

**Translating Western Science, Technology and Medicine to Late Ming China:
Convergences and Divergences in the Light of the *Kunyu gezhi* 坤輿格致
(Investigations of the Earth's Interior; 1640) and the *Taixi shuifa* 泰西水法
(Hydromethods of the Great West; 1612)**

For the years 2018-2021, the German Research Foundation (*Deutsche Forschungsgemeinschaft*, DFG) has granted an amount of more than 0.5 million Euro for a new research project, directed by Prof. Hans Ulrich Vogel, Chair of Chinese History and Society, Department of Chinese Studies (Institute of Asian and Oriental Studies, Faculty of Humanities) of Eberhard Karls Universität Tübingen. The implementation of this project started in June 2018.



Three important historical actors discussed in this project,
from left to right Johann Adam Schall von Bell, Georgius Agricola and Xu Guangqi.

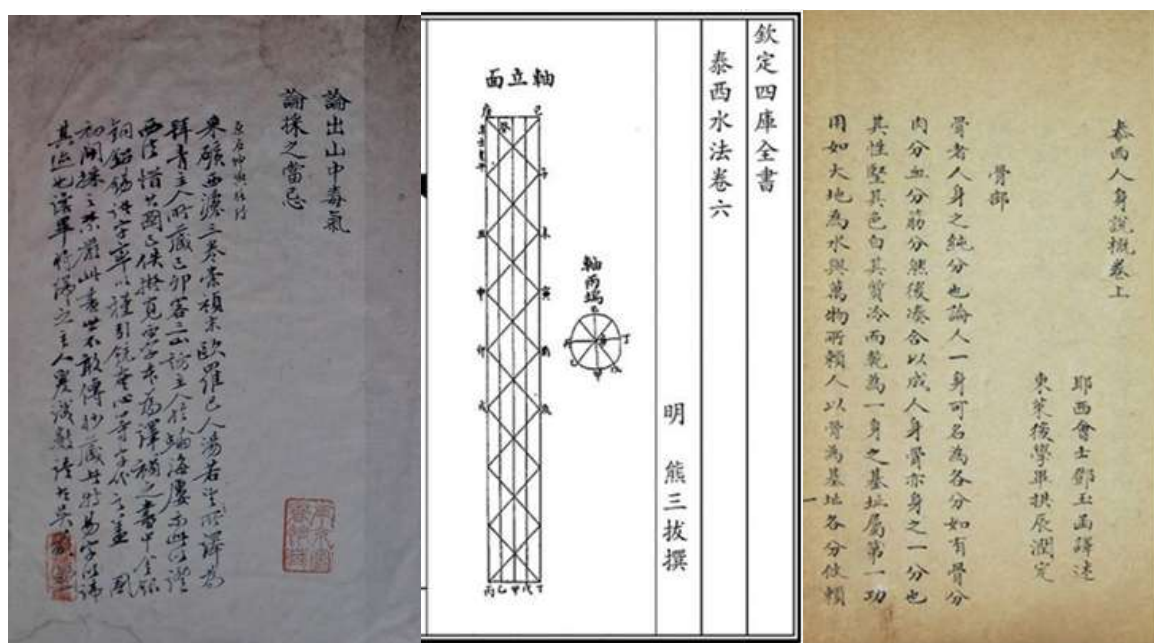
This project has been prompted by the sensational rediscovery of the Chinese version of Georgius Agricola's (1494-1555) *De re metallica* (1556). The Chinese rendering of this famous mining and metallurgy classic, initiated by the well-known Ming official Li Tianjing 李天經 (1579-1659) and supervised by the outstanding German Jesuit missionary Johann Adam Schall von Bell (Tang Ruowang 湯若望, 1592-1666), was lost for more than 350 years. One aim of our project is to completely translate this Chinese version, entitled *Kunyu gezhi* 坤輿格致 (Investigations of the Earth's Interior; 1640), into English, with the inclusion of all relevant historical records. Hereby, the Jesuits' highly selective and complex approach to this translation, both with regard to the selection of Western reference texts and the inclusion of new geological and mineralogical ideas and concepts, will be elucidated. This will provide us with unique insights into the scope and limitations of the transmission of useful and reliable knowledge from Europe to the Middle Kingdom. Moreover, it is important to find out how this translation was received and perceived by Chinese readers and what the fate of this mining and metallurgy treatise was until its recent rediscovery.

Furthermore, for comparative reasons we will investigate another important and largely neglected text, the *Taixi shuifa* 泰西水法 (Hydromethods of the Great West; preface 1612), by addressing similar research questions to it. This treatise which is based on more heterogeneous Western sources was orally composed by the Jesuit missionary Sabatino de Ursis (Xiong Sanba 熊三拔; 1575-1620), written down in Chinese by the famous scholar-official and Christian convert Xu Guangqi 徐光啓 (1562-1633), and revised by Li Zhizao 李之藻 (1565-1630), another well-known and high-ranking supporter of the Jesuits. It contains a systematic

Aristotelian-influenced discourse on both the theoretical and practical aspects of water and water management, including water lifting devices and meteorological phenomena, and discussions about the medical benefits of hot spring treatments and distillation methods.

Our comprehensive and systematic investigation of these two unique treatises dealing with different technical and economic sectors but overlapping in the fields of water control and natural philosophy will take duly into account recent research on the history of knowledge transfers from West to East during the period of early globalization. Moreover, we will confront the early seventeenth-century events with those of later periods, especially the Protestant missionaries' efforts of the late nineteenth century. By paying due attention to historical contextualisation, i.e. the background of political, social, economic and cultural conditions and developments, and by combining our micro-historical case studies with the methods of a macro-historical comparative sociology we will finally highlight corresponding convergences and divergences between China and Europe and thus contribute to the debate about the origin of the "Great Divergence" during the Early Modern Period.

Within our DFG-funded project Prof. Hans Ulrich Vogel (Fu Hansi 傅漢思) und Dr. Cao Jin 曹晉 will be responsible for the subsection of the *Kunyu gezhi*, whereas Mrs. Sabine Kink (Jin Xiabi 金霞筆), M.A., is in charge of the *Taixi shuifa*. This team has already perfectly collaborated in authoring *Die Falschmünzbande vom Alten Rabenhorst im Distrikt Tongzi, Guizhou (1794): Die chinesische Dokumentensprache der Qing-Zeit (1644-1911) in Forschung und Lehre* (Tübingen University Press), a forthcoming research monograph and textbook about Qing documents dealing with the largest counterfeiting case of the late imperial period.



Excerpts from three important Jesuit treatises, from left to right *Kunyu gezhi*, *Taixi shuifa* and *Taixi renshen shuogai*.

In Tübingen, within the framework of the DFG project further doctoral and postdoctoral scientific work will be conducted. In his postdoctoral project Dr. Alexander Jost (Cao Dalong 曹大龍) will elaborate on another recently discovered manuscript written by the famous Jesuit missionary Matteo Ricci (Li Madou 利瑪竇, 1552-1610) in collaboration with the already mentioned Christian scholar-official Xu Guangqi (1562-1633). This document entitled *Kaicheng jiyao* 開成紀要 (Record of the Essentials of Inception and Completion [of Things]) deals with different craft sectors and their principles of operation. Anna Strob (Wan Ting 萬

婷), M.A., in her PhD project examines the introduction of Aristotelian natural philosophy into late Ming China based on an annotated translation of Alfonso Vagnone's (Gao Yizhi 高一志, 1568-1640) *Kongji gezhi* 空際格致 (Investigation into the Phenomena in the Atmosphere; after 1624). The master thesis of Patrick Aberle (Li Like 李理克), B.A., focuses on the *Celiang fayi* 測量法義 (The Meaning of Methods of Measurement; 1608) by M. Ricci und Xu Guangqi, and that of Anja Chen 陳安雅, B.A., on the *Dace* 大測 (Grand Measuring; 1631) by Johann Schreck (alias Terrenz; Deng Yuhan 鄧玉函, 1575-1630), while Katharina Viklenko (Wei Rulan 魏如蘭), B.A., by using Chinese and Russian original sources examines the implications of the Russian Orthodox Mission to Qing China, particularly the activities of the archimandrite Palladius (P. I. Kafarov, 1817-1878). Jonas Schmid (Shi Aiyu 史愛友) will deal with Schall von Bell and Jiao Xu's 焦勛 *Hugong qiexiao* 火攻擊要 (Essentials on Attacks with Fire Weapons; 1643), Sheng Jia 盛佳 with Schall von Bell's *Yuanjing shuo* 遠鏡說 (Explanations on the Telescope; 1626), and Han Qijin 韓奇金 with Ferdinand Verbiest's (Nan Huairan 南懷仁, 1623-1688) *Yanqi tushuo* 驗氣圖說 (Illustrated Explanation on Verifying Qi; 1671). Furthermore, as an associate researcher Dr. Ailika Schinköthe (Xu Aili 許艾莉) will work on an annotated translation of Nian Xiyao's 年希堯 (1671-1738) *Shixue* 視學 (The Study of Vision), an introduction to the Western art of linear perspective. Eventually Prof. Beatriz Puente-Ballesteros (Bai Yashi 白雅詩) supported by a Multi-Year Research Grant at the University of Macau is carrying out a research project in parallel to the Tübingen group that focuses on the comprehensive translation and edition of Johann Schreck's (Deng Yuhan 鄧玉函, 1575-1630) *Taixi renshen shuogai* 泰西人身說概 (Outline of the Human Body from the Great West; after 1620, first published by Bi Gongchen 畢拱辰 in 1643). An English translation of treatises written in Chinese language and composed, or at least influenced, by Jesuits is an integral part of virtually all these investigations.

These translations as well as discussions about the overriding topics of the project themselves are incorporated into the Tübingen Sinological curriculum through various courses, reinforcing the close link between research and teaching. Moreover, a distinct strategical and organizational characteristic of the project is the international cooperation with other researchers and institutions in Germany, Europe, the US and Asia.

As an outcome of this project, it is intended to establish with Brill Publishers a special academic series dealing the translation of Western scientific, technological and medical treatises to the Middle Kingdom in Chinese and Manchu. It will be edited by Prof. Vogel and Prof. Puente-Ballesteros and will cover the whole period from the seventeenth up to the early twentieth centuries. It is our aim that all listed Jesuit treatises above are published as individual monographs in order to create the first series on transcultural translations that beyond astronomy, mathematics and cartography, has a clear focus on "hands-on" sciences as practical crafts and techniques as well as on anatomy.

This corporate endeavour, which is carried out under the auspices of the UNESCO Sub-Committee on Education and Research (SCEaR), Memory of the World Programme, is of extraordinary importance not only for the history of West-East interactions and exchanges, but also for German cultural history.

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Prof. Dr. Hans Ulrich Vogel

Department of Chinese Studies
Chinese History and Society