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INDIVIDUAL ITINERARIES AND THE
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IN CHINA, 17TH-20TH CENTURIES

EDITED BY

Catherine JAMI



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INVESTIGATING THINGS UNDER HEAVEN:
IMPERIAL MOBILITY AND THE KANGXI EMPEROR'S
CONSTRUCTION OF KNOWLEDGE

Catherine JAMI

During the late imperial period, emperors played a major role in the production and circulation of knowledge in China. From the early fifteenth century, they promoted the teachings of the Cheng-Zhu school of philosophy (named after the Song dynasty philosophers Cheng Yi 程頤 [1033-1107] and Zhu Xi 朱熹 [1130-1200]) and its interpretation of the Confucian teachings to the status of state orthodoxy, a status retained for almost five centuries, until the end of the imperial examination system. In turn this philosophy conferred on the ruler a uniquely privileged status in relation to learning. One of the *Four Books* (*Sishu* 四書) compiled by Zhu Xi, which formed the core of the examination curriculum, the *Great Learning* (*Daxue* 大學)—then attributed to Confucius—argued that the “investigation of things” (*gewu* 格物) lay at the foundation of sagehood as an attribute of the ideal ruler:

Those of antiquity who wished that all men throughout the empire would let their inborn luminous virtue shine forth put governing their states well first. Wishing to govern their states well, they first established harmony in their households. Wishing to establish harmony in their households, they first cultivated themselves. Wishing to cultivate themselves, they first set their minds in the right. Wishing to set their minds in the right, they first made their intentions true. Wishing to make their intentions true, they first extended knowledge to the utmost. The extension of knowledge lies in the investigation of things.¹

It should be noted from the onset that *wu* 物, which is habitually translated by “thing” in the context of the expression “investigation of things,” includes living creatures—and therefore human beings—as well as any phenomenon, whether pertaining to nature or to human artefacts. In late imperial China, it was not just the emperor, but all scholars who had a moral obligation to pursue this aim. This, being said, in the *Great Learning* inves-

¹ Translation in David K. Gardner, *The Four Books: The Basic Teachings of the Later Confucian Tradition* (Indianapolis: Hackett Publishing, 2007), pp. 4-5.

tigating things was represented as being first and foremost an obligation for any monarch who wished to govern his state well so as to make his subjects virtuous. In Zhu Xi's philosophical synthesis, the investigation of things became associated with "fathoming the principles" (*qiongli* 窮理) that underlay these things. The "investigation of things and fathoming of principles" was mainly a moral and social endeavor; however, the phrase was also applied to textual studies and increasingly to objects of investigation pertaining to the natural world. Thus the well-known seventeenth-century scholar and Ming loyalist Fang Yizhi 方以智 (1611-1671) defined "things" as "that which fills the space between heaven and earth." Although it is unlikely that Fang's writings had any direct influence on the Qing court, his definition was in keeping with the conception of "things" that seems to have prevailed at the time.²

The Kangxi 康熙 emperor (r. 1662-1722) was one of the most active supporters of the Cheng-Zhu school. He took the injunction of the *Great Learning* quite literally and professed that he "took to heart studies of the investigation of things"³ pertaining to both the human and the natural realms. Kangxi was the second emperor of the Manchu Qing dynasty (1636-1911) to rule China. While consolidating Qing rule over Chinese territory, he also reconciled the Chinese literati elite to a dynasty whose emperors came from beyond the Great Wall, and whose culture was not Chinese. In this process the emperor strove to be perceived not only as a patron of learning, but also as a scholar.⁴ Ostentatious cultivation of the investigation of things could only serve this purpose. In 1691, in a memorial on harmonics—a topic that had profound implications for ritual—one of his Grand Secretaries pointed out: "His Majesty, with Heaven-granted talent, attains to the study of the investigation of things."⁵ The ruler was thus commended for taking up the scholarly tradition of Confucian monarchs.

While cultivating scholarship (*wen* 文), Kangxi continued to act as the military (*wu* 武) leader of the armies organized under the Eight Banners (*ba qi* 八旗); he travelled around the empire's territory to better assert his con-

² Willard J. Peterson, "Fang I-Chih: Western Learning and the Investigation of Things," in Wm. Theodore de Bary, ed., *The Unfolding of Neo-Confucianism* (New York: Columbia University Press, 1975) pp. 370-411; see pp. 378-379.

³ *Shengzu Ren huangdi shengxun* 聖祖仁皇帝聖訓, *juan* 5; in *Yingyin Wenyuange Siku quanshu* 景印文淵閣四庫全書 (hereafter *SKQS*) (Reprint, 1500 vols., Taipei: Taiwan shangwu yinshuguan, 1986), vol. 411, p. 213.

⁴ Lawrence D. Kessler, *K'ang-hsi and the Consolidation of Ch'ing Rule* (Chicago: The University of Chicago Press, 1976), pp. 137-158; Catherine Jami, "Western Learning and Imperial Scholarship: The Kangxi Emperor's Study," *East Asian Science, Technology and Medicine* 27 (2007), pp. 146-172.

⁵ Zhang Yushu 張玉書, *Zhang Wenzhen ji* 張文貞集, *juan* 2; *SKQS*, vol. 1322, p. 412.

trol over it. During his reign of sixty-one years, Kangxi left the capital more than one hundred and thirty times for “inspection tours” in all directions.⁶ His remarkable mobility was to be emulated only by his grandson, the Qianlong 乾隆 emperor (r. 1736-1795); it contrasts with the attitude of Ming rulers, who hardly left their Beijing palace after the 1520s. Imperial touring could by no means be taken for granted, and throughout Chinese history it was repeatedly criticized by high officials. Kangxi himself faced such criticisms during the first decade of his reign.⁷ His travels enabled him to be an eyewitness to various features of his empire; this being said, information concerning it and the world beyond mostly came to him through multiple and well-organized official channels. An imperial intelligence network supplemented the data provided by the Chinese civil service; tributaries from within and outside the territory under his control were another source of information.

Abundant source material bears testimony both to Kangxi’s mobility and to his approach to the “investigation of things.” How did these two features interact? Or, to take up the Grand Secretary’s words, what resources lay behind the “Heavenly-granted talent” that he applied to his investigation? These questions are relevant to the circulation involved in the production of knowledge. In order to address them, I will rely on a collection of ninety-three jottings attributed to the Kangxi emperor and first printed in 1732, as part of the *Collected Prose Imperially Composed by the Sagely Ancestor and Humane Emperor (Shengzu Ren huangdi yuzhi wenji 聖祖仁皇帝御製文集, hereafter Collected Prose)*. As appropriate, the translation refers to the emperor by his posthumous title.⁸ These jottings are given the title *Kangxi Collection of the Investigation of Things in Leisure Time (Kangxi jixia gewu bian 康熙幾暇格物編, hereafter Collection)*⁹ and occupy no more than six of the 176 chapters (*juan 卷*) of the *Collected Prose*. Both the size and the title of the *Collection* suggest that it was of minor importance within the writings produced by the emperor. Perhaps the most striking feature of this *Collection* is that the majority of the jottings (seventy-three out

⁶ Michael G. Chang, *A Court on Horseback: Imperial Touring and the Construction of Qing rule, 1680-1785* (Cambridge, Mass.: Harvard University Asia Center, 2007), p. 73; Chang mentions that 128 tours took place between 1681 and 1722.

⁷ *Ibid.*, pp. 50-70, 75-79.

⁸ This collection was itself included in the *Siku quanshu 四庫全書* in 1782 (*SKQS*, vols. 1298-1299); Li Di 李迪, ed., *Kangxi jixia gewu bian yizhu 康熙幾暇格物編譯注* (Shanghai: Shanghai guji chubanshe, 1993), “Qianyan” 前言, p. 2.

⁹ *Jixia* 幾暇 is an abbreviation of *wan ji zhi xia 萬幾之暇* (leisure from the myriad affairs [of state]), of which there are seventy-one occurrences in the Ming and Qing *Veritable Records (Shilu 實錄)* altogether. I am indebted to Nicolas Standaert for drawing my attention to this point.

of ninety-three) carefully locate the “things” that they discuss. In a number of jottings, Kangxi claims to have seen what he discusses with his own eyes. It is therefore legitimate to ask how far what he saw during his travels contributed to his “investigation of things in leisure time.” In what follows, I will first discuss what is known of the history of the *Collection*. I will then go on to consider how some of the data discussed in it were gathered in the course of travels outside Beijing. Next, I will turn to the circulation of other individuals and to that of some of the objects that provided material for the *Collection*. My final remarks will address the mapping of these various circulations, and what they tell us about the scholarly construction of the Qing Empire.

Ninety-three Jottings and their Publication History

The process of composition of the *Kangxi Collection of the Investigation of Things in Leisure Time* is not known. It is possible that it was put together as part of the compilation of the fourth and final part of the emperor’s *Collected Prose*,¹⁰ which took place after his death. This was edited under the supervision of Yunlu 允祿 (1695-1767) and Yunli 允禮 (1697-1738), his sixteenth and seventeenth sons, by a team of Hanlin Academicians headed by Zhang Tingyu 張廷玉 (1672-1755), best known as the general editor of the *Ming History* (*Mingshi* 明史), and Jiang Tingxi 蔣廷錫 (1669-1732), who also worked on several other imperially commissioned editorial projects. Both of them had already worked on editorial projects at the Kangxi court; Zhang Tingyu’s father, Zhang Ying 張英 (1638-1708), had been an editor of the first part of the *Collected Prose*.¹¹ The ninety-three jottings that compose the *Collection* may well have been given their titles at that time.¹² The *Collected Prose* was duly included in the *Complete Library of Four Treasuries* (*Siku quanshu* 四庫全書) in 1782. The *Collection* was first printed as a separate book at the end of the Qing dynasty by the Manchu scholar Shengyu 盛昱 (1850-1899). In 1993, Li Di 李迪 (1927-2006) relied on this edition for his annotated translation into modern Chinese, and he drew attention to its relevance to the history of science.¹³ Following this,

¹⁰ *Shengzu Ren huangdi yuzhi wenji*, 1732; see n. 8.

¹¹ Li Di, *Kangxi jixia gewu bian yizhu*, “Qianyan,” p. 1. On these princes and officials, see Arthur W. Hummel, *Eminent Chinese of the Ch’ing period, 1644-1912* (2 vols., Washington, D.C.: U.S. Government Printing Office, 1943).

¹² Li Di, *Kangxi jixia gewu bian yizhu*, “Qianyan,” p. 2.

¹³ Three editions have been used for the present study: the one found in the first printing of the *Collected Prose* (1732), the *Siku quanshu* version (1782), and Li Di’s punctuated edition

recent scholarship has mainly focused on the passages of the text that are relevant to science in the modern sense of the term. And indeed the jottings provide ample evidence of the emperor's interest in and knowledge of "scientific matters."¹⁴ On the other hand, the jottings are also taken as evidence that Kangxi, a Manchu emperor, was "one hundred percent enlightened by Confucianism," as Chen Shengxi 陳生玺, who has recently published a new edition of the *Collection*, puts it in his introduction.¹⁵ These modern representations of the emperor echo the one that prevailed in eighteenth-century Europe. When a partial translation of the *Collection*, done by Pierre-Martial Cibot (1727-1780), a Jesuit missionary in China, was published in Paris in 1779, it was entitled "Observations of Physics and Natural History by the Kangxi Emperor."¹⁶ These two fields correspond to the two new classes of the French *Académie Royale des Sciences* established in 1785, "general physics" and "natural history and mineralogy;" "physics" was then understood as the study of the three kingdoms of nature: mineral, vegetable and animal.¹⁷ This publication posthumously turned the Kangxi emperor into an enlightened monarch in the European fashion.

By contrast with these approaches to the *Collection*, the present study takes it as a whole, without presupposing that some of the jottings are more worthy of interest than others. In fact, they cover a wide variety of topics, ranging from the shape of the Earth to the name of a Yuan dynasty poet.¹⁸ They are relatively short: the most concise one, devoted to Tibet, consists of forty-five characters; the longest one, devoted to the source of the Yangzi River, consists of almost 2,000.¹⁹ No principle of classification can be discerned when browsing the table of contents. The jottings could have been arranged in order of composition; if so, this order does not seem to follow the chronology of the collecting of facts and information. The clues that I

with annotated translation into modern Chinese (1993); see Li Di, *Kangxi jixia gewu bian yizhu*, "Qianyan," pp. 2-3.

¹⁴ See, e.g., Qin Yanyan 秦艳燕, "Xixue dongjian beijing xia de Zhongguo chuantong bowuxue—yi 'Kangxi jixia gewu bian' he 'gezhi jingyuan' wei shijiao" 西學東漸背景下的中國傳統博物學——以《康熙幾暇格物編》和《格致鏡原》為視角 (Master's Thesis, College of Humanities 人文學院, Zhejiang University, Hangzhou, 2010).

¹⁵ Chen Shengxi 陳生玺 and Jia Naiqian 賈乃謙, eds., *Tingxun geyan—Jixia gewu bian 庭訓格言—几暇格物編* (Hangzhou: Zhejiang guji chubanshe, 2013), p. 1.

¹⁶ "Observations de Physique & d'Histoire naturelle de l'Empereur Kang-hi," in *Mémoires Concernant l'Histoire, les Sciences, les Arts, les Mœurs, les Usages, &c. des Chinois, par les Missionnaires de Pékin* (vol. 4, Paris: Nyon l'Ainé, 1779), pp. 452-483.

¹⁷ Éric Brian and Christiane Demeulenaere-Douyère, eds., *Histoire et Mémoire de l'Académie des Sciences: Guide de Recherches* (Paris: Lavoisier TecDoc, 1996), p. 416.

¹⁸ Li Di, *Kangxi jixia gewu bian yizhu*, pp. 87, 100.

¹⁹ Li Di, *Kangxi jixia gewu bian yizhu*, pp. 81, 110-111.

have found as to the dating of particular jottings mostly point to the last two decades of the Kangxi reign; however, in writing them the emperor certainly drew on information and experience from earlier periods. For example, the first jotting evokes the emperor's navigation down the part of the Yellow River located outside the Great Wall: this can be dated to 1697.²⁰ A jotting concerning the Old Man Star (*Laorenxing* 老人星, Canopus),²¹ found in the fourth chapter, could be related to an imperial visit to the Nanjing Observatory in March 1689.²² On the other hand, a jotting on earthquakes, found at the end of the fifth chapter of the collection, mentions the earthquake that happened in the 60th year of his reign; it cannot have been written before 1721.²³ Thus the *Collection* is structured neither according to topics nor according to dates. This is one of its aspects that are evocative of the notebook (*biji* 筆記) genre, of which there are a number of instances during the Qing dynasty.²⁴ But no clue indicates that the compilers had this genre in mind.

Despite the little we know about the process of creation of the *Collection*, there is no reason to doubt that the jottings either were written by the emperor or recorded words he uttered, so that they do represent his views. Many of the jottings can be shown to relate to conversations between Kangxi and some of his high officials or sons. We shall see below that he discussed such topics as the propagation of sound, the Changbai Mountains (Changbaishan 長白山, the alleged homeland of the Qing imperial clan), and the Old Man Star with Li Guangdi 李光地 (1642-1718). Li, who supervised a number of imperial editorial projects aimed at promoting Neo-Confucian orthodoxy (the teachings of the Cheng-Zhu school) in the 1710s, seems to have been one of the emperor's favorite interlocutors in matters related to learning.²⁵ Some of the jottings are also included in other compendia of Kangxi's writings. For example, the jotting on "thunder wedges" (*leixie* 雷楔), pieces of stone or metal that were believed to have been shaped by lightning, is found among

²⁰ Peter C. Perdue, *China Marches West: The Qing Conquest of Central Eurasia* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 2005), p. 201.

²¹ Canopus (Alpha Carinae) is the second brightest star in the sky after Sirius. It is located in the far southern sky; see the translation of this jotting below.

²² Catherine Jami, *The Emperor's New Mathematics: Western Learning and Imperial Authority during the Kangxi Reign (1662-1722)* (Oxford: Oxford University Press, 2012), pp. 120-135.

²³ Li Di, *Kangxi jixia gewu bian yizhu*, pp. 108-109.

²⁴ A number of Qing dynasty *biji* are collected in *Qingdai biji congkan* 清代筆記叢刊 (Jinan: Qi Lu shushe, 4 vols., 2001).

²⁵ Jami, "Western Learning and Imperial Scholarship," pp. 159-162; Ruth Rogaski, "In Search of Mount Changbai: Creating Imperial Knowledge of a Manchu Homeland in the Early Qing." Unpublished paper, 2007; Jami, *The Emperor's New Mathematics*, pp. 120-135; on Li Guangdi, see Hummel, *Eminent Chinese*, pp. 473-176.

the *Sacred Instructions of the Sagely Ancestor and Humane Emperor*, compiled by the Yongzheng 雍正 emperor (r. 1723-1735) after his father's death. There the same text forms part of an address to high officials dated to the 57th year of the reign (1718).²⁶ So the content of the jottings seems to have been intended for the “happy few” who had scholarly exchanges with the emperor. Assembling them as part of his *Collected Prose* was a way of bestowing on local officials and literati what had only circulated in a narrow circle around the “Sagely Ancestor and Humane Emperor” during his reign.

As mentioned above, there is no evidence that the emperor intended the jottings to be compiled into a book or that he chose a title for them; therefore one cannot assume that taken as a set they represent his personal understanding and practice of the “investigation of things” mentioned in the title of the *Collection*. This term has often been taken to refer to “science” in early and mid-Qing China. According to Li Di, only nine jottings bear no relation whatsoever to science (*kexue* 科學). However, this last word is a late nineteenth-century Chinese borrowing of a word created in Japanese, and neither Kangxi nor the editors of his *Collected Prose* used such a category. The term *gewu* 格物 occurs twice in the jottings themselves, which gives a glimpse of how he might have used it. Arguing that “the Earth is a sphere” (*di qiu* 地球), he wrote:

Discussions on astronomy since Antiquity have all been well enough, but none of them refers to the sphericity of the Earth. The reason why the altitude of the Celestial North Pole can have many different values [according to latitude] has never been clarified. Only since the arrival of Westerners in China do we have this explanation, which is in conformity with the foundations of astronomy. One sees that when Master Zhu [Xi], talking about the Earth, compared it to an egg yolk, this proceeded from the investigation of things and fathoming of principles (*gewu qiongli* 格物窮理). His successors did not understand that he had reached this principle.²⁷

On the one hand, the Western provenance of the idea of the Earth's sphericity is acknowledged;²⁸ on the other hand, Kangxi claims that Zhu Xi already

²⁶ Li Di, *Kangxi jixia gewu bian yizhu*, p. 86; *Shengzu Ren huangdi shengxun*, juan 5, dated KX57.07.21 (17 Aug. 1718); see also n. 3. Chinese dates are abbreviated by the two initials of an emperor's reign name (KX for Kangxi), followed by the year, month and day; thus KX57.07.21 means the 21st day of the seventh month of the fifty-seventh year of the Kangxi reign.

²⁷ Li Di, *Kangxi jixia gewu bian yizhu*, p. 87.

²⁸ Pingyi Chu, “Trust, Instruments, and Cross-Cultural Scientific Exchanges: Chinese Debate over the Shape of the Earth, 1600-1800,” *Science in Context* 12, no. 3 (1999), pp. 385-411.

knew about it, whereas astronomers did not. This is consistent with the idea that “Western learning originated in China” (*xi xue zhong yuan* 西學中源), of which the emperor became an advocate in the 1700s.²⁹ In this jotting the phrase *gewu qiongli* is associated with Zhu Xi’s approach to “things,” an approach that is obviously commended. “Master Zhu,” the author most often cited in the *Collection* (ten occurrences), provides an authoritative worldview, within which all the facts and explanations found in the text fit.

The second jotting in which the phrase occurs discusses the “mutual resonance of similar sounds” (*Tongsheng xiangying* 同聲相應); the title is a quotation from the *Book of Changes* (*Yijing* 易經, the hexagram *qian* 乾).³⁰ This jotting is a refutation of received wisdom in which the emperor argues that, although people believe this phrase refers to the fact that human voices express feelings, in fact it refers to a deep principle of nature (*ziran zhi zhili* 自然之至理)³¹ pertaining to harmonics (*lülü* 律呂). He then comments on the limits of human knowledge:

All the profound principles of the universe (*tiandi jingwei zhi li* 天地精微之理) are before us; but people are unable to investigate things and fathom principles.³²

The phrase “investigation of things and fathoming of principles” does not seem to refer to a particular approach in either of these occurrences. Rather, it points to a correct, thorough way of approaching things; in both occurrences the things investigated pertain to natural phenomena. However, some of the “things” investigated by the emperor in other jottings pertain to the human as well as the textual realm. This is another reason why a literal translation of *gewu* is preferred here. In view of the history of the *Collection*, the jottings are best regarded as a set of samples that illustrate the emperor’s gaze on the things around him.

Inspection and Investigation

Kangxi’s best-known travels are his six Southern Inspection Tours (*nanxun* 南巡), which took place between 1684 and 1707.³³ His repeated

²⁹ Jami, *The Emperor’s New Mathematics*, pp. 249-250.

³⁰ ☰. See *Zhouyi* 周易 in *Shisan jing zhushu* 十三經註疏 (Taipei: Yiwen yinshuguan, 1973), vol. 1, p. 15.

³¹ Here “nature” should be understood as “that which is so of itself,” rather than in the modern sense.

³² Li Di, *Kangxi jixia gewu bian yizhu*, p. 95.

³³ Chang, *A Court on Horseback*, pp. 79-86; Jonathan Spence, *Ts’ao Yin and the K’ang-hsi Emperor: Bondservant and Master* (New Haven: Yale University Press, 1966), pp. 124-157;

visits to the region “South of the River” (Jiangnan 江南) had two motivations. He wished both to display interest in the living conditions of its inhabitants—a foremost duty of a Confucian ruler—and to impress them with the martial discipline of the Manchu court. The region was the main breeding-ground of Chinese scholars; it had resisted the Manchu conquest and had consequently suffered very heavily from it. The main feature of “the South” noticed during his tours and mentioned in the *Collection* was its vegetation. He emphasized how peculiar to the area it was, ascribing this to “the nature of things in the South” (*nanfang wuxing* 南方物性):

In the South, [trees] such as plum, apricot, and peach trees blossom and bear fruits earlier than in the North. These fruits ripen at the same time as those of the North, or even later. Cereal sprouts are luxuriant as early as the second month and form ears early; it would be fitting for them to ripen before those of the North. But when comparing the times of harvest, there is little difference between the North and the South. It is as though plants, even if they grow since the beginning of spring, must wait until the autumn to bear seeds. In short, local conditions in the South are soft and slow; the nature of things corresponds to that; that is why the cereals and fruits are often difficult to digest. We have done many a Southern Inspection Tour, and from personal experience, know this very well; whereas the authors of this region are so familiar with it that they overlook it.³⁴

Here Kangxi’s experience takes on the value of authoritative testimony. The imperial body is no longer a human organism coping with the changes of diet entailed by travel; instead it is turned into an instrument for assessing the properties of food, which in turn reflect those of the area where it grows. The standard of the instrument is provided by the emperor’s diet back in the northern part of the empire.³⁵ The emperor claims to be in a better position than Jiangnan scholars to investigate “things” related to their homeland precisely because he is alien to it. This is an explicit assertion of the Manchu ruler’s superiority over Chinese literati by their own intellectual standards.³⁶ Furthermore, the Southern Inspection Tours enabled him not only to investigate the things of the South, but also to read Chinese Official Histories (*zheng shi* 正史) critically:

Pierre-Étienne Will, “Vu de Shanghai” in Pierre Arizzoli-Clément, ed., *Kangxi, Empereur de Chine, 1622-1722: La Cité Interdite à Versailles* (Paris: Réunion des Musées Nationaux, 2004), pp. 29-41; Jami, *The Emperor’s New Mathematics*, pp. 120-135.

³⁴ Li Di, *Kangxi jixia gewu bian yizhu*, p. 83.

³⁵ Marta E. Hanson, *Speaking of Epidemics in Chinese Medicine: Disease and the Geographic Imagination in Late Imperial China* (London: Routledge, 2011).

³⁶ See Jami, *The Emperor’s New Mathematics*, pp. 121-126, 229-233.

One may read in the chronicle of Muzong 穆宗 in the *Liao History* (*Liaoshi* 遼史) that, in the 2nd month of spring of the 12th year of Yingli 應歷 (962), Xiao Siwen 蕭思溫³⁷ submitted: “The Old Man Star (Laorenxing 老人星) is visible; we beg that an amnesty should be promulgated.”³⁸ But, although the stars follow heavenly motion, their visibility and invisibility [can be discussed in terms of] coordinates. The Old Man Star can be seen in the area of today’s Yangzhou 揚州 during the second and the third months.³⁹ If one is in the North, it is not visible. This can only be understood if you point it out on a celestial globe. Thus [the fact that] it is called the Old Man of the South Pole tells us that this star belongs to the South. Zhang Shoujie’s 張守節 Commentary on the *Book of Heavenly Officials* (*Tianguan shu* 天官書) of the *Records of the Historian* (*Shiji* 史記) says that “the Old Man Star is to the south of the Bow (*hu* 弧); at the autumn equinox it is visible at dawn in Bing 丙, at the spring equinox it is visible at dusk in Ding 丁.”⁴⁰ Both Bing and Ding are to the south. This is clear evidence (*mingzheng* 明證). The Liao capital in Linhuang 臨潢 prefecture is located far to the northeast.⁴¹ How could it make any sense to see the Old Man Star from there?⁴²

Kangxi uncovered an inconsistency—which may well have been the consequence of a report forged by the Liao dynasty (907-1125) rather than a mistake. This jotting was a token of the emperor’s ability to “investigate things” in the scholarly fashion that became dominant during eighteenth century—the critical analysis of ancient texts in the light of external evidence, which came to be known as evidential scholarship (*kaozheng xue* 考證學). It is typical of this trend that an older text (in this case a Tang commentary on Sima Qian’s 司馬遷 *Records of the Historian*) is praised to the detriment of a more recent one. Another element strongly evocative of evidential scholarship is the use of astronomy as a tool for textual criticism. Seen from a more political angle, this jotting could serve as a warning to

³⁷ Xiao Siwen (d. 970) was an official of the Khitan Liao dynasty.

³⁸ The *Liao History* record quoted here is dated the 11th year of Yingli; this date corresponds to 21 March 961 (Julian calendar); it is interesting that this date is close to the vernal equinox, when the star would be visible further South.

³⁹ The spring equinox falls in one of these two months.

⁴⁰ Zhang Shoujie is the author of one of the great commentaries on the *Shiji*. Bing and Ding are associated with fire, summer and the South in the Five Phases (*wuxing* 五行) correlations; they are not, however, habitually used in astronomy. Their use by the emperor may be his way to solve a textual difficulty in the original form of the passage quoted, which the emperor quotes in emended form; see Sima Qian 司馬遷, *Shiji* 史記. 10 vols. Beijing: Zhonghua shuju, 1982, vol. 4, p. 1306.

⁴¹ Located in present day Chifeng 赤峰, Inner Mongolia.

⁴² Li Di, *Kangxi jixia gewu bian yizhu*, p. 99; Jami, *The Emperor’s New Mathematics*, pp. 133-134.

officials that the emperor was likely to uncover fraudulent reports. Last but not least, the jotting highlights the geographical extent of the Manchu conqueror's mastery of China. He controlled not only its territory but also the heavens above it, as seen from places as distant as Linhuang prefecture and Yangzhou (the difference in latitude between the two is of almost 10°). It is known that he observed the heavens from "the South." In March 1689, he visited the Nanjing Observatory (built under the Ming dynasty), where he remarked on the visibility of the Old Man Star in front of his officials, singling out Li Guangdi as an interlocutor for what was a lecture rather than a conversation.⁴³ Kangxi, however, did not mention his observation in the jotting.⁴⁴ A few days after this visit, he stopped in Yangzhou on his way back to Beijing; this may be the reason why he mentioned Yangzhou, rather than the former Ming secondary capital.⁴⁵ Thus the Southern Inspection Tours put the emperor in a position to master both the heavens and the earth, not only as a military ruler, but also as a scholar.

The main official purpose of the Southern Inspection Tours, however, concerned the earth rather than the heavens. The inspection of water conservancy works was one of the prime duties of the Chinese imperial state; as such, Kangxi made it clear that he took it to heart. This was duly reflected in his "investigation of things," where he discussed some of the most famous waterworks of the empire. For example, he stopped at Wenshang 汶上 (Shandong), on the Grand Canal, during his first and last Southern Tours, and devoted a jotting to the history of the complex works done there during the Ming dynasty:⁴⁶

During Southern Inspection Tours, when passing the confluence in the Wenshang district, We have visited the place where the Wen 汶 is blocked and its flow divided, admiring the ingeniousness of Bai Ying's 白英 opportune dredging. Checking in the writings on waterways, at the beginning of the Yuan dynasty the waters of the Wen were blocked and diverted to the north towards Yanggu 陽谷 to join the waters of the Wei 衛, to the south towards Jining 濟寧 to join the waters of the Si 泗; the division point was the Huiyuan 會源 sluice gate, that is, the present Tianjing 天井 sluice gate in Jining. However, according to the topography, it would be easier for the water to flow from Gutou 沽頭 to the south to join the [Yellow] River and the Huai 淮. Still, the waters flow from

⁴³ Jami, *The Emperor's New Mathematics*, pp. 120-135.

⁴⁴ Kangxi's own observation dated KX28.02.27 (18 March 1689); see Jami, *The Emperor's New Mathematics*, p. 120.

⁴⁵ *Da Qing lichao shilu* 大清歷朝實錄, dated KX28.03.03-04 (23-24 March 1689) (Reprint, 1200 vols., Tokyo: Daizō shuppan, 1937), Kangxi 139.

⁴⁶ *Da Qing lichao shilu*, Kangxi 116 & 228, dated KX23.10.13 (19 Nov. 1684) and KX46.05.10 (9 June 1707).

Anju 安居 to the north to Nanwang 南旺, the level of which is higher than that of Tianjing. How can one make the waters flow against the current and divide them? At the time, therefore, although many sluice gates and dams were built, there were devastating floods. When water overflowed, one could only get around by boat. At the time of the Ming Yongle 永樂 emperor (r. 1403-1424), the Director General of Canal Transport Song Li 宋禮 implemented old Bai Ying's plan, building a dam to stop the Wen in the village of Dai 戴, so that the waters would flow out from the E 鷺 River and be guided into the Nanwang Lake. After that the waters were divided between south and north. The division point serving as a backbone, the channeling evenly following the topography; there were four branches to the south and six to the north. The sluice gate was repaired, and then opened and closed according to schedule; transportation to the capital was successfully established. Today the northern and southern branches are useful; thus when it is too shallow to the south, one closes Nanwang's northern sluice gate; when it is too shallow to the north, one closes Nanwang's southern sluice gate. Lake and spring waters pour in, southern and northern converge; although there are droughts, they can be relieved; the transport boats are not held up. All this is thanks to Bai Ying's achievement in holding and dividing the waters of the Wen. According to the tradition, at the time he paced up and down between Wenshang and Jining and thought it over for several decades; one day he saw it and came up with this proposal. It has been implemented for more than three hundred years without failing. This is called adjusting to local conditions and following the nature of the water.⁴⁷

The section of the Grand Canal discussed here is well known to historians of Chinese hydraulics. It is a summit level section, which joins the northern bed of the Yellow River and the Nanwang Lake; it was therefore difficult to maintain a sufficient water level. It was redesigned in 1411, when a dam was built to divert the Wen River southwest so that part of its waters would feed into the Grand Canal. The work achieved by Song Li had important economic implications: it made the Grand Canal navigable again, thereby ensuring smooth transport between Jiangnan and Beijing. Bai Ying, whose advice Song Li is said to have taken, was a local expert who does not seem to have held any office.⁴⁸ He was praised in the *Veritable Records of the Ming* (*Ming shilu* 明實錄), which were used for the compilation of the *Ming History* (*Mingshi* 明史) that Kangxi had commissioned in 1679, as well as in local gazetteers. Bai Ying was later turned into an exemplary

⁴⁷ Li Di, *Jixia gewu bian zhuyi*, pp. 91-92.

⁴⁸ See Joseph Needham, with Wang Ling and Lu Gwei-djen, *Science and Civilisation in China*, Vol. 4, *Physics and Physical Technology*, Part 3, *Civil Engineering and Nautics* (Cambridge: Cambridge University Press, 1971), pp. 315-317.

figure of “peasant water conservancy specialist” (*nongmin shuilijia* 農民水利家) by Mao Zedong.⁴⁹

This jotting is remarkable for its technical details, which Kangxi seems to have derived from books rather than from observation; still, he did start by stating that he has seen the waterworks. Elsewhere he emphasized the importance of observation, rendered possible by his mobility: “During inspection tours to the Seven Provinces, We have applied Ourselves to understanding all the local popular customs.”⁵⁰ It is noteworthy that as regards the Inner Territories (Neidi 內地), the jottings concern almost exclusively the seven provinces that he visited, namely Zhili, Shanxi, Shaanxi, Shandong, Henan, Jiangsu and Zhejiang.⁵¹ So there is a close correlation between the places where his inspection tours took him and the location of the things he investigated.

This being said, one should read the jottings very carefully before asserting that the emperor saw all the things he investigated. Thus he wrote on another famous place where the landscape had been redesigned to allow grain transportation to reach the imperial capital in the days when it was located in Xi’an 西安. The Three Gates and the Whetstone (*Sanmen dizhu* 三門砥柱) are features in a particularly difficult gorge of the Yellow River.⁵²

During the Inspection Tour of the forty-second year, passing through Shanzhou 陝州,⁵³ [one] visited the Three Gates and the Whetstone. The Whetstone is a rock standing in the middle of the River. Yu 禹 [the Great] pierced three openings, so that the River’s waters would flow through them as though they were gates; this is why they are called the “Three Gates.” The northern gate is commonly called the “Gate of Devils” (Guimen 鬼門), the central gate, the “Gate of Spirits” (Shenmen 神門), and the southern gate, the “Gate of Men” (Renmen 人門); of the three, the “Gate of Devils” is the most dangerous one. During the Kaiyuan 開元 era (713-742) of the Tang, Li Qiwu 李齊物, Magistrate of the Shan 陝 Commandery, further dug the Whetstone so that grain transports could get through. He burnt the rock, then poured acid on it, cutting off its top so as to open a towpath. According to local songs of Daizong’s 代宗 time (762-779),

⁴⁹ During Mao Zedong’s visit to Nanwang in 1965; see, e.g., http://big5.gmw.cn/g2b/history.gmw.cn/2011-09/27/content_2703447_2.htm, accessed 24 February 2015.

⁵⁰ Li Di, *Kangxi jixia gewu bian yizhu*, p. 79.

⁵¹ There are exceptions; see references to a variety of jujube called *jinguangzi* 金光子, found in Fujian, and the “rice of Ge the Immortal” (*Gexian mi* 葛仙米, nostoc), found in Guangxi. *Ibid.*, p. 106.

⁵² Needham, *Science and Civilisation in China*, Vol. 4, Part 3, pp. 273-279, retraces the complex history of the works in the Three Gates gorge.

⁵³ In Henan province.

people from Bashu 巴蜀 and Xianghan 襄漢 made ropes with hemp and fine bamboo for towing Shaanxi boats. To our days these ropes have made deep scars into the rock; they are quite visible, about the size of a finger. What the ancients have accomplished, the following generations are unable to attain.⁵⁴

The imperial first person pronoun, *zhen* 朕 (best translated as “We” according to the Ancien Régime usage in Europe) does not occur in this jotting. This is consistent with the information found in the *Veritable Records*. Kangxi stopped in Shanzhou in January 1704 during a Western Inspection Tour. However, because a local official warned him that access was difficult, the emperor sent his third son, Yinzhi 胤祉 (1677-1732), who like his father was well versed in the mathematical sciences,⁵⁵ to go and visit the Three Gates and the Whetstone, instead of going himself. A few days later, back in the capital, the emperor mentioned this to his officials.⁵⁶ The jotting gives a quite plausible account of the gorge, combining his son’s report with historical documents. So while no false claim is made in the *Collection*, the imperial gaze could evidently be substituted by that of commissioned observers, in this case a member of the imperial family who had been trained according to his father’s orders.⁵⁷

Beyond the Great Wall

While Kangxi’s Southern Tours are the most famous of his journeys, he spent much more time beyond the Great Wall than he did in Jiangnan. His first journey outside the capital took him to Shengjing 盛京 (or Mukden, present day Shenyang 瀋陽, the capital of the Qing before their conquest of China) in 1671, only two years after he assumed personal rule; it was presented as an essential duty of filial piety that he had to fulfil towards the founders of the dynasty.⁵⁸ He made two more visits there, in 1682 and 1698.⁵⁹ Like the first one, the majority of his journeys beyond the Great Wall were motivated by affairs that concerned the non-Chinese parts of the empire—often military affairs. The autumn hunts at the Mulan 木蘭 reserve were designed not only for imperial amusement but also to keep bannermen fit for combat. In 1690 and 1696-97, Kangxi personally led his armies in the

⁵⁴ Li Di, *Jixia gewu bian zhuyi*, p. 84.

⁵⁵ Jami, *The Emperor’s New Mathematics*, pp. 244-245, 269-276.

⁵⁶ *Da Qing lichao shilu*, Kangxi 213.

⁵⁷ Jami, *The Emperor’s New Mathematics*, p. 275.

⁵⁸ Chang, *A Court on Horseback*, p. 77.

⁵⁹ Mark C. Elliott, “The Limits of Tartary: Manchuria in Imperial and National Geographies,” *Journal of Asian Studies* 59, no. 3 (2000), pp. 603-646, pp. 609-612.

conquest of the Zunghar Khanate headed by the Oirat chief Galdan (1644-1697).⁶⁰ The emperor was quite impressed by the Gobi Desert (Hanhai 瀚海), which he then crossed, as witnessed by the various mentions of it in the *Collection*. Beside the landscape and vegetation mentioned in passing, jottings are devoted to features like mirages and shells found in the desert. During one of the expeditions, the emperor collected stones and sent them back to Beijing as gifts for his family:⁶¹

In the sand of the Gobi Desert, agate stones have formed; they are bright and multi-colored, limpid and smooth. Some are like the seeds of an open pomegranate, of a fresh shiny red, some are like peeled litchis, with glossy pure white flesh. Some are like shells, butterflies, and cicadas with perfectly drawn features. The dexterity of execution of the famous “mulberry leaves chiseled in three years”⁶² does not surpass this. There are also some white ones with black motifs, resembling paintings, like bare forests in the autumn moonshine, peaks in mist or brooks in smoke; there are even mountain landscapes with precipices, herds grazing in twilight, just like paintings created by nature. During the campaign against the Oirats, We have chosen several hundreds of them Ourself, which seem to depict such shapes. This is very strange and hard to describe. The ingenuity of nature (*zaohua* 造化) in creating things extends this far!⁶³

Here Kangxi’s gaze is more that of a collector of curios than that of a naturalist, and he emphasizes the aesthetic value of the stones. However, he also pondered at the formation of the Gobi Desert. In another, less lyrical jotting, he attempts to fathom the principles that underlie the presence of shells in the desert sand:

In the Gobi Desert, land made barren by salt extends as far as the eye can see; there are neither rivers nor valleys. Yet in the sand one often sees shells. The Mongol tradition records that at the time of floods in Antiquity, this whole area was marshy. Water withdrew, leaving a mass of sand. If one thinks of the position of the eight trigrams, *kan* 坎⁶⁴ is in the North; therefore the water sources of the empire (*tianxia* 天下) most likely come from the North. Mencius says that

⁶⁰ Perdue, *China Marches West*, pp. 174-208.

⁶¹ *Ibid.*, p. 185.

⁶² This proverbial expression is found in the *Han Feizi* 韩非子 21, “Yulao” 喻老. Chen Qiyou 陳其猷, ed., *Han Feizi jishi* 韓非子集釋 (Hong Kong: Zhonghua shuju, 1974), vol. 1, p. 407.

⁶³ Li Di, *Kangxi jixia gewu bian yizhu*, p. 88.

⁶⁴ ☵ the Abysmal (Water); this trigram is associated with running water, the setting sun, west, autumn, etc.

floods invaded China.⁶⁵ The use of “invade” indicates that it really happened in this way, and one knows that this water must come from somewhere [other than China]. In general the nature of water is to flow downstream; it makes its bed to the southeast. Thus since Antiquity half of the marshy regions that were [once] saturated with water of the Northeast, as one can see in the Histories and check for the present in local gazetteers, have become drained plains. On thousands of *li*, they have dried up, but one continues to call them “the Vast Sea” (Hanhai 瀚海); this means that in the beginning they were certainly not deserts. The theory of floods does seem to match principles. This is recorded so as to make up for what predecessors had not discovered.⁶⁶

Here Kangxi constructs a history of the flood of Chinese antiquity that explains the present situation, using both the *Book of Changes*—one of the Five Classics—and Mencius—one of the Four Books—as evidence for his claim. Drawing simultaneously on the Mongol tradition, he integrates the lands that he has seen outside the Inner Territories into the historical geography of China.

The integration of these lands into the Qing Empire also had an economic dimension. In several jottings Kangxi reached beyond what he had observed in person, to evoke the many products that could be obtained from there:

During the Ming, it was forbidden to export mirabilite,⁶⁷ the law was very strict. It was not known that beyond the borders mirabilite was produced in many places: in Khalkha and Oirat territories there is a white earth; if one boils it, one gets mirabilite of better quality than the one produced in China (Zhongtu 中土). It is now known that useful things are found all over the world (*tianxia* 天下); originally there was no difference between China and the outside world.⁶⁸

Mirabilite is a mineral used as a purgative in Chinese medicine; it is discussed in many works, including Li Shizhen’s 李時珍 *Systematic Materia Medica* (*Bencao gangmu* 本草綱目) of 1596. Territorial expansion had brought about unprecedented knowledge of the world and of its resources, and it was the Manchu armies that put such things as this superior mirabilite within reach of investigation. This jotting points to the fact that Qing rule benefits the economy of China, while imperial investigation of things bene-

⁶⁵ *Mengzi* 3.B.9: “In the time of Yao, the water reversed its natural course, flooding the central regions.” See D.C. Lau, trans., *Mencius* (Harmondsworth: Penguin Books, 1970), p. 113.

⁶⁶ Li Di, *Kangxi jixia gewu bian yizhu*, p. 88.

⁶⁷ Glauber’s salt (sodium sulfate, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$); in Chinese, *mangxiao* 礬硝 or 芒硝.

⁶⁸ Li Di, *Kangxi jixia gewu bian yizhu*, p. 89.

fits the health of Chinese subjects. The ill-informed policy of the Ming dynasty regarding this product is noted in passing. Kangxi's scholarly and military facets are thus complementary in his endeavor to rule in the Confucian tradition.

Imperial Envoys

Kangxi's investigation of things relied on the multi-layered information network in his service: Chinese officials, especially governors and Governor-generals, relayed relevant local matters. On the other hand, he commissioned and received lengthy intelligence reports concerning frontier areas and the lands beyond them. Members of the imperial household—including his sons—and officials were sent on various missions that entailed the collection of information. Although the reports were usually written in Manchu, their authors sometimes promoted the writing of chronicles on frontier affairs in Chinese.⁶⁹ The emperor made use of one such chronicle:

The world is wide, and many wonders are found in it. What is recorded in the Classics must have some foundation. Later men doubted, because they had not seen with their own eyes. Thus the "Tribute of Yu" (Yugong 禹貢) reports that "the Wei 渭 flows from the common den of birds and rats."⁷⁰ Kong Anguo 孔安國 wrote: "Birds and rats live together as male and female; they live in the same den." Cai Shen 蔡沈 found this story incredible; that was because he had never been there himself. When Zhang Penghe 張鵬翮⁷¹ was sent to the Russians, in a place he went past he saw birds and rats in the same den. We have personally interrogated him, and therefore know that the words or the "Tribute of Yu" are not deceitful.⁷²

The issue here is the credit to be given to the geography of the Classics. The description of the "Tribute of Yu" was matched by a place-name in use in Kangxi's time. Near the source of the Wei River, in Gansu 甘肅 province, stands a mountain called the Mountain of Birds and Rats (Niaoshushan 鳥鼠山). Kong Anguo (fl. c. 120 BCE), whose commentary Kangxi quotes, was a scholar of the Western Han period (206 BCE-9 CE), whose authority was all the greater as he was a twelfth-generation descendant of Confucius.

⁶⁹ Matthew W. Mosca, "Empire and the Circulation of Frontier Intelligence: Qing Conceptions of the Ottomans." *Harvard Journal of Asiatic Studies* 70, no. 1 (2010), pp. 147-207, pp. 158-159.

⁷⁰ "Yugong" 禹貢 28; see *Shujing* 書經, in *Shisan jing zhushu* 十三經註疏 (Taipei: Yiwen yinshuguan, 1973), 2 vols., vol. 1 p. 90.

⁷¹ Hummel, *Eminent Chinese*, pp. 49-50.

⁷² Li Di, *Kangxi jixia gewu bian yizhu*, p. 80.

In his own commentary of the *Book of Documents* (*Shujing* 書經), Cai Shen (1167-1230), a disciple of Zhu Xi, expresses doubt as to Kong's assertion that birds and rats "are together like male and female;" he does not question the fact that they might share the same den.⁷³ In 1688, Zhang Penghe (1649-1725) took part, in the role of secretary, in a diplomatic mission that was to negotiate the border between Russia and the Qing Empire. However, due to unrest in the territories they were to cross, the mission had to return to Beijing without reaching its destination. Shortly after his return, Zhang wrote a *Record of the Itinerary of the Embassy to Russia* (*Fengshi Eluosi xingcheng lu* 奉使俄羅斯行程錄). The emperor sought—and obtained—oral confirmation from Zhang that he had indeed seen "birds and rats in the same den" near the source of the Wei River, and he used it to criticize Cai Shen. This jotting can be seen in two different lights. On the one hand, only the emperor was in a position to produce it; he relies on the unique information network at his disposal to test the Classics against the testimony of a witness. On the other hand, as an exercise in refuting a Song dynasty commentator while vindicating a Han dynasty one, the jotting fails to be convincing. For the modern reader, it serves as a reminder that Kangxi's investigation of things belongs in the Chinese textual tradition rather than in the genealogy of "modern science."

Chinese sources could also be used to corroborate observations made outside the Qing Empire by envoys and reported back to the emperor, such as that of "cereal ears turning into mosquitos" (*gu sui bian wen* 穀穗變蚊):

In Tsewang Rabdan's territories,⁷⁴ there are all kinds of paddy fields, and there are no worries about droughts and floods. But one year, cereal ears turned into mosquitos that flew off. When crushing them between one's fingers, there was water or blood. We sent an Imperial Guardsman there; he saw this with his own eyes. We have read that the *Records of Strange Things from Lingnan* say: "In Lingbiao 嶺表 there are trees whose fruits look like loquats; when they ripen, they split and swarms of mosquitos fly off; the locals call them 'mosquito trees.'"⁷⁵ This is similar to the phenomenon of cereal ears turning into mosquitos. Master Cheng 程 said: "Things under heaven must be compared." This can be seen from the above.⁷⁶

⁷³ Cai Shen 蔡沈, *Shujing jizhuan* 書經集傳, *juan* 2; *SKQS*, vol. 58, pp. 38-39.

⁷⁴ Tsewang Rabdan (1665-1727, r. 1697-1727), Galdan's nephew, succeeded him as ruler of the Zunghar Khanate.

⁷⁵ This quotation may in fact have been taken from the *Extensive Records from the Taiping era* (*Taiping guangji* 太平廣記, 978, by Li Fang 李昉, comp.), a collection of stories which itself refers to the *Records of Strange Things from Lingnan* (*Lingnan yiwu zhi* 嶺南異物志).

⁷⁶ Li Di, *Kangxi jixia gewu bian*, p. 81.

By finding a phenomenon comparable to the one observed in Oirat territory in a source dating back to the Han dynasty, Kangxi lends credit to his guardsman's report, thereby integrating the latter's observation into the body of "things" accessible to Chinese scholars for investigation. This brings out the universality of Chinese scholarly knowledge, insofar as this knowledge lends credit to observations made beyond the territories where this knowledge prevails. This is also an interesting example of the way in which Manchu territorial expansion contributed to broadening the scope of "things" investigated, furthering the universality of Chinese learning. The choice to bring together these two occurrences of plants yielding mosquitos is finally placed under the auspices of Cheng Yi, the pioneer of the philosophical school championed by the emperor.

Kangxi's eagerness to check received knowledge encompassed "all under heaven" (*tianxia* 天下). He sent explorers beyond the limits of Qing territory. In 1704 he commissioned Laxi 拉錫, an Imperial Guardsman, to explore the source of the Yellow River, then located in Oirat territory. A jotting recounts the latter's findings:⁷⁷

The Yellow River originates at Constellation Lake. Later people, because of the name "Constellation Lake," suspected that the Yellow River came from the Heavens. It is not so. We have sent an Imperial Guardsman west to fathom the River's source. He reached the Constellation Lake, called Eduntala by the Mongols (*Edun* means "star," *tala* means "plain"). Above the ground, waterfalls mix and gush, turning into thousands of bubbles. Looking from above, dots of various sizes shine like a constellation; therefore it is called "constellation."⁷⁸

Here the emperor refutes a popular belief on the basis of an observation that only he could commission. The jotting then goes on to recount how he sailed down the part of the Yellow River to the north of the Great Wall during one of his campaigns against Galdan. Together the two parts of the jotting point to the fact that the whole river, up to and including its source, is within reach of Qing armies. This source lies in present day Qinghai province. Kangxi's son Yongzheng conquered most of the territory that now constitutes this province in 1724. His grandson Qianlong went on to conquer the Oirat territories in the middle of the eighteenth century. Another jotting, in the final chapter of the *Collection*, is devoted to the source of the Yangzi River (Changjiang 長江).⁷⁹ In this case, no exploration was carried

⁷⁷ *Da Qing lichao shilu*, Kangxi 216.

⁷⁸ Li Di, *Kangxi jixia gewu bian yizhu*, p. 79; the passage between parentheses corresponds to a note in small characters in the original text.

⁷⁹ *Ibid.*, pp. 110-111.

out, so that the jotting relied mainly on written sources. It pointed out that the two rivers have many common points. Both come from the Kunlun 崑崙 Mountains—which held an important role in Chinese mythology—the Yellow River flows from their northern side, the Yangzi River from their southern side. Each of the two rivers waters five provinces of the Inner Territories before flowing into the sea. Put together, these two jottings achieved the integration of the two main rivers that water the Inner Territories into the scope of Chinese geographical knowledge; this contributed to legitimizing Qing territorial ambitions from a China-centered standpoint.

Other imperially commissioned explorers contributed to the geographical legitimation of the Qing. For example, Umuna's 武默訥 expedition to Mount Changbai in 1677 aimed to identify the homeland of the Aisin Gioro clan (the Qing imperial lineage).⁸⁰ The subsequent institution of sacrifices to Mount Changbai put it on a par with the Five Sacred Mountains (Wuyue 五岳) of China (Taishan 泰山 to the East, Hengshan 衡山 to the South, Huashan 華山 to the West, Hengshan 恆山 to the North and Songshan 嵩山 at the Center).⁸¹ A jotting devoted to the newly sanctified Aisin Gioro homeland in the *Kangxi Collection of the Investigation of Things in Leisure Time* integrated it into the sacred geography of China:

Ancient and modern treatises on the veins of the Nine Provinces simply state that Huashan is a tiger and Taishan is a dragon. Geographers (*dilijia* 地理家) also say that Taishan rises to the east, both its sides forming protective screens. No one has yet investigated the place of origin of the Taishan Dragon. We have closely examined the grounds and scrutinized the veins of the earth, as well as sent people across the [Bohai 渤海] sea to make measurements, and thereby know that the Taishan Dragon originates from Mount Changbai. The Changbai Mountains stretch south of the Ula 烏喇 region; on its slopes hundreds of springs gush out; they are the origin of the Songhua 松花, Yalu 鴨綠, and Tumen 土門 rivers. To the south, its foothills form two ranges. One heads southeast; it goes east until the Yalu, and west to Tongjia 通加. Korea's mountains are mainly branches of these. The other range stretches from west to north, reaching the deep forests of Nalu 納麓, and then dividing into two branches: the northern branch goes to Shengjing 盛京, where it forms Mounts Tianzhu 天柱 and Longye 隆業, then turns west, forming the Yiwulü 醫巫閭 Mountain; the western branch enters Xingjingmen 興京門, where it forms Mount Kaiyun 開運; winding toward the south, rising majestically into many peaks, forming the Iron Mountain in Lüshun 旅順, in Jinzhou 金州. The Dragon's spine sometimes appears, sometimes hides. In the sea, the Huangcheng 皇城 and Tuoji 鼉磯 Islands are places where it appears. It reaches Shandong to form Mount Fu 福 and

⁸⁰ Elliott, "The Limits of Tartary," pp. 612-614.

⁸¹ Rogaski, "In Search of Mount Changbai."

Mount Danya 丹崖 in Dengzhou 登州. The Dragon hidden under the sea thus appears on the Continent, goes southwest for more than eight hundred *li* to form Mount Tai 泰, its majestic peaks rising towards the sky. It is the head over the Five Sacred Mountains. Although the Ancients did not reach this theory, it can be founded with certainty on forms and principles. Some doubt it on the grounds that the sea separates. However, the configuration of the mountains is uninterrupted; they may be compared to a dragon because their form and *qi* 氣 reach everywhere. Ban Gu 班固 said: “Shape and *qi* are like head and tail.”⁸² Today’s geomancers talk about “crossing the strait” and “separating waters.” The Bohai 渤海 [Gulf] is just a “crossing of the strait.” The *Geographical Treatise* edited under the [Liu] Song and Wei dynasties says: “Crossing rivers and stretching into the sea.” So the Changbai Mountains Dragon stretches into the sea and becomes Mount Tai 泰. The position of Mount Tai 泰 also provides evidence: it faces northwest and leans back southeast. If one said that originating from Hangu 函谷 one reaches Taishan, how could a dragon coming from the west face west? This principle is clear and intelligible.⁸³

According to this quite elaborate listing of the relief (both on dry land and under the sea) between the Manchu homeland and Mount Tai 泰, Mount Changbai is not just a sixth sacred mountain—it is the source from which *qi* flows into Mount Tai 泰, which is the head of the Dragon. Interestingly, what amounts to a claim that Manchu dominance over China is inscribed in its symbolic geography was made during a conversation that Kangxi had with his high officials in 1709. According to the *Veritable Records*, it was the emperor who started the conversation by asking “Do you know where Jieshi 碣石 Mountains⁸⁴ and the mountains of Shandong come from?” Kangxi must have expected the reply submitted by Li Guangdi, that the vein of the mountains of Shandong originated from Shanxi and Henan. The emperor could then put on one of his favorite acts, redressing what he regarded as the China-centric bias of his officials.⁸⁵ The fact that this took place at the time of the great survey aimed at producing a complete map of the empire (*Huangyu quanlantu* 皇輿全覽圖, 1718) indicates that imperial geography had a manifold agenda.

⁸² Ban Gu 班固, *Han shu* 漢書 (Beijing, Zhonghua shuju, 1962), vol. 6, chapter 30 (*Yiwenzhi* 藝文志 10), p. 1775.

⁸³ Li Di, *Kangxi jixia gewu bian yizhu*, p. 90; see also Rogaski, “In Search of Mount Changbai,” pp. 30-31.

⁸⁴ The Jieshi Mountains are located in what was then Zhili, close to Shanhaiguan 山海關.

⁸⁵ *Da Qing lichao shilu*, Kangxi 240, dated KX48.11.24 (24 Dec. 1709); see Rogaski, “In Search of Mount Changbai,” p. 29.

Tributaries and Agriculture

Another major source of information that the emperor had at his disposal were the populations of the newly conquered territories. Thanks to them, Kangxi's displays of scholarly superiority were not limited to geography and history; they also included linguistic matters:

As to the two characters *nanwu* 南無 in Buddhist sutras, common people do not know that they are a phonetic transcription from the Western marches. They have interpreted them wrongly on the basis of their individual prejudices; their annotations have accumulated so that they fill up entire books. Ultimately there is not one single sensible word in them. We have asked people from the West, and know that among them, joining hands and bowing down to the ground is *nanwu*, pronounced “*namo*.”⁸⁶ This is why in the sutras the names of all the Buddhas contain the two characters *nanwu*. For they say that they bow to this or that Buddha. This explanation is the most relevant. For when you read letters from the Song and Yuan dynasties, when they are sent to Buddhist monks, at the end it says that disciple so-and-so would *henan* 和南. *Henan* means to bow down and join hands, whereas *nanwu* means to bow down to the ground.⁸⁷

This jotting again aimed at clarifying a point that “people” interpreted wrongly. It does not concern nature, but rather language and religion, which pertain to the human realm. The emperor's argument did not rely on textual learning, but rather on the possibility open to him to question native speakers of “Western” languages. The importance of Inner Asia for a correct understanding of Chinese culture is emphasized thus repeatedly in the *Kangxi Collection of Investigation of Things in Leisure Time*. Qing conquests, then, were relevant to China from a cultural viewpoint.

But many more jottings are concerned with agriculture than with language. Indeed, the lands beyond the Great Wall proved a major asset in this respect. On the same day that he taught his officials how Qing rule was in fact inscribed in the topography of China, Kangxi also informed them of the price of cereals in the capital. These were alarmingly high, due to the bad harvests in Jiangnan in the two previous years: millet fetched as much as 1 *liang* 兩 2 *qian* 錢 per *shi* 石. By contrast, millet grown beyond the passes was sold there for no more than 3 *qian* 錢 per *shi* 石:⁸⁸ it was four times

⁸⁶ The Sanskrit phrase *Namo Amitābhāya*, “Homage to Amitābhā” is a common invocation to the Buddha Amitābhā (see, among others, the *Sutra of Infinite Life*, *Wuliang shoujing* 無量壽經).

⁸⁷ Li Di, *Kangxi jixia gewu bian yizhu*, p. 82.

⁸⁸ *Da Qing lichao shilu*, Kangxi 240, dated KX48.11.24 *gengyin* 庚寅 (24 Dec. 1709).

cheaper. The many jottings in which the emperor praised the cereals of these regions are best understood with this economic stake in mind:

The wheat grown in the Heilongjiang 黑龍江 region is the best one; it is of an immaculate white, and moreover of an agreeable quality. According to the tradition, the wheat grown in China originates from the Western Marches. Russia is more than ten thousand *li* to the West of these. The [region of the] upper course of the Heilongjiang is inhabited by Russians; its wheat crops have also been imported from the West. Therefore the quality of the wheat surpasses that of other regions.⁸⁹

Here scholarship comes to the rescue of statecraft; praising the quality of crops from the Manchu homeland would help in marketing them. This would not only relieve the Inner Territories in case of bad harvest but also boost the economy of a region that was peripheral to the Chinese grain market. In some cases, however, the emperor took steps to acclimatize these crops so as to introduce them into the Inner Territories:

Seven years ago, in the Ula 烏喇 region, a stem of white millet suddenly grew in the hole inside a tree trunk. The natives sowed its seeds—it was much superior to [older grains]—and harvested plenty of it on large areas. It tastes sweet and feels smooth. People offered some, and We ordered some be sown within the walls of the Summer Residence (Bishu shanzhuang 避暑山莊). Its stems, leaves, and ears are twice as large as those of other types of millet, and it ripens sooner. The cakes made out of it are white like those made out of non-husked glutinous rice; they are thinner, tasty, and they melt in the mouth. If one considers the good cereals of Antiquity, some new ones must have appeared since then in this way. Thus one can supplement agricultural treatises.⁹⁰

The use of the imperial Summer Residence in Rehe 熱河 (present day Chengde 承德) to experiment with the culture of this new cereal enables us to date the jotting no earlier than 1710, as this Residence was built in 1703. The conditions there were closer to those of the Central Plain of China than to those of the Ula region. The emperor's ambition to spread the cultivation of this millet is a contribution to the promotion of agriculture (*quannong* 勸農), an important task that fell to local officials. Here again he relied on resources that were unavailable to Han officials, and his Manchu origins put him in a unique position to participate in scholar-officials' culture and to act as the perfect Confucian ruler.

⁸⁹ Li Di, *Kangxi jixia gewu bian yizhu*, p. 90.

⁹⁰ *Ibid.*, p. 80.

The Manchu homeland was by no means the sole source of agricultural products. Thus, we are told, the region of Hami 哈密 (in present day Xinjiang) produced excellent fruits. A jotting recounts how the Muslims (*huizi* 回子) who were Kangxi's allies against Galdan during the 1696-97 military campaigns presented him with sundried melons, a delicacy hitherto unknown on Chinese territory.⁹¹ Some fruits from that area were also acclimatized:

Grapes come from the Western Marches; there are only few varieties of them in the Chinese territory. Recently, all kinds were received from Hami's Muslims; they have been planted in the Imperial Garden (Yuyuan 御苑). They produce white, green, and purple fruits, and are as long as a mare's teat. There is also one variety of large grapes with some small ones, called *gonglingsun* 公領孫, and a variety of small grapes called common grapes. Despite this name, they are a sweet and refreshing food. When transplanted to the South, they lose their taste. The stony ground and the climate of the North probably suit their nature (*xing* 性) better.⁹²

Thus the excellent fruits produced beyond the Great Wall could not be acclimatized in the fertile region of Jiangnan—where plums, apricots, and peaches ripened slowly. This suggests that the Inner Territories could not be self-sufficient. The Qing Empire, however, was allowed to draw full benefit from the varied nature of things (*wuxing* 物性) in different parts of the vast territory within Kangxi's reach.

Things from around the World

The Kangxi emperor lived in an age of globalization. The Jesuits' presence in China since the end of the sixteenth century was a consequence of European (mostly Portuguese) overseas expansion. As is well known, this expansion had other consequences with a much wider impact on Chinese economy. Most famously, the inflow of American silver since the sixteenth century triggered a monetary crisis that, according to some historians, contributed to the collapse of the Ming dynasty.⁹³ At the same time, new plants such as peanuts, sweet potatoes, and chili peppers spread rapidly during the

⁹¹ Li Di, *Kangxi jixia gewu bian yizhu*, p. 84.

⁹² *Ibid.*, p. 91.

⁹³ Richard Von Glahn, *Fountain of Fortune: Money and Monetary Policy in China, 1000-1700* (Berkeley: University of California Press, 1996), pp. 113-142; Von Glahn, "Money Use in China and Changing Patterns of Global Trade in Monetary Metals, 1500-1800," in Dennis O. Flynn, Arturo Giráldez and Richard Von Glahn, eds., *Global Connections and Monetary History, 1470-1800* (Aldershot: Ashgate, 2003), pp. 187-213.

late Ming and early Qing period.⁹⁴ It comes as no surprise, therefore, that not all the things discussed in the *Kangxi Collection of the Investigation of Things in Leisure Time* can be located on a map of Inner and East Asia; some originated from “the Western Ocean” (Xiyang 西洋). These included the astronomical knowledge mentioned in the jotting on the Old Man Star quoted above, but also material objects and the knowledge of these. When discussing “thunder wedges” found in the Gobi Desert and in Manchuria, the emperor mentioned that similar objects, made of stone of slightly different colors, were also found in the West.⁹⁵ Even America is mentioned in one of the jottings:

The great Western red [pigment] (*Xiyang dahong* 西洋大紅) comes from America (Amoliga 阿末里噶). There, there are trees on which are some insects. One waits for the insects to fall down, and collects them with a cloth under the tree; one makes this great red out of them. The insect is called cochineal (*gezuonila* 各作泥臘).⁹⁶

After this well-informed account of the production of cochineal red, Kangxi went on to identify the insect with another one that was mentioned in Chinese sources from the Tang to the Yuan dynasty.⁹⁷ In his mind, as in that of Chinese scholars of his time, there were no geographical limits beyond which the knowledge found in Chinese writings ceased to be relevant. In other words, this knowledge was universal. The emperor partook in its construction by integrating in it “all under heaven,” now taken to mean all on the spherical Earth (*diqu* 地球) described in the Jesuits’ astronomy and—in Kangxi’s professed view—already fathomed by Zhu Xi. The universality of the imperial investigation of things was not limited to its objects. The tools used for this investigation also originated from around the world, as is apparent in a jotting on thunder and the propagation of sound:

⁹⁴ Joseph Needham and Francesca Bray, *Science and Civilisation in China*, Vol. 6, *Biology and Biological Technology*, Part 2, *Agriculture* (Cambridge: Cambridge University Press, 1984), pp. 427-428, 530-531.

⁹⁵ Li Di, *Kangxi jixia gewu bian yizhu*, p. 86; according to the author, *leixie* 雷楔 could be either meteorites or Neolithic tools; see p. 17.

⁹⁶ *Ibid.*, p. 105; the Chinese transliteration must be derived from either Spanish (*cochenilla*) or Portuguese (*cochonilha*).

⁹⁷ On the circulation of red as a color in the early modern age, see Pamela H. Smith, “Knowledge in Motion: Following Itineraries of Matter in the Early Modern World,” in Daniel T. Rodgers, Bhavani Raman and Helmut Reimitz, eds., *Cultures in Motion* (Princeton: Princeton University Press, 2013), pp. 109-133.

As to thunder and lightning, Master Zhu [Xi] has discussed them with utmost precision; there is no need to say more. We have checked it by means of calculation: the sound of thunder cannot go further than 100 *li* 里. The calculation relies on the Yellow Bell as standard for the foot (*chi* 尺) and the inch (*cun* 寸) to determine the seconds pendulum (*yimiao zhi chuixian* 一秒之垂線); whether for length or for weight, there are fixed variations. This has been tested with cannon: as the smoke rises they resound; the further the sound, the more delayed it is. Having obtained standard proportions, and then calculating the distance of the thunder or cannon, one obtains [it]. Each time We have measured, beyond one hundred *li*, although there was lightning, the sound did not reach; thus for the first time the range of thunder is known. When doing river works, We stopped in Tianjin. Bannermen fired cannon at the Lugou 蘆溝 Bridge; at the time a northwest wind was blowing; the sound of cannon seemed quite close, and they were at about 200 *li*. Using this as a measure, that cannon resonate further than thunder is not to be doubted.⁹⁸

This is the closest any jotting gets to describing what one might call an experiment. Things are not only observed and measured; they are caused to occur in order to be measured. The jotting's conclusion, though, is about the different ranges of thunder and of the sound of cannon, rather than about the velocity of sound—a notion absent from all the sources. The standards used for the experiment are listed just after the indispensable preamble paying tribute to Zhu Xi. However, the latter's explanation of thunder and lightning as the "mutual rubbing and grinding of *qi* 氣"⁹⁹ is not mentioned. The emperor then goes on to specify the standards used for length and time units. These were defined in 1702, purportedly so as to match the "natural" pitch for the fundamental note of the musical scale, Yellow Bell (*huangzhong* 黃鐘); the measurement of a degree of meridian was also carried out at the time. Kangxi then explained the principle of the seconds pendulum and of its use to measure the propagation of the sound of cannon to a slightly confused Li Guangdi.¹⁰⁰ The second as a time unit was imported by the Jesuits at the time of the late Ming calendar reform (1629-1635) and adopted by the Qing. Imperial units were thus a synthesis between two different sources. As to the experiment mentioned in the jotting, only the emperor could have caused it to be carried out, since it required military equipment and staff as well as coordination on a scale such that it was mentioned in the *Veritable Records*. We thus know that the experiment mentioned in the jotting took

⁹⁸ Li Di, *Kangxi jixia gewu bian yizhu*, p. 84; Jami, "Western Learning and Imperial Scholarship," pp. 159-160.

⁹⁹ Yung Sik Kim, *The Natural Philosophy of Chu Hsi (1130-1200)* (Philadelphia: American Philosophical Society, 2000), p. 159.

¹⁰⁰ Jami, *The Emperor's New Mathematics*, p. 393.

place on 6 February 1716.¹⁰¹ It may well have been carried out in relation with the work of compilation of the imperial compendium on the mathematical sciences that was completed in 1723, a text that contains a problem in which a distance is measured using a gun and a pendulum.¹⁰²

Let us now step back from the technicalities involved in this jotting to consider the resources it presupposes. The Jesuits had provided the cannon and the seconds pendulum; both remained imperial monopolies. The description of the experiment, on the other hand, brings out quite forcefully the military character of Manchu presence on Chinese territory. Here as in the jottings on the Gobi Desert, the author comes across as the leader of a victorious army rather than as a travelling scholar. In both cases, Chinese philosophy as recast by Zhu Xi remained the framework for speculating on things that Kangxi encountered in the process of empire building. The jottings thus contributed to the assertion of the universal validity of Chinese philosophy, or in other words to the scholarly construction of empire.

Mapping imperial knowledge

The question that motivated the enquiry carried out above can be re-phrased as: “To what extent and in what ways did the unusual mobility of the Kangxi emperor shape his ‘investigation of things’ as exemplified in the *Kangxi Collection of the Investigation of Things in Leisure Time*?” At this juncture, it is both possible and fruitful to take the phrase “mapping knowledge” literally, that is to say, to represent the emperor’s investigation on maps. As shown on Map 5.1, the vast majority of the things investigated pertain to nature, either as observed or as modified by human action. To give a quantitative estimate, among the 105 “things” mentioned in the jottings that can be placed on a map of the Qing Empire and its neighbors, 57% are natural phenomena or features (such as wild animals or a volcano); 30% are natural features modified by human action (such as waterworks or agricultural products); only 13% are purely manmade (such as regional dialects or paper). Map 5.2 shows the same things following a more detailed classification; here the fact that 35% of these things are plants reflects the prime importance of agriculture to the imperial state (**Fig. 5.1**).

¹⁰¹ *Da Qing lichao shilu*, Kangxi 266, dated KX55.01.14 (6 Feb. 1716).

¹⁰² Jami, *The Emperor’s New Mathematics*, pp. 359-360.

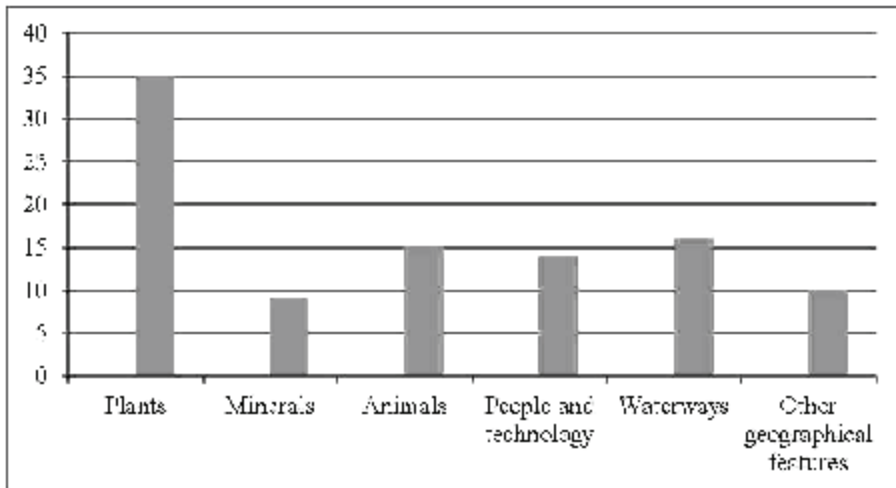


Figure 5.1 A Modern Typology of the Things Investigated by Kangxi.

The means by which the information reached the emperor are shown on Map 5.3: there are 40 “things” for which it has been possible to ascertain these means (either from the jottings or from other sources). In most cases (85%), evidence comes from one or several eyewitnesses—Kangxi himself in 55% of cases, an informant in 30% of cases. Only in 15% of cases is the information derived from books. This is consistent with the fact that, as argued above, the emperor was in a unique position to contribute new knowledge to Chinese scholarship. That almost a third of the jottings taken into account on Map 5.3 present data gathered from informants moreover reflects the fact that Kangxi was able to shape the itineraries of persons, objects and knowledge across—and sometimes beyond—imperial territory so as to centralize information, while his own itinerary was shaped by political and military imperatives.

As is evident on all three maps, some areas of the empire, such as the “Far South,” or Sichuan province, are hardly mentioned at all. Given that the jottings overwhelmingly concern things of which the emperor had some experience, direct or mediated, it is no surprise that the things investigated in the Inner Territories are almost exclusively located in the seven provinces that he toured. Altogether four main zones held his attention: the capital and its surroundings, the lower Yangzi region and the route between these two, the Yellow River, and finally all that lay beyond the Great Wall, where more than half of the things investigated are located. This last feature makes

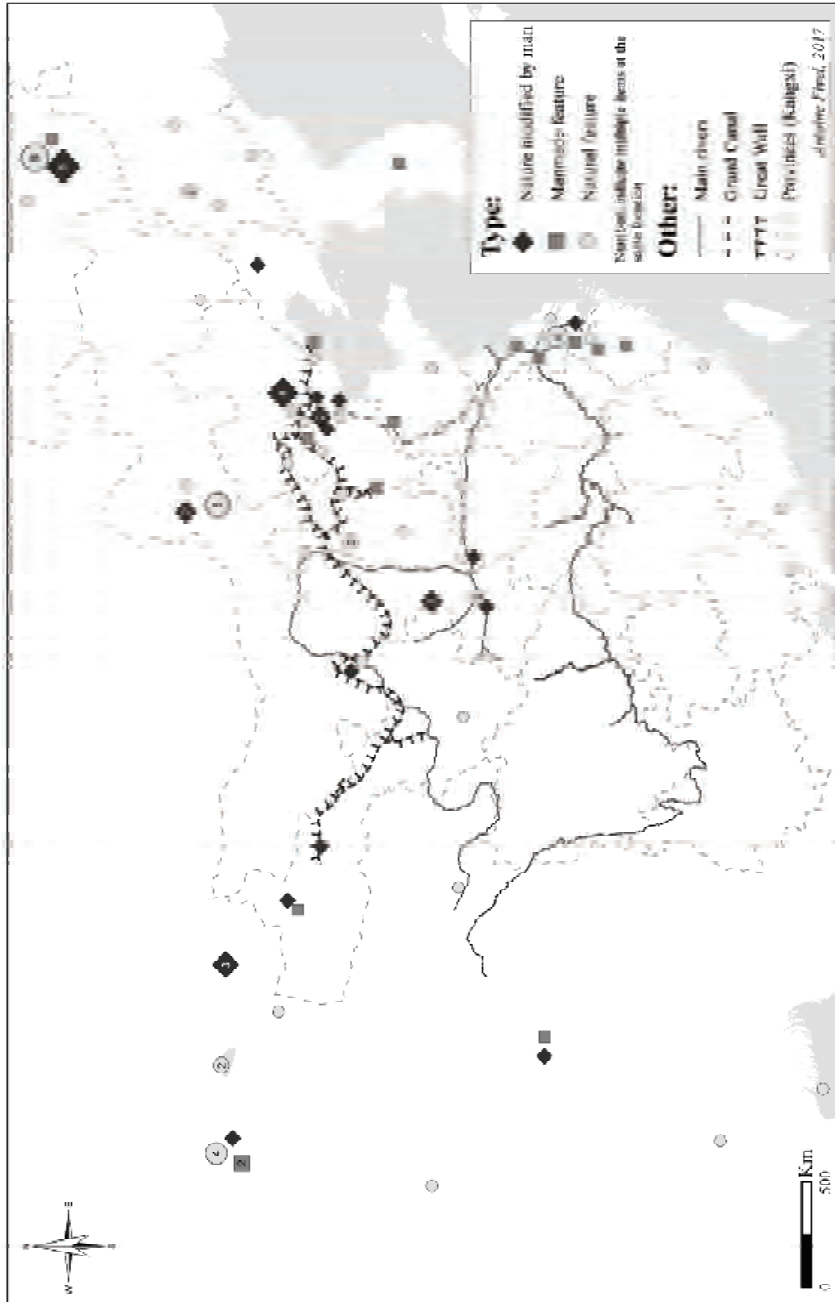
the Qing imperial project directly readable on the map of imperial scholarship that we have drawn.

Reconsidering the text of the jottings with these four areas in mind enables us to better understand the strong element of self-display in the *Kangxi Collection of the Investigation of Things in Leisure Time*. As mentioned above, its author did not travel for leisure or for the sake of knowledge. Piety towards his ancestors took him to Manchuria; he visited Jiangnan to inspect, among other things, waterworks; conquest motivated his expedition through the Gobi Desert. Even his Summer Residence was used to acclimatize plants for the benefit of agriculture. The emperor devoted his leisure time to investigating things, and thereby to “governing his state well.” In this respect he stood out as a role model for his officials; this was no doubt a carefully crafted image.

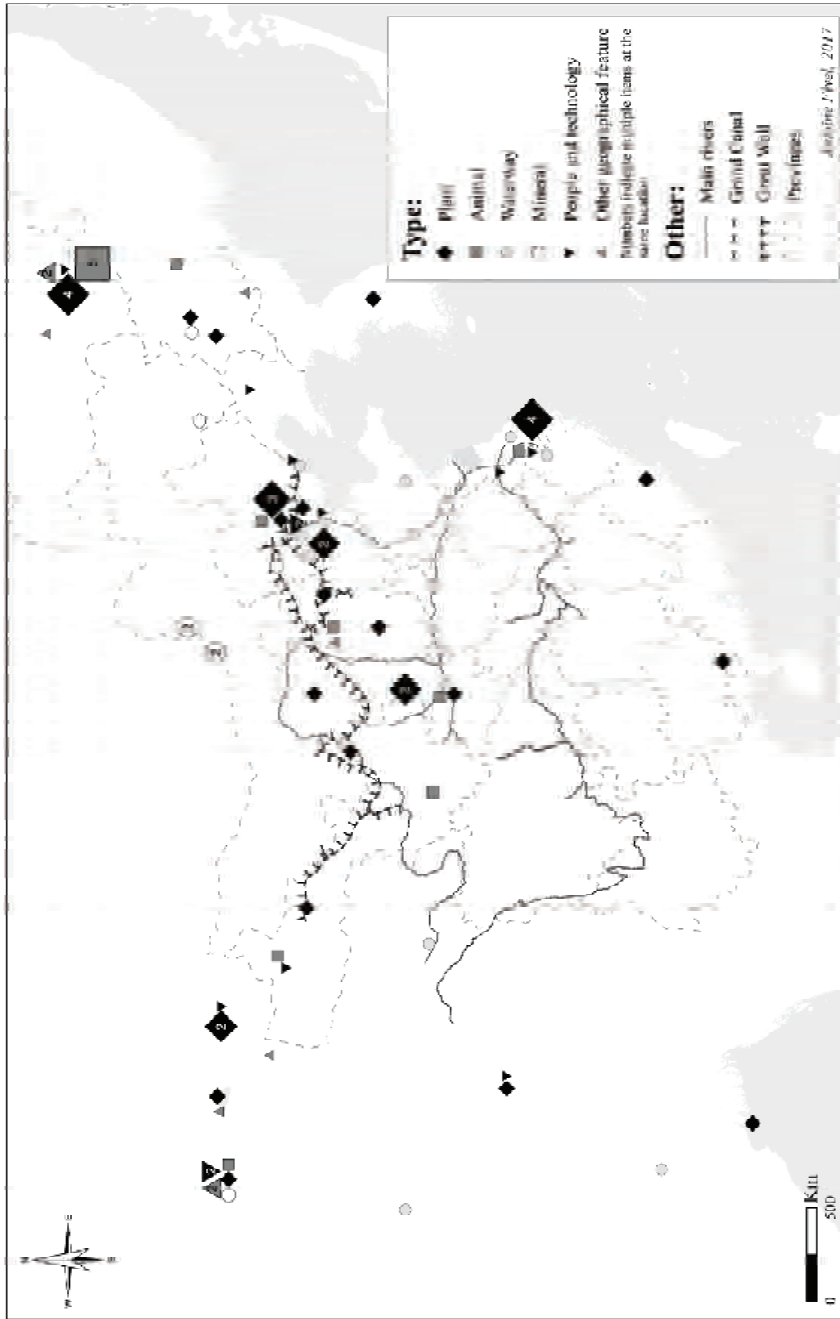
The geographical scope of imperial knowledge brings out the way in which it partakes in the construction of universal knowledge grounded in the Chinese scholarly tradition. The emperor assumes a standpoint that is not China-centered, while abiding by Chinese cultural imperatives. This enables him to broaden the scope of knowledge available to Chinese scholars by introducing both new objects and new tools. In other words, the *Kangxi Collection of the Investigation of Things in Leisure Time* provides an excellent example of the ways in which empire and universal knowledge relate to each other in various times and places. However, in several cases there are limits to the universality constructed by Kangxi. The knowledge presented in the jottings is not always fully shared with its readers; it is sometimes merely displayed to them, as in the case of the experiment on sound propagation. Did the emperor monopolize this universality, or could the Chinese literati partake in it? After all, he was not exactly one of them.

The emphasis put on observation in the jottings evokes the construction of scientific practice and discourse in early modern Europe, where, it is often said, observation increasingly challenged the authority of texts handed down by tradition. However, Kangxi’s criticisms are never directed against the Five Classics and Four Books; he only targets later commentators—to the exclusion of Cheng Yi and Zhu Xi—and popular beliefs. One might wonder if there is anything pioneering in the way he combines eyewitness accounts with textual knowledge. Rather, his insistence on the former could instead have been part of his style of rulership, in which the display of a high-level expertise in all the matters he dealt with served as a means to remind those in his service of the tight control he kept over the empire and its inhabitants. He did not merely investigate things under heaven—he mastered them.

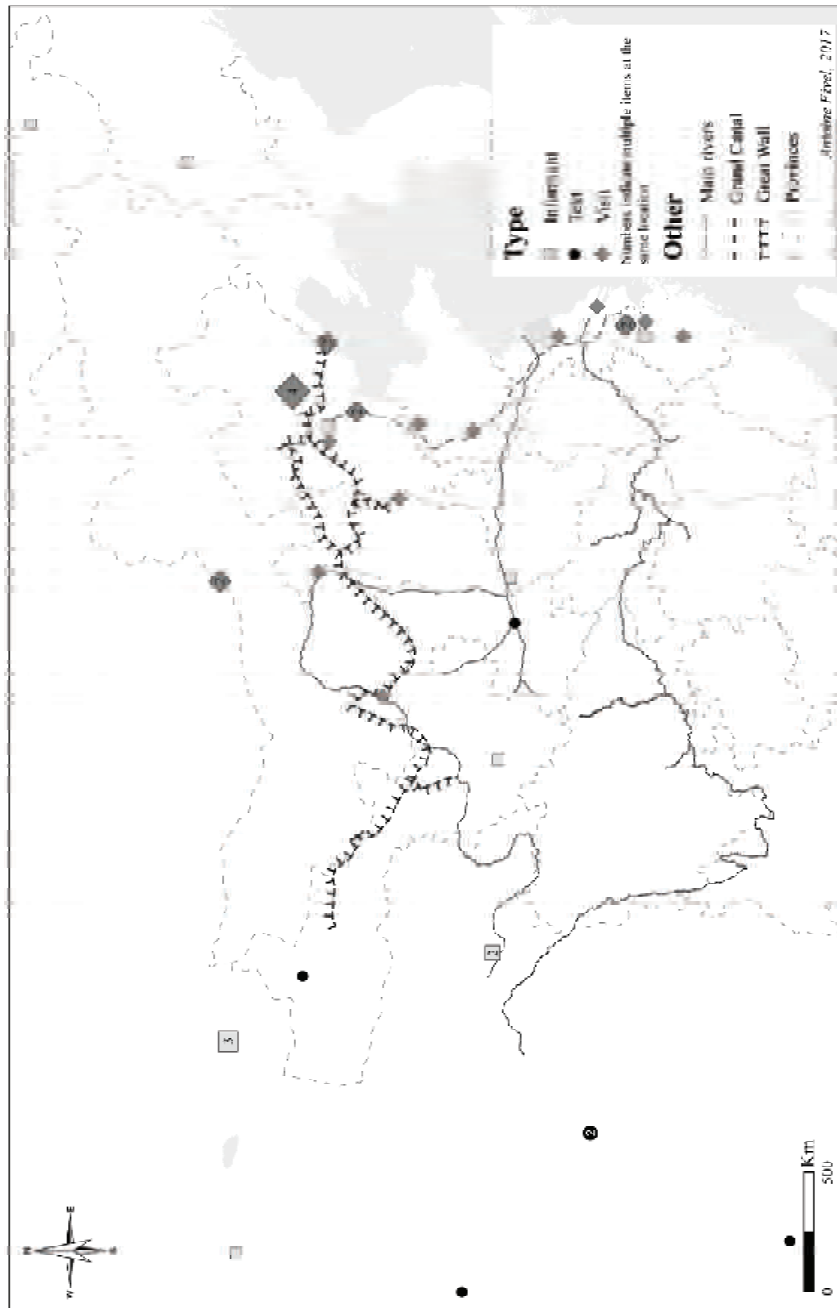
Last but not least, the jottings developed a rationale based on the Chinese scholarly tradition in order to legitimize Manchu expansion in Inner Asia. Reconstructing knowledge in a way that integrated imperial mobility within and beyond the Great Wall contributed to more than just drawing a map of the Qing Empire; it also sketched a new image of China, in which Han Chinese cohabited with a number of other groups—the China we know today.



Map 5.1 Things Investigated by Kangxi, Natural and Manmade.



Map 5.2 A Modern Typology of the Things Investigated by Kangxi.



Map 5.3 How Kangxi Gathered Information.