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THEMATIC DOSSIER

EMPIRE UNDER THE NIGHT SKY: RECORDING ASTRAL-COSMOGRAPHY IN QING DYNASTY  
CHINA, 17<sup>TH</sup> – 19<sup>TH</sup> CENTURIES

# Introduction: Empire under the Night Sky: Recording Astral-Cosmography in Qing Dynasty China, 17th – 19th Centuries

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Astral science (the study of celestial objects) and cosmography (the study of the dynamic interactions among the Heavens, the Earth, and the human realm), loom large in the global history of science. With the northern hemisphere sharing more or less one night sky, the transregional circulation of astral-cosmographic knowledge was a central vehicle of scientific exchange through the early modern eras among the Western, Islamic, African, and Asian cultural spheres. Whether conveyed by Arab polymaths, South Asian merchants, or Jesuit missionaries, astro-cosmographic knowledge was readily translatable and transmutable.<sup>1</sup> It was also politically consequential.

Through these centuries of continuous cultural exchange, one aspect of Chinese astral-cosmography proved remarkably resilient: the *fenye* 分野 system. *Fenye* (translated alternatively as “field allocation” or “allocated fields”) is a heaven-earth correspondence system that correlated constellations with discreet geographic regions of the Chinese empire. Theories surrounding *fenye* correlations emerged between the eighth to third centuries BCE for uses in political

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<sup>1</sup>Dror Weil, “Chinese-Muslims as Agents of Astral Knowledge in Late Imperial China,” in *Overlapping Cosmologies in Asia: Transcultural and Interdisciplinary Approaches*, eds. Bill M. Mak and Eric Huntington, 116-138 (Leiden: Brill, 2022).

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prognostication and continued to develop through the late imperial era (i.e., the Ming and Qing Dynasties, c. 1368-1912).<sup>2</sup>

Most scholarship on *fenye* has explored the earlier eras of its history and indeed the system today is often associated with Chinese antiquity.<sup>3</sup> Due to the state of current historiography, *fenye* sometimes appears to scholars of the later empire as a quintessentially traditional, Sino-centric cosmological system, especially in contrast to more up-to-date foreign astronomical knowledge. That claim is not completely without merit, considering that some literati of the Ming and Qing eras critiqued *fenye* as a cultural relic of China's past. The esteemed historian Ge Zhaoguang expresses one broadly held version of this view in documenting a dramatic “collapse of Heaven and Earth” that he observes as commencing around the turn of the seventeenth century with the arrival of the Jesuits in Ming China.<sup>4</sup> In view of that relative consensus, few have examined how the *fenye* system changed over time, let alone how it was influenced by foreign knowledge.<sup>5</sup> While a substantial literature exists on the history of the Jesuit-led introduction of Western astronomical and calendrical knowledge into early modern China, historians have paid little heed to the *fenye* system, which does not fit with modern understandings of astronomical science. The implicit assumption is, since the Jesuits ignored *fenye*, maybe we should too.

This thematic dossier opens with two key observations that challenge prevailing assumptions. First, the astral-cosmographic correlative system of *fenye* remained ubiquitous in China in the centuries during and after the Jesuit mission. In thousands of surviving local gazetteers—published semi-official geographic overviews of Qing provinces, prefectures, and counties—*fenye* correlations were recorded regularly through the eighteenth and nineteenth centuries. Second, over this time, the ways Chinese literati conceptualized the relation between the heavens, the Earth and the world of people were not static, trapped in the past, let alone

<sup>2</sup> For a seminal study of *fenye*'s history in early China, see David W. Pankenier, “Characteristics of Field Allocation (*fenye*) Astrology in Early China,” in *Current Studies in Archaeoastronomy: Conversations Across Space and Time*, eds. John Fountain and Rolf M. Sinclair, 499-513 (Durham: Carolina Academic Press, 2005).

<sup>3</sup> Each paper in this dossier introduces examples of the existing academic literature on *fenye* relevant to the argument at hand. Here, I would offer one representative expression of the view of *fenye* as “outdated” from Benjamin Elman's *On Their Own Terms*: “Scholars recognized the gradual displacement of the classical center of ancient culture in the northwest since medieval times. They also perceived the concomitant enrichment of the southeast after the Yangzi delta emerged as the cultural nexus of China since Song times. . . . The enlargement of geographical horizons led to discrediting the idea of local applicability of portents.” Benjamin Elman, *On Their Own Terms: Science in China, 1550-1900* (Cambridge, Mass.: Harvard University Press, 2005), 196.

<sup>4</sup> Zhaoguang Ge, *An Intellectual History of China*, Volume Two, trans. Josephine Chiu-Duke and Michael S. Duke (Leiden: Brill, 2018), 217.

<sup>5</sup> The most comprehensive overview of *fenye*'s history is Qiu Jingjia's recent study. Qiu Jingjia 邱靖嘉, *Tiandi zhi jian: Tianwen fenye de lishixue yanjiu* 天地之間：天文分野的歷史學研究 [Between Heaven and Earth: A Historical Study of *Fenye* Astrology] (Beijing: Zhonghua shuju, 2020).

unitarily “traditional.” Chinese literati contested, reconstituted, and updated this knowledge in significant and surprising ways.

Collectively, we find that Nicholas Tackett’s observation for Song China (960-1279 CE) remained broadly true into the Qing period: “though [models of the cosmos] were invoked by educated elites in a variety of circumstances – in poetry, in essays, in political debates – there were no attempts to systematize them into a single coherent theory.”<sup>6</sup> *Fenye*, even with its obvious problems and limitations, remained relevant in the marketplace of ideas as one option to understand the cosmos among several competing ones. Conventions from antiquity were sustained over the *longue durée* by an intellectual flexibility that saw old knowledge soak up and digest new information. In turn, the intellectual agendas of the literate elite could achieve the temporary appearance of coherence through selective appeals to a tradition maintained through that subtle dynamism.

With the above observations as our starting point, the authors of this dossier address key questions related to astronomical knowledge exchange and the global history of science, including: How did contributions to astral-cosmographic learning by local literati differ from the more “elite” views of the imperial capital? To what extent can authoritative knowledge traditions survive crises by accommodating alien ideas, and when do they give way to new paradigms? How does the plurality of a knowledge tradition explain both its instability and its resilience? How can historians shed new light on the evolution of a knowledge tradition by putting it in its local context? How can variegated local stories add up to explicate large-scale epochal changes?

One of the strengths of the following papers is their use of digital tools developed by the Max Planck Institute in Berlin, particularly the Local Gazetteers Research Tools.<sup>7</sup> This searchable repository of local gazetteers allows the authors to trace trends in astrological knowledge over time and space, including the spread of Jesuit-introduced Western Learning through China and the adoption of alternatives to *fenye*, such as the longitude-latitude system. In addressing these questions, this thematic dossier collectively reveals that as new knowledge about the heavens and earth was globalized across Eurasia, it was also profoundly localized. Presented through four highly resonant papers, this never-before-documented case study reveals that there was not one “Chinese” response to the arrival of Western Learning—but many.

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<sup>6</sup> Nicolas Tackett, *The Origins of the Chinese Nation: Song China and the Forging of an East Asian World Order* (Cambridge: Cambridge University Press, 2017), 154.

<sup>7</sup> The papers of this dossier emerged from a 2023 workshop held at the Max Planck Institute for the History of Science. The papers all benefitted from access to Staatsbibliothek zu Berlin’s CrossAsia portal and the LoGaRT gazetteer database: Shih-Pei Chen and Calvin Yeh, LoGaRT: Local Gazetteers Research Tools (software). Berlin: Max Planck Institute for the History of Science, 2023. <https://logart.mpiwg-berlin.mpg.de/>

We begin with Shih-Pei Chen’s paper, “*Fenye* by the Numbers,” which introduces the concept and history of *fenye* and then traces the earliest attempt by an imperial court to replace *fenye* with an alternative system of “Gnomonic Degrees” (*guidu* 晷度) following the circulation of Western astronomical and geographical knowledge. Huiyi Wu’s paper “An Encounter of Incommensurables” employs the same digital gazetteer database to document the gradual spread of Western Learning across among local-level literati across the empire during the Qing period. Tristan Brown’s paper “From *Fenye* to *Fengshui*” examines how a diverse range of actors—from court astrologers to popular geomancers operating from the metropole to Qing frontiers—actively made use of *fenye* through the close of the dynasty. Finally, Jiajing Zhang’s paper “From *Fenye* to Latitude and Longitude” brings us out of the imperial era through documenting the beginnings of *fenye*’s replacement by a longitudinal and latitudinal system by the late nineteenth century.

## Biographies of the Contributors

**Shih-Pei Chen** is a digital humanities specialist with a focus on the applications of new technologies for historical research and Digital Sinology. Trained as a computer scientist, Chen has been Senior Research Scholar and Digital Humanities Researcher at the Max Planck Institute for the History of Science since 2014. There, she closely works with historians of science and technology to develop digital research methodologies. She leads projects that range from research-oriented digital tool development (Local Gazetteers Research Tools), geospatial and visual analysis (CHMap), to technical research infrastructure development (RISE & SHINE) and new forms of publishing historical datasets (Digital Concordances). She publishes in the field of Chinese history and Digital Humanities on results derived from computational analytics and digital research tool building.

<https://www.mpiwg-berlin.mpg.de/users/schen>

**Huiyi Wu** completed her PhD in history in 2013 under joint supervision between Université Paris Diderot and Istituto Italiano di Scienze Umane (Florence). She was the ISF fellow at the Needham Research Institute (Cambridge, UK) from 2013 to 2020, and is now a permanent research fellow (chargée de recherche) at the French Centre National des Recherche Scientifiques (CNRS). In her first book, *Traduire la Chine au XVIIIe siècle* (Editions Honoré Champion, Paris, 2017), she examined French Jesuits’ translations of Chinese texts and the formation of European knowledge of China during the early eighteenth century. She works on knowledge circulation between China and Europe between sixteenth and eighteenth century, with a particular focus on the Francophone word, and on the materiality and spatiality of knowledge.

She is currently coordinating a working group book that compares imperial knowledge projects in the Chinese and the Spanish empires on their local worlds. (M. Cooley & H. Wu, eds., *Knowing the Empire in Early Modern China and Spain*, Lever Press, forthcoming in 2025).

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**Tristan G. Brown** completed his PhD in history in 2017 at Columbia University. He is S.C. Fang Chinese Language and Culture Career Development Professor in the History Department at the Massachusetts Institute of Technology, where he researches the social and cultural history of late imperial China. His first book, *Laws of the Land: Fengshui and the State in Qing Dynasty China* (Princeton University Press, 2023), examines the use of cosmology in Chinese law during the eighteenth and nineteenth centuries, an era of substantial economic and environmental change. For the 2022–2023 academic year, Brown was a visiting scholar at the Max Planck Institute for the History of Science in Berlin and an elected research fellow of the Future Earth international research program. He is currently researching the history of Islam and Muslims in Ming Dynasty China.

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**Jiajing Zhang** is an Associate Professor at the University of Chinese Academy of Sciences. She received her PhD in 2013 from the Institute for the History of Natural Sciences, Chinese Academy of Sciences. Her research focuses on the history of the geographical and cartographic sciences in late imperial and modern China as well as the impact of Western science and technology on those fields. She is currently working on a project that examines cartographic knowledge and technology in local Chinese gazetteers using a new digital tool (Local Gazetteers Research Tools). Her scholarship has appeared in both English and Chinese in journals such as *Isis*, *Journal of Chinese History*, *Studies in the History of Natural Sciences*, *Cultures of Science*, and *The Chinese Journal for the History of Science and Technology*.

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