waters, the VOC frequently stole Portuguese nautical documents when engaging in piracy on the high seas. However, since Taiwan's waters were located on the margins of Portuguese shipping routes, these Portuguese documents did not contain sufficient nautical knowledge about this area. The VOC mariners thus had to collect information on their own with assistance from Chinese mariners.

The early sailing instructions for the China coast, the Pescadores and Taiwan (especially present-day Anping [安平]), recorded in the VOC archives, and the sea-charts produced during the same period therefore carry information that reveals the traditional navigational style of Chinese mariners sailing between those various shores. In this article the author traces the contacts between the Chinese and Dutch

mariners from 1622 to 1636 and encodes the nautical information preserved in the sailing instructions and sea-charts that survive in the Dutch archives. In relating them to earlier Chinese sea-routes and later geographical narratives, the author attempts to re-construct the process by which navigational knowledge was transferred from Chinese to Dutch mariners.

S1/6

Pierre-Yves MANGUIN
(Ecole Française d'Extrême-Orient)

***Sea pilots for the China Sea:
towards a multilingual catalogue***

Sea pilots – as is true of most nautical literature of a technical nature written in Asian as well as European languages – have so far been left largely untapped as a source by historians of Asia. Considering only the 15th-17th century period, we now have good editions and extensive translations in both French (Ferrand) and English (Tibbetts) of such texts written in Arabic, and some useful, if too hasty, editions in English of comparable Chinese sea-pilots (Mills). The Portuguese *roteiro* literature is by far the least well known, much of it remaining in manuscript form, but a few of these texts have been published or commented upon by specialists of Asian history (Boxer, Manguin, Moura). Very few of these texts have actually been used as full-fledged historical sources, providing information not only to the student of navigational techniques, but also to those maritime historians seeking information on trade networks, historical geography, etc. This paper attempts to present a preliminary catalogue of the texts available for the China Sea, and, on the basis of a few case studies, points to differences and convergences between texts stemming from various cultures.

S2

Freud in Japan

S2/1

Christopher HARDING
(Edinburgh University)

***Remaking Freud for Japan:
Psychoanalysis as Spiritual Path***

This paper looks at how Kosawa Heisaku, the ‘father of psychoanalysis’ in Japan, sought to remake Freud for a Japanese clientele. It draws on hitherto unseen family archival material to argue that Kosawa did this in two major ways.

First, Kosawa construed Freud’s life and mission in psycho-spiritual terms, believing Freud to be a Shinran for modern times (a reference to a great Buddhist reformer from medieval Japan) and rejecting as sub-standard much of the rest of what passed for ‘psychoanalysis’ in Vienna when Kosawa worked there in the early 1930s. This ‘remaking’, then, was not so much a cultural adaptation of Freud and his ideas, nor a simple relocation from one place to another – both of these are popular models for understanding the internationalization of psychoanalysis and Japan’s adoption of western technologies and intellectual disciplines in general. It was more a dramatic shrinking of time and space, in Kosawa’s mind, so that Freud and Shinran were made to stand alongside one another, serving the same unchanging and universal human needs.

Second, Kosawa responded to the two nation-building agendas through which he lived – the pre-war and the post-war – by asserting the potential of psychoanalytical psychotherapy to speak to a rich variety of Japanese needs: from the everyday emotional fragilities and relational

problems in which mainstream university psychiatry was slow to take an interest, to the creation of a psychologically sound educational syllabus for Japan’s children.

S2/2

Bernhard LEITNER
(University of Vienna)

***Matter over Mind - On Neurological
Psychiatry and the Absence of Freud
in Japanese Medical Academia***

The huge impact of the Viennese neurologic paradigm on Japanese psychiatry at the brink of the 20th century can only be roughly estimated today. Every substantial research on the history of Japanese psychiatry credits the strong connection of the first generations of Japanese psychiatrists to Vienna, but a detailed account is still missing today. How did exchange in psychiatry between Austria and Japan happen? How did Viennese psychiatry and neurology shape the emerging academic psychiatry in Japan? Besides German institutions, pioneering Japanese psychiatrists visited Vienna to study at the famous Neurological Institute of the University of Vienna, first of all the “father” of modern Japanese psychiatry Kure Shuzo. There they received basic training in microscopy and dissection, affecting the praxis of psychiatry in Japan.

At the same time in Vienna Sigmund Freud gave rise to a whole new “psy” discipline. Although psychoanalysis gained noticeable influence among psychiatrists in Europe and the US, it had a considerably smaller effect on Japanese medical academia. Could the strong ties between Japanese psychiatrists and the Viennese

Neurological Institute have inhibited the development of psychotherapy in Japan? These questions open a new field in the transnational history of psychiatry.

I am going to analyse the distinct psychiatric thought style and its associated thought collective constituted through exchange of Japanese scholars with Viennese colleagues around 1900. I use the conception of thought style and thought collective from Ludwig Fleck to emphasise the social dynamics of scientific knowledge production. I will start with shortly introducing Heinrich Obersteiner, the founder of the Neurological Institute. I will then take a look at the scientific output as well as personal networks of psychiatrists from Tokyo at the Neurological Institute in Vienna focusing on Kure Shuzo to outline the basic structure of their thought style and thought collective. I will also indicate the persistency of this thought collective by drawing on the work and life of Saito Mokichi. He studied in Vienna almost three decades after Kure Shuzo, when psychoanalysis was already established. I would like to show how this Austrian-Japanese thought collective may have contributed in repressing the advent of psychotherapeutic currents in Japanese academic psychiatry in favour of strengthening a distinctive neurological psychiatric thought style in Japan.

S2/3

Sarah TERRAIL LORMEL
(CEJ, INALCO)

***Psychotherapy without Freud:
Morita Shōma's criticism of Freudian
psychoanalysis (Japan, 1920s-1930s)***

While psychoanalysis was already an established movement in several Western countries and was just beginning to gain momentum among some intellectuals,

psychologists and doctors in Japan, starting in the 1920s and in the 1930s it has been the object of strong criticism by a Japanese psychiatrist himself highly interested in the neuroses and their cure. Morita Shōma 森田正馬 (1874-1938), a graduate from Tokyo Imperial University and disciple of the “father” of Japanese psychiatry, Kure Shūzō (1865-1932), had started in 1919 to promote his own psychotherapy of neuroses, later known as “Morita therapy”, that would in the following decades prevail as the dominant form of psychotherapy practiced by Japanese psychiatrists. After some 15 years of therapeutic practice, Morita was judging that if psychoanalysis could be of some interest for psychological exploration, its psychopathological theory was wrong and its cure mostly ineffective. Was his a mere replication of German psychiatry's rejection of psychoanalysis? One may wonder why Morita was so resolutely opposed to Freudian theories, since he was himself firmly convinced of the limits of modern medicine's “materialism” and was a strong advocate of a psychogenic understanding of neuroses, and moreover wasn't institutionally strictly tied to Japanese psychiatry's neuropathological mainstream. I will try to answer this question by first setting out Morita's arguments against psychoanalysis and the local debate crystallized around Morita and Marui Kiyoyasu (1886-1953) –the first psychiatrist to teach psychoanalysis in Japan– at the turn of the 1920s. Then I will replace the Moritian criticism of Freudianism in the historical context of the establishment of psychotherapy in Japan as a scientific medical method in a period of blooming of “alternative” psychological therapies.

S3

The arts of the fire: Ceramics and Enamels

S3/1

Béatrice WISNIEWSKI

(Ecole Pratique des hautes Etudes)

The question of written sources in studying ceramic traditions of ancient Vietnam

The more we go back in time, the more ancient Vietnamese sources become scarce and lose diversity. The language was first written relatively late, probably around the late 13th century and early 14th, through the system of Chinese characters, in the complex form of the *nôm*. Thus, the first references to the Viet territory appear in Chinese narratives (*Yuanhe junxian zhi* 元和郡縣志 - 812 or 814 A.D., *Jiu Tang shu* 舊唐書 - 936-946 A.D., *Taiping huanyu ji* 太平寰宇記 - 976-984 A.D.). Much of the information we have on geography, crafts or customs of ancient Vietnam, comes from these sources. The data are often limited to geography or dynastic history, military facts and the large undertakings of the State. We learn about diplomatic relations and battles as well as resources of the country through trade notes and embassies. For earlier periods, it is difficult to find, in these texts, information, even remote, on the craft of ceramics. The inventory of written sources on this subject reveals their weakness. There are, however, sources, that can be described as secondary, offering some perspectives, such as inscriptions on pieces, on steles posted near by the temples dedicated to the guardian spirits of pottery villages or, for the first millennium, the sources of Chinese officials concerning variations of goods taxation between the south of China and the Red River Delta

(in Sima Guang's 司馬光 *Zizhi Tongjian* 資治通鑑 - 1084 A.D. - and in Sanguo zhi 三國志 [*The Chronicle of the Three Kingdoms*] - 220-280 A.D.). We propose here to describe these missing links in the Vietnamese sources and initiate the analysis of secondary sources providing the most relevant information on the evolution of the ceramic traditions of Vietnam from the late first millennium until the 18th century.

S3/2

ZHAI Yi

(Laboratoire d'Archéologie Médiévale et Moderne en Méditerranée)

Persian Savants' Opinion about Ancient Chinese Stoneware

It is well accepted that certain techniques in Islamic ceramic are inspired by Chinese white stoneware. The opaque white glazed ware, invented during the 9th to 11th centuries, imitated the Chinese white stoneware of the *Xing* type. Later on, another accomplishment, the fritware, with not only a white surface but also a whole white body similar to the white porcelain of the *Ding* type, was first produced in Egypt or West Asia at least in the 12th century.

Therefore, it is interesting to study how Islamic craftsmen understood the Chinese pottery. Fortunately, clues can be found in the works of a few medieval Persian savants. The *Kitâb al-Jamâhir fi al-Jawâhir* (The Book Most Comprehensive in Knowledge on Precious Stones), completed by Abū Rayhān Bīrūnī in 1035 A.D. and the *Jowhar-nâme-ye Nezâmi* (the book of jewels for Nezâmi) of Mohammad al-Jowhari al-Neysâpuri, dated to 1196,

literally mentioned “Chinese porcelain” in the text. Moreover, the famous treatise about ceramic fabrication of Abu al-Qâsem Kâshâni in his *Arâyes al-javâher va nafâyes al-atâyeb* (The Spouses of Jewels and the Wealth of Drugs), dated September 1300 A.D., contains information about the fritware. Considered as representatives of knowledge at that time, these works can help us understand why the development of Islamic pottery took a different route than the Chinese counterpart.

Al-Bîrûnî's main opinion about the “Chinese porcelain” followed by Al-Neyshâpuri covers the following three kinds of content: the materials, the processes of fabrication, and the final potteries. Based on their knowledge about Iranian pottery they described their understanding about Chinese porcelain. By analyzing these details, we draw two conclusions. First, some processes of fabrication are shared by both the Iranian and the Chinese craftsmen, for example crushing and purifying the primary material, stamping the paste and its importance. These commonalities stem from the common human conscience of the old art of fire. Second, on the other hand, the view of “*tîn al-sînya*” (clay from China), considered as a kind of the purest quartz, presents an ignorance of the importance of highly fired clay in the Islamic world. This diverged understanding of material constitutes the main difference between the porcelain body and the fritware's body.

S3/3

LI Weidong

(Shanghai Institute of Ceramics, Chinese Academy of Sciences)

The Evolution of Porcelains from the Dehua Kiln Site of Ancient China

Dehua 德化 county is located in central Fujian Province on the southeast coast of

China. Dehua is surrounded by mountain and water, rich in porcelain stones, has a convenient transportation, and has been a famous ceramics making area in south China. As far back as the Neolithic Period, people in Dehua already knew how to make hard pottery. Porcelain making in Dehua started in the Tang Dynasty (618-907 A.D.), a book named *Tao Ye Fa* 陶业法 on porcelain making technology was handed down. Dehua porcelains began to be exported abroad in large quantities in the Song Dynasty (960-1279 A.D.) and Yuan Dynasty (1279-1368 A.D.) to Southeast Asia and the Middle East along the Marine Silk Road. Dehua white porcelain production reached its climax in the Ming Dynasty (1368-1644 A.D.), when a large varieties of Dehua white wares were exported to Europe, called *blanc de chine* by the French. *Blanc de chine* is the masterpiece of Dehua white ware with an ivory white tone, a translucent body and superb shaping and sculpture workmanship, thus often called as “lard white” or “ivory white”. In the Qing Dynasty (1644-1911 A.D.), blue and white wares became the main export item of Dehua kiln, thus the output and quality of white porcelains declined dramatically.

The production of Dehua porcelain always catered to the demand of overseas market, accordingly the development and flourish of Dehua porcelain has always been closely related to the export trade.

Over 200 kiln sites from the Song to Qing Dynasties have been discovered within the scope of Dehua county. Archaeological excavations were carried out on five Dehua kiln sites. In this study, white porcelain samples excavated from Wanpinglun, Qudougong, Zulonggong, Jiabeishan and Xingjiao kiln sites were analyzed to investigate chemical compositions, microstructures, firing techniques and physical properties of the white porcelains

of the Song, Yuan, Ming, Qing Dynasties, trying to reveal the development and evolution regularity of Dehua white porcelains.

S3/4

SHIH Chingfei

(Graduate Institute of Art History,
National Taiwan University)

***The Early Modern Revolutionary
Transformation of Colour Palettes:
Qing Overglazed Enamelware as an
Example***

This paper aims to discuss a phenomenon of changes of colour palettes happened in different regions around the same time (17-18th centuries). This phenomenon involves two main aspects: first, it is crossmaterial, involving at least glass, painted enamelware and ceramics makings; second, it is inter-regional and very likely the changes in different regions mutually inspired each other and all contributed their parts to this revolution of global colour palettes. Due to the scale limit of this present paper, I will focus on the case of Qing overglazed enamelware of 18th century and provide a detailed context of its development as a base for further studies on the topic.

I first reemphasizes the most important development of Qing overglazed enamelware is the transformation from the palette of traditional mineral glazes to enamel pigments. This transformation involved not only the new visual styles and glaze ingredients that scholars have already identified, but also a systematic change in overglaze technology that included the introduction of new ingredients, painting and firing techniques, and kiln types. The *falangcai* ware that was enameled in the Imperial Workshops in Beijing, the *yangcai* ware enameled in the Imperial Kiln in Jingdezhen, and the *fencai* ware enameled by commercial kilns in Jingdezhen

might have been developed in different contexts, but the most critical cause of their appearance was the revolutionary transformation of palette. This revolution and the development it caused is the most important milestone in the development of the Qing ceramic industry and Chinese overglazed ware.

Secondly, I would like to expand the discussion to a global issue as this phenomenon was not only happened in China (Beijing, Jingdezhen and Guangzhou) but also happened at least in Europe and Japan and likely in other regions around the same time. As I mentioned earlier that the transformation of palette incorporates introduction of new ingredients, painting and firing techniques, and even kiln types, these new elements mainly derived from Europe contemporary experiments in new colour palette and was adopted in Beijing, Jingdezhen and Canton among Qing Empire. The workshops in those regions all developed new colour palettes based on their existed palette and made efforts to invent or to exchange new ingredients and new colours with other regions in China and elsewhere overseas to improve their colour palette in a context of global revolution on colours.

S3/5

Wai Yee Sharon WONG

(Department of Anthropology, The
Chinese University of Hong Kong)

***Pre-Industrial Globalisation: Case
Study of Canton Enamel Production
in Hong Kong***

In O.W. Wolters "History, Culture, and Region in Southeast Asian Perspectives", he proposed the term "local cultural statement" to explain foreign and local elements fitting in one or various ways into new contexts through the localizing process and rearticulating with their local cultures.

Canton enamel, which was called “foreign porcelain” in China, its painted enamel techniques were probably introduced by French in the 18th Century. During the period of Republic of China (1912-1949 A.D.), political unrest caused hundreds of ceramic capitalists and craftsmen escaping from Guangdong to Hong Kong. The capitalists gradually created a new Cantonese enamel production centre and traded their products along the overseas trade route from East Asia to Europe. Yuet Tung China Works is the oldest and the last hand-painting Canton enamel company in Hong Kong. It is also typical example of pre-industrial ceramic technological transfer from Guangzhou to British colonial Hong Kong since 1920s. However, this research arena received very little attention by researchers even though it is the crucial sources on the interpretation of pre-industrial globalisation and locality of technology from Guangzhou to Hong Kong after the collapse of imperial China. This paper aims to 1) obtain a comprehensive understanding of the Canton enamel production in Hong Kong including such subjects as product types, decorative and firing techniques, and concrete trade routes between East Asia and Europe; 2) discuss to what extent the foreign and local elements of technology fitting into new contexts of Canton enamel production of Hong Kong. This case study is based on the oral histories by the owners and craftsmen of Yuet Tung China Works, Guangzhou and Hong Kong chorography, records of porcelain trade union, and newspapers as the main sources.

S4

Measuring and knowing during the Song dynasty

S4/1

GUO Jinsong

(Princeton University)

***Disengaging from the Heaven
in Order to Know about it: Shen
Gua's (1031-1095) Epistemology of
Measurement***

Shen Gua 沈括 (1031-1095), a literatus-official in Northern Song China who extensively treated natural phenomena and technical issues in his *Brush Talk at Dream Brook* (*Mengxi bitan* 夢溪筆談), has received enormous attention from historians of Chinese science. Most scholarly studies of this figure, including the most recent ones, tend to highlight his “scientific” achievements, and accordingly classify his approaches as “empirical” or “experimental,” which conforms the epistemological values of science that we are familiar with. I propose in this paper a different, de-familiarizing interpretation of Shen Gua’s ideas. Through close re-examination of several arguments he made on issues of measurement – in particular measurement of celestial motions, cosmic cycles and time, I argue that Shen took a bold epistemological position that privileged the place of “measurement” (*du* or *ce*) in making knowledge. Shen understood measurement as a process of generating data in artificial frameworks and putting phenomena into human-constructed order, a way to cope with the condition that the universal order, the Way (*Dao*), was incomprehensible to any ordinary knower. He implied that one had to rely on instruments and conceptual devices that at once facilitated

and limited the ability of knowing, and had to disengage to a certain degree from the actual complexity of the phenomenal world. Shen’s stress on the epistemological importance of human-designed aids of knowing is in implicit opposition to the rising philosophical ideas of “investigating things” (*gewu*) in his time, and it also contradicts, when applying to technical problems, what we termed as “empirical” and “experimental.” His proposition is rather proximate to the thoughts on the way of governing in support of the political reform in the eleventh century.

In addition, I intend to raise a methodological issue by showing the intricacy of meaning in Shen’s writings, that is, how to read literati’s accounts of technical knowledge, a type of source that constitutes in large part the historical landscape of traditional East Asian science. However rich the information they contain, we must beware, I suggest, that they were rarely written down as simply records or instructions, but often crafted as devices of ideological advocating and/or self-fashioning.

S4/2

Elizabeth Woo LI***The History and Philosophy of Zhang
Zai's Qi - explicated through the New
Yi Study of the Song Dynasty***

This presentation aims at an investigation of Zhang Zai’s historical development of the concept of Qi 气 from Northern Song tracing back to the Pre-Qin idea of “one source” (一元) exemplified by *Daojia’s* 道家 idea of “oneness” which in turn

influenced Ming and Qing *Rujia* 儒家. The monist stance entailed in the concept of *Qi* in the Pre-Qin has changed when Zhu Xi in the Song Dynasty rationalized and synthesized the notion of *Qi* and transformed it into a “two source” (二元) approach to morality in terms of the *Li-Qi* (理 - 气) formula. The so-called “New Yi Study of the Song Dynasty” (宋代新易学) was developed within about 100 years from Zhang Zai to Zhu Xi. *The History of Yi Study* (volume two by Zhu Bokun 朱伯昆, 2002, *Yixuezhexueshi* 易学哲学史) offers a detailed account of this development. The presentation will focus on part of history related to the philosophy of *Qi* elucidated by Zhang Zai and altered later by Zhu Xi from “one source” to “two source.” As a great synthesizer of the time, Zhang Zai was inspired by the conception of *Qi* as well as other conceptions including the ideas other than *Ru* (e.g., Dao tradition and Buddhism). The *Yi* (*Book of Changes*) was the earliest record of the notion of *Qi* as a point of reference for various philosophical schools later. The concept was adopted in Pre-Qin philosophical writings such as the *Laozi* 老子, the *Huainanzi* 淮南子, the *Zhuangzi* 庄子, and re-appropriated by Song Confucians such as Zhang Zai and Zhu Xi. The paper will discuss in detail Zhu Xi’s interpretation of Zhou Dunyi’s diagram “*Wuji is Taiji*” (无极而太极) so as to approach Zhu Xi’s rationale to validate the two-source conception of in terms of “Principle first and *Qi* second (“理先气后”). The conceptual change in Zhu Xi’s notion of “*Zi Wuji Erwei Taiji*” (自无极而为太极) as well as his re-ordering of *yin-yang* and *wuxing* circles of the diagram leads to an overall interpretation of *Qi* differs from that given by Zhang Zai. The paper will show how Zhu Xi’s understanding of *Qi* traversed via the works of Zhu Zhen 朱震, Cai Yuan 蔡元 and the Cheng Brothers

(二程). These major deviations from Pre-Qin conceptions are key to elucidate the metaphysical gulf between Zhu Xi and Zhang Zai with regard to their different explanations of *Qi* and its function. The implications of these differences are fundamental, which allows Zhang Zai to explain *Qi* from a perspective of physical phenomena (i.e., physical movements of *Qi*) rather than a moralistic one.

S5

Mathematics in China and Japan

S5/1

GUAN Zengjian

(Shanghai Jiao Tong University)

***The Concept and Metrology of Angle
in Ancient China***

In their long scientific practice, the ancient Chinese realized the existence of angle problems. A text such as the ancient technology encyclopedia *Kao gong ji* 考工記 used the term *jugou* 倨句 as a general name for an angle, though it did not establish angle metrology. Different methods were used to deal with angle measurement problems in different fields. Proportional measuring methods were used to measure the spatial positions of heavenly bodies. In the handicraft manufacturing field, the *Kao gong ji* used constructional methods to solve concrete angle problems. Finally, near the end of Ming Dynasty, the introduction of Western works such as Euclid's *Elements* enabled Chinese people to understand the concept of angle. They accepted the 360 degree system now generally used in the world, and came to know the instruments and methods of angle measurement, so that angle metrology was established in China at last.

S5/2

HU Huakai

(Department for the History of Science
and Scientific Archaeology, University of
Science and Technology of China)

***On the Cognition of Object Motion
in Ancient China - Based on the
Kinematic Questions in Ancient
Chinese Mathematical Books***

Kinematics is a basic branch subject

in physics, which describes the motion with the consideration of the time, space, velocity and acceleration. There are a large number of mathematics books in ancient China; many of them contain kinematic questions, such as the *Nine Chapters on the Art of Mathematics* 九章算術, *Mathematics Canon* by Zhang Qiujian 張邱建算經, *Writing on Mathematics in Nine Chapters* 數書九章, *Introduction to Computational Studies* 算學啟蒙, *Systematic Treatise on Algorithm* 算法統宗, *Essential Principles of Mathematics* 數理精蘊, *Collected Introduction of the Proportion* 比例匯通 etc. According to incomplete statistics, there are at least twenty works of this kind which contain about a hundred computational problems related to kinematics from the end of Han dynasty to late Qing Dynasty. From the view of modern knowledge of kinematics, these questions cover the uniform motion, uniformly accelerated motion and accelerated motion. While different to modern kinematics, not only in problem solving strategies but also in knowledge system, the ancient Chinese borrowed the mathematical method of excess and deficiency 盈不足 and continued proportion 連比例 to solve these problems. This is an intriguing phenomenon in the history of science, which reflects the differences in the cognition and method of physics between the ancient Chinese and European.

S5/3

DENG Kehui(College of the Humanities and Science,
Donghua University)***A study of Mei Wending's Dusuan shili***

Dusuan shili 度算释例 was completed by Mei Wending 梅文鼎 in 1717, in his old age. This book was based on his study of the *Bili gui jie* 比例规解 a work introducing the proportional compass into China, which was included in the *Chongzhen lishu* 崇禎曆書 at the end of the Ming dynasty. The main contribution of Mei's *Dusuan shili* was to determine again the names of ten lines of ratio in order to use the proportional compass accurately. The scope of application of these ten renamed lines is then broadened. The principles of the proportional compass (*bili gui* 比例规) were developed and expressed again in *Dusuan shili* in a form that was in accordance with ancient Chinese mathematics. In this work, Mei Wending also corrected many errors of the *Biliguai jie*. Mei studied two other books introducing Western mathematics, namely *Biaodu shuo* 表度說 and *Jianpingyi shuo* 簡平儀說, in order to understand the principles of proportional compass and the many related theories. Moreover, *Dusuan shili* was the basis of another treatise also entitled *Bili gui jie* 比例规解, which was included in the *Shuli jingyun* 数理精蘊 (1722), compiled by his grandson Mei Juecheng 梅穀成 and others. This paper argues that Mei Wending not only intensively studied Western mathematics to form an original research style through his reading of the late Ming *Bili gui jie*, but also combined knowledge from Euclid's *Elements* with the practical issues of astronomy.

S5/4

JOCHI Shigeru

(Osaka Kyoiku University)

Seki Takakazu's 1661 Manuscript of the Yang Hui Suanfa (1275)

The *Yang Hui Suanfa* 楊輝算法 is one of the most important mathematical works in pre-modern age (from the 13th century to the 19th century) in Eastern Asia. Because the *Yang Hui Suanfa* had new direction of the mathematics in Eastern Asia, that is to say, speedy calculations for commercial trade, therefore it became the textbook in the Yi 李 dynasty (1392-1910) in Korea.

Japanese mathematicians also studied the *Yang Hui Suanfa* and studied magic squares, indeterminate equations and the solving method of higher degree equations although the *Yang Hui Suanfa* did not describe the establish method of higher degree equations, that is, the *Tianyuan-shu* 天元術 method.

Seki Takakazu 關孝和 (1645?-1708) also studied the *Yang Hui Suanfa* in boyhood and hand-copied it in 1661 by the wood printed version in Korea probably. The best version of *Yang Hui Suanfa* is the wood printed version in Korea and 8 books of *Yang Hui Suanfa* are kept in Japan, Taiwan and Korea. But Korean version has some mistakes, and Seki Takakazu corrected them. Some opinions said that there were corrected versions in the 17th century.

We had the wood printed version and the manuscript of *Yang Hui Suanfa* at the Yonsei University 延世大學校, Korea. And we found that the corrected points are not the same as Seki Takakazu's ones. Therefore we conclude that 16 years old boy of Seki Takakazu corrected mistakes by his own mathematical ability.

S5/5

Marion COUSIN

(SPHERE, University Paris Diderot)

Mathematical language in geometry and algebra textbooks during the Meiji period

During the Meiji period, Japan underwent a nationwide modernization program, including sweeping reforms in the education system. More specifically, there was a profound transformation in the content and the way in which mathematics was taught. Formal education now introduced students to Western mathematics, against the background of a strong popular tradition of mathematical practice (*wasan* 和算) based on Chinese tradition.

As *wasan* was very successful at that time, there were no Japanese translations of texts dealing with the new Western mathematics which were available at the beginning of Meiji era. On the one hand, in geometry, although geometrical research was led by *wasan* scholars, deductive reasoning and argumentative discourse were completely new in Japanese mathematical culture, and the authors had to create a whole new mathematical language, adapted to those types of reasoning. On the other hand, in algebra, Japanese mathematicians found a large amount of similarities between Western texts and those developed within the *tenzan* 点竄 research (Japanese notational algebra based on Chinese *tianyuan* 天元 tradition – positional algebra – and developed during the Edo period - 1600-1868), and, as a consequence, some of them wanted to use traditional terminology to translate Western texts.

During this presentation, I will focus on the first geometry and algebra textbooks, and explore how Japanese mathematicians were able to establish the new mathematical

language required to integrate those foreign disciplines in national education.

S6

Translating Science in late Qing and Republican China

S6/1

NIE Fuling(Institute for the History of Science and
Technology,

Inner Mongolia Normal University)

***A Study on Translation of Knowledge
and Theories in Huaxue Jianyuan in
the Second Half of the 19th Century***

Huaxue Jianyuan 化学鑒原 is an important treatise of inorganic chemistry translated by Xu Shou 徐壽 and John Fryer (傅兰雅) in the second half of 19th century. Most of western chemical knowledge in it was introduced in China for the first time. It played an important role in dissemination western chemical knowledge. Based on a comparison of the *Huaxue Jianyuan* with its original English texts, Wells' s *Principles and Applications of Chemistry* (1858), this study discovers, on the one hand, that some contents were updated and some new contents were added in this *Huaxue Jianyuan*. The updated and added contents are mainly extracted from another English text of Charles Loudon Bloxam's *Chemistry, Inorganic and Organic, with Experiments and a Comparison of Equivalent and Molecular Formulae* (1867), which was also translated into Chinese by Xu Shou and John Fryer, entitled *Huaxue Jianyuan Bubian* 化学鑒原補編. The updated and added contents makes the *Huaxue Jianyuan* more advanced than its original text in some respects. On the other hand, this study also discovers the structure of knowledge in original text was adjusted and some important knowledge was omitted in *Huaxue Jianyuan*, which lead to *Huaxue Jianyuan* being a

slightly weaker than its original text in terms of reflecting the modern system of chemical knowledge and theories.

S6/2

CHANG Hao

(I-shou University)

***The Original Version of Huaxue
Fenyuan***

Huaxue Fenyuan (henceforth *Fenyuan*) covers a range of topics dealing with both qualitative and quantitative analytic chemistry, and is regarded as the beginning of the Chinese importation and acceptance of Western chemical experimentation. This book, translated by John Fryer and Xu Jianyin, comprises eight volumes, 170 pages, and 333 paragraphs. It also contains 59 illustrations, which werelater published by Jiangnan Arsenal in 1871. In the past, it has been assumed, wrongly, that the master copy for *Fenyuan* was translated from the fourth version of *An Introduction to Practical Chemistry: Including Analysis* (Philadelphia: Henry C. Lea, 1866), authored by John Eddowes Bowman (1819-1854). However, after a detailed comparison among different versions, we discover that the original author of *Fenyuan* should be Bowman's fifth version, published in London by John Churchill Press. Both of Bowman's books, although published in different places and despite differences of pagination, have almost the same content. Both comprise of five parts, with 782 paragraphs and 107 illustrations. Moreover, the only major difference among the 53 illustrations seems to lie with number 78, the 'hot-water drying oven'. The British

version calls it the copper-water bath oven, whereas the American version labels it as a type Fresenius's copper-air bath. The only other differences are the lines and shadows of the various apparatus, of which the Churchill version demonstrates more than the other version. More interestingly, these differences in the first published versions from both London and Philadelphia, allow us to better understand the role played by Fryer and Xu in the compilation and translation of *Fenyuan*. Furthermore, given that by March 18, 1868, Fryer worked for the Jiangnan Arsenal, one thing we can be sure of is that the original version of *Fenyuan* was ordered by him rather than coming out of any extra ordering or loaning system in existence at Jiangnan at the time.

who viewed western anatomy as a late-stage development of Chinese medicine. One such reader, Tang Zonghai 唐宗海 (1846-1897), is selected for our discussion. His (mis-)reading, largely recorded in his monumental *Yijingjingyi* 醫經精義 (1892), was particularly interesting. It soon won over a huge following and greatly influenced the development of the indigenous medicine in the early 20th century. With the examples of Osgood and Tang, we hope to show that misrepresentation is almost always part and parcel of intercultural communication, and studies of circulation of science in the global context should indeed look into it as a subject in its own right, rather than dismissing it as a distraction.

S6/3

CHAN Man Sing

(Caritas Institute/University of Hong Kong)

Misrepresentation - Translating and Reading Gray's Anatomy in Late Qing China

This paper is about communicating science in the cross-cultural context, principally through translation, and how it was understood within the host culture, in our case, Qing China of the late nineteenth century. It will focus on *Quantichanwei* 全體闡微 (1880), the first ever attempt at a book-length Chinese translation of *Gray's Anatomy*, by Dauphin William Osgood (柯為良 1845-1880), an American Board medical missionary who arrived at Foochow 福州, China in 1870. The paper will discuss the manner of his translation, the cultural-linguistic difficulties involved in the process, and how the translation was misread, due partly to Osgood's own imperfect command of the Chinese language, and partly to the self-interested focus of the Chinese physician-readers

S6/4

Yuen Mei Vicky LAW

(City University of Hong Kong)

Benjamin Hobson's (1816-1873) Medical Translations and Their Reception by the Late Qing Integrationists before 1895

This paper examines the reception of Benjamin Hobson's medical translations before 1895 by the Chinese physicians, particularly the Integrationists. The Integrationists were basically medical reformists who favoured incorporating the new, Western medical science into China's medical tradition. Despite the outdated nature of much of Hobson's translations by the 1880s and 90s, and the growing abundance of medical translations, they remained for the Integrationists the chief source of knowledge on western medicine, up to at least 1894 when war broke out between China and Japan. China was soundly defeated, and from thence onward, turned to Japan for guidance and expertise in all areas, including medicine. This paper outlines and explains the unusual

popularity of Hobson's works by carefully comparing them with those by D. W. Osgood and J Dudgeon, both of them later and more accurate translations. The author argues that the "cultural self-image" is usually a decisive factor in determining the success of translating strategies, which lean usually toward either of the two poles of "domestication" and "foreignization". A cultural self-image of confidence would normally favour domestication. This, as argued by the author, centrally contributed to the immense success of Hobson's medical works, which were much sinicized both in content and format, before China met with humiliating defeat in the first Sino-Japanese War.

world histories of sexuality, the interaction between Euro-American science and host languages during translation and illuminates the role of scholar-translators in the development of knowledge.

S6/5

GUO Ting

(University of Exeter)

***Identity, obsession and modernity:
Translating Sexuality in Republican
China (1912-1949)***

Before the translation of modern western works on sexology, China created its own lexicon for sexuality, which was seen as a temporary and changeable obsession or an expression of social status and taste rather than an identity. However, these concepts were challenged when Western biologically based sexology was introduced. Centered on a case study of Feng Mingzhang's (1944) and Pan Guangdan's (1946) translations of Havelock Ellis's *Psychology of Sex: A Manual for Students* (1933), this paper investigates how western sexological discourse was translated and deployed in Republican China's nation-building and quest for modernity. It analyses the different strategies adopted by the two translators to indigenize key concepts in order to elucidate phenomena that, in their judgment, English terms do not fit, and develop their own sexological and modernist discourse. It sheds new light on

S7

Qing imperial science

S7/1

YANG Fan

(Institute for the History of Natural Sciences, Chinese Academy of Natural Sciences)

The Measurement of Longitude and Latitude and its Applications in Calendar-making in Ming-Qing China

The prediction of eclipses, the determination of the 24 solar terms (*jie qi* 节气) and the lengths of day and night constituted an important part of mathematical astronomy (calendar-making) in ancient China. These are all dependent on the geographical locations where observations or measurements are made. With the introduction into China of the concept of the global earth at the turn of the 17th century, the measurement of geographical longitude and latitude began to be taken into consideration in calendar-making. This paper studies how the determination of longitude and latitude was featured in the astronomical treatises on calendar-making in the late Ming and early Qing dynasties. During the Chongzhen Calendar Reform, Xu Guangqi tried to use the prediction of solar and lunar eclipses to demonstrate the superiority of “Western methods” in calendar-making. With knowledge of longitude he could predict the time of occurrence of eclipses not only for the imperial Capital, but also for provincial capitals. In the early Qing dynasty, Kangxi emperor commissioned Jesuit missionaries and officials to survey his empire. The accuracy of this measurement of longitude and latitude had reached an unprecedented high level.

But this achievement somehow was not reflected in the two calendrical systems of the early Qing: the *Lixiang kaocheng* 历象考成 (*Complete Treatise on Calendrical Astronomy*, 1722) and the *Lixiang kaocheng houbian* 历象考成后编 (*Continuation of the Complete Treatise on Calendrical Astronomy*, 1742). The data used in the *Lixiang kaocheng* was more accurate than that in the *Chongzhen lishu* 崇祯历书 (*Chongzhen Calendar*), but far less accurate than that measured during the Geodesic survey of the Kangxi period. Though the purpose of the *Lixiang kaocheng houbian* was to improve on the *Lixiang kaocheng*, the data of longitudes and latitudes for provincial capitals remained unchanged.

S7/2

LAI Yu-Chih

(Institute of Modern History, Academia Sinica)

Imperial Politics and European Botanical Practice at the Qianlong Court: A Study of the “Images of the Auspicious Tree”

In 1750, Emperor Qianlong sent the second-rank imperial bodyguard of the Qianqing Palace to organize an expedition group of up to 37 people, including a court painter, to investigate a legendary tree grown in the Zhangbai Mountain, the sacred cradle of the Manchu origin. This tree was said to have eight branches belonging to eight different kinds of species. After more than one hundred days of climbing and wading, this group finally reached the tree, took the precise measurements, collected its leaves, branches, and cones as the specimens and came back. Sadly,

the guard died at the end of the journey.

What is special about this story is that Emperor Qianlong not only composed an imperial rhyme to commemorate the expedition and renamed the tree as “Auspicious Tree” that meant to symbolize the longevity of the empire and the Heaven’s recognition of the Manchu’s ruling, but most importantly, he emphasized the empirical approach to document the existence of this tree and proclaimed that “what I state is all documentary truth, not empty words.” At least four sets of images were produced based on the accompanying painter’s sketches from the trip. Two of them clearly have much to do with the European tradition. One is the album depicting eight kinds of leaves in a style that reminds us of the botanical illustrations using watercolors in the European tradition that flourished since the Renaissance period. The other album contains eight kinds of actual leaves, just like the album of specimens in European fashion.

Why was Emperor Qianlong so interested in this tree and took all the effort to investigate it first-handedly? Why would the European botanical tradition be adopted in representing it? This paper intends to focus on the reconstruction of the expedition, the making of the sacred tree, and how and what role the European botanical practice played in validating the traditional auspicious politics at the Qianlong court.

S7/3

CHANG Ping-Ying
(History Department,
City University of New York)

***Jingzheng’s Reformation of the Late
Qing Astronomical Bureau***

Although the European missionaries did not completely withdraw from the Chinese Astronomical Bureau 欽天監 until 1826,

by the end of the eighteenth century the Bureau had already been begun to stagnate. The periodical examination system, which was designed to monitor and stimulate the Bureau staff’s study of mathematical sciences, had become formulaic, and the Bureau had not produced any new mathematical treatise since the publication of the *Thorough Investigation of Instruments and Phenomena* 儀象考成 in December 1753. However, the poor state of affairs at the Astronomical Bureau improved after May 1824, when Emperor Daoguang 道光 appointed Jingzheng 敬徵, a Manchu minister who was famous for his administrative ability rather than his knowledge of astronomy or mathematics, as its new superintendent.

This essay uses several sets of archives, including the *Archive of the Grand Secretariat* 內閣大庫檔案 held at the Academia Sinica in Taiwan, the *Complete Collection of the Qing Officials’ Résumés* 清代官員履歷大全, and the *New Methods of Ling, Fan and Visual Difference* 凌犯視差新法 to reconstruct the operations of the Astronomical Bureau and the hereditary mathematician families who working for this institution during the Qing dynasty (1644–1911). The paper describes how the power struggle among the hereditary mathematician families delayed the publication of the improved calculation methods and led to the stagnation of the Astronomical Bureau in the late eighteenth century. It progresses to describe how Jingzheng reformed the Astronomical Bureau by aggressively utilizing the periodical examination to oust incompetent mathematicians—particularly those from the old He 何 family, members of which had worked for the Bureau since the beginning of the Qing dynasty—while he patronized new and proficient hereditary mathematician families. By the

time Jingzheng retired from public service in 1845, the Bureau's mathematicians had repaired the astronomical instruments, updated the astronomical constants, and derived new calculation methods that simplified the calendar-making process and improved its accuracy.

S8

From missionary accounts to sinology:
European knowledge of China

S8/1

Jose A. CERVERA
(El Colegio de Mexico)

The Ming dynasty through Spanish eyes: the accounts by Martín de Rada and Miguel de Loarca after their travel to China (1575)

The Augustinian Martín de Rada (1533-1578) was one of the most outstanding friars in the Philippines during the second half of the 16th century. He was a good mathematician and astronomer, and he had an important role in the establishment of Spaniards in the Filipino archipelago in 1565. As most of the missionaries who went to the Philippines in the 16th century, Rada's main goal was the Chinese empire. He accomplished his wish when he visited Fujian Province in 1575, although he was not able to establish a permanent mission in China.

Rada wrote a *Relación* (account) of his travel, providing a description of several aspects of China. But he was not the only one who wrote after this Spanish expedition to Fujian. One of the soldiers who accompanied Rada in his travel, Miguel de Loarca, also wrote a very interesting account. Rada's text was used by his fellow Augustinian friar Juan González de Mendoza to write his famous *Historia del Gran Reino de la China (History of the Great Kingdom of China)*, published in 1585 and considered as the most important work about China published in Europe in the 16th century. But Mendoza also used Loarca's account, as it is easy to infer when both texts are compared.

In this paper, I will give a general

description of Rada's scientific work, and I will focus on his travel to China in 1575, with a study of his *Relación* and the text by Loarca. I will contextualize these accounts, comparing them with other texts about China written in the Iberian world during that time and showing their influence in Mendoza's book. After this study, I will provide several conclusions about the knowledge of Ming China (geography, history, politics, religions...) by the Portuguese and the Spaniards in the second half of the 16th century.

S8/2

MAU Chuanhui
(Institute of History, National TsingHua University)

The growth of French geographic knowledge of South-East Asia

In the Early 17th century the wealth that Portuguese, Spanish, Dutch and English obtained from maritime trade in Oriental India strongly attracted French adventures and government towards entering into this lucrative but fierce market. In doing so several ministers of the French king hoped to increase incomes for the Royal Treasury. That coincided with the rise of French geographic science, including map making. At the same time to ensure sufficient resources for exploiting long distance maritime trade, the French government tried to built a fleet strong enough for long distance navigation and for resisting attacks from pirates and enemy countries. Besides, the French were aware of the need to acquire necessary geographic knowledge about the South East Asian region, with

the hope of ensuring that their trips would be profitable. Rich collections of maritime maps and documents related to this region were gathered long before the French government was able to get officially into Oriental Indian trade.

In the second half of the 17th century, some special establishments were set up and collecting geographical information became systematic both by gathering existent documents in Asian languages and by field surveys carried out by the staffs of the French East Indian Company and sailors of French Marine, as well as by individual adventurers. Abundant information introduced into France has been supposed to be useful in developing French geographic knowledge on South East Asian region, especially during the period of the Enlightenment. This paper pursues two main goals. Firstly I intend to gather documents concerning the South East Asian region collected by French Marine and East India Company; secondly, I plan to analyse how the French succeeded in gathering information and in using it for development of geographic knowledge.

S8/3

Michela BUSSOTTI

(EFEO & UMR China, Korea, Japan)

Isabelle LANDRY-DERON

(UMR China, Korea, Japan,
CNRS & EHESS)

***Engraving Chinese types in Europe:
the collection of Chinese characters at
the Imprimerie Nationale of France***

Since its foundation under King François I (1494-1547), Imprimerie Nationale has produced many non-Latin fonts. Among its oldest treasures, the Chinese wood types “*Buis du Régent*” were carved between 1715 and 1742 in Paris under the supervision of the scholar and orientalist Etienne Fourmont (1683-1745). They are

now listed as national heritage as they are the oldest complete collection preserved to this day. They were first used for printing the catalogue of the Chinese books belonging to the Royal Library in 1742. Later, during Napoleon’s empire, they were used for the edition of the Chinese-Latin-French Dictionary (1813). The collection holds 86.000 types but textual sources are inconsistent about numbers. Estimations mention up to 130.000 or more but there is evidence that a number of them were never used.

This joint communication will present the latest research on what we could observe directly on the original Chinese types of the Imprimerie Nationale and what the historical and literary sources of various periods say about it. This paper will include the descriptions of the material characteristics of the types, trying to understand how they were devised and organized, engraved and employed (or not at all!) and, finally, classified and stored to avoid any confusion. In this manner, the study will also focus on Western technical practices for printing Oriental languages at the time when Europeans encountered and tried to master them.

S8/4

LU Ye

(Shanghai Jiaotong University)

***Chinese Catholics’ contribution to the
scientific exchanges between
China and Europe - The case
of Pierre Hoang (1830-1909)***

Peter Hoang, a Chinese Catholic scholar, was the first Chinese achieved the ‘Prix Stanislas Julien’, a highly prestigious French award in Sinology. P. Hoang left a number of monographs in the field of theology and nature science, as well as Chinese policy, economy and culture, written in Chinese, French and Latin. In this article

*From missionary accounts to sinology:
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we briefly introduced his scientific work, especially focused on calendar monographs. Meanwhile his contribution to scientific exchanges between China and Europe in Qing dynasty would be discussed. In the following books, *A notice of Chinese calendar and a concordance with the European calendar* and *Concordance des chronologies néoméniques Chinoise et Européenne*, P. Hoang published the calendar from 841 BC to 2020 AD, including Emperors' reign titles, Chinese era, the first day of every month both at Chinese and Western calendar, etc. He integrated the Chinese and Western calendar in a mathematical way, or in other words, he introduced the formula to convert Chinese lunar calendar and western Gregorian calendar. Moreover, he systematically praised the Chinese calendar, such as the sexagenary cycle, intercalary year and month, the 24 solar terms, etc. Referred to previous missionaries' calendar about Chinese ancient origins, P. Hoang's astronomical ephemeris, which is calculated by Chinese generational intercalation rules, contained a concept of linear time for millennia and retained the independence and distinctiveness of Chinese calendar.

Thanks to the Catholic mission press at the T'ou-Sè-Wè Orphanage, a catholic mission press which printed the famous series of sinological books *Variétés Sinologiques*, P. Hoang's calendar became the blueprint for Chinese and overseas scholars. For instance, an English scholar G.M.H. Playfair's book, *An Anglo-Chinese calendar for the years 1892-1911*, the work of a Chinese Christian, Mathias Tchang, *Synchronismes chinois* and certain Chinese scholars like Chen Yuan, Xue Zhongshan and Ouyang Yi's calendars, all referred to Hoang's calendar. P. Hoang's scientific monographs also involved Chinese earthquake tables from 1767 BC to 1895

AC, records of eclipses in ancient China and so on, making up the blank in certain areas, which still used for contemporary scholars. In the conclusion, P. Hoang's contribution to the Chinese and Western integration was multi-dimension, not only referred western scientific method to serve Chinese science, but also transmitted Chinese distinguishing feature to the west.

S9

Female medical practitioners and patients

S9/1

BU Liping
(Alma College)

Pioneering Chinese Female Doctors of Western Medicine: Their International Education and Career Life

Chinese women went abroad to study modern science and medicine for a career in the late 19th-century. Some of them were sponsored by Western missionaries, while others were by their own families. In contrast, Chinese men benefited from government-sponsored study-abroad programs. Chinese men who received medical education abroad and became famous doctors in China, from Huang Kuan 黄宽 (trained at Edinburgh) to Liu Ruiheng 刘瑞恒 (Harvard) and from Wu Liande 伍连德 (Cambridge) to Yan Fuqing 颜福庆 (Yale), have been studied in medical history, whereas Chinese women who studied medicine abroad and became pioneers in the field were less studied.

Drawing on archival data, my paper concentrates on Chinese women who studied medicine abroad in the late 19th and early 20th centuries and examines how their medical careers as educators and practitioners contributed to China's maternal and child health. I will specially discuss Jin Yamei 金雅梅, Zhong Maofang 钟茂芳 (also called 马凤珍), Cao Liyun 曹丽芸, and Ding Maoying 丁懋英, who were leaders of China's first public medical school for women—the Beiyang Women's Medical School. Zhong Maofang (trained at London Guy Hospital) made a long-lasting contribution to China's nursing education by translating into Chinese the

Oxford Handbook of Nursing as the standard textbook in the 1910s. Different from Xu Jinyin 许金匄, Shi Meiyu 石美玉 and Kang Cheng 康成 who were studied in relation to the missionary movement in China, the individuals of this study practiced medicine in a more secular orientation, despite their missionary ties. They studied abroad and returned to China to practice Western medicine as American or British trained physicians. Different from Chinese male doctors, these women devoted their efforts to taking care of women patients. They opened dispensaries and hospitals for women and children, and often ran educational programs to train other Chinese women for nursing, midwifery, and paramedical services. Their pioneering contribution to women's and children's health helped advance an important dimension of China's social reforms and national modernization. This paper examines their career development, and argues that their stories were inseparably intertwined with Western influence in China and Chinese desire to modernize their society.

S9/2

Mirela DAVID
(University of Saskatchewan)

Chinese female gynecologists, their birth control clinics in 1920s-1930s Beijing, and their connections to the global birth control movement

By integrating birth control information into their medical praxis and by opening up birth control clinics, Chinese female gynecologists in Beijing turned birth control from merely a theoretical proposition into

a movement in practice. My project tracks this tendency towards the medicalization of the birth control debate in the 1930s and its capture by scientificity and national policy-making. I explore how Chinese female gynecologists internalized or rejected the eugenic argumentations of birth control in their medical practice. I situate their efforts within the broader birth control movement, animated by the efforts of renowned birth control activist Margaret Sanger to coordinate the birth control movement in China and link it to its global counterparts through diasporic intellectual connections.

I seek to recapture the activism of female gynecologists and to show that Chinese women did have a voice in matters regarding female reproduction. These women were committed to spreading birth control knowledge, whether through writing in their columns and translating Margaret Sanger's works, or in practice through their activities in the birth control clinics, as a means to help women who developed health problems from giving birth too frequently. Chinese women birth control activists were actively engaging with Sanger's ideas and adapting them to Chinese realities.

My findings suggest these birth control clinics were a small-scale attempt to reach working class women. Some like Yang Chongrui 杨崇瑞 abstracted the uplifting and progressive aspects of eugenics suitable for large national projects without getting caught up in the dehumanizing aspect of it, while others like Yang Chao 杨赵步伟 could see the problematic aspects of eugenics in terms of social stratification. Their dual status as doctors and journalists allowed for a faster dissemination of birth control. Their writings attest to the rigor of scientific research, as well as how they saw their contribution: to give practical advice to women of all classes. Inspired by Sanger and sometimes in correspondence with

her, these women were already organizing themselves.

Yang Chongrui's commitment to public hygiene and midwifery education is a prime example of how she integrated the small scale of birth control work into her work for the Hygiene Department and at the First National Midwifery School. She embodied the idea of service and was the initiator of large-scale hygiene educational projects that aimed to have a national reach. By contrast, Yang Chao's efforts at her private clinic were groundbreaking terrain, even facing government raiding of her clinic. Despite the diverging ways of their commitment to birth control activism, the two Yangs' agency comes from the methods they device in practice and in translation to adapt the lessons learned from the West to Chinese economic and social realities and from their groundbreaking efforts in practice.

S9/3

FANG Xiaoping

(Nanyang Technological University)

***Bamboo Steamers and Red Flags:
Building Discipline and Collegiality
among China's Traditional Rural
Midwives in the 1950s***

This paper explores how the new Communist government developed a political consciousness of discipline and collegiality among old-style rural midwives in Chinese villages during the 1950s. This paper argues that selected rural women with limited and occasional experience of delivering babies preliminarily learned how to observe discipline by attending meetings and studying, and to develop the collegiality with peers through criticism and self-criticism of techniques and character in short-term training courses that started in 1951. These old-style midwives' ability to attend births was thus legitimized, and midwife identity gradually formed in rural

communities. However, the traditional identities these rural women retained caused them to seriously disobey rules and institutions (such as attending meetings, conducting disinfection, and service attitudes), while collegiality was impaired by fierce conflicts due to competition for the income generated by birth attendance and disputes over authority among villagers. In order to solve disinfection difficulties and raise a political sense of discipline, county maternal and child health care stations organized rural midwives to establish disinfection stations and make bamboo steamers to sterilize equipment. Meanwhile, county stations assessed and classified rural midwives individually following the criteria of political consciousness of discipline and collegiality, and then launched “Red Flag Competitions” to enhance collegiality collectively by adjusting groups, solving collegial conflicts, and exchanging experiences. Under both institutional surveillance and dynamic and constant molding, the new government intended to indoctrinate rural midwives with a sense of discipline and collegiality in their daily practice.

S9/4

LU Zxyann

(National Yang-Ming University)

Displaced agencies: hybridized coexistence of clinical practices in hormonal replacement therapy (HRT) in Taiwan

Hormone replacement therapy (HRT) for menopausal women has been viewed as a significant representation of medicalization of women's bodies. After its use over 70 years in the medical circle, the increased cancer risks claimed by the Women's Health Initiatives (WHI) randomized controlled trials published in 2002 have gained worldwide attention. Taiwanese gynecologists

discredited the WHI results and claimed that the results from the American women study population can't be generalized to Taiwanese women. Faced cancer risks, Taiwanese women modified their HRT doses by cutting in half or 2/3 and supplemented with alternative or Chinese herbal medicine such as isoflavones products. The clinical encounters with these menopausal women represent the intersections between hegemonic practices of biomedicine and alternative medicine in a particular context of Taiwan. This paper explores how the agency of midlife women requesting menopausal treatment is possible without confronting dominant biomedical physicians? This paper applies Mol's (2002) enactment approach and Lin's (2013) displacement theory to examine how different configurations of agency, such as menopause, HRT guidelines, physician organizations, materials used for menopause, are enacted and the process of displacement makes it possible that local alternatives are able to combine with universal EBM practices. An ethnographic design with methods of ethnographic interview, participant observation was applied. Interactions of the gynecological outpatient clinics and activities i.e. annual meetings held by the Taiwanese Menopause Society were observed. Participants include menopausal women and medical physicians who prescribed HRT regularly.

Texts were also collected from newspaper (the year of 2002 to present), women's magazines, health education pamphlets and professional journals with key words, menopause, Chinese herbal medicine for menopause, HRT, low-dose HRT. The emergence of “low-dose hormone” as a standard regimen for menopausal bone health has displaced the risk of hormonal deficiency with the risk of osteoporotic body.

Weighing between women's compliance and drug efficacy has driven the modification of ingredients and dosage in the process of drug production. While endorsed the International Menopause Society hormone therapy guidelines, the Taiwan Menopause Society joined the clinical trial study of a new drug, Femarelle, with "natural" herbs. The attempt to shape the Taiwanese local biology and further "the Asianese" after the HRT controversy in 2002 has demonstrated by the clinical trial studies from the alliance among the Pan-Asian menopausal medical societies. This article demonstrated the multiple configurations of agency of gynecologists and menopausal women with alternative ontologies coexisted in day to day clinical practice in the context of Taiwan.

S9/5

WU Yan-Chiou

(Research Center for Humanities and Social Sciences, Academia Sinica)

A History of Women "Cooking Alcohol" (hiänn tsiú 煮酒) and Family Care in Taiwan, 1945-2002

Making alcohol was important domestic work for women in Taiwan. Sometimes, people call it "hiänmtsiú" in Taiwanese, which literally means "cooking alcohol". In the traditional gender division of labor, women were responsible for cooking in the kitchen, and cooking was a necessary process to distill spirits. We can see the close relationship between making alcohol and cooking. However, in the history of women, except for aboriginal women, making alcohol in Taiwan was seldom recorded. There have been several dissertations on the history of the alcohol industry in Taiwan in recent years. These histories describe how local alcohol industries were established in the early 20th century. The owners of the industries and craftsmen were mostly

male. The industries were destroyed by the colonial government, which enacted the monopoly on alcohol in 1922. Even though after the Japanese colonial power was expelled in 1945, the policy of monopoly on alcohol wasn't repealed until 2002. Women were invisible in the governmental alcohol industry except for the packing and sales departments. So the first purpose of this research is to elucidate the historical role of women in the alcohol-making craft.

The second purpose of this research is to explore why women took the risk of making spirits. Making alcohol without governmental permission was illegal. However, many women distilled spirits privately and silently. According to traditional Taiwanese gender stereotypes, women were not allowed to drink alcoholic beverages freely. But there were some reasons to justify women ingesting and cooking spirits. In the traditional culinary culture, cooking food with alcohol, such as sesame oil chicken (麻油雞) has always been considered delicious and good for one's health. Moreover, women needed to take the responsibility to take care for their family and protect them from the risk of dangerous fake alcohol. Further, women were (and still are) expected to consume food cooked with large amounts of alcohol to recover after labor.

The third purpose of this research is to explain how women learned the craft of "cooking" spirits, and to clarify whether there were any differences of technology between female and male alcohol makers. After the monopoly on alcohol was enacted, alcohol making became a difficult science relegated to the professional domain. But it was not so difficult for women, who had learned this craft from practicing chores and observation in the kitchen every single day.

S10

From ore to arms: mining, metallurgy and artillery

S10/1

ZHENG Weiwei

SHOJI Tetsuo

(Tohoku University)

***Study of Cast Steel Technology in
Ming Dynasty China - Metallurgical
Examination of Hongwu Cannon
(1377)***

The main objective of this study is to examine the microstructure and the chemical composition of the Hongwu cannon (洪武大炮) which was made in Shanxi 山西, China in 1377. Emphasis is also placed on evaluation of fabrication processes for heavy section cannon manufacturing during the Ming dynasty. The results of microstructural analyses show that the cannon has chemical composition as the maximum and the minimum of the three measurements as, C: 1.36-1.8 mass%, S: 0.58-0.78 mass%, P: 0.61-0.81 mass%, Si: 0.45-0.61 mass%, Fe: Residue. Observed microstructure by OM and SEM shows a rather uniform hypereutectoid with proeutectoid cementite, Fe₃C and pearlite. This microstructure along with the carbon content suggests that the cannon might be made by cast steel, not by cast iron because of its hypereutectoid microstructure. However, hypereutectoid microstructure can also be observed in decarburized cast iron, which had been developed for a long time in iron making and casting history in China. In order to make clear this ambiguity, microstructural and hardness gradient from the surface to inside were examined and the results made it clear that there is no supporting evidences of decarburization. Hence, these facts described above suggest that this cannon was made by cast steel in

1377. In order to confirm this finding, high temperature optical microscope with a capacity to heat a sample up to 1773K was used to examine any formation of specific phases with low melting point, and the result shows an existence of a phase with low melting point around 1225K.

The microstructure and EDX analysis on elemental distribution revealed a formation of eutectic phase in pro-eutectoid cementite, which suggests a formation of steadite, Fe-Fe₃C-Fe₃P with a low melting point. As can be seen from a chemical composition of steadite, phosphorous, P seems to have played an important role in casting processes. Molten iron fluidity can be significantly improved by adding phosphorous into a molten iron.

In sum, it is quite likely that the Hongwu cannon (洪武大炮) was made by cast steel through the metallurgical technology to form a low melting point phase, steadite, in connection with a crucible technology in the Ming dynasty.

S10/2

SU Yangyang

(Princeton University)

***Why not the flintlock: a reevaluation
of Qing matchlock muskets in a global
context***

While members of the British Marcatany embassy to Qing China in 1793 saw muskets as in common use by the army there, they noticed those firearms were not flintlocks but matchlocks, in terms of the ignition technology. In this regard and by that time in Europe, the flintlock was the most recent military adoption and the matchlock had become dated. Yet, when British diplomats

confidently presented the flintlock to their Qing counterparts, the latter responded with much less interest than expected. Instead of taking for granted a popular interpretation of such a technological encounter as a clear sign of Qing backwardness, ignorance, and arrogance, this paper shows that, prior to the arrival of the British envoy, Qing emperor, officials, and even ordinary people actually had access to the flintlock for decades. Nonetheless, the British observation was accurate that the Qing army did not replace its matchlocks with flintlocks at a large scale. Accordingly, this paper raises the question that why the Qing didn't equip their soldiers with the flintlock while being very much aware of it. For an answer, this paper will examine the uses and technical features of Qing matchlocks in the very different context of Asia.

S10/3

HUANG Chao

(Research Center for Science Technology and Civilization, University of Science and Technology)

DU Jialin

(Missionary Liang Fa Research Institute)

Metallurgical Knowledge Transfer from Asia to Europe: The Example of Chinese Paktong and its Transmission to Sweden and Austria

The invention of Paktong (white copper), a blend of copper-nickel or copper-nickel-zinc alloy, became known in China at least from the 4th century AD. It's considered one of the most important inventions in the history of metallurgy, and facilitated economic and material exchange to Europe from the 17th to 19th centuries. It was welcomed and popular across European countries, because its metallic nature is silvery, lustrous, and, most importantly, does not tarnish and resembles silver. Before the discovery of nickel by the

Swedish mineralogist Axel Fredrik Cronstedt, the exact chemical compositions of Paktong were still unknown to anybody who was eager to reproduce it with the possibility of using the local minerals in Europe. European scientists later worked out the chemical elements of Paktong and subsequently produced similar alloys under various names such as "German silver."

Previous scholarship has examined the history of Paktong in various fields, among which, the most ever-lasting discussion is on the transmission of this metal to the United Kingdom. The famous industrial revolutionaries Matthew Boulton and James Watt were involved in this case as such, but here we are yet to reveal the metallurgical knowledge transfer to Sweden and Austria. In Chinese or English literatures for Paktong research, these two European countries were seldom mentioned and discussed, but their participations of decoding the manufacturing knowledge of Chinese Paktong were of great significance. The merchants and scientists of both countries had strong connections to make the transfer effective.

As our recent investigations on the history of Paktong show, we have recognized that the secret of the metal's manufacturing had close involvements with Yunnan and Canton in China, and the metallurgical knowledge transfer had intimate relations with Sweden and Austria. However, what are the textual sources from Asia to Europe for bringing forward to serve the process of knowledge transfer? How did Swedish and Austrian scientists figure out and employ the knowledge of chemistry, metallurgy and mineralogy to reproduce Paktong of their own? Therefore, in order to engage these inquiries, we will combine textual materials, extant artifacts, and metallurgical and archaeological findings to shed new light on the history of metallurgical knowledge

transfer from Asia to Europe.

S10/4

Erich PAUER

(University of Marburg)

***Japanese mining technology around
1880 - A College of Engineering
graduate student's internship
reports as new source for
technological development***

After the Meiji Restoration (1868) the new Japanese government took over virtually all mines previously operated by the feudal government and lords. But later, in the middle of the 1880s, most of these mines were privatized. While for the pre-modern era (before 1868) and the period of industrialization (after around 1885) appropriate sources have been preserved to a large extent, the lack of equivalent sources for the years in which the government was responsible for the mines has greatly hampered research.

New, recently discovered documents shed some light on this period by providing technical details for some of these mines. In 1881 and 1882, graduate students from Tokyo's College of Engineering (*Kōbudaigakkō*) undertook compulsory internships lasting from several weeks or months in various mines: Ikuno (silver), Miike (coal), Sado (silver, gold), Innai (silver), Ani (copper, silver) and others. Each student submitted extensive, handwritten reports on these internships; most of these reports are more than 100 pages long and written in English. They were regarded as the student's final thesis. The reports were not kept in the college, but returned to the graduates, and over time most have been lost. The very few surviving reports give remarkable – and hitherto unknown – insights into the conditions of the different mines. In addition to a general description of the respective mining district,

they provide a large amount of technical information, including the layout of the mine and descriptions of the individual workshops and equipment, the workers and their activities and wages. The reports also provide details on the procurement of materials and their costs, including transportation. Of particular importance are numerous technical drawings concerning new (mostly imported) equipment and machinery with notes on their operation. Further detailed drawings and charts give full particulars for methods of surveying, drifting, construction, drainage, and underground and surface transport, and examples of winches, shaft-head frames, machinery and equipment for processing minerals, etc. These reports not only reveal details of the operation of the mines; they also reflect the scope of technology transfer from the West and the rapid change from traditional to modern mining on the eve of the industrial revolution in Japan.

S11

Science, environment and politics in the twentieth century

S11/1

Lisa YOSHIKAWA

(Hobart and William Smith Colleges)

***Making Science Matter:
Nation Building through Resource
Preservation in Taishō Japan***

While the Meiji leaders celebrated industrialization's "success" that led to two consecutive war victories at the turn of the century, natural scientists began to caution against the larger consequences of this rapid development. Demographic increase exacerbated such trends as reclamation of land for new transportation networks and city planning, and water engineering, in addition to industrial pollution. Fear about real and perceived consequences such as topographical erosion and endangering various flora and fauna increased during the first decade of the twentieth century. By the Great War's eve, zoologists, botanists, and geologists gathered at the national level to counter these threats. They worked with other scholars, including historians and literature professors, who saw similar destruction to historic sites, scenic beauties that inspired poetic creations, and more. The humanists appealed to their audience by relaying familiar historical or fictional tales, often successfully. Natural scientists had a harder time convincing the public of the anatomical, ecological, or other highly technical significance of their subject matter.

This paper examines how natural scientists presented their cases to the lay audience, in one of the largest and most effective lobby groups for state-led preservation of the nation's natural

resources—the Japan Society for Preserving Landscapes and Historic and Natural Monuments. Founded in 1911 by Tokyo Imperial University botanist Miyoshi Manabu (1862-1939), the Society gathered natural scientists, humanists, and philanthropists working to institutionalize preservation at the national level. This study's main source is the Society's journal, *Shiseki Meishō Tennen Kinenbutsu*, from its inception in 1914 to the passage of the Historic Sites, Places of Scenic Beauty, and Natural Monuments Preservation Law in 1919. Scientists presented their local efforts as part of the global movement among "civilized" nations to domesticate nature, emphasizing how Japan could contribute to and hence join the Great Powers. Scientists also advocated protection of natural resources as conducive to nurturing patriotism and public-mindedness. The effort, they suggested, may solve the perceived national moral degeneration linked to industrialization, urbanization, and commercialism that heightened selfish materialism and individualism. Science and scientists, they argued, were crucial components of modern nation building.

S11/2

PARK Buhm Soon

(Korea Advanced Institute of Science and Technology (KAIST))

***Following the Footsteps of Japan?
Industrialization, Pollution, and
Environmental Lawsuits in Korea,
1970 - 1990***

The environmental history of postwar Japan generally narrates stories of economic miracles spurred by rapid industrialization,

environmental problems discovered in the industrialized regions, and the birth of environmental movements led by pollution victims. To date, this history has been a source of information for studying environmental politics within Japan or conducting comparative studies along with the cases of the United States and European countries. How is it, then, situated in East Asia? Surprisingly little explored is how Japan's case *actually* affected its neighboring countries, such as Korea, which took a similar historical path of rapid industrialization in the 1970s and 1980s. This paper aims to show that early leaders of environmental movements in Korea paid serious attention to the ways in which the Japanese dealt with the problems. Some activists sought to uncover the Korean cases of Minamata disease (caused by mercury poisoning) and *itai-itai* (disease associated with cadmium waste), while others studied Japanese legal casebooks to find ways to defend pollution victims in the lawsuits against powerful industries. The two most notable environmental cases will be analyzed in depth. One is about the pollution case of Onsan, the southeast seashore area, where an industrial park for chemical factories was set up in the late 1970s. Despite the heightened public attention, the activists failed to bring Onsan's case to the court, because the victims had settled on taking some compensation from the companies. The other case is about a woman living in Seoul, Kille Park, who became a victim of coal dust emanating from a briquette factory nearby. Successfully brought to the court during the heyday of Korea's democratization movement in the late 1980s, this case became a legal precedent for making the company accountable for environmental hazards that led to fatal disease. In both cases, this paper argues, the Japanese experience of

organizing the citizen's movements, taking the cases to the courts, and finding ways for legal and administrative protection became inspiration and guidance for many environmental activists in Korea.

S11/3

Marianne NOEL

(Université Paris-Est, Laboratoire
Interdisciplinaire Sciences Innovations
Sociétés (LISIS)/IFRIS)

Mathieu QUET

(Institut de Recherche pour le
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***A Combined History of Science and
Technology Studies (STS) and the
Critique of Science in South Korea***

Science and Technology Studies (STS) is now a mature field in many countries, and it is important to understand its historical and political roots in a wide variety of national contexts. The present contribution to such a vast project links a number of South Korean activist groups involved in a critical reflection upon science and technology in the 1970s and the 1980s to the academic developments of the STS field in the 1990s. A focus on the activist roots of South Korea's STS counterbalances more institutional and less politicized stories of the field; it also enlightens the specificity of critical approaches to science in the context of an emerging power that was a military dictatorship. The authors describe how a few groups of students and professors (most of whom have been trained as scientists and engineers) created discussion circles to foster a critical and political discourse on science. They present the trajectory of groups such as the Research Group on Industry and Society, created at the end of the 1960s by students at the College of Engineering of Seoul National University, the Science Generation Group, the Natural Philosophy Study Group, etc. The paper then traces the emergence of the

new field (STS) through the dissemination of texts and their reception. The academic aspects of Korean STS are then compared from 1961 to the present day over three periods, with similar currents in Europe and the United States at the same time. The conclusion shows that the critique of science that emerged in South Korea took a form substantially different from critiques elsewhere, linking this difference to political and institutional causes.

S12

Technology transfers

S12/1

Aleksandra KOBILJSKI
(UMR China, Korea, Japan,
CNRS & EHESS)

When bad planning is good: failures of technology transfer and innovation in Japanese industrialization

The apparent rapidity of Japan's economic development, bedrock of most economic histories of the Meiji period, can leave the reader with the impression that Meiji Japan was able to industrialize more or less smoothly due to astute government leadership and investment.

Historians of technology and an increasing number of economic historians have, since the 1970s, offered examples of how poorly planned were some aspects of Meiji industrialization. This line of inquiry gave rise to what Tessa Morris-Suzuki calls the revisionist approach.

In a classic work on the steel industry, Iida Ken'ichi 飯田堅一 has lamented the insufficient planning by administrators and engineers involved in the building of Japan's first steel plant, Yawata Iron and Steel Works (八幡製鉄所). In his work on Yawata's predecessor, Kamaishi Iron Works (釜石製鉄所), David Wittner offered a fine-grain analysis showing how frequently plans changed, often significantly and abruptly, making success an elusive goal. This paper goes further by showing ways in which bad plans ended up well. By looking at two case studies - the privately-owned Osaka Chemical Works (大阪精密, 1897) and the state-owned Imperial Yawata Iron and Steel Works (1901) - this paper shows that challenges caused by what could be

seen as poor planning turned out to be fertile ground for cultivating creativity and stimulating innovation. We examine the ways in which specific technical problems, arising from a failure to test how imported equipment behaved with local raw materials, were resolved by disregarding established protocols and questioning the definitions of operational excellence. In so doing, I will suggest that engineers and technicians grappling with ill-suited equipment *in concreto*, on the factory floor, worked not only at reconfiguring industrial landscape but were engaged in a process of professional identity building grounded in a capacity to solve problems through a dynamic conversation between the material (machines, parts, raw materials, buildings) and the human (technicians, engineers, administrators).

S12/2

Joyman LEE
(Pacific Lutheran University)

Building Rural Industries: Sino-Japanese Technological Flows in Global History, 1895-1915

In 1903 Yuan Shikai, the governor-general of Zhili, sent his lieutenant Zhou Xuexi 周學熙 to Japan to learn about a set of information strategies. Although scholars have tended to associate Japanese industrial policy with the postwar period (Chalmers Johnson 1982), in the 1880s Japan's Ministry of Agriculture and Commerce created a set of institutions aimed at channeling overseas market and technological information to rural producers across the country, with the goal of increasing exports to the Asian continent

(Kaoru Sugihara 1996). The Japanese state set up commercial museums and organized trade fairs, industrial exhibitions and networks of circuit technical instructors to distribute information to small and medium-sized producers, and launched marketing and promotional programs for Japanese products overseas. I argue that in the aftermath of the Sino-Japanese War (1894-95), the Chinese state understood the significance of these Japanese institutions, and attempted to create them at the provincial level especially in North China. Led by the Zhili Industrial Crafts Bureau 直隸工藝總局 (1903-08), China initiated a largely successful effort in emulating the core components of the Japanese policy, and the experience had a profound impact on the debates amongst policymakers and industrialists at the National Conference on Commerce and Industry in Beijing in 1912.

By understanding this set of Japanese-origin institutions as industrial policy and as technology, I move beyond the literature on the transfer of Western technology amongst core nations (David Jeremy 1981, 1991) and from the metropole to the periphery (Eleanor Westney 1987) to deepen our understanding of technological transfers between countries on the global “semi-periphery”. The institutional structure that the Chinese created on the Japanese model not only enabled Chinese policymakers to focus on labor-intensive sectors which had enabled Japan to achieve trade breakthroughs, but also allowed China to select which Japanese technologies and management structures to import. This is an important case of the globalization of technology in East Asia, as it counters the “diffusion” narrative and instead demonstrates the multi-sited nature of global innovation and adaptation. Through my case study of the bureau’s

attempts to draw lessons from Japan in rural North China, I attempt to connect global and regional flows in technology with its application at the local level.

S14

Technologies of leisure

S14/1

Esther-Maria GUGGENMOS

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Nuremberg)

Whose Dice is it? Divination by Dice in the Zhancha Shan'e Yebao Jing

This paper aims to develop a deeper understanding of the shape and usages of dice as described in the late 6th-century Buddhist apocrypha “*Sutra on Divining Good and Evil Karma*” (*Zhancha Shan'e Yebao Jing* 占察善惡業報經, T. 839). Tracing the cultural contextualization of this Buddhist dice ritual, the paper will assemble sources that refer to the ritual as well as ludical usages of dice from other Chinese (including archaeological artifacts), Central Asian (dice in the Bower Manuscript) and Indian sources (esp. *pāsaka*-dice). The material intends to delineate the questions of: a) the shapes, b) the surfaces, and c) the divinatory usages of the dice (the structure of the ritual or game in which they were employed) in relation to the described four-sided pieces in the *sūtra* mentioned above and d) elucidates the types of questions and problems these dice divination practices were intended to answer.

S14/2

Frédéric OBRINGER

(UMR China, Korea, Japan,
CNRS & EHESS)

Ming Scholars and their Perfumes: a Transdisciplinary Approach

Historians of the making, the use, and the appreciation of perfumes in China

have to take in account social as well as technical, medical, economical or cultural viewpoints; it is in this way that I shall consider the theme of my paper. During the Ming dynasty, books belonging to the literature of Ming connoisseurship (to follow Craig Clunas) have very often sections devoted to perfumes and incenses (*xiang* 香). This is the case for example of the *Kaopanyushi* 考盤餘事 (Desultory Remarks on Furnishing the Abode of the Retired Scholar), by Tu Long 屠隆 (1542-1605), the *Zunshengbajian* 遵生八箋 (Eight Discourses on the Art of Living) by Gao Lian 高濂 (published in 1591) or the *Zhangwuzhi* 長物誌 (Treatise on Superfluous Things) by 文震亨 (1585-1645).

These texts are dealing with formularies to make perfumes or objects in relation with the « way of smell » ; they have to be read with the aid of other more specialized works, like *Xiangguo* 香國 (Land of Perfumes) by Mao Jin 毛晉 (1599-1659), *Xiangsheng* 香乘 (Annals of Perfumes) by Zhou Jiazhou 周嘉胄 (end of the Ming dynasty) or *Bencaogangmu* 本草綱目 (Compendium of Materia Medica) by Li Shizhen 李時珍 (1578). Reading these books, it is possible to begin to describe and understand one aspect of Ming elite material life. More precisely, thanks to this technical and aesthetic environment of incense materials, we can draw what I call places of scent (echoing Christian Jacob's “places of knowledge”).

S14/3

Anthony BUTLER

(University of Saint Andrews)

John MOFFETT

(Needham Research Institute)

The technology of leisure pursuits: A stick-and-ball game played in Yuan/Ming Dynasty China

It has been suggested by a number of Chinese scholars that the stick-and-ball game *chui wan* (捶丸), widely played in the Yuan and Ming dynasties, is the precursor of modern golf. The similarity between the two games is evidenced from literary and pictorial sources, particularly the latter. For example, a painting by Du Jin (1465-1487 CE) shows three court ladies with clubs, clearly aiming to knock a ball into a hole in the ground. The manual for playing *chui wan* is a work of 1282 CE, the *Wan Jing* 丸經. From this source Chinese scholars have made much of the similarities between the two games, particularly the etiquette of play. They have relied on the translation of excerpts as, until recently, there has been no full translation of the *Wan Jing*. We have used a very recent translation by Professor Wuzong Zhou and Dr Chuan Gao to compare *chui wan* with modern golf and its European precursors.

In total there are 32 rules for playing *chui wan*; many concern the ethics of play, some the technical aspects of the game and a few give a description of play and allow us to see the probable structure of the game. The technical aspects, such as the way the condition of the ground in the playing area affects play and different clubs for ground and air shots, are much the same as those experienced by a modern golfer. However, the rules concerning the way the game is played indicate important differences. Significantly, there is no initial long shot in *chui wan* and no fixed number of holes for

a round. There is an allocation of playing tokens to the winner of each hole and play continues until one player has a certain number of tokens. *Chui wan* is designed to fit the Chinese enjoyment of gambling. This is also reflected in the ethical rules where the punishments for cheating are severe. Other rules are what one would expect from a society dominated by the Confucian ethic. These differences separate *chui wan* from both modern golf and its European precursors, such as *pelemele*, *jeu de mail* and *colf*.

If *chui wan* were the precursor of modern golf, there should be some direct evidence of the spread of *chui wan* to Europe before the appearance of modern golf in Scotland around 1500 CE. To date, there is no evidence of even the most rudimentary kind, for that spread. Based on the evidence currently available, we conclude that modern golf, although much younger than *chui wan*, was independently invented in Europe and is not derived from the Chinese game.

S14/4

REN Yu Feng

(School of Philosophy,

University of Inner Mongolia)

Morinhuur: the craft techniques and cultural meanings of a Mongol musical instrument

The *morinhuur* is a traditional Mongolian bowed stringed instrument. It is one of the most important musical instruments of the Mongol people, and is considered a symbol of the Mongolian nation. It has been studied by Li Hongmei (李红梅 2003), Tonggalag (通拉嘎 2009) and Li Xudong (李旭东 2014) mainly from the perspective of national instrument and cultural phenomenon. However, the modern character of the *morinhuur* is

overemphasized in these studies instead of the origin of its national and folk characteristics, which is inadequate and incomplete for understanding of the national musical instrument.

The conception of technology in history of technology has been changed with the introduction of new theories and new perspectives. Technology as a daily practical activity is more emphasized for studies recently than it as a great invention lead to social change, which advocates that technology exists in the culture and society, and they are constructed each other. In this theoretical background, it is reasonable to study technique of *morinhuur*-made for the history of technology.

Combining research of texts and documents on name, origin and traditional handmade techniques of *morinhuur* with fieldwork of the inheritors of *morinhuur*-made in Inner Mongolia, this article discusses materials, modeling features and decorative patterns of *morinhuur*, and analyses the changes of craftsmanship of *morinhuur*-made and the cultural concepts and meaning hiding in the ritual of ethnic. This article also discusses the relationships between the *morinhuur* and beliefs, values, lifestyle of Mongol people and nomadic culture. It comes to the conclusion that *morinhuur* became a symbol of Mongolian culture, and it is deeply involved in all aspects of Mongol people life

This study has an important significance both for the extension of study objects of history of technology itself and for the understanding the characteristics of national culture of Mongolian.

S15

“Traditional” medicine in modern societies

S15/1

LEE Yeseul

(Acupuncture and Meridian Science
Research Center, College of Korean
Medicine, Kyung Hee University)

***Interpretation and Representation of
Health in Korea: Changes between the
Past and the Present***

Terms that describe different kinds of symptoms in Korean language exist in a wide scope in terms of expressiveness and targeting diseases. For example, different words exist in Korean describing the subjective sensations of stomach ache, showing the deep interest among Koreans in their own body and health. On the other hand, although the words and expressions in Korean language describing one's symptoms remained, the system on which treatments and health services were provided changed rapidly in the mid-1900s due to modernization, altering the medical basis underlying the treatment.

By using a qualitative approach of interviewing students from College of Korean Medicine, Kyung Hee University, and by comparing the classification of diseases between Joseon Dynasty and the present by looking at the classification of diseases in *Dong Ui Bo Gam* (東醫寶鑑) and the current KCD (Korean Standard Classification of Diseases), this study looks at interpretation and representation of health in Korea. Furthermore, the study highlights some of the characteristics in the health service utilization in Korea to elaborate the differences between the past and the present due to modernization which, from the perspective of medicine, resulted in acceptance and gradual

domination of Western Medicine.

Three things are ascertained in this study. First, common interest in symptoms and subjective feelings of patients is found in Korean language, which indicate the interest Koreans have to express and interpret one's health. Second, modernization which led Western medicine to flourish in a timely manner altered the way Koreans view diseases, from imbalance of *qi* and blood (氣血) of East Asian Medicine to imbalance in scientific health indexes, based on biomedicine and science. Third, a rapid modernization and economic boom in the mid- and late 1900s in Korea has led Koreans to “consume” health; the use of general hospitals in the urban area, regular health checkups, or consumptions of health supplements came to be acknowledged as a privilege rather than a basic right. Such representation may also have led to over-consumption of health in Korea.

The interpretation and representation of health in Korea shows its own characteristics in language, and its changes over history shows how culture and behavior are affected by societal and historical ramifications.

S15/2

Bridie ANDREWS

(History Dept., Bentley University)

***The meanings of “Chinese” medicine:
nationalism and internationalism in
the history of acupuncture***

Much recent historical research has shown Chinese medicine to be a modern construct, formed in response to different international and ideological pressures. By contrast, Chinese medicine is represented

very differently in different contexts. These representational narratives often differ from what practitioners were actually doing. By examining the contrasts between the practices and representations of acupuncture, we can reveal a great deal about both local context and national and international aspirations. For example, when Maoist China was reconstructing acupuncture according to an ideology of indigenous empiricism combined with Pavlovian science from the Soviet Union, many Japanese acupuncturists were rejecting simple empiricism in favor of a return to the ancient wisdom of Han Dynasty classic texts. At the same time as a few young Americans travelled to China in the 1970s to study the new acupuncture (that was presented to them as ancient Chinese knowledge), a few schools in Europe and Taiwan were teaching acupuncture techniques that the Chinese Communist regime considered superstitious and obsolete, and representing these as the 'true' acupuncture. The same controversies have continued into the present, with licensed acupuncturists in the USA today doing battle with physiotherapists who would like to include 'dry' needling in their practices without having completed any training in acupuncture. This paper will look at the history and local interpretations of acupuncture in China, Japan, and the West, examining the local, national and international contexts of successive waves of conflicting narratives about acupuncture and by extension, Chinese medicine and culture.

S15/3

LIANG Wenbo

(Institute of History and Philosophy of
Science & Techniques (IHPST)/
Univ. Paris 1/CNRS)

Rethinking acupuncture and placebo effect: a perspective of historical epistemology

In this study I want to propose some reflections upon the placebo effect of acupuncture that is now tested by a large quantity of randomized controlled trials (RCTs), such as German acupuncture trials for chronic low back pain and acupuncture for Knee Osteoarthritis. By reviewing the history of RCTs and its application in acupuncture studies from 1959 until now in China, America and Europe, I shall argue that applying RCTs to acupuncture requires a double evaluation, both the standards of RCTs and of traditional Chinese medicine, rather than a reductionist concept of confirmation. I shall suggest that the abstract debates about placebo effect should be set aside, a more practical question is how can acupuncture lead to successful treatments with "special effect" in the framework of RCTs.

S15/4

HAN Sunyoung

(Kyung Hee University)

Sharing Experience: The Transmission of Pulse Diagnosis in Contemporary Korean Medicine

By demonstrating the ways of identifying suffering and guiding healing repertoires followed, diagnosis illuminates the perspective on the body and illness in a medical system. Against this backdrop, this study examines pulse diagnosis of Korean medicine, a version of East Asian medicine. Pulse diagnosis, one of the most important diagnostic methods

in the East Asian medical tradition, is to grasp the changes of inner body conditions through the sensation evoked on a doctor's fingertips. The experience of pulse diagnosis highlights how the sensory experience of touching has been understood and practiced in the East Asian medical tradition. An inevitable tension has emerged in East Asia as the “modern” medical epistemology prefers certainty emphasizing “gaze” to the “unobjective” epistemology of traditional medicine full with fluent and divergent sensory experiences. Through ethnographic investigations on clinical and educational settings in contemporary Korean medicine, this study shows how pulse touching, in spite of the unfavorable environment, is actively transmitted from masters to younger generation. In particular, it delves into the sharing of sensory experiences in pulse touching among Korean medicine doctors through an embodied experience, suggesting pulse diagnosis as an effective, therefore indispensable, diagnostic method in Korean medicine. This study attempts to elaborate the existential and phenomenological ground of touching in pulse diagnosis, and to expand further understandings of the bodily tradition of Korean medicine.

S15/5

Nathalie ALLAIN
(INALCO)

Marie GAVART
(Kyung-Hee University)

François MACÉ
(INALCO)

KIM Namil
(Kyung-Hee University)

***Moxa manufacturing process in
South Korea and Japan -
A comparative approach***

This presentation is intended to become a cross-cultural dialogue between South Korea and Japan, using a comparative approach to study moxa manufacturing process in the two countries.

First, we will compare the different plant species used for moxa manufacturing. Three species are nowadays used for moxa production: *Artemisia argyi*, *Artemisia princeps* and *Artemisia montana*. *A. argyi* grows in China and in the Korean peninsula but not in Japan, whereas *A. princeps* and *A. montana* are endemic to Japan and the Korean peninsula. *A. argyi* is widely used for moxa production in today's South Korea, whereas in Japan, *A. princeps* and *A. montana* are the only species considered appropriate for the purpose, as demonstrated in historical records since the end of the 17th century. We will explain why Korean manufacturers prefer *A. argyi*, to *A. princeps*, which is commonly sold as a cooking ingredient in Korean markets.

Secondly, we will examine the manufacturing technics used in both countries. Let's recall that moxa is made of the indumentum of *Artemisia* spp. leaves, which is obtained by crushing dried leaves with stone mills, and sieving them with different types of winnowing machines. The very sophisticated machines developed in the late 19th century Japan, allowed to obtain finely sieved moxa keeping only 3 to 5 % of the raw material. This high quality moxa production allowed Japanese therapists to favour direct moxibustion 点灸 over indirect moxibustion. Thanks to this prime moxa quality, therapists could reduce the moxa size and defined three sizes (米粒大、半米粒大、糸状灸). This practice, clearly related to technological progress, is specific to Japan.

Thirdly, we will investigate the impact of avoiding skin burning and moxa combustion smell on moxa production.

The recent trend, that is to be observed in both countries, refusing burning pain and scars, led moxa manufacturers to innovate and produce easy-to-use, non painful moxa (e.g. 台座灸), and even smokeless moxa.

In conclusion, we will demonstrate how moxa manufacturing techniques have been differently developed, since the end of the 19th century, in the two countries in relation with distinctive cultural and historical contexts in response to locally available resources and technologies. We will discern similarities and differences in the moxa manufacturing processes in order to evaluate the impact of these technics on the medical practices of both countries.

S15/6

XIANG Zairong

(ICI Berlin Institute for Cultural Inquiry)

TCM's Body of Orifices and its Implication in Contemporary Queer Studies of the Body

Traditional Chinese Medicine has been attacked as not being scientific and thus in need of modernization. Attackers or reformers both inside and outside China often nod to the modern myth of linear evolution of human knowledge, a co-product of Western colonialism. Knowledge system outside of the comprehension of Western modernity is often taken as either locked in history (in the sense of the “traditional” of the “tradition”) or in history’s waiting room to become modernized by a particular version of modernity. Within the boundary of the “West”, queer subjects are often regarded, similarly as of “backward sexuality”, as the West’s other, waiting to be modernized (that is, to be straightened or normativized-qua-heterosexualized). Given the complicity of modernity, coloniality and heteronormativity, it is not difficult to draw

an analogy between TCM and queerness. This paper will venture into a hitherto less discussed and seemingly unlikely conjunction between queer theory’s critique of (Western) modern heteronormative sexual division of human bodies and a particularly archaic understanding of the human body in *Huangdi Neijing* (黄帝内经). *Jinkui Zhenyan* (金匱真言 sec.4 chap.1) of this canonic text of TCM sets the foundation of TCM’s understanding of the body, based on the idea of inner-outer correspondence through the connectivity between bodily orifices and the five correlating *zang*-organs. This connectivity is crystallized through the concept of *kaiqiao* (开窍). Hexagram Tai (泰卦) of the *Yijing* illustrates clearly this body-of-orifices, which is often unfortunately reduced to heteronormative “fertility myth” of reproductivity. Without romanticizing the ancient understanding of the human body, I opt for a reading that is both a decolonial learning from the ancient texts, particularly the queer potentiality of the concept of orifice (窍) and the orific bodily connectivity (开窍); as well as a queer critique of the heteronormative gender dichotomization of *yin-yang* into static oppositions such as femininity/masculinity, activity/passivity, negativity/positivity. The paper is a decolonial and reflexive critique of queer studies’ and especially Western queer community’s failure of looking beyond Western (modern) culture(s) and their (undesired) reiteration of the colonial/modern linear logic propagated in “queer liberalism”. It will hopefully also open up the studies of TCM to other fields, addressing those global questions with careful readings of local cosmologies.

S16

From hot springs to power stations: nuclear technologies for peace

S16/1

NAKAO Maika
(Keio University)

Radiation and the popularization of hot springs in modern Japan

This paper examines how radiation medicine contributed to the popularization of hot springs in modern Japan. In the early 20th century, radium was a precious material for medical use and people wanted to use it for treatment and to enhance their health without knowing about its harmful effects. Radium hot springs became fashionable in Japan and its colonies in the 1910s. The boom in “radium hot springs” was generated through the relationship between Japanese scholars, national policy, and local villages. In 1909, medical scientist Kaichirō Manabe and physicist Denichirō Ishitani found “radium emanation” (radon) in several hot springs. They reported that these well-known hot springs contained traces of radium. As scholars reported that radium provided the real potency of hot springs, local hot springs villages seized on the scientific explanation, and connected their developments with national policies. This paper illustrates how the discourse about radium, which came from the field of radiation medicine, connected traditional and modern values, central and regional terrain.

S16/2

ITO Kenji

(The Graduate University for Advanced Studies)

Defeat and Knowledge Transmission: Nuclear Research in Japan during the Occupation

War is often a medium of global transmission of knowledge. It is partly because war is an occasion when different civilizations meet. It is reasonable to expect that after a war, the kind of knowledge perceived to have greatly contributed to the victors is sought after by others, possibly most keenly by the defeated. At the same time, it is also possible that the same knowledge is abhorred because of the hardship it caused.

In the case of Japan after World War II, the defeat caused several setbacks for nuclear research. At the same time, it was also in Japan that the atomic bombs demonstrated their power in the most impressive way. The significance of nuclear research was undeniable, if not its desirability (Nakayama 2001; Ito 2010).

Against this background, this paper examines how this ambivalent situation affected the resumption of nuclear research in Japan. Rather than nuclear power research, it will focus on nuclear physics research and its earliest application, the use of radioisotopes. Much attention has been paid on the beginning of nuclear power research or importation of nuclear power technology (Yoshioka 2011; Kato, 2013). In particular, Yoshioka (2011) downplays the role of physicists in the introduction and development of nuclear power technology

in Japan. The earliest peaceful use of nuclear research (besides radiological studies), however, was the use of radioisotopes, which deserves some attention from the history of science. While Creager(2013) examines the distribution of radioisotopes by the United States Atomic Energy Commission, little has been investigated about the US export of radioisotopes to Japan. This paper will examine the scientific and political contexts in Japan and the US that allowed the introduction and the resumption of nuclear physics and research using radioisotopes in Japan, initiated by nuclear physicists such as Yoshio Nishina. By doing so, this paper aims to discuss the question of how a military defeat affects transmission of the kind of knowledge presumably responsible for the defeat.

S16/3

NAKAMURA Miri
(Wesleyan University)

***The Atomic Maid:
Matsumoto Seichō's Critique of
"Peaceful" Nuclear Technology***

Japanese mystery writer Matsumoto Seichō 松本清張 (1909-1992), rose to fame in the immediate postwar era, garnering the the Akugatawa Prize in 1952 and becoming a best-selling author in the 1960s. Recently in Japan, his name has once again become a common household name, due to the highly successful TV series, *Kaseifu no Mita* 家政婦のミタ (The Housekeeper Mita, 2011), which is based on Matsumoto's story, *Atsui kūki* 熱い空気 (Hot Air, 1963).

This paper contributes to the conference's theme of "locality" and "globalisation" by grounding this Japanese story in the historical discourse and debate revolving around atomic energy in the postwar world. Dwight Eisenhower's famous speech

"Atoms for Peace" (1953) created a new language of "peace" for describing nuclear energy, setting off the United Nations' International Conference on Peaceful Uses of Atomic Energy in Geneva in 1955 and 1958 and changing the perception of nuclear technology worldwide. Japan was no exception to the rule. The country that had just suffered the atrocities of Hiroshima and Nagasaki began to debate over the use of this "peaceful" nuclear technology, and though the country was initially reluctant, the rhetoric and the industry both became accepted.

"Hot Air" may not appear to be about the atomic bomb or nuclear energy at first. The story's main character is Nobuko, who becomes a housekeeper for an academic household and seeks to destroy the family's happiness. The term for "housekeeper" is extremely specific: *hashutsu kaseifu* 派遣家政婦 (out-call housekeeper), a job for women created after World War I, when the number of maids (*jochū* 女中) was in decline. The out-call system was based on the already existing similar system for nurses, and one of the main jobs of these housekeepers was the care industry, or what is called "affective labor." Through a nuanced reading of this work, I will discuss how affect plays a key role in reading this text, for it is not disconnected from the United States' emotional management over the postwar public's anxiety towards atomic energy and the manipulation of affect in the advertisement for "peaceful" nuclear technology. By doing this, I hope to shed light, not only on the literary and cultural history of nuclear power in 1960s Japan, but also to draw out the connections to the current rhetoric of nuclear technology in post-Fukushima Japan.

S17

Chinese astronomy in history

S17/1

XU Fengxian(Institute for the History of Natural
Science, CAS)***A square earth or an orientable earth?***

It is believed that the idea of *tian-yuan-di-fang* 天圓地方 “a round heaven and a square earth” had played as a domain cosmology in ancient China. The earliest record of this idea appeared in a text compiled in the first century AD, which recorded a dialogue between two thinkers of the fifth century BC doubting this idea. After that though often under criticism, this idea appeared in more and more literatures. Modern historians of Chinese astronomy believe it to be the earliest cosmology in Chinese history. The present article set forth that the idea of “a square earth” was a misunderstanding of earlier idea of an orientable earth. In Chinese, the word *fang* 方, which is interpreted as “square” in this context, has another meaning as “direction, orientation, or locality”, etc. Since in the 13th century BC oracle bone inscriptions the word *fang* has the later meaning only, the original meaning of *fang* had no meaning of “a square”. Archaeological discoveries show that from the mid Neolithic period (c.a. 3500 BC) on, almost all important cultures of Chinese civilization began to pay great attention to directions. Buildings such as altars, city walls, palaces, began to orient to the four cardinal directions intentionally. In the late Neolithic Taosi 陶寺 Site a ritual observatory was found which had been designed carefully for observing the sun’s

rising from different directions at different seasons. Establishment of the four cardinal directions as spacial coordinate system on the ground must have been based on astronomical observations. In traditional Chinese cosmology different directions corresponded to different seasons, different colors, different elements, and different virtues, etc., which formed the foundation of Chinese ideological and political idea. So in the original stage the idea *tian yuan di fang* 天圓地方, which has been understood as “a round heaven and a square earth” after the Warring States, must be interpreted as “a round heaven and an orientable earth”, which reflected the special period when Chinese people began to establish direction system on the ground and orient important buildings by astronomical observations.

S17/2

Daniel MORGAN(ERC project SAW, CNRS
Université Paris Diderot)***Early Imperial Astral Sciences as viewed through Actors’ Categories***

The taxonomic schemes by which early imperial actors divided the astral sciences—*tianwen* 天文 “celestial patterns” vs. *lü-li* 律曆 “(harmonic) standards & (astro-calendrical) sequencing”—are incongruent with those informing modern fields of knowledge and are irreducible to simple dichotomies of astrology vs. astronomy, space vs. time, or observation vs. calculation. In this paper, I analyze textual genres to detail the boundaries, overlap, juxtaposition, and interaction between the categories

that actors self-consciously imposed upon astral knowledge from as early as the first century CE. Paralleling the division of labor within the state astronomical office, I argue that the primary distinction that we see between *tianwen* and *li* is one of skill-set and approach: one constitutes the outdoor observation, collection, and interpretation of data, and the other, indoor (textual) data processing. That the analysis of actors' taxonomies allows us to move beyond outmoded observers' categories like "science" and "magic," while revealing how actors distinguished between proper and improper epistemic strategies across different fields and how contradictory positions coexisted and interacted over time. How is it, for example, that the theory and practice of omenology changed over time in response to advances made in the computational side of the astral sciences?

S17/3

ZHANG Yangyang

(Department for the History of Science and Scientific Archaeology, University of Science and Technology of China)

The Metaphor of a Pellet in a Bladder: the Key to Understand the Acceptance of the Sphericity of the Earth in China, 1600-1800

The metaphor of a pellet in a bladder was firstly created by a Chinese catholic named Yang Tingyun 杨廷筠 in his apologetic writing *Dai Yi Pian* 代疑篇 as a special model of the heaven and the earth, and increased in popularity among Fang Yizhi 方以智, Jie Xuan 揭暄 and some other scholars during Ming and Qing Dynasty. This model is a demonstration of how the earth can float in the universe as a sphere. The pellet, which symbolizes the earth, could float while blowing into the bladder. This model shows some Chinese scholars accepted the idea that the earth is round,

but rejected its fundamental physical interpretation - Aristotle's four element theory. And they held on to the traditional interpretation came from Chinese natural philosophy of the stable structure of the heaven and the earth - the earth floats in the air, and combined it with the western theory of the sphericity of the earth. There has been no article concerning the introduction of the sphericity of the earth in China investigated this Metaphor. The research in this paper on literature on the metaphor of a pellet in a bladder revealed that this adjustment, which was made by Chinese scholars and acquiesced by foreign missionaries, improved the acceptance of the theory of the sphericity of the earth in China. It can be summarized that instead of being considered as a replacement of an advanced and superior theory to an underdeveloped one, the introduction of the theory of the sphericity of the earth in China accompanied with some cautious doubt and audacious modification.

S18

Agronomy, past and present

S18/1

WANG Xingguang

(College Of History, Zhengzhou University)

Climatic Aridity and Counter Measures of Agricultural Technology in the Middle and Lower Yellow River in the Tang Dynasty

The climate of the middle and lower Yellow River came into the warm period in the Tang dynasty, but the climatic change tended towards desiccation with the increase of air temperature, decrease of precipitation and increment of evaporation. There were the drought records of 142 years in the long history of 360 years of the Tang dynasty, which directly affected the normal development of agricultural production, and led to impoverishment of the ecological environment, such as decrement of flow curve, deserting and losing of water and soil and land desertification and soil salinization etc. To cope with the adverse effect of the climate aridity, the ancient people used the traditional plough-rake-harrow farming system for dry land, cultivated drought resisting crops, developed multiple cropping by rotation, and extended vegetable species and planting area. They carried out water conservancy engineering, improved irrigation implements and extended irrigation area. The government adopted the 'Equal field' system, encouraged farmers to open up wasteland and extended cultivated area. The government established the ever-normal granary and charity granary, carried out positive disaster relief policies and redressing

measures, which played an effective and positive role in agricultural production and loss reduction and provided the experience reference to drought resistance and disaster relief in contemporary China.

S18/2

LUO Xingbo

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

Dream, Plan, and Reality - Research on the Sino-US teamwork on agriculture technologies cooperation after World War II

The Nanjing central government of Republic of China started its ambitious plan for agricultural development after World War II. An international teamwork was build up in 1947 under the support of two nations, and carried on several month's investigation on almost all of the China's agriculture, including agriculture policy, agriculture finance, agriculture economics, Chinese tea, Chinese tung-oil, Chinese silk, wool, and so on.

The comprehensive report about the investigation (*gai jin zhong guo nong ye zhi tu jing*, 改进中国农业之途径) once was seen as the blueprint of reform of China's agriculture, but also got many public criticisms. The plan was an unrealized intention at last because the Chinese Communist Party came to power.

The paper reviewed the beginning and end of the Sino-US teamwork on agriculture technologies cooperation, focus on its aim, process, result, and the influence.

S18/3

LEE Yi-Tze

(National Dong Hwa University)

The Web of Transnational Cultivation and Benevolence: Taiwan's contemporary networking of alternative farming and self-help agronomy

This paper aims to delineate the inner dynamics of transplanting agronomies from KKF of Thailand, Permaculture of Australia, and Shumei organization to Taiwan, and the process of forming networking among the technology literate farmers. Based on the idea promoted by the group leader of such networking, "learning is a process of hacking," farmers searching for alternative agronomies consider that new agriculture should be a "movement of open-source activities on the land." Connecting agricultural productivity with spiritual benevolence, these groups adopt spiritual cultivation and environmental observation into technological transformation for the land and crops. The farming network group has established itself transnational microbial knowledge as well as religious devotion of environmental restoration, while the official agricultural extension goes for hierarchical information. Farmers' networking based on this movement becomes an exciting front in the array of organic farming. The discussion from this microbe-hunting group sheds light on the way of transplanting agronomical technology, a new networking of knowledge sharing, and the meaning of hacker in the practice of agriculture and environmental awareness.

In this paper, histories of the three alternative agronomies and their religious/spiritual connection to environmental beliefs will be explored. Furthermore, how these organizations advance their practice into systematic agricultural techniques and

practice for transnational groups is taken as echoes for contemporary awareness of food safety and efforts to the convergence of environment and spiritual transformation of farmers themselves. My discussion will focus on the transnational formation and localization of these three alternatives as a means of contesting agronomies against the hierarchical knowledge from governmental sectors and its market ideology. In the end, this article aims to reflect the meaning of agricultural practice as hacking based on the idea transnationalism, spirituality, and networking.

S19

Modernisation in science, language and society

S19/1

WANG Kai

(Department of History of Science and Scientific Archaeology, University of Science and Technology of China)

Scientific Gentry in China: Socialisation of Western Science and China's Modernisation during the "Self-strengthening" Movement (1860-1895)

The socialisation of modern science in China is depicted as embedded within the social setting where the industrialized western civilization intruded into traditional Chinese society subsequent to the Opium Wars. Among the substantial changes by this intrusion, components of China's gentry and their functions alerted over the years. Under such a changing circumstance, how did the structural factors including Confucian ideology affect the localisation of western science in China? In which way did China's gentry as social status group contribute to the institutionalisation of scientific knowledge, i.e. obtaining regulating power upon the social actions? This article attempts to answer the questions by combining historical and sociological perspectives in investigating how scientific knowledge professionals, as exemplified by Xu Shou 徐壽 (1818-1884), attained membership of the social status group as *scientific gentry* during the Self-strengthening Movement (1860-1895). It was in their deploying modern science to integrate society and to head up the organization of public affairs, I argue, that modern science gained the regulating power over social members but via the channels of traditional Chinese behavioural norms, cultural values, and

social institutions. As such, socialisation of modern science is perceived in the broader cultural and institutional background. Specifically, scientific gentry's social function is delineated as relied largely upon how effectively they were able to materialised scientific knowledge for removing social upheaval, resisting military humiliation, and facilitating economic progress.

This paper contributes to our knowledge of socialisation of modern science seeking institutional power in China. The sociological understanding of its course further sheds new lights to exploring the nature and modernisation of China society. The contribution also includes connecting up so far largely distinct categories of historical and sociological literature and sources, consisting primarily of *Qingshigao* 清史稿) *Chouban yiwu shimo* 籌辦夷務始末, *Jiangnan zhizaoju ji* 江南制造局記, *The Cambridge history of China* (Vols 10 and 11), *Science and civilisation in China* (Vol 7: 2), *Society in China* (Douglas, 1894), *The Chinese gentry* (Chang, 1955), *Economy and society* (Weber, 1978), *The constitution of society* (Giddens, 1984), *The elements of social theory* (Barnes, 1995), *Classicism, politics, and kinship* (Elman, 1990), *A social history of truth* (Shapin, 1994).

S19/2

Ruselle MEADE

(Japan Society for the Promotion of Science, University of Tokyo)

Juvenile Science and the Japanese Nation: "Shonen'en" and the cultivation of scientific subjects

The role of scientific discourse in

promulgating ideas about nationhood and empire has been widely demonstrated, particularly in studies of British and French imperialism. However, we still know little about the part played by science education in shaping children's ideas about the modern Japanese nation. The government's reforms of 1887 made loyalty to the Emperor the cornerstone of the educational system, and key to cultivating devoted subjects was the print market for young people, which was expanding after a generation of mandatory education. It is in this context that the pioneering juvenile magazine *Shonen'en* 少年園 (Children's Playground, 1888-1895) was launched. It was created by Yamagata Teisaburō 山縣悌三郎, who as a Ministry of Education official was instrumental in fashioning the new Emperor-centred policy. A highly regarded writer of popular science books, Yamagata ensured that scientific content was carried in every issue of *Shonen'en*. This scientific material was not isolated from, but worked to reinforce the Confucian-centred moralistic ethos of the magazine. With particular focus on coverage during the First Sino-Japanese War (1894-95), this paper demonstrates how scientific content was presented synergistically with other material in an attempt to link scientific achievement with the national polity. As an early articulation of scientific modernity, 'Shonen'en' offers a compelling case study of how elites sought to create a new cultural template wherein 'modern science' would underpin a traditional social order.

S19/3

Iwo AMELUNG
(Goethe University)

Standardization and Chinese Languages of Science in the early 20th century

The creation of modern scientific terminologies during the late Imperial period in China has become a subject, which has been intensively researched in recent years. Given the linguistic and scientific importance of these terminologies, the attention paid to the problem is entirely justified. Strangely enough the Republican period has been largely neglected by research. For contemporary scientists and educators, however, the issue of terminology and the language of science remained high on the list of priorities.

In this paper I will on one hand look into the question of terminological standardization during the Republican period. I am here especially interested how the results achieved during the late Imperial period were preserved, this is how institutions aiming at the standardization of scientific terminologies were installed, developed and operated in order to attain their goal. One aspect which deserves special attention are the government sponsored and individually executed dictionary projects of the period, which at times were of unprecedented scope, Du Qibao's 1930 Geological Dictionary for example had more than 1200 pages.

The issue of terminology was closely related to the question of the language of science. Since the middle of the 1920s there was a conscious and determined call for employing Chinese as the language of science in the natural sciences as well. In the second part of my paper I will relate this demand to the question of standardization of terminology. I will suggest that this

question not only had a “practical” side, related to educational practices, but was symbolically charged as well. The demand that “science needs to speak Chinese” (Luo Jialun) in order to get a root in China also has to be seen within the framework of the indigenization (*bentuhua*) of the sciences in 20th century China, an issue which up to now has been almost completely neglected by research.

S19/4

Lingqiong XIE-FOUQUES
 (UMR China, Korea, Japan,
 CNRS & EHESS)

From craftsmen to professional architects, the ascent of a scientific approach to architecture in China?

During the first decades of the 20th century, the first professional architects appear in China, the result of modern specialized education both in China and abroad. Representing modernity and science, these professionals progressively become recognized by public authorities and become the founders and the authority on the scientific discipline of architecture. My presentation looks at the consequences of this ascent on another group of participants in this trade, construction craftsmen, the builders of China’s pre-modern architectural heritage and holders of traditional know-how. It also proposes to reflect on the evolution of the concepts of architecture and heritage, caused by the development of a new scientific approach to knowledge.

S20

Stories of globalisation

S20/1

YI Doogab

PARK Jinyoung

(Seoul National University)

Global Connectedness in the History of Tobacco Litigation in Korea: Circulation of Scientific Knowledge and Legal Practices in the Age of Tobacco Liberalization in East Asia, 1980s-2000s

The dramatic fall in American consumption of cigarettes in the 1980s and 1990s, along with the trials of big tobacco companies, set the stage for the intensive push into new global markets. The opening of tobacco markets in East Asia (i.e., Japan in 1986 and South Korea in 1988) by the U.S. introduced fierce global competition to the local tobacco markets, ending state-run cigarette monopolies. Alarmed by the “American Liberation of the Cigarette Market” that made East Asia another paradise of smokers, some local and global health organizations brought a series of lawsuits against tobacco companies in Korea and Japan from the late 1990s. This paper examines the history of tobacco litigation in Korea in order to analyze the global circulation of scientific knowledge and legal practices related to tobacco control. At one level, we will investigate how the U.S. exported not just tobacco but also anti-smoking policies, including scientific and legal knowledge generated in American courtrooms. At another level, we will follow how this “American” scientific and legal knowledge influenced the fate of tobacco litigation in Korea. We will then briefly discuss tobacco litigation in Japan, whose legal and regulatory regime for the tobacco industry and whose social norms

toward smoking bear striking similarities to those of Korea, a former colony of Japan. The interplay of global and local events in tobacco litigation in East Asia, as we will show, has profound consequences for local tobacco companies, forcing them to be one of the competitive multi-national companies competing for another unregulated global market for cigarettes. The liberalization of the tobacco industry in East Asia, which has transformed local tobacco companies into profitable multi-national firms, indeed worsened public health not just in Korea and Japan but also in the Western Pacific region. In conclusion, we will discuss the implications of the global connectedness and dynamics in the history of tobacco litigation in East Asia for understanding new global patterns of health and disease in global medical history.

S20/2

WANG Shen

(Dept. of History of Science, University of Science and Technology of China)

Socialistic Assistance to Vietnam and Albania: the Destiny of a Lucky Geologist Chang Yinbo during China's Cultural Revolution

During the turbulent decade of the Cultural Revolution (1966-1976) in China, large amounts of scientists were unable to do research as they were suffering inhuman treatment which led to stagnation in science development. However, assistance for science of the land of socialism like Vietnam, North Korea and Albania did not cease and many groups of scientists and engineers were sent to these countries.

Geologist Chang Yinbo 常印佛 was the most prominent example among these experts. Chang was early educated in the period of the Republic of China (1911-1949) and became one of the earliest college students in the People's Republic of China in October 1949. Inspired by the belief of "Saving China via Science", Chang Yinbo chose geology as his major and graduated from the Tsinghua University three years later. Because of scarcity of mineral resources, Chang, like most of his classmates, quickly became an excellent geologist who is not just a master of theories but also a practitioner in the mineral exploration. From 1965 to 1974, Chang was sent to Vietnam and Albania to assist local people to explore ore resources and was awarded by both governments. While Chang went on his geological research work abroad, many of his classmates, colleagues and teachers were suffering maltreatment and disesteem in the turbulence of ten years' Cultural Revolution. When the disturbance came to an end, Chang came back to China and began to supervise a series of national key science and technology projects in the "Spring of Science". Just based on his experience inside and outside of China, he was successively elected to be academicians both of Chinese Academy of Sciences and Chinese Academy of Engineering respectively in the 1990's. Only a very tiny number of scientists have ever been honored with both kind of academicians in China.

From Chang's academic career, scientist's destiny closely connected with nation in new China could be discussed in this paper. As the first generation of scientists who were trained independently in red New China, Chang played the role in foreign assistance for socialism countries during the Cold War by chance. He accomplished

his political mission by helping "brother countries" develop geological science and luckily avoided the turmoil inside China and led him to be a successful scientist both in theory and practice.

S20/3

James FLOWERS

(Johns Hopkins University)

Stone Gorge Yi: Charting Heaven and Earth in Colonial Period Korea

Sok Kok, also known as Yi Kyu Chun (1855-1923), is an important figure in the practice of medicine in South Korea today. He is most well known for his theory of strengthening *yang qi* 扶陽氣, heart *yang* 心陽, in particular. In order to strengthen Yang, he advocated strengthening the Spirit, or the Heart 心 with the practice of Confucian virtue and morality. Better understanding of Sok Kok's medical thinking requires socio-political contextualization. To get at contextualization, we need to examine his overall oeuvre. To make his case, Sok Kok employed a range of literary genres. His oeuvre needs to be seen as a coherent whole. In Sok Kok's geographical global model, China is located in the south and center. England in the northwest is cold while China in the southeast is warm. People in the northwest are cold, therefore *yin* 陰, only proficient in manual techniques. Using maps, Sok Kok reasoned that China and Korea sat at the center of the civilized world. Sok Kok acts as an important point of difference between the practice of medicine in Korea and China. While he claimed authority from Han China, the China of his own time failed to inspire. He therefore set his own path in formulation of a medical model tied to social, political, and geographical considerations.

S20/4

ZHANG Jiajing

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

The Spreading and Application of Western Cartography Drawing in Modern China – The Contour Method as an Example

Modern times have witnessed an evolution in Chinese traditional cartography, and Western cartographical knowledge's flooding into and application in China. We'll take contour method, one of the methods for cartography drawing, for an example.

There are various undulating landscapes on the earth surface including mountains, hills, plateaus, plains and basins. Generally, they could fall into five basic categories: hills, ridges valleys, saddles and basins. Hypsography is an approach that presents various forms of the landscapes on the maps. Traditional Chinese hypsography is scenery depiction approach which presents the undulation of the land with perspective drawing. The scenery depiction approach is vivid in image, easy to draw and understand and strong in illustration. However, it is not precise enough to judge the altitude of the mountains. Since modern times, western painting approaches such as hachuring, hill-shading, contouring and tinting begin to gradually appear in the Chinese maps. These hypsographies are not only vivid in image but also higher in the precision. They could even tell the accurate altitude of the mountains from the maps. The contour method in the thesis refers to use the method that uses contour lines to present the undulation of the mountains. Contour line is a special form of the isoline. It is what the linking line of the equal elevation points projects on the horizons. Contour lines first appeared in the late 18th century.

And it was not until the beginning of the 19th century that the Survey Bureau of the French Staff began to apply the contour lines in the field works. Since then, the contour lines were widely applied.

During the late Qing Dynasty (1840—1911), westernization group introduced contour theory into China in their translated books. Thereafter, a handful of contour maps were published. The drawing level of contour map in the late Qing Dynasty was uneven, and there were substandard unreal isobaths map, unreal contour map and standard contour map drawn by the authorities.

During the period of Republic of China (1911—1949), contour theories were gradually consummated, and there were lots of diversified contour maps, mainly including military-purpose contour map and civilian-purpose one. Also there were plenty of contour maps drawn by individuals. The popularization of contour map during the period of Republic of China symbolized the transfer of traditional Chinese cartography to modern times.

Social and technical factors are two major factors influencing the spreading and application of contour method in China. Social factor consists of urgent demands in military defense, demands in political rule, and demands in mineral exploration and railway construction. Technical factor includes the development of measuring technique, the application of new-type devices and the progress of printing technology.

S20/5

LI Wenliang

(History of Art, School of Culture and Creative Arts, University of Glasgow)

European Perspective in the Eighteenth century's Chinese Theories and Paintings: Sources, Applications, Influences

On the discussion of spatial expression and visual experience in ancient Chinese painting, some of the eighteenth and nineteenth centuries' European documents mentioned its lack of proportion, perspective etc., and current research mainly focuses on the analysis of artists' personal expression within literary or philosophical context. To avoid over generalized descriptions on the use of perspective in Chinese painting, comprehensive study on theoretical evaluation of vision and space in both science and art area are crucial. Especially in the eighteenth century, as an artistic response to European contact, Chinese publications on European perspective and its use in Chinese painting not only arouses discussions of traditional spatial expressions but also merges the accumulation of traditional material and technique, thus promotes the forming of new artistic style.

With the analysis of original Chinese textual documents on vision and space in both science and art area, this paper take specific artworks and *Shixue Jingyun* 視學精蘊 (The Essence Science of Vision), the first Chinese treatise that introduced European perspective and descriptive geometry, as examples, to discuss the original and available European publications which were possibly cited in *Shixue Jingyun* but not just Andrea Pozzo's *Perspectiva Pictorum et Architectorum* as described in most of current researches and libraries' catalogues. Moreover,

the influence of European perspective, specifically, to what extent that European perspective was accepted and applied in the eighteenth century by Chinese scholars and artists.

S20/6

Alice CROWTHER

(EHSS)

The use of Manchu as a language for the translation of scientific texts: Dominique Parrenin's The Manchu Anatomy (Wargi namu oktosilame niyalma beye giranggi sudala nirugan-i gisun) [Illustrated explanations of Western physicians on the bones and vessels of the body] as an example

During the 1710's, at the request of the Kangxi 康熙 emperor, the Jesuit Dominique Parrenin (1665 – 1741) produced a Manchu translation of *L'anatomie de l'homme* (1690), a series of anatomical lectures and demonstrations that Pierre Dionis (1643 – 1718) had given at the Jardin du Roi and published in Paris in 1690. This paper will present the results of a study of the medical and anatomical terminology Parrenin and his imperially appointed Manchu assistants used in their translation, tracing the loan words and calques taking from the medical terminology of the Chinese and Mongolian as well as the use and re-use of older Manchu terms, and the influence of the structure of the French and Latin and Greek terms on the creation of neologisms in Manchu. It will hope to contribute to an understanding of the ways in which Manchu was adapted to be used as a vehicle for scientific translation, as well as to an understanding of the ways in which European scientific texts were translated and interpreted in China during the early Qing dynasty, and the ways in which translation and scientific knowledge were used by the Jesuits as a tool

in their missionary work.

S20/7

SHINNO Reiko

(University of Wisconsin-Eau Claire)

***Impact of the Mongol Empire on
Chinese Medical History***

The Mongol Empire in the thirteenth and fourteenth centuries was one of the largest empires created in human history, and it had a major impact on global history. Despite the popular image of the Mongols being ruthless destroyers of Eurasian civilizations, recent studies have shown that the impact of their rule in various regions were diverse and complex. To show the complexity, this paper focuses on history of medical institutions, culture, and theories in China under Mongols.

In the first part of the paper, I will point to the empire's impact on the institutional history of medicine in China. The Mongol rulers valued physicians and recruited a large number of them in their military and government. The Mongols gave tax discount to physicians' households and created a large number of governmental positions related to medicine. The physicians serving the government were led by the highly-respected Imperial Academy of Medicine. These medical administrators in turn created what I call medical temple-schools.

The second part of the paper will discuss the relationship between the Mongol rule and the representations of physicians and medical practice in China. As the Learning of the Way (*daoxue* 道學) gained popularity from late Northern to Southern Song, literati in South China frequently used the term "Confucian physicians" (*ruyi* 儒醫) to praise elite physicians, but those in North China did not seem to care for it. This situation changed after the Mongols conquered North China, dismantled

the north-south border, and allowed the Learning of the Way to spread in the north.

Finally, in the last part, I will show that the Mongol reunification of China and China's incorporation into the Mongol empire contributed to the development of medical theories. Although physicians in the Jin and the Southern Song domains had all inherited Northern Song legacies, they developed the theories in different ways during the time of division. The reunification of China allowed Zhu Zhenheng 朱震亨 (1282–1358), born and raised in South China, access to the medical books in North China and spread the Jin legacy to South China. In addition, now that China was part of the larger Mongol empire, he critiqued and adopted therapies developed outside of former Jin or Southern Song domains.

S21

Science and politics in Republican China

S21/1

CHANG Ku-Ming
(Academia Sinica)

***Western Vitalism in China:
The Significance of Life for Chinese
Conservatism, 1910-1945***

The first few decades of the twentieth century saw Chinese intellectuals earnestly open to Western ideas and institutions. Remarkably, vitalism as introduced by Henri Bergson (1859-1941) and Hans Driesch (1867-1941) were embraced by a wide span of figures who included prominent Confucian thinkers (such as 梁漱溟, Liang Shuming, 1893-1988 and 熊十力, Xiong Shili, 1885-1968), Buddhist monk (太虛 Taixu, 1890-1947), Daoist (陳撻寧 Chen Yingning, 1880-1969) and theorists of the Nationalist Party (陳立夫 Chen Lifu, 1900-2001). Embracing vitalism, these intellectuals argued for the preexistence of vitalist thinking in Chinese and Buddhist traditions, and for the superiority of Chinese spiritual culture. They clashed with such advocates of Westernization as 丁文江 Ding Wenjiang (1887-1936) and 胡適 (Hu Shih, 1891-1962) in their upholding of Chinese superiority and the way they used Driesch's and Bergson's vitalism to challenge the omnipotence of natural scientists. This paper aims to recover the forgotten flourishing of vitalism in the first half of the twentieth century and to shed light on a new chapter of modern Chinese intellectual history in which Western ideas were not rejected, but were appropriated to celebrate the strength of Chinese traditions.

S21/2

Joshua HUBBARD
(University of Michigan)

***The Chinese (Geo-) Body and Global
Biopolitics in the Nanjing Decade***

Though many have attributed the tripling of Chinese Nationalist Party (Kuomintang or KMT) territory during the Nanjing Decade (1927-37) to an all-consuming military apparatus, a transnational scope and a gendered lens bring non-military modes of KMT expansion, specifically the promotion of women's and children's hygiene and health, to the fore. In 1928, the KMT established a centralized Ministry of Health only months after founding a new state in Nanjing. The ministry's goals demonstrated a focus on women and children by targeting prostitution, pregnancy, childbirth, and motherhood, and a geographic focus on the interior, where KMT authority remained limited when not absent. The agency's founding of local bureaus, hospitals, and orphanages in disputed and recently acquired territories coincided with military campaigns to defeat regional polities and seize the areas to which they laid claim. The KMT-led agency's successes depended upon the global movement of capital, knowledge, and personnel. In concert with armed conflicts to acquire territory, a class of Chinese, female, medical professionals—including doctors 伍智梅 Wu Zhimei, 蘇曾祥 Su Cengxiang, 石美玉 Shi Meiyu, and 康愛德 Ida Kahn—returned from universities in Europe and the U.S. to work in alliance with the state and transnational aid organizations—such as

the Rockefeller Foundation and the League of Nations—to improve the health of rural women and children, thereby shoring up the KMT-led state’s influence in areas such as Jiangxi, Hubei, Gansu, and Ningxia. This paper examines extra- and inter-governmental correspondence, legislation, and popular media to demonstrate the centrality of women’s and children’s health and hygiene to a fundamental reordering of the political landscape in continental East Asia within the context of global biopolitics and humanitarianism. I argue that the extension of state power and the promotion of women’s and children’s health in the interior were, in fact, integrated components of a broader, cooperative effort of the KMT, local elites, and foreign philanthropists to colonize both the bodies of potential citizens and the geo-body of the contemporary Chinese nation-state in the early to mid-twentieth century.

or not” as seen in the case of Bernal and Polanyi. The variation between debates in the west and in China provokes a comparative approach to the theory itself as well as to the impact it had on both sides. Upon a preliminary survey of the relevant archives and publications at that time, this paper reveals the content and ideology of the debate that happened in China in the last century. The specific differences of the topics between western and Chinese debates are identified. Furthermore, within the theoretic framework synthesizing the social historical background of modern China, ideas of traditional culture, and some other aspects, the article also concludes with a plausible explanation of why the Chinese had such a distinct attitude towards the question of *Planning Science*.

S21/3

FU Banghong

(Dept. of History of Science and Scientific Archaeology, University of Science and Technology of China)

Can science be planned? Debates in China in the 1930-40s

In the 1930-40’s, J.D. Bernal put forward the theory of *Planning Science*, triggering strong controversy in the western world. Fearing that the autonomy of science risked being damaged, M. Polanyi founded the Society for Freedom in Science, with the aim of guarding scientific freedom. Scientists of different groups have since then engaged in debates over the issue of planning of science for a long time. In the meantime, Republican China saw such disputes emerging in a similar fashion, although the main point of contention altered from “science and its social relations” and “can science be planned

S22

Rituals, beliefs and their artifacts

S22/1

Susan NAQUIN
(Princeton University)

Built, Improved, Wrecked, and Repaired? An Inquiry into the Life of Objects, in this Case, Chinese Temples

Certain kinds of Chinese public buildings are easy to date. A stone was customarily inscribed, describing the construction process and recording the date that the work was completed, and placed inside as a permanent record. This paper will argue that this method of dating is seriously flawed because it is based on a misunderstanding of the life cycle of many objects and especially of what it means to “finish” a Chinese building. Beginnings cannot be so easily dated; repairs and restorations were continuous; and rebirths on the same site were not uncommon. These were not anomalies, they were expected and desirable stages.

Using as examples the temples of Ming and Qing dynasty North China, this paper will examine the histories of such buildings and discuss the problems involved in dating them. It will propose that “building complex” replace the singular “building,” and suggest that we must view all such complexes not as expressions of finished visions but as works perpetually in progress. The misleading model of some European buildings will be brought in to contrast difference in who paid for such buildings, who built them, and what they meant to their users.

I will look closely at the language used to mark moments in the making of a building (*jian* 建, *chuang* 創, *zao* 造), of rebuilding(

重建, 復創, 新造), of collapsing and falling apart (*tui* 頹, *qing* 傾, *hui* 毀, *fei* 廢), and especially the language of “improvement” and “repair” (*xiu* 修). These are words with wide valence in the world of Chinese technology, and are employed for the making of many other things. *Xiu* 修 in particular is used in many different domains, including medicine and religion. My paper will thus also explore whether we have misunderstood other kinds of “creating” and “restoring” in spheres other than buildings.

S22/2

ZHOU Hanguang
(East China Normal University)

The Positive Influence of Buddhism Upon the Development of Science and Technology In Ancient China – A Discussion with Joseph Needham

The purpose of this paper is to do some research work on the relationship between Buddhism and the development of science and technology in ancient China, especially on the effects that Chinese Buddhism had given. We do not agree with Joseph Needham’s conclusion that those effects of Chinese Buddhism were very largely inhibitory. We have sufficient evidences to believe that in generally speaking Buddhism made a positive contribution to the development of science and technology in ancient China.

First of all, the paper provides three important characteristics of Chinese Buddhism those are closely connected with the development of science and technology as following, (1) A strong spirit to get into the secular society; (2) A high degree of

adaptive ability; (3) A sophisticated level of thinking. These three characteristics provide both theoretical and practical reasons for Chinese Buddhism to participate in scientific and technological activities and then affect the development of science and technology. Then the paper points out four kinds of ways that how Chinese Buddhism get involved with the development of science and technology: (1) The Buddhist scriptures themselves contain a wealth of knowledge of science and technology, and the ancient eminent monks introduced them into China by translating these Buddhist scriptures; (2) Some knowledge of science and technology in early India or other places which might not be created or owned by Buddhism was brought into China by the spreading activities of Buddhism; (3) Ancient Chinese Buddhists played an active part in scientific and technological activities and they got a series of achievements; (4) Chinese scientists who didn't believe in Buddhism made further innovation and improvement by the inspiration of Buddhism knowledge of science and technology.

In Chinese history, we have not found intense conflict between Buddhism and science, on the contrary, Chinese Buddhism made positive and promoting influence on the development of science and technology through many ways, and got a lot of important contributions in different scientific areas such as mathematics, astronomy, medicine, biology, geography, architecture, ancient technology and so on.

S22/3

LIU Liu
GONG Decai
WU Hao

(University of Science and Technology of China)

Technical study of lacquer craft of Qing Chinese wooden coffins

China is a state of ceremonies and owns a long history of lacquering technique since early Neolithic age. Social-status-based particular details were carried out strictly on funerals in ancient China that even reflected on the selection of coffins.

Samples provided by the Institute of Archaeology of Taiyuan City were collected from two elegant wooden coffins excavated from Yangqu, Shanxi, China. The coffins were manufactured in Qing Dynasty and the hosts are supposed to be a sixth-level officer and his wife according to the epitaph. Technical means such as SEM-EDS, WD-XRF, FT-IR and XRD combined with microscopic analysis are used in the research, explaining the material composition in lacquer, lacquer ash and metal decorations as well as the lacquer craft.

Research reveal that particle of marble and talc were added into the lacquer ash apart from common clay mineral. Tung oil was added into the lacquer and the metal decorations are composed of silver and gold. The craft called "*Bu Qi*" (put linen above the objects with lacquer) was put into use for achieving a better strength. It is also noticeable that two different craft called "*Bo Jin*" (lay gold foil on the surface of objects) and "*Ni Jin*" (grind several gold foils into powder with glue, brush the powder on the surface of objects) are all observed in different parts of metal decorations which has been reported rarely. The result is in accordance with ancient texts such as *Xiu Shi Lu* 髹饰录 and *Da Qing Tong Li* 大清通礼.

The job fills the blank of lacquer craft study of wooden coffin in ancient China, illustrates the material and crafts, also establishes a solid foundation for conservation.

S23

Water technologies in modern China

S23/1

LI Haijing

(Department for the History of Science and Scientific Archaeology, University of Science and Technology of China)

The Technology of Water Conservancy from the West:***Ludwig Brandl's Management of the Qiantang 錢塘 River (1928-1931)***

In a country as essentially agricultural as China, water conservancy projects have been naturally given the top priority in the course of time. A substantial number of seawalls and dams were built across China in its history of floods control. Primarily for the protection of the thriving local economy, governmental bodies invested heavily in the frequently flooded area of Qiantang River (錢塘江), maintaining and repairing its seawalls and dams. Notwithstanding the tremendous efforts of this sort, the complete elimination of water disaster was rarely achieved.

Soon after the Water Conservancy Bureau of Zhejiang Province was founded in 1928, Ludwig Brandl, a distinguished Austrian water expert, was invited for the position of chief engineer in the management project of the Qiantang River (錢塘江). From 1928 to 1931, after investigating the upstream of the Qiantang River (錢塘江), Ludwig Brandl proposed a number of effective schemes, combining western modern hydraulic technology with Chinese traditional techniques. By applying the knowledge of structural mechanics and statics into the design of dams and seawalls in China, the schemes further shed new lights on controlling floods of Qiantang River (錢塘江). Proved to be

practically effective, Brandl's ideas became the main principles and exemplar. With his help, China's fundamental subjects of measurements, meteorological observation and hydrology developed significantly, which gave rise to the independent system of subjects. Moreover, the structure of seawall and dam has undergone changes, affecting the standard seawall project launched in the 1980s. The new design featured narrow width but deep bottom, serving as one fundamental principle, has since brought forth the far-reaching impact upon the floods control projects in China.

S23/2

ZHANG Zhihui

(Institute for History of Natural Sciences, Chinese Academy of Sciences)

Some Historical Reflections on the Construction of Liujiaxia Hydropower Station in China

Liujiaxia Hydropower Station (刘家峡水电站) is one of the most important hydropower stations in the upper stream of the Yellow River (黄河) before 1980s. It used to be the first large hydropower station above 1 million kW, designed, constructed and installed by Chinese. The construction started in the 1950s and finished in the 1970s. After completion, the project became the largest hydropower station in China and even in the whole Asia. The design and construction of the project underwent some ups and downs, but was completed successfully eventually. Later on, it was selected as one of "the a hundred classic projects for the 60th anniversary of the founding of New China". This paper, based on the specific

facts of Liujiaxia Hydropower Station, reviews the contribution of Soviet experts to Liujiaxia Hydropower Station, and then reconsiders the influences of “Double Reverse” Movement (“双反”运动), the “Great Leap Forward” Movement (“大跃进”运动), “Technological Innovation” Movement (技术创新运动) and the “Design Revolution” Movement (“设计革命”运动) to the construction of Liujiaxia Hydropower Station. Furthermore, it revisits the construction accidents of Liujiaxia Hydropower Station during the “Cultural Revolution” (“文化大革命”) period, and attempts to draw a few lessons in the last. The paper not only affirms the role of Soviet experts in planning, site-choosing and designing of Liujiaxia Hydropower Project, but also points out that in the context of the “anti-rightist” (“反右”运动), the Chinese water conservancy departments could supply a more relaxed environment for engineering debate, and Chinese experts stood their ground on the technical issues when disagreeing with the Soviet experts, which led to the Chinese experts’ effective influence on engineering decisions. Besides, under the influence of a series of political movements including the “Double Reverse” Movement, engineering experts had been forced to stand aside, so the construction was delayed, and the cost increased correspondingly. However, thanks to the sufficient geological survey, core engineering design conforming to the norms, and the effective correction of errors once being discovered, Liujiaxia Hydropower Station basically reached the design target, and ran well until now.

S23/3

Constantin CANAVAS(Faculty of Life Sciences, Hamburg
University of Applied Sciences)

The kārīz (kānérjīng) of Turfan: Societal embedding and vulnerability of a traditional water technology

Considering the traditional water management technique known in different regions between the Iberian Peninsula and China (and even beyond these limits) under the terms *qanāt*, *kārīz* (*kāhrez*) or *kānérjīng* 坎兒井 one can notice surprising discrepancies among modern scholars in regard with assessing the interpretation models of the geographical dissemination of this technique. Whereas Iran appears as an incontestable centre of development of *kārīz* (or *kāhrez*), in the case of arid regions in North Western China (nowadays Xinjiang) the provenance of the *kārīz* technique, known here also under the Mandarin Chinese term *kānérjīng*, is controversial. Some authors (e.g. J. Needham) trace it back to the early Han dynasty (2nd century BCE), whereas others (e.g. H. Goblot, Pelliot, Aurel Stein) consider it as an Iranian import from the late 18th century CE. There are also claims that the technology was developed independently by the local population.

The present study considers these controversies as a reference in order to analyse the different methodological approaches behind them. The analysis of the controversy between text-based and technology-based approaches leads to the question of how the *kārīz* networks have been embedded in the specific (local) societal frames. This question will be treated in the present study by focusing on the preservation and maintenance of *kārīz* (*kānérjīng*) in the Turfan area (Xinjiang Province). The importance of local factors can be demonstrated in the efforts of the local

society after 1949 under the Communist administration to adapt the technique to its proper needs and potentials, and to exploit it both effectively (in technological terms) and efficiently (in economic terms) - under the condition of using the traditional knowhow preserved mainly by Uyghur craftsmen.

The study argues that precisely the capacity or incapacity of adaptation of the technology to the changing local conditions – so important for the survival of a population in an arid environment – can be considered as a measure for assessing its vulnerability towards disruptions in knowhow transfer, maintenance etc. The determinants of this assessment depend on the modalities through which the management of the technology is embedded in the specific political frame of the Xinjiang Uyghur Autonomous Region and the local societal agreement on distributing work load and costs for construction and maintenance. This frame is also conditioned by the “Ordinance of the Karez Protection in Xinjiang Uyghur Autonomous Region” issued in 2006 by the Congress of Xinjiang. The study assesses the political and ideological representation of the Turfan *kārīz* (*kānérjǐng*) in two Museums near Turfan, as well as actual potential and limits concerning maintenance, functionality and efficiency of this traditional technology.

S24

Medicine in transition (1868-1940)

S24/1

CHIU Ann Shu-Ju
YIP Hon-Ming

(Chinese University of Hong Kong Library)

***From CM to TCM:
A Case Study of the Tung Wah
Hospital in Hong Kong since 1870***

Chinese Medicine (CM 中醫) refers to traditional medicine practiced in China before the arrival of Western medicine in the nineteenth century. Shu-Yun Ma (2011) distinguishes carefully the term CM from Traditional Chinese Medicine (TCM 傳統中醫), which was coined in the mid-1950s by the newly established People's Republic of China to refer to its state-regulated, modernized, scientific and standardized medicine. He situates the epidemic event of bubonic plague in 1894 to end the CM practice of Tung Wah 東華 Hospital established in 1870 in Hong Kong. Under the pressure of the British colonial government, it was transformed into a Western medicine hospital. But the outbreak of SARS in 2003 provided the impetus to introduce TCM practice for inpatient service. As Ma point out, the handover of Hong Kong's political sovereignty to China made its reinstatement possible. He reviews the medical history of Tung Wah Hospital in the local socio-political settings.

On the other hand, Hon-Ming Yip 葉漢明 (2009) studies the archives of Tung Wah Hospital. This primary source reveals the potential for the storage service of Tung Wah Hospital to inform studies of global Chinese. As Chinese laborers yearned to return home, Tung Wah Coffin Home in Hong Kong functioned in networking

overseas Chinese between China and the world beyond from the late nineteenth century until 1949. The first Chinese hospital in America also modelled itself after this medical institution (Risse 2011). This Chinese charity hospital was sponsored by local merchant elites to deliver free health service from the very beginning. It lost its autonomous power after World War II and received government subvention to operate. When China sought its partnership for TCM projects implemented in Hong Kong following 1997, Tung Wah was favored most. The P.R.C. actually tends to use TCM to demonstrate its national soft power in recent decades. Many Confucius Institutes of Traditional Chinese Medicine have been established in Europe, the Americas, Asia and Africa. Tung Wah Hospital might prove of significance in once again networking Chinese in a global setting. In this study, we will explore (1) the continuity and change of Chinese medical practice adopted by Tung Wah Hospital in the past century; and (2) its identification towards CM and TCM.

S24/2

KIM Yeonhee

(Seoul National University)

***Between Yangsang (養生) and Weisheng (衛生) in Korea
(late 19th - early 20th century)***

Around the year 1880 in Choseon, a civilized notion of *weisheng* was first introduced. *Weisheng* was fundamentally different from *yangsang*, which is a notion based on the traditional belief that nature and human are organically connected. *Weisheng* shared modern-day notion of

population management and required nationwide system and financial support. Furthermore, *weisheng* became a tool for an imperial rule distinguishing what is civilized and what is not.

Some reformists of post-1880 studied what *weisheng* meant and what it entailed, and they attempted general social reform with *weisheng* projects. And efforts were made to understand *weisheng* on an individual level. Suckyoung Chi (池錫永, 1855-1935) was at the forefront of studying personal hygiene. He introduced vaccination in Korea for the first time in early 1880s. He wrote *Sinhak sinseol* (身學新說) during his exile in 1890. In the prologue, he wrote: "I read books on Western medicine and I believe the teachings are easy, similar to ours, and infinitely reasonable." He wrote that he was referring to the teachings in *Pakmul sinpyeon* (博物新編) and *Jeonche sinron* (全體新論) written by Dr. Hobson.

The following characteristics of *Sinhak sinseol* were outstanding.

1st, *Sinhak sinseol* is written in Korean, which indicates that he did not copy his reference books in his writing, but wrote his ideas and thoughts after digesting his readings.

2nd, in his book, there is no single word that reminds of what *weisheng* entails: in other words, there is nothing that the word *weisheng* connote such as "government's role", "nationwide projects", or "public."

3rd, he only used the term *weisheng* for an individual's health, which shows that he saw the connection between *weisheng* and *yangsang*, the traditional way of nourishment.

4th, the book consisted of eight parts : Light, Heat, Air, Dry-wet and Environment, Water, Food, Sports, and Child Care. Such contents of the book seem to have been influenced by a book titled

Huaxue weisheng lun (化學衛生論, 1880) translated by John Fryer and imported into Korea in 1882.

5th, he used the words "the West," "Western learning," and "Western countries" as his reference when asserting his ideas. This suggests that the intellectual authority is shifting from the East to the West. Even so, he still kept the traditional framework of individual nourishment versus public.

6th, Chi did not refer to Daoism (道教) or the traditional medicine while writing his book. When introducing Western sports, he completely ruled out Daoism.

S24/3

KIM Hyunkoo

(Institute of Social and Cultural Anthropology, University of Oxford)

***Integration or Subjugation?
Comparison of Disease Names in
Eastern and Western Medicines in
Early 20th Century Korea***

This paper examines comparison works of Western and Eastern disease names in Korea during the Japanese colonial period in the early 20th century. It examines how the disease names of Korean medicine have been subsumed into the disease classification system of Western medicine under the influence by the Japanese colonial authority. This research analyses it in two ways: Firstly, by analysing the book titled the *Essentials of Eastern and Western Medicine* 東西醫學要義 (1924), which was officially used in Colonised Joseon to prepare the National Examination for Student Doctors (醫生試驗), I will argue that medical knowledge were newly hybridized during the period according to the health care policy of the colonial government. Secondly, the comparison tables which contained Eastern and Western medical terms were changed as

time went by. Some disease names were added and some were removed. This paper especially juxtaposes two disease name comparison tables in the *Disease Name Comparison Table on the Inner Land and Joseon* 内鮮病名對照表 (1915) and the *Comparison and Explanation of Eastern and Western Disease Names* 東西病名對照釋要 (1918) with the table in the *Essentials of Eastern and Western Medicine*. By doing so, this paper investigates the changes of the comparison works. Arguably, it was the process to enlarge the influence of Western medical knowledge to the epistemology of traditional medicine. Therefore, this paper outlines how the 'globalised' Western medical system infused by the Japanese colonial government expanded its control even to the 'local' disease names used by laypeople as well as the disease names used by the traditional practitioners. The comparison work during the period was not for integration but for subjugation.

S24/4

LEE Sujin

(Dept. of History, Cornell University)

***Problematizing Population:
Scientific Discourses of Eugenics
in Interwar Japan***

In this paper, I will discuss both natural and social scientific ideas on "overpopulation problems" in Japan during the interwar years, as a critical site for viewing how population became problematized and constantly reconstituted in the name of race and nation. In interwar Japan, there were largely two groups who advocated birth control as a scientific and ideal solution for overpopulation: a liberal, neo-Malthusian-based group, and a socialist, labor movement-based one. Both pro-birth control intellectuals, however, were hardly different from each other in

terms of their eugenic ideas. In relation to the concept of eugenics, I will attempt to use this term in a rather broad sense in order to highlight how its ideas contributed not only to categorizing population but also constituting and reinforcing the very form of population as a site of politics. This broad, yet fundamental redefinition of eugenics will shed light on science not as a neutral, objective realm of knowledge, but a biopolitical language.

Although it was only after the promulgation of the National Eugenic Law (*Kokumin yūsei hō*) in 1940 that the state institution implemented eugenic policies, it should not be overlooked that the ideas of eugenics were salient in the forms of social reform movements during the interwar years. Frank Dikötter rightly resituates eugenics within the biopolitical system of modern states by defining it as a "fundamental aspect of some of the most important cultural and social movements of the interwar period, intimately linked to ideologies of "race," nation and sex, inextricably meshed with population control, social hygiene, state hospitals and the welfare state." The public discourses and movements of eugenics in interwar Japan reflected social contradictions undercurrent in the overpopulation problem, and at the same time, they reconstituted such differences and stratification in racial and sexual forms. In view of this, while eugenics is specific in respect of its theoretical vocabulary such as heredity and social Darwinism, it is fundamentally linked to the governmental technology in terms of its problematization, formation, and transformation of population.

S26

Individuals in history and historiography

S26/1

Valentin PHILIPPON(Centre de recherche sur les civilisations
d'Asie Orientale (CRCAO))***The Biographies of Physicians in
the Twenty-Five Official Histories of
China: Illustrating their Value with
Examples from the Official Historical
Records of Song 宋, Jin 金
and Yuan 元 Dynasties***

Biographies of physicians or experts in medicine *yi* 醫 are to be found in the biographical section (*lie zhuan* 列傳) of almost each of the twenty-five official historical records of China (*zheng shi* 正史). As we can read in the numerous studies on the subject that have been published during the last fifty years, Chinese official historiographies and biographies are sources with a very unique set of particularities, both in their contents and in the way they were written: compiled by officials for officials, based on various sources sometimes difficult to identify, their content is selected most of the time for didactic purposes, and they show a lot of seemingly worthless details and citations rather than what Western historians would consider essential, e.g. precision in the description of facts and actions, for example. Despite these unique particularities, one cannot but notice the extremely rich content that some of these biographies offer, like the famous twenty-five medical case studies listed in the biography of Chunyu Yi 淳于意 (born in 215 B.C.), to be read in the 105th *juan* 卷 of the *Shiji* 史記 (Records of the Historian, by Sima Qian 司馬遷), the first biographical chapter about experts in medicine, giving

a model to the genre. On the downside, the valuable content of these biographies seems to be rather irregular, some of them belonging clearly more to legend than fact. Some of the official histories do not even count physicians or experts in medicine among the eminent characters worth having their biography recorded. One can also wonder why some of the most outstanding figures in the history of medicine in China as we know it are not mentioned, nor their writings, in the official historical records. Based on an analysis of the structure, context and content of extracts from the official histories of Song, Jin and Yuan dynasties (960-1368), this presentation aims to show the use that can be made of these biographies, as well as their limits, in the fields of history and anthropology of medical knowledge in China. Particular attention will be paid on how the institutionalization, reforms and specializations of medical practice during the Song dynasty are depicted in this corpus. The biographies of the four great masters of the Jin-Yuan dynasties (*Jin Yuan si dajia* 金元四大家) will also be one of the focal points of this presentation, as the contrast they show in the nature, volume and interest of their contents is highly representative of the irregularity in value mentioned above.

S26/2

KIM Namil

(Kyung Hee University)

Joseon Scholar-Physicians in Korean Medical History

This study explores the issues of scholar-physicians, also called Confucian doctors, in Joseon Korea (1392-1910). Drawing on the *Daily Records of Royal Secretariat* 承政院日記 and medical texts written by scholar-physicians, it examines the backdrops of their emergence in Korean history, their social status, activities in international stages, academic researches, roles in the royal court, and their contributions to welfare for commoners. This paper also investigates the definition of scholar-physicians and characteristics of those defined as scholar-physicians. Dividing their activities into three categories—as doctors, scholars, and actors of Korean culture—the present study elaborates the active roles of scholar-physicians. In detail, this presentation investigates three significant questions. First, where their scholarly basis, that enables their social activities, is originated? Second, what is the relationship between their medical achievements and their scholarly activities? Third, what is the ultimate goal of these dual actors?

S26/3

SUZUKI Mika

(Shizuoka University)

Morooka Tamotsu 諸岡存 (1879-1946), medical doctor, man of letters

This paper explores an encounter between scientific knowledge and literary studies before and during WWII in Japan, when those intellectuals who had acquired Westernized education were searching for their ways to cope with the tide of the day. It is also an examination on the

role and stature of a medical doctor in pre-war Japan. My focus is on Morooka Tamotsu, 諸岡存 (1879-1946). He learned English at a missionary school at Nagasaki, entering the Imperial University of Kyushu. Following the course of life of ambitious high-profile intellectuals, he went abroad to complete his education in 1919. His destination was London. There he learned psychiatry and psychology at the London County Council's Pathological Laboratory. Two years later a place in medical school at Kyushu Imperial University was waiting for him. He was an associate professor there in 1923.

However, in the wake of a consultation fees scandal and resignation of the staff, he gave up his position at Kyushu University in 1927, moving to Komazawa University, a private Buddhist institution. Hereafter his learning in Chinese classics helped him. He got committed to tea studies and established himself as a man of letters while his credentials were based on science as he made use of his qualification as a medical doctor through his publishing career. What he did was to dedicate his erudition and scientific knowledge to the edification of ordinary people in civilization, health and regimen, especially in the benefits of tea-drinking. His strategy went well, making himself a popular and respected health advisor and author. In his short autobiographical writing published in 1943, his passions in Chinese civilization were a driving force in his intellectual pursuit. His retrospect takes on a wartime hue and his emphasis is on East Asian traditions. Nevertheless, he was an embodiment of the fusion and negotiation between China-oriented text-based knowledge and scientific minded Westernized medical education.

S26/4

**ZHANG Li
& ZHAO Tao**(Institute for the History of Natural
Sciences, CAS)***The Interpretation of the Scientists'
Self-consciousness and Academic
Ecology in the Early Period of the
People's Republic of China -
from the Diary of Zhu Kezhen***

An interpretation and analysis of the scientists' original documents including diaries and letters is hard work which involves a long time preparation and accumulation. But it is undoubtedly a rich ore for the study of Chinese contemporary history of science, promoting our understanding of the complexity and multidimensionality of the inner world of individual scientists as well as our understanding of their role as a social stratum. We try to use "Zhu Kezhen's Diary" to carry out the relevant exploration. Zhu Kezhen (1890-1974), was a famous meteorologist and geographer in modern China. He had been served as president of the Science Society of China, the director of the Institute of Meteorology of Academia Sinica, the president of Zhejiang University, the vice president of Chinese Academy of Sciences and other important positions. In meteorology, geography, natural resource investigation, science education, science research management and other aspects, Zhu had made outstanding contributions. *The complete works of Zhu Kezhen* was published in 2008. His diary (1936-1974) which recorded the rich and very important information about science, politic, education and so on is the most important part, and the diary has become the important historical data in research of Zhu Kezhen and modern science history of China. In this paper, by the interpretation of

Zhu's diary, it is revealed how the scientists view their living social environment, how their mentality, disposition and self-adjustment developed, and it is also analyzed how the social existence affected their spirit and scientific research work.

S27

Medicine since 1950

S27/1

Rachel CORE
(Stetson University)

Institutional Change and Tuberculosis Control in Shanghai's Rural Counties, 1958-92

This paper examines the tuberculosis (TB) control efforts in Shanghai's rural counties from the 1950s until the start of the World Health Organization's Direct Observed Therapy Short-course (DOTS) program in 1992. During these decades, institutional changes, such as the 1950s collectivization of agriculture, 1960s creation of the cooperative medical system (CMS 合作医疗) and 1980s dismantling of the rural collectives affected rural citizens' access to both preventive and curative healthcare, and ultimately, their health behavior and outcomes. After briefly introducing the TB situation in Shanghai's rural counties, I focus on collectivization and the health system. I demonstrate how Shanghai's rural counties developed the CMS following Mao's June 26, 1965, directive, which emphasized health work in the countryside as a guiding principal. I briefly analyze the three-tiered system, which had county hospitals at the top level, township facilities at the middle level, and brigade clinics staffed by barefoot doctors at the grassroots level. I emphasize the unevenness of health facilities and workers per capita between rural communes. Then, using data from the *China Anti-TB Journal* 中国防痨杂志, Shanghai Municipal Archives (上海档案馆) and chronicles of urban TB prevention and treatment clinics, as well as my interviews

with former urban TB clinic directors, I investigate how TB control efforts aimed to rectify this unevenness. In the late 1950s and early 1960s, health professionals from urban clinics assisted with rural health programming. Once the CMS was in place, brigade clinics were responsible for their own health promotion, and preventive and curative medicine, including coordination of TB case finding, and treatment. These efforts led to declining TB incidence, prevalence, and mortality, in the 1960s and 1970s. In much of China, the rural health system collapsed with decollectivization of the 1980s; however, Shanghai's rural counties continued to see improvements to health indicators throughout the 1980s. This paper will demonstrate how rural industry helped to fund healthcare, allowing for continued gains against TB in the 1980s. While the story is largely one of Shanghai's exceptionality, this paper also evaluates which parts of Shanghai's experience might be more widely generalizable.

S27/2

KIM Ji Youen
(Wonkwang University)

The increasing availability of Korean Medicine and the implementation of health insurance of Korean Medicine in 1987

According to Article 2 of the Act on the Promotion of Korean Medicine and Pharmaceuticals, Korean Medicine and Pharmaceuticals consists of one medical practice that is based on Korean Medicine being passed down from our ancestors and the other medical practice which is applied

and developed based on aforementioned medical practice. Korean Medicine itself is protected in the national health care system in Korea. I studied the history of the process of building up the current health care system after Korean War in 1950's. For this study, I researched how Korean Medicine could become closer to Korean people; I focused on public health centers their role in the expansion of Korean Medicinal practice.

In 1951, as the National Health Service Act was enacted, Korean Medicinal doctors were specified in the national health care system and even today Korea has a dual medical system of Korean Medicine and Western Medicine. After the Korean War in 1953, the government had to make new policies as national systems experienced an insufficiency of professionals and resources. The Public Health Center Act was enacted in 1956 and it established a foundation for public health care policy coming into effect all over the nation. In 1963, the Medical Insurance Act was institutionalized and by the 1980's, it could be expanded to national health insurance for all people.

Until then, people could only receive the benefit of national medical insurance for Western Medicine from health care system. Based on a 2-year demonstration project, however, health insurance covering Korean Medicine including acupuncture, moxibustion, cupping, and some Korean medicine formulations was enforced as a primary form. In addition to this, Korean Medicinal practice took off in public health centers and their branch offices as public health Korean Medical doctors began to be assigned for military duty in 1998 and a local health program implemented in 2001. This was for local people, especially the elderly and lower-income groups. Enacting the Act on the promotion of Korean Medicine and pharmaceuticals

established a legal basis upon which to develop Korean Medicine in 2003. In 2005, Korean Medicine health promotion HUB project was imposed and Korean Medicine public health projects started on an upward trend. The number of public health centers are increasing and it's budget is expanding as well. Korean Medicine has become a primary health care institution.

S27/3

LEE Taehyung

(Dept. of the History of Medicine, Johns Hopkins University/School of Medicine Acupuncture & Meridian Science Research Center, Kyung Hee University)

Korean Medicine in the National Health Care System: The Process of Modernizing Korean Medicine since the Late Twentieth Century

In the dichotomy between modern and pre-modern of twentieth century, traditional medicine in South Korea, called Korean medicine, has existed in a unique way different from other East Asian countries. After the Medical Services Act was enacted in 1951, Korean medicine constituted the dual, but separated medical system of South Korea along with biomedicine, and established independent colleges of Korean medicine and its affiliated hospitals. However, since the 1980s when the South Korean state began to establish the National Health Insurance Service, the nosology of Korean medicine needed to be linked with the Korean standard classification of diseases (KCD) which was originally based on the nosology of biomedicine. During the three times of revision, the separated diseases classification of Korean medicine has been integrated into the whole diseases classification of KCD. The pre-existing exclusive relationship between Korean medicine and biomedicine is on the process

of change. For Korean medicine, this change can be an opportunity to overcome the simple structure of dichotomy between modern and pre-modern and to promote a cooperative model with biomedicine while keeping its own characteristics. However, at the same time, this change also has the possibility to be understood as the process of the unification between two different medical systems in South Korea.

S27/4

CHEN Tzung-Wen

(Department of Sociology, National Chengchi University)

Imagination and immunization: a bachelardian perspective on vaccine technology in Korea and Taiwan

According to Gaston Bachelard, imagination is a spirit (*esprit*) which guides science and technology development. But the imagination can also become an obstacle to the science and technology development, thus producing a *rupture épistémologique* in the history of science and technology. This paper uses the perspective of Bachelard to reexamine the history of vaccine technology in Korea and Taiwan.

As a technological object, a vaccine is also a medical product. The role of a vaccine in society is controversial because it cannot promise one hundred percent efficacy. The vaccine must be applied to the population, or it would be useless. Formal and material imaginations are therefore important for defining roles of a vaccine in a society, and especially when the vaccine is something *tout neuf* to this society.

Korea and Taiwan entered the era of modern vaccine industry in the mid-1980s, by way of hepatitis B vaccines (HBVs). Before then, the two societies had almost only formal ideas about vaccines, such as BCG and JE vaccines. These traditional

vaccines were applied directly in the societies according to foreign instructions. The cases of HBVs are different. Korea and Taiwan tried to join the global vaccine technology by making HBVs domestically. Korea established a self-sufficient supply system of hepatitis B vaccines in the late-1980s. Although the vaccine supply system benefited from the global market, Korea had to wait for a successful immunization result until a new vaccination campaign was launched in the early twenty-first century. By contrast, Taiwan completely depended on imported hepatitis B vaccines after the dissolution of Lifeguard, a government supporting HBV maker, in the early 1990s. However, Taiwan has achieved great success in immunizing the population through a series of immunization programs since the end of the 1980s.

The different fates of vaccine technology in Korea and Taiwan are results of different material imaginations. The Taiwanese actors emphasized on the “use” dimension of HBV, whereas the Korean actors imagine more on making the vaccines. Moreover, obstacles of epistemology prevent players of the two societies to enter the mainstream, highly profit-oriented vaccine industry in the world. The obstacles include rupture in time, space and power. This paper expands the concepts of Bachelard to the late-comer societies, with some findings that are beyond the French style of epistemology.

S27/5

KIM Taewoo

(Kyung Hee University)

Phenomenology of Disease Names in East Asian Medicine: An Anthropological Investigation in the Case of South Korea

In this era of a drastically increasing number of diseases, why has the number of disease names in East Asian medicine not significantly changed from its pre-modern past? Why do people feel vague about East Asian disease names compared to those of biomedicine? This study examines the epistemological underpinning that leads to this divergence of disease names between the medicines of the East and the West. Drawing on anthropological fieldwork in diverse settings of Korean medicine in South Korea, this study examined how disease names are understood among practitioners, how this understanding is transmitted from teachers to novices, and how the names are used in diagnosis and treatment in clinical settings. By combining anthropological field data and phenomenological accounts provided by Husserl and Merleau-Ponty, this study investigates the East Asian way of perceiving and expressing bodily phenomena. Without anatomical body parts to fix the practitioner's gaze, East Asian disease names guide practitioners to explore the interconnectedness of the diverse constituents of human existence, and allow them to specifically define illness based on their own experience of color, sound and pulse in patient's body. This study's examination, centered on disease names, will demonstrate how the subject perceives the world in the East Asian tradition, and how this way of knowing contextualizes actions for issues in the world.

S28

Ideas and practices in pre-modern medicine

S28/1

Bair NANZATOV(Institute of Mongolian, Buddhist and
Tibetan Studies SB RAS)***The Role of Medicines of Animal Origin
in Traditional Mongolian Medicine***

Medicines of plant and animal origin have been important objects of barter trade relations in the vast Eurasian space since the Mongol invasions turned it into a united macroeconomic medieval world-system. This type of product occupied an important place in the trade and economic relations between Russia and various countries of the East, in particular China and Mongolia in the 17th – 19th centuries. This period is characterized by the active shift of the eastern direction vector of foreign trade of the Russian Empire to the Urals, Eastern Siberia, with the formation of new centers of Russian-Orient trade. The active development of trade and economic relations between Russia and the East of this period coincides with the beginning of the formation of pharmacology in Russia.

In the list of goods exported from Russia to China and back medicinal raw materials of plant and animal origin were mostly present.

Antlers - new, large horns that deer grow back in the spring - red deer and elk that Buryats and Mongols called “blood” *shuhan eber* - were among the expensive medicinal raw materials, highly sought after in the Qing Empire. The most valuable were the horns of young deer. An important motive for hunting in Southern Siberia and Mongolia in the 17th-19th centuries was hunting elk and red deer males to get horns. It retained its importance in the early 20th century. Deer horn powder has been widely used in traditional Tibetan medicine by Buddhist healers: Buryat and Mongolian lamas gave patients the powder as

a medicine with a broad spectrum of action. Antlers tincture promoted wound healing, increased vitality, and rejuvenated the body. It was used in diseases of the upper respiratory tract, lung diseases, women's diseases, and bleeding. Deer antler medicine was used as a tonic in fatigue, nervousness, asthenic conditions, hypotension, and is especially useful after acute infectious diseases.

Deer musk, as well as bear bile, were sold mainly as smuggled goods from the border areas of southern Siberia to Mongolia and China. These two remedies of animal origin have a broad spectrum of therapeutic action.

S28/2

Mathias VIGOUROUX

(Zhejiang University)

***Knowledge, Practice and Quackery in
Early Modern Japanese Medicine***

In the past, the majority of studies on early modern Japanese medicine have focused on medical doctrines, their reception, production and dissemination in Japan. More recently, historians have started to explore the geographical and social distribution of the actors involved in the practice of medicine, and the role of institutions in medical training. Little attention has been paid, however, to how physicians applied in their clinical practice the theoretical knowledge they learned from textbooks or their teachers. Moreover, the impact the dramatic economic, social, and cultural changes of the Edo period (1603-1868) had on physician perceptions of medicine as a profession remains also relatively unexplored. How did the relations among physicians and between physicians and their patients evolve in this changing environment? What strategies did physicians adopt for the survival of their medical lineage and for maintaining

exclusivity in medical practice? On what criteria were practitioners categorized as legitimate physicians or quacks, and who had the authority to establish such classifications? How did literati physicians combine or adapt medical ethics as explained in the Confucian classics with the emergence of a competitive medical market? This paper discusses the professionalization process of early modern Japanese medicine. I review the strategies used by literati physicians to distinguish the qualified practitioner from the quack, examining the criteria by which physicians classified their competitors as persons unfit to practice medicine. I also present some features of the geographical distribution of physicians in Edo city based on biographical dictionaries and medical advertisements published in early nineteenth century.

S28/3

Daniel TRAMBAIOLA

(Hong Kong Institute for the Humanities and Social Sciences, The University of Hong Kong)

Understanding Epidemics in Early 19th-Century Japan

The Japanese cholera epidemic of 1858 has often been seen as a crucial event in the development of Japanese ideas about medicine and public health. By contrast, Japanese responses to similar epidemics during the preceding century have generally attracted less scholarly attention. This paper will argue that medical understandings of the novel threat of cholera were shaped by the accumulated collective experience of similar types of epidemic disease since the mid-eighteenth century and the intellectual stimulus of new ideas about epidemic disease drawn from Chinese and Japanese sources. These new ideas included the concepts of “warm epidemics” 温疫 and “warm disease” 温病 introduced by the seventeenth-century Chinese doctor Wu Youxing 吳有性, which

attracted particular attention among the Japanese advocates of “ancient formulas” 古方 who were also some of the earliest doctors to study European medical texts and adopt European therapeutic methods. By the first half of the nineteenth century, Wu Youxing’s *Discourse on Warm Epidemics* (*Wenyilun* 温疫論, 1642) had become the subject of extensive Japanese commentary and criticism in books such as Dodo Shunryō’s 百々春料 *Discourse on Epidemics* (*Ekiron* 疫論, 1781), Hata Ryūan’s 畑柳安 *Disputation on the Discourse on Warm Epidemics* (*Ben Onēkiron* 辨温疫論, 1800), and Ogino Gengai’s 荻野元凱 *Further Discourse on Warm Epidemics* (*Onēki yoron* 温疫餘論, 1811), and later popularized in an allegorical *Tale of Recovery from the Battle of Drugs and Disease* (*Yakueki kassen heifukudan* 薬疫合戦平復談, 1832). These writings about epidemic disease show how Japanese doctors selectively appropriated elements from imported Chinese and European medical writings and incorporated their own experiences of local epidemics to develop a distinctive approach, constructing a set of intellectual resources that later served as the basis for understanding and responding to the cholera epidemics of the mid-nineteenth century and later periods.

S28/4

Marina SODNOMPILOVA

(Institute of Mongolian, Buddhist and Tibetan Studies SB RAS)

Folk medicine in the traditional culture of the Buryat Mongols

The nature of diseases in traditional representations of the Buryat Mongols is an under-studied phenomenon that requires a detailed study. Traditional worldview of the Buryat Mongols determines that any illness is a negative consequence of a human contact with the other world. It is the result of human breaking of the prohibitions that

govern the interaction of the earthly world of people with the world of deities and spirits. Another topical question is what conditions of a human organism the Buryat Mongols considered as illness. The main features of a disease condition are torpidity, drowsiness, indifference to others, and vice versa, excessive excitation, anxiety, leaving aside the obvious reason of disease. The aforementioned symptoms of disease, such as drowsiness and apathy indicated, according to traditional views, the lack of a human soul. Disease in the interpretation of the traditional worldview is a temporary separation of a soul from a body. The longer a man's soul is outside his body, the more dangerous the situation gets for the patient. Ultimately, lack of a soul ended up in death. The traditional worldview reduces the origin of the complex and infectious diseases to the malicious activities of supernatural beings surrounding humans. According to the beliefs of Western Buryat shamanists, diseases were spread among people mainly by the evil eastern Tengeri and eastern Khans, headed by Erlen Khan, lord of the underworld. Also diseases were spread through the land of fog, considered as negative phenomena of nature in Buryat traditional worldview. Various dairy products were widely used as therapeutic tools. The Buryat Mongols attached special significance to properties of mare's milk in traditional medicine. It was used as a restorative remedy for various diseases and also used as a means of cleansing the body of toxins. Horse meat and mutton were preferred by the degree of therapeutic effects on the body. Horse meat had warming properties, and its use was desperately needed during cold winters. Animal meat fed on a variety of useful plants growing in the forest, was popular in the Buryat diet as a source of vitamins. Fresh "live" blood of animals was drunk to cure a number of diseases. Wolf blood was considered especially healing. It was recommended to drink blood for anemia and tuberculosis.

This paper is based on the field research materials gathered over recent years in Buryatia and Mongolia. In order to get a deeper understanding the the logic of traditional therapeutic methods, I compare the field data with the historiography by M. Khangalov, Ts. Zhamtsarano, G. Potanin and other scholars. In this way the paper introduces new knowledge on traditional healing methods and verifies it against the existing classical research.

S29

Reading medical texts

S29/1

LI Weixia

(Institute for the History of Natural Sciences, CAS)

Practical Medical Knowledge in the Si Shi Zuan Yao (c. 800 AD)

The *Si shi zuan yao* 四时纂要 (Essential Knowledge for the Four Seasons) is a book of daily practical knowledge for farmers compiled by Han E in the late Tang Dynasty. It includes a wide spectrum of knowledge which had been considered practical for farmers: divination, agriculture, stock raising, food processing and manufacturing, medicine and so on. This paper focuses on medical knowledge in the book. Firstly, the book includes a remarkable amount of medical knowledge on veterinary medicine: types of diseases and cures for these diseases. Mostly they are on cattle, sheep and horses. The occurrence of the diseases also show very clear seasonal pattern; mostly the diseases occur in months of January and March. Also, entries on horse diseases make up the most part of the veterinary medical knowledge in the book. Apparently, this was due to the wide use of horses in the Tang Dynasty and their importance in the economy.

Secondly, this book contains only a very limited amount of medical knowledge on humans. But they spread throughout out the year except in January, March, April and November. They are mainly on disease prevention and on curing of chronic diseases. Prevention of epidemics and diseases seemed to be the focus.

S29/2

Mujeeb KHAN

(University of Cambridge)

The “Ishinpō” and Life Cultivation in Ancient Japan

The *Ishinpō* 医心方, the oldest extant Sino-Japanese medical work, was compiled by Tanba no Yasuyori 丹波康頼 in 984. A thirty-volume work, it is a multifaceted puzzle which can shed light on the transmission and conceptualization of medical knowledge in tenth-century Japan if placed within the context of later Japanese medical writers and compilers. The *Ishinpō*'s popularity in Japan during recent centuries largely centers on the practice of life cultivation 養生 (Jp. *yōjō*, Ch. *yangsheng*). Scholarly work on the *Ishinpō* and life cultivation ranges from discussions on its preservation of ancient texts to studies of it as a “sex manual”. This study, however, attempts to contextualize life cultivation elaborated by the *Ishinpō* to its place in Japan and its conceptualization by Tanba no Yasuyori. Three of its volumes explicitly focus on life cultivation practice (Taoist cultivation 仙道, life cultivation, and sexual matters 房内), but the *Ishinpō* as a whole can also be understood as a work on life cultivation. Focusing on these three volumes of the *Ishinpō*, this talk probes the *Ishinpō* to understand the locality of life cultivation as envisaged by Tanba no Yasuyori. The *Ishinpō* as a text is largely composed of collated quotations from the Sui- and Tang-dynasty works but also treatises from earlier periods. Through an exposition and analysis of Yasuyori's collation of these excerpts and the nature

of their content, this talk will illustrate the locality of life cultivation in the *Ishinpō*. At the same time, it will examine the relationship between *materia medica* 本草 (Jp. *honzō*, Ch. *ben cao*) and life cultivation practice within the *Ishinpō*. Finally, it also considers life cultivation in the rest of the text and uses other Japanese works to situate life cultivation in respect to its practice in Japan and on the continent.

S29/3

Elisabeth HSU

(Institute of Social and Cultural
Anthropology, University of Oxford)

***Technologies of power in different
versions of the Yi jin jing (The Sinews
Transformation Classic)***

This presentation compares and contrasts four different sequences of movements from the *Yijin jing* (The Sinews Transformation Classic), one a premodern text (Wang Zuyuan 1882), one sanctioned by the Chinese Health Qigong Association (on video), one that Lim Chee Han learnt in Singapore and one that the author learnt in Kunming (PR China). If one takes seriously the intentionality of movement (Merleau-Ponty 1962) and focuses on volitional efforts (*yinian*) and on the ways in which the practitioner imagines and experiences the body, one can identify how through enskilment (Ingold 2000) into a routinised enactment of these different movements practitioners become attuned to environments made up of different materialities: *qi* versus *jin* respectively. The focus on techniques allows us to identify that different kinds of power are being mobilized, in pre-modern and modern China and beyond.

S30

Studying celestial phenomena: observation, calculation and instruments

S30/1

MA Liping

(National Time Service Center, Chinese Academy of Sciences)

Ancient Chinese Records of the Moon or a Planet Occulting or Approaching a Star

Official records of the Moon and planets either occulting (掩) or approaching (犯) stars originated from the Western Han Dynasty and extended to the Ming Dynasty. Of the 7,485 records of occulting and approaching in the Twenty-Four Histories, more than 90%, namely about 6,932, are records of approaching. The largest number of records that had been ever detected occurred in the Northern Song Dynasty with up to 2,682 cases. The reliability of these records is rather high in that the average error rate since the Northern Song Dynasty has been 10% and 20% before this Dynasty. Given the above, the equivalence between the zodiacal star names given by Chinese and western astronomers is examined with modern astronomical computational methods. Some traditional stars might not remain as they were as early as in the Northern Song Dynasty. Thus, the identification of the names of traditional stars should refer more to astronomical records of the lunar and planetary occultation/approach.

S30/1

CHOI Goeun**MIHN Byeong-Hee**

(Korea University of Science and Technology, Korea Astronomy and Space Science Institute)

AHN Young Sook

(Korea Astronomy and Space Science Institute)

LEE Ki-Won

(Catholic University of Daegu)

Analysis of Calculation Method for Sunrise and Sunset Times in Shoushi Calendar

We analyze the calculation method for the sunrise and sunset times employed for the *Shoushi* (授時) calendar of the Yuan (元) dynasty in China, particularly the mathematical method. The Datong (大統) calendar of the following dynasty, the Ming (明) dynasty, is fundamentally identical to the *Shoushi* calendar, and each calendar is recorded in its respective history book: the *Mingshi* (明史, History of the Ming Dynasty) and *Yuanshi* (元史, History of the Yuan Dynasty). In this study, we refer to the former book because it contains a detailed calculation procedure together with examples. We find that the sunrise and sunset times were obtained on the basis of actual observations and mathematical calculations. Regarding the observation data, we find that the shadow length and the altitude of the sun at the winter and summer solstices were used to determine the latitude and obliquity. We think that the unequal movement of the sun with respect to the number of days elapsed since each solstice is also derived

from actual observations. Considering the mathematical method, we find that Chinese mathematics such as the *Zhaocha* (招差), *Hushi geyuan* (弧矢割圓), the *Chongcha* (重差) methods were utilized at that time. Additionally, we verify the values in various tables associated with the calculation of the sunrise and sunset times. In conclusion, we believe that this study will be helpful for understanding not only the Shoushi and Datong calendars but also the *Chiljeong san naebyeon* (七政算內篇) of the Joseon (朝鮮) dynasty in Korea, which was compiled in 1444.

S30/1

WANG Guangchao

(Institute for the History of Natural Sciences, CAS)

The controversy over the new star of AD. 1408

In recent years, the likelihood of a supernova having occurred in AD 1408 has aroused a controversy in Chinese astronomy. The initial suggestion was made by Li Qibin 李启斌, who discussed several Chinese records of temporary stars seen during the year and suggested that these records related to the same object - a supernova appearing in Cygnus. Richard Stephenson considered that these records might be possible as a comet or meteor. Until now, the two sides still differ with each other over the question of these records. This article examines the controversy over the new star of AD 1408. Based on some fresh historical materials, this article partially support F. Richard Stephenson's viewpoint and put forward some ideas of identifying historical novae or supernovae.

S30/1

MIHN Byeong-Hee

KIM Sang Hyuk

(Korea University of Science and Technology, Korea Astronomy and Space Science Institute)

LEE Ki-Won

(Catholic University of Daegu)

AHN Young Sook

(Korea Astronomy and Space Science Institute)

The Structure of the Angbu ilgu in Joseon Dynasty

Angbu ilgu (仰釜日晷, a scaphe sundial) was first invented in the reign of the king Sejong (世宗, 1418 – 1450) and a representative sundial during the period of the Joseon (朝鮮) dynasty (1392 – 1910). In this study, we study on the *Angbu ilgu* using historical documents and its remains in terms of the structure. First, we suggest that the *Angbu ilgu* was an improvement of the *Yangyi* (仰儀) of the Yuan (元) dynasty. According to the *Sejong silok* (世宗實錄, Veritable Record of the King Sejong), the *Angbu ilgu* had a small pinhole plate supported by several arms; this is similar to that of the *Yangyi* recorded in the *Yuanshi* (元史, History of the Yuan Dynasty). However, the size of the *Angbu ilgu* might be much smaller than that of the *Yangyi* because the former has only the function of a clock. Second, we think the 100 intervals and 365.25 degrees systems of the *Datong* (大統) calendar were used for the scales of the time and season lines, respectively, before 1654 (i.e., the introduction year of the *Shixian* (時憲) calendar in the Joseon dynasty). Nonetheless, we find that all extant *Angbu ilgu* have the 96 intervals and 360 degrees systems of the *Shixian* calendar. That is, those sundials were manufactured after the 17th century. Finally, we suggest that the hemisphere size of the *Angbu ilgu* in the reign of the King Sejong was 20 or 40

cm (i.e., a ring size of the *Ilseong jeongsiui* (日星定時儀) invented in the same era). In conclusion, we believe that this study will be helpful for restoring the *Angbu ilgu* of the early Joseon dynasty.

S30/1

HAM Seon Young

(Chungbuk National University/Korea Astronomy and Space Science Institute)

KIM Sang Hyuk

(Korea Astronomy and Space Science Institute, Korea University of Science & Technology)

LEE Yong Sam

(Chungbuk National University)

A Study on the Celestial Movement Apparatus of Honcheonui in 17th Century Joseon Dynasty

This study is about celestial movement apparatus in Choi Yu Ji's (崔攸之, 1603-1673) *Honcheonui* (渾天儀, armillary sphere) made in 17th century, Joseon Dynasty. We investigated and analyzed the records of literatures and relics about celestial movement apparatus in Joseon and China. In the celestial movement apparatus in astronomical clock made in early period of Joseon, the solar movement apparatus was tied and moved with thread. After then, from celestial movement apparatus in Choi Yu Ji's *Honcheonui* in 17th century, the lunar movement apparatus was added and installed. In the *Jukwonjaseol* (竹園子說) in *Ganhojip* (艮湖集), Choi Yu Ji's personal collection of works, it was found that celestial movement apparatus in his *Honcheonui* was moved with the mechanical mechanism using *gyeonggak* (梗角, gears, installed at two positions that Meridian ring hits against *Chajeon*), *Chajeon* (叉箭, gear that had form of a sort of pin gear installed on *Sochuk* or gear that had the form of a sort of pin gear installed at the lower part of axis of the lunar movement

apparatus), and *Banggak* (方角, gear at near north pole of *Honcheonui*'s rotation axis) which were gears. Through this study, the conceptual design of celestial movement apparatus of Choi Yu Ji's *Honcheonui* was completed. Also, development process of celestial movement apparatus in Joseon Dynasty could be examined.

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