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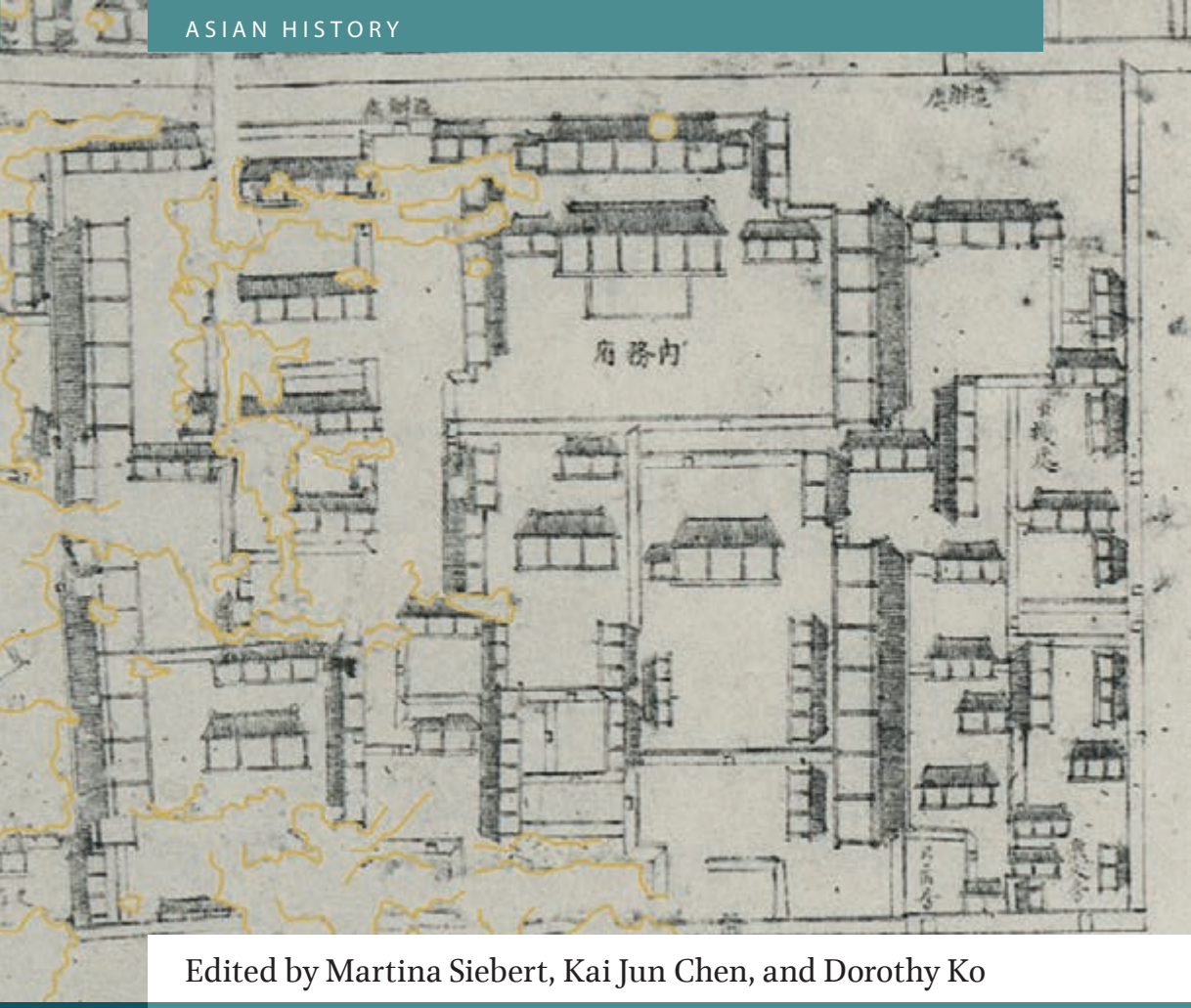

Edited by Martina Siebert, Kai Jun Chen, and Dorothy Ko

Making the Palace Machine Work

Mobilizing People, Objects, and Nature in the Qing Empire

Amsterdam University Press

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Cover illustration: Artful adaptation of a section of the 1750 *Complete Map of Beijing of the Qianlong Era* (Qianlong Beijing quantu 乾隆北京全圖) showing the Imperial Household Department by Martina Siebert based on the digital copy from the Digital Silk Road project (http://dsr.nii.ac.jp/toyobunko/II-11-D-802, vol. 8, leaf 7)

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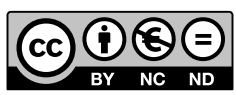

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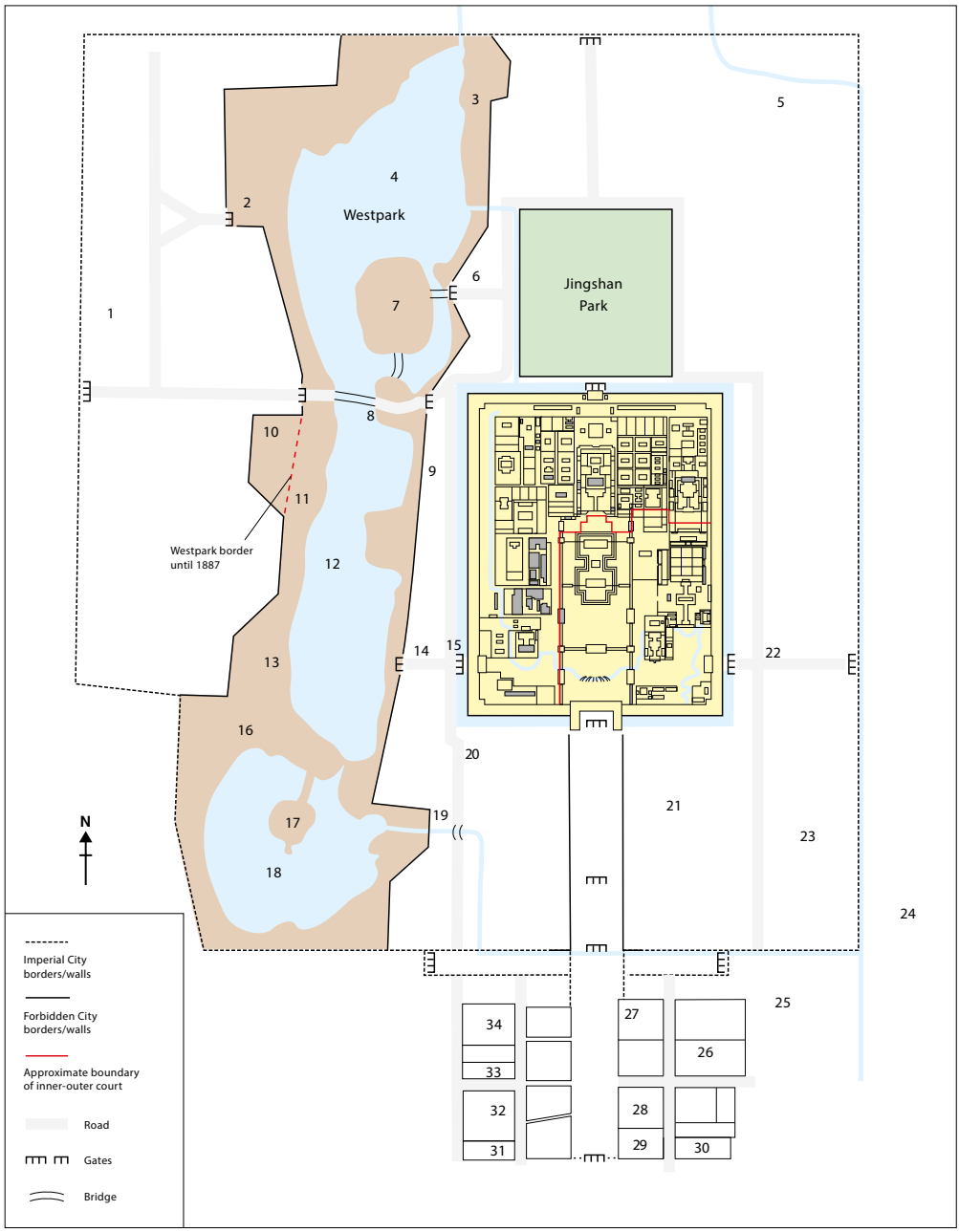
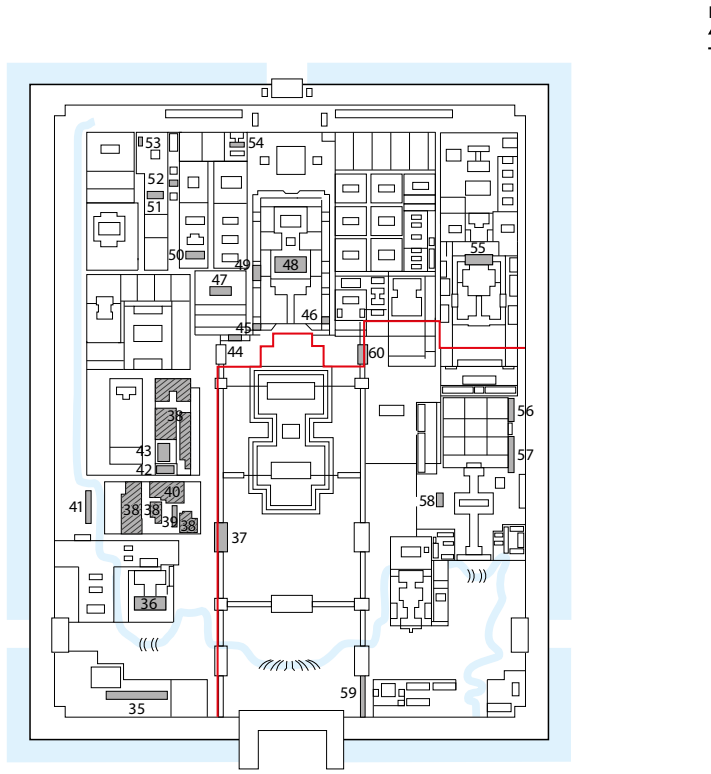


Map by Mary Yang

Map 1b Forbidden City



1 Catholic church at Xishiku
2 Sandalwood Temple
3 Temple of Sericulture
4 North Lake
5 Imperial Bureau of Weaving and Dying
6 Office of Inspection and Censors for the Affairs at the Imperial Household Department
7 White Stupa
8 Gold-Turtle Jade-Rainbow Bridge
9 Office of Control and Punishment
10 Catholic church at Canchikou
11 Pavilion of Purple Light
12 Middle Lake
13 Yiluan Palace
14 Bureau of Imperial Gardens and Parks
15 Inner Department of Works
16 Garden of Abundant Beneficence
17 Yingtai
18 South Lake
19 Office of Insignia
20 Court of Treasury of the Imperial Workshops
21 Imperial Ancestral Temple
22 Imperial Armory
23 Textile Vault (of Board of Revenue)
24 Ministry for Ruling Outer Provinces
25 Imperial Chariot Garage
26 Board of Work
27 Court of Imperial Clan
28 Board of Revenue
29 Board of Rites
30 Court of Imperial Academy of Medicine
31 Board of Punishment
32 Court of Censors
33 Court of Imperial Sacrifice
34 Imperial Procession Guard
35 Ceramic Vaults
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37 Hongyi Pavilon
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45 Southern Study
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47 Yangxin Palace
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49 Maoqin Hall
50 Qixiang Palace
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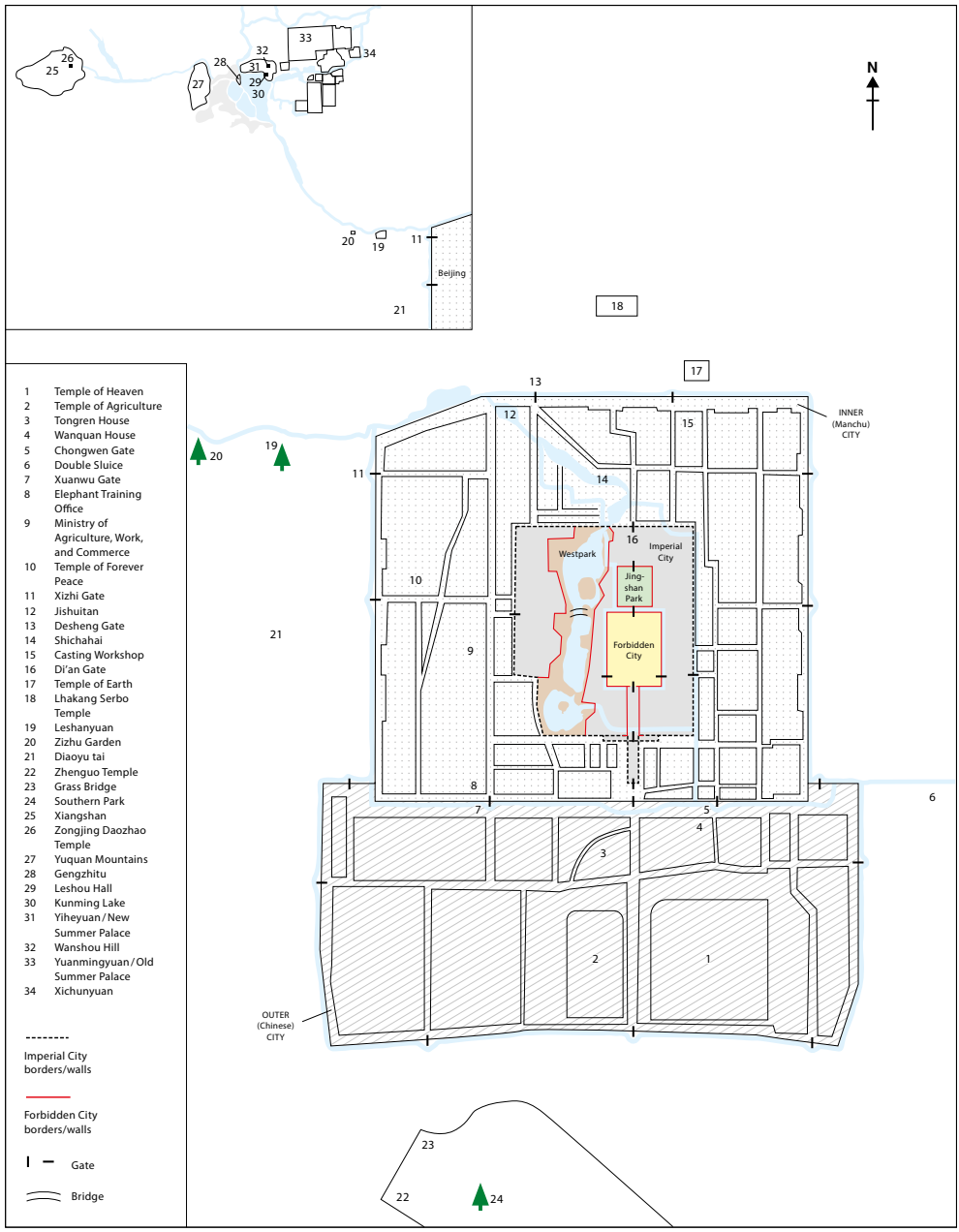
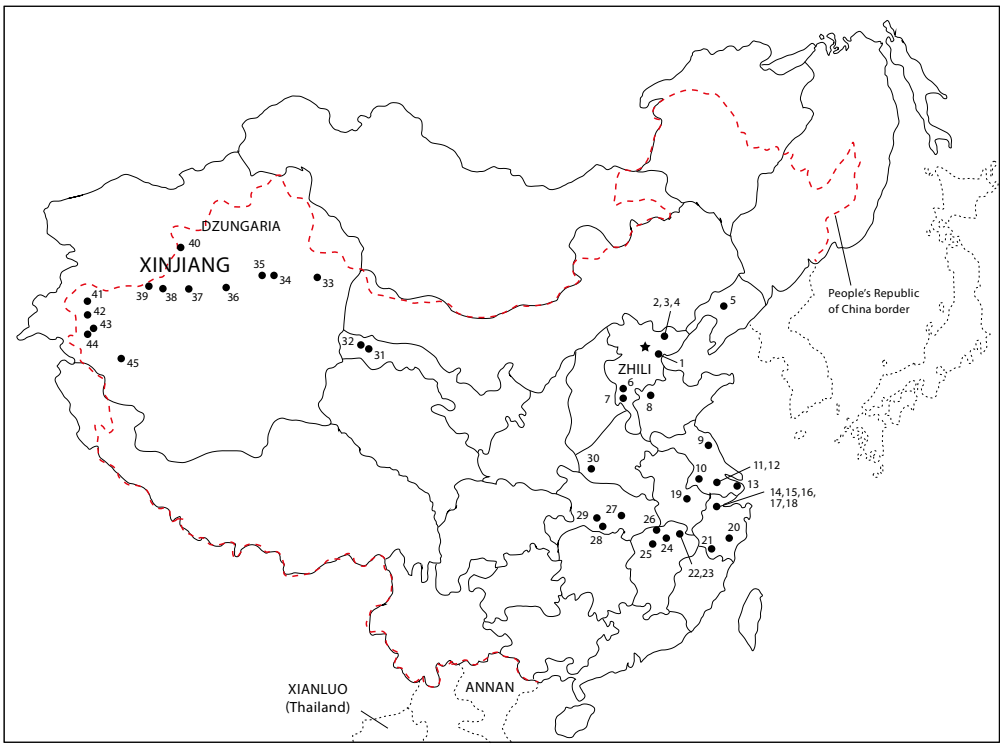
52 Jianfu Palace
53 Bilin Lodge
54 Hall of Zhengyi mingdao
55 Ningshou Palace
56 Medicinal Warehouse
57 Imperial Academy of Medicine duty office
58 Imperial Stud
59 Archives of the Grand Secretariat
60 Jingyun Gate

*The map above shows the position of the Grand Storage Office according to the Qianlong map. An internal map of the Beijing Palace Museum locates the office within the Courtyard of the Imperial Household Department (no. 40).

Map 2 Beijing and outskirts



Map 3 Qing China around 1840



Map by Mary Yang

1 Tanggu (near Tianjin)
2 Putuo Zongcheng Temple (Chengde)
3 Rehe (present Chengde)
4 Xumi Foshou Temple (Chengde)
5 Shenyang / Mukden
6 Neiqui county (Zhili)
7 Cizhou (Zhili)
8 Dong'e county (Shandong)
9 Huai'an Customs House
10 Jiangning (present Nanjing)
11 Imperial Textile Manufactory (Suzhou)
12 Suzhou (Jiangsu)
13 Yangshupu Garden (in Shanghai)
14 Tiger Grotto kilns
15 Turtle Hill kilns
16 Jiaotanxia kilns
17 Lin'an (present Hangzhou)
18 Renhe County (Zhejiang)
19 Wuhu (Anhui)
20 Chuzhou (Zhejiang)
21 Longquan kilns
22 Porcelain Bureau in Fuliang County
23 Imperial Ceramic Manufactory (Jingdezhen)
24 Raozhou prefecture (Jiangxi)
25 Nanchang Government Repository
26 Jiujiang Customs House
27 Wuhan (Hubei)
28 Jiangling (Hubei)
29 Jingzhou (Hubei)
30 Junzhou (present Henan)
31 Suzhou (Gansu)
32 Jiayu gate (Gansu)
33 Hami (Xinjiang)
34 Pizhan (Xinjiang)
35 Turfan (Xinjiang)
36 Karashar (Xinjiang)
37 Kucha (Xinjiang)
38 Aksu (Xinjiang)
39 Ush (Xinjiang)
40 Yili (Xinjiang)
41 Kashgar (Xinjiang)
42 Ying-a-za-er (Xinjiang)
43 Yarkand (Xinjiang)
44 Mi'erdai mountains (Xinjiang)
45 Hotan (Khotan)
★ Beijing

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Acknowledgments

The editors would like to thank the contributors for their patience and perseverance through several rounds of editing during the long process of preparing this volume. Most contributors have been with us since 2015 and took part in one or both workshops organized by Kai Jun Chen and Martina Siebert during their time as post-doc and senior researcher respectively at the Max Planck Institute for the History of Science in Berlin. Although Professor Xiaodong Xu's paper is not included in this volume, her contributions at the workshops were invaluable, as were those of the other workshop participants. We also want to thank the three anonymous reviewers who invested time and energy identifying quirks and flaws, helping us to turn it into a coherent and readable volume. The support of the Weatherhead Institute of East Asian Studies at Columbia University makes possible the availability of the volume in open access; the Dean of Faculty and the Department of East Asian Studies of Brown University provided funds towards translation and preparation of the manuscript. Saskia Gieling of AUP guided us professionally through the various stages of the publication process.

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Conventions for the Notation of Time, Weights, and Measures[1]

Chronology of Dynasties and Periods
Xia dynasty, ca. 2070-1600 BCE
Shang dynasty, 1600-ca. 1945 BCE
Zhou dynasty, ca. 1045-256 BCE
    Western Zhou, ca. 1045-771 BCE
    Eastern Zhou, 771-256 BCE
Spring and Autumn period, 770-476 BCE
Warring States period, 476-221 BCE
Qin dynasty, 221-206 BCE
Han dynasty, 206 BCE-220 CE
    Western Han, 206 BCE-8 CE
    Eastern Han, 25-220
Three Kingdoms period, 220-280
Six Dynasties period, 265-589
    Western Jin, 265-316
    Eastern Jin, 317-420
    Southern and Northern dynasties, 420-589
Sui dynasty, 581-618
Tang dynasty, 618-907
Five Dynasties and Ten Kingdoms period, 907-979
Song dynasty, 960-1279
    Northern Song, 960-1127
    Southern Song, 1127-1279
Yuan (Mongol) dynasty, 1271-1368
Ming dynasty, 1368-1644

1 The information here is intended as a quick guide for the convenience of the reader. The beginning and end dates of dynasties are controversial, tied as they are to claims of legitimacy. The values of units of measure also varied in time and space. The conversions provided here are approximations and may differ from those used by the authors of individual chapters. The dynasty dates and modern conversions of measurements are in part adopted from Christine Moll-Murata, *State and Crafts in the Qing Dynasty, 1644-1911* (Amsterdam University Press, 2018), 11-13 and Endymion Wilkinson, *Chinese History: A New Manual* (Cambridge, Ma.: Harvard University Asia Center, 2013), 551-562.

Qing dynasty (1644-1911) reign names[2]
- Shunzhi, 1644-1661
- Kangxi, 1662-1722
- Yongzheng, 1723-1735
- Qianlong, 1736-1795
- Jiaqing, 1796-1820
- Daoguang, 1821-1850
- Xianfeng, 1851-1861
- Tongzhi, 1862-1874
- Guangxu, 1875-1908
- Xuantong, 1909-1911

Manchukuo (*Manzhouguo*), 1932-1945
Republic of China, 1912-1949
People's Republic of China, 1949-
Republic of China (Taiwan), 1949-

Lengths
chi 尺: foot: a unit of length; about 32 cm (12.6 inches) in the Ming-Qing period = 10 *cun* 寸 (inches)
zhang 丈: a unit of length = 10 *chi*

Land Measures
mu 畝: a land measure; official value in the Ming = 608 sq. m., or 6.5 *mu* per acre. Official value in the Qing = 614 sq. m., or 6.5 *mu* per acre

Weights and Volume
The present book uses the common English translations of *liang* 兩 (tael) and *jin* 斤 (catty) in lieu of the Chinese. All other units of measures appear in Chinese:
jin 斤 (catty in the volume) = 16 *liang* 兩 = 160 *qian* 錢; about 596.8 g (21.2 oz) in the Ming-Qing period
liang 兩 (tael in the volume) = 10 *qian* 錢; approximately 37.3 kg
qian 錢 (sometimes rendered as 'mace'); approximately 3.73 g
Shi 石 can be a measure of weight or volume.

2 Authors in this volume refer to a specific year of a reign period in three ways: (1) spelling out fully; for example, 17th year of the Qianlong reign (1752), (2) abbreviating to Qianlong 17 (1752) or, (3) in the footnotes, QL17 (1752). Following Chinese conventions, the full date of an archival source is given in this order: reign year/lunar month/day. For example, Qianlong (or QL) 26/7/4; an 'r' before the month indicates an intercalary month (*runyue* 閏月). Western equivalents are given in the order of day, month, year. For example, 3 August (or Aug.) 1761.

Shi as a measure of weight:
1 *shi* = 120 catties; approximately 71.6 kg (159 lbs)
Shi as a measure of volume:
1 *shi* of rice = 138.75 catties; approximately 82.8 kg

Currencies
liang 兩 (tael) of unminted silver; 100% purity (unless otherwise stated) = 10 *qian* 錢 = 100 *fen* 分 = 1,000 *li* 釐.
Kuping liang 庫平兩 (Treasury ounce): imperial standard set by the Board of Revenue, used for official accounts = 37.31 g. Many other regional *liang* weights existed.
wen 文 (cash), brass coin of copper-lead-zinc-tin alloy, with a nominal standard exchange rate of 1,000 cash to one tael of silver. Many local variances of exchange rates existed.
diao 吊 (string) = 1,000 *wen* (cash). The cash coins were bound with strings in ten bundles of a hundred each, which was sometimes accounted as strings (*diao*) of 1,000.

Note on Translation

Following East Asian conventions, the names of Chinese and Manchu people are given by their family name first (Tang Ying). The only exceptions are the names of authors of the present volume (Yijun Wang).

Well-known Manchu and non-Han individuals are referred to by their common English translated names (Gao-pu; Fuk'anggan), whereas others are transliterations in *pinyin* of their names in Chinese, as is given in the archival documents, without short dashes in between syllables (Yiling'a).

Chinese proper names, office titles, and technical terms in each chapter are given in *pinyin* romanization followed by Chinese characters at first appearance. All frequently used terms and titles are also translated into English (*Neiwufu* 內務府, Imperial Household Department). Henceforth, only the English is used. The English translations of office titles and sources have been harmonized throughout the volume and are those of the editors.

The titles of non-English books and articles in the footnotes of each chapter are given without English translations. The only exceptions are the chapter or entry titles from anthologies or collectanea that are not individually listed in the bibliography. All other titles of non-English books and articles are translated into English in the bibliography and have been harmonized as far as possible.

Note on the Frontmatter Maps and Cover Image

The four maps at the front of the volume present the locations of the main palaces, offices of the Imperial Household Department and Qing administration, as well as geographical features mentioned in the chapters. All four maps are abstractions aiming to give readers an idea of the whereabouts of locations and are by nature selective. The two most pertinent sources for Maps 1a-b and Map 2, of the Imperial and Forbidden City and Qing Beijing, are the geo-referenced *Complete Map of Beijing of the Qianlong Era* (Qianlong Beijing quantu 乾隆北京全圖) of 1750 made available by the Digital Silk Road project of the National Institute of Informatics in Tokyo[1] and an annotated map of the Forbidden City compiled for internal use by the Department of Architectural Heritage (*Gujian bu* 古建部) of the Palace Museum in Beijing in 2002. In addition, two Prussian maps of Beijing produced in 1907 and 1914[2] as well as a Qing manuscript map of Beijing[3] and a number of maps in scholarly publications[4] have been consulted. The research for Map 3, of Qing China around 1840, relied largely on the Harvard China Historical GIS project.[5]

Readers should be aware that the locations of Qing offices could move, and that the warehouses mentioned in the archival sources are difficult to

1 http://dsr.nii.ac.jp/toyobunko/II-11-D-802/ presenting the Toyo Bunko facsimile of the original map made in the 1940ies. The cover image is an artful adaptation by Martina Siebert of a detail of leaf 7 in volume 8 of this map.

2 *Beijing quantu* 北京全圖 = *Peking*, compiled by Deutsch Ostasiatisches Expeditions Korps. Feldtopograph, Prussia (Germany), 1914, Library of Congress: http://hdl.loc.gov/loc.gmd/g7824b.ct001942 (accessed October 2020) and *Peking und Umgebung*, Berlin: Reichsamt für Landesaufnahme, 1907, Library of Congress: http://hdl.loc.gov/loc.gmd/g7824b.ct001944 (accessed October 2020)

3 *Jingshi jiucheng quantu* 京师九城全圖 (Complete map of the nine inner cities of Beijing), Library of Congress: http://hdl.loc.gov/loc.gmd/g7824b.ct001960 (accessed October 2020).

4 'Diagram of the Imperial Palace', in Preston Torbert, *The Ch'ing Imperial Household Department: A Study of Its Organisation and Principal Functions, 1662-1796* (Cambridge, MA: Harvard University Press, 1977), 31; 'The Peking Palace inner and outer courts in the seventeenth and eighteenth centuries', in Beatrice S. Bartlett, *Monarchs and Ministers: The Grand Council in Mid-Ch'ing China, 1723-1820* (Berkeley: University of California Press, 1991), 14; 'Etablissements Catholiques de Pékin, 1950', in Alan Richard Sweeten, *China's Old Churches The History, Architecture, and Legacy of Catholic Sacred Structures in Beijing, Tianjin, and Hebei Province* (Leiden: Brill, 2019), 70.

5 The China Historical Geographical Information System, http://chgis.fas.harvard.edu/ (accessed October 2020).

locate as they sometimes existed in multiples on different administrative levels; their physical locations could also change over time. In addition, the Qianlong 1750 map and the 2002 map are both specific to their times, i.e. of Beijing under early- to mid-Qianlong rule and of the Forbidden City in a more recent academic reconstruction of its late-Qing layout.

The cover image of this volume, a detail of the Qianlong map showing the Imperial Household Department and the Imperial Workshops, draws attention to this mutability of places and their function by highlighting the damages and cracks that the map has suffered in the 250 years since its production. That some of the pertinent information on the map is erased by time serves as a useful reminder that our knowledge of the Qing palace machine is not – and may never be – complete. But it also suggests that with the materials we do have at hand, it is still possible to piece together the lively picture of the Qing palace presented in this volume.

We thank graphic designer Mary Yang of Open Rehearsal for contributing her expertise and making the frontmatter maps.

Introduction

Martina Siebert, Kai Jun Chen, and Dorothy Ko

The Qing, the last dynasty of the Chinese imperium, ruled for over 260 years (1644-1911). At the end of the 19th century it occupied a territory of roughly 13 million square kilometres and claimed sovereignty over more than 400 million people. One of the questions this book examines is how – on a sheer logistical level – was a complex empire of this size governed before the age of telegrams, telephones, and internet? Instead of looking to the Qing emperor, often perceived as an autocratic Son of Heaven who exercised absolute power over his subjects, our inquiry begins with the palace compound itself, in the heart of the capital city, Beijing.

Behind the deliberate staging of splendour and order, imperial palaces were complex and mobile structures with mundane functions that required diverse strands of management: from long-term fiscal planning to chores like sweeping the floors, from the choreography of state rituals to the provisioning of daily meals to princesses and servants. The minutiae of these tasks had to be coordinated on multiple levels so that the palace could function effectively as a unit. The administrative organization of the imperial palace of the Qing dynasty provides a telling example of how representational, religious, diplomatic, and day-to-day activities were planned and executed. An abundance of archival and material sources, coupled with eyewitness reports, has facilitated our investigation into the inner workings of the Qing palace. The chapters of this volume take readers inside the public halls, private chambers, and treasure vaults of the Qing palace, to explore the secrets of its operation.

The 'palace' means many things, both tangible and intangible, to the editors and authors of this volume: the buildings, gardens, and bodies of water in and near the Forbidden City; the rules and regulations that defined the duties of personnel and workflows; the paper trails tracking the circulation of materials and monies; and – last but not least – the people, plants, and animals whose lives were entangled with the life of the court, such as high officials and hereditary bannermen, lowly workers and maids, elephants,

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medicinal herbs, and lotus plants. Thus construed, the Qing palace was not just an architectural compound, nor can it be reduced to its bureaucratic or social dimensions, as is often assumed. This volume proposes that the Qing palace was a shifting material and social assemblage that was made and unmade by daily routines and ad hoc adjustments. Building on Latour's concept of 'networks of actants' and Bennett's concept of 'assemblage', this book focuses on an early modern, non-Western case, to refine our understanding of the power hierarchy and dynamic operation in this network or assemblage of human and non-human agents.[1]

The Palace as Machine

Our interest in mapping the dynamic operations and ad hoc everyday decisions in the palace network or assemblage is, by definition, a post-structuralist one. This interest in moving parts, rather than a static structure, is expressed in our choice of the metaphor of 'machine' in describing the Qing palace in the book's title. Structure *does* matter in a machine. After all, routine decisions had to be made within the parameters of established imperial rites and decrees as well as the financial resources available, which were all steered by the empire's ideological and political agenda. But structures are revealed, if not forged, only through routine operations. Over time, some expedient measures would become the new established practice. Thus, the dynasty administration was like a machine wrought of component parts that move, like rotating gears. In using the model of a 'machine' to explore the workings of the Qing palace, and by extension of the Qing empire, this book highlights the dynamic and material nature of politics, the power of logistics, and the contributions from lowly workers and non-human actors that made the Qing empire work.

Historians of engineering generally talk about two kinds of machines: the simple Archimedes machines, and the complex industrial and post-industrial machines. The simple Archimedean machines provide a 'mechanical advantage' by using a lever, wheel and axle, pulley, inclined plane, wedge, or screw to multiply force.[2] In contrast, complex machines use what the 19th-century

1 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford; New York: Oxford University Press, 2005); Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010). For a global comparison of imperial palaces, see Jeroen Duinda, et al., eds., *Royal Courts in Dynastic States and Empires: A Global Perspective* (Leiden; Boston: Brill, 2011).

2 Isaac Asimov, *Understanding Physics* (New York: Barnes and Noble, 1966), 88.

engineer Franz Reuleaux (1829-1905) conceived of as 'kinetic chains'. He asserted that a 'machine is a combination of *resistant bodies* so arranged that by their means the mechanical forces of nature can be compelled to do work accompanied by certain *determinate motions*' (author's emphasis).[3] These 'resistant bodies' and 'determinate motions' are contradictory forces that work in tension and in tandem to accomplish tasks. Other thinkers use 'the machine' as a metaphor to highlight the open-ended quality of all operations.[4] All of these meanings are applicable to the Qing palace machine, as this anthology will reveal.

Using the model of a palace-as-machine affords several new insights. First, it calls attention to the enormous physical presence and scale of the Qing palace compound, in the same way that turbine machines can occupy monumental buildings. Anthropologist Michael Meeker highlights the architecture of the Ottoman Palace as an 'instrument of edification as well as of government … designed to confound and enthral, if not intimidate and terrify'. He sees a building itself as an instrument of power that 'mediates between the eye of its resident [the ruler] and the imperium beyond its walls'. The layout of windows, balconies and towers constitutes a 'device of omnipresent inspection and regulation' and provides an object lesson in 'internalizing a discipline' for imperial subjects.[5] The long, meandering corridors of the Forbidden City in Beijing and wide empty grounds in front of the main buildings might have the same intimidating effect on officials and visitors, as viewers of Bertolucci's film 'The Last Emperor' may recall. In that film, the palace buildings as brick-and-mortar extensions of Puyi's body, the source of his political persuasion, also marked the depth of his psychic isolation and physical confinement. This volume shows how the Qing palace machine was both material and fluid, at once constraining and enabling for its operators – including the emperor himself.

A second insight afforded by the metaphor of the Qing palace as a machine concerns the nature of its infrastructure and power. A machine is comprised of functional parts designed to be combined into more complex

3 Franz Reuleaux, *Kinematics of Machinery: Outline of A Theory of Machines*, translated and edited by Alexander B.W. Kennedy (New York: Dover Publications, 1963), 35.

4 One notable thinker in this regard is Gilbert Simondon. See the collection of reflections on Simondon's philosophy in *Gilbert Simondon: Being and Technology*, eds. Arne De Boever, Alex Murray, Jon Roffe and Ashley Woodward (Edinburgh: Edinburgh University Press, 2012); see especially the explanations on the pages 208 and 216-217 in the 'Glossary of key terms' on 'Automaton / Open machine' and 'Machine'.

5 Michael E. Meeker, *A Nation of Empire: The Ottoman Legacy of Turkish Modernity* (Berkeley: University of California Press, 2001). Quotations cited are from pp. 118, 120, 131.

wholes which, once combined, enable the performance of high-level tasks. Conceiving the Qing palace as such a complex constellation of interrelated parts allows scholars to alternate their analytic lens between the micro- and macro-levels with greater ease than that afforded by traditional approaches to institutional history. This is especially the case for one key institution examined in this volume, the Imperial Household Department, which was both the 'brain' that planned the myriad daily tasks and the 'hands' that executed them. By focusing on this key institution, the volume seeks to illuminate the design principles of the palace as a whole. Exploring the logic, logistics, and interaction of these parts – among themselves and as part of the whole – provides a novel glimpse inside the operational structure and sequence of the Qing palace machine.

The findings are striking when placed in a comparative frame between early modern China and Europe. Readers will find that the Qing palace machine, and especially the Imperial Household Department, was in part 'Western' and 'modern' by design. The Department not only exhibited the 'mechanical advantage' principle of Archimedean simple machines, but also rested on the premise of 'mechanical objectivity', by planning and treating all issues in a regulated and predictable way. This created the same kind of 'freedom from will' that is often ascribed to computers today.[6] For instance, the meticulousness with which the Imperial Household Department drew up its regulations and workflows projected a planner's faith that, once the perfect machine had been designed and built, all matters would be assessed accordingly and no ad hoc tinkering would be necessary. Furthermore, the planners believed that the existence of this perfect machine, being immune from human errors, would deter illicit activities. But, as with all 'real machines, [when] in operation … [they] are open rather than closed systems'.[7]

The distance between design principles and the realities of practice became even more glaring as time went on. In the 18th century, a series of

6 See Stephen Toulmin on the changing use – metaphorical and beyond – of a 'machine' in physics which, in the mid-19th century, gave way to the concept of 'fields', and Lorraine Daston and Peter Galison on the Renaissance ideal of a 'mechanical objectivity' that offered a 'freedom from will' in order to overcome any 'wilful intervention' by which a scientist might influence scientific results or theories (Stephen Toulmin, 'From Clocks to Chaos: Humanising the Mechanistic World-View', in *The Machine as Metaphor and Tool*, ed. Hermann Haken et al. (Berlin: Springer, 1993), 139-153; Lorraine Daston and Peter Galison, *Objectivity* (Brooklyn: Zone Books, 2008), 115-190, 123.

7 This quote by anthropologist Tim Ingold takes its inspiration from philosopher Gilbert Simondon, *On the Mode of Existence of Technical Objects* (Minneapolis, MN: Univocal Publishing, 2017), 61-62. See Ingold, *Being Alive: Essays on Movement, Knowledge, and Description* (London; New York: Routledge, 2011), 18.

military campaigns in Central Asia created logistical challenges of enormous proportions; when the empire was won with the annexation of Xinjiang 新疆 (New Territories) in the 1760s, the complexity and magnitude of the tasks faced by the Qing court were compounded. The palace machine's transformation was also necessitated by the weakening of the imperial household's financial strength and a changing global order from the late-18th century on. The officials of the Imperial Household Department and the emperor both understood that it was impossible to enhance the capacities of the palace machine by merely 'mechanical' means, that is to say, by applying impetus from outside the machine, or transferring movements from one part of the machine to another. They strived to perfect the machine at the overall design level by improving workflows and incorporating new features into the regulations. To allow for the adjustment of project expenditures with wide fluctuations in market prices, for example, they introduced a mechanism of feedback control; in requiring sub-departments to raise the funds needed for projects instead of awaiting central dispensation, they adopted what was, in fact, a modern management principle of self-organization. Contrary to the narrative of decline in the standard history books, the Qing palace machine proved to be resilient and adoptable to new realities in the 18th and 19th centuries, be it expansion or precarity.

The Machinery of the Imperial Household Department

The Imperial Household Department (Chinese: *Neiwufu* 內務府; Manchu: *Dorgi baita be uheri kadalara yamun*; literally, the 'Bureau in Charge of All Internal Affairs') was a unique Manchu institution that was the 'ghost in the machine'. Designed in part as a mirror image of the bureaucracy of the public state, this emperors' private institution was staffed by hereditary members from the upper three banners of the Manchu banner system.[8] The Department had been founded in 1638, when the Manchu court was still in Shengjing 盛京 (present-day Shenyang 瀋陽), Manchuria.[9] After

8 For an introduction to the Eight Banners system as a socio-military organization, see Mark Elliott, *The Manchu Way*: *The Eight Banners and Ethnic Identity in Late Imperial China* (Stanford: Stanford University Press, 2001). Ideas and projects developed within the Imperial Household Department probably influenced how the state dealt with similar issues. The interconnections between the 'public state' and the emperor's 'private' bureaucracy are discussed in a number of chapters, but are not the focus of this anthology.

9 Evelyn S. Rawski, *The Last Emperors: A Social History of Qing Institutions* (Berkeley: University of California Press, 2001), 179, 355-56, note 73.

the conquest of Beijing it became an instrument in a power struggle waged by the early Qing monarchs against the Thirteen Yamen (*Shisan yamen* 十三衙門). Dominated by eunuchs, the latter had served the Ming royal house for similar purposes of filling the imperial coffers and running their imperial residences.[10] In 1667 the Kangxi emperor (r. 1662-1722) succeeded in formally abolishing the eunuch power structure and replaced it with the Ten Offices – or Seven Offices and Three Courts (*Qisi Sanyuan* 七司三院) – which comprised the basic hierarchical structure of the Imperial Household Department. The Department reported directly to the emperor.[11]

The Department's jurisdiction entailed managing the vast system of Imperial Workshops (*Zaoban huojichu* 造辦活計處 or just *Zaobanchu*) that was established in 1680 to provision the entire material needs of the court, ranging from ceremonial banners, cannons, to everyday articles and objects of art.[12] The chapters in this volume examine the operation and products of the Imperial Workshops, as well as the knowledge cultures thus engendered. Other offices analysed in this anthology, including the Grand Storage Office (*Guangchusi* 廣儲司) which managed the finances and vaults, the Imperial Stud (*Shangsiyuan* 上駟院), the Garden Bureau (*Fengchenyuan* 奉宸苑), and the Imperial Dispensary (*Yuyaofang* 御藥房), were crucial to the functioning of the palace machine and have not been scrutinized in previous research. A number of chapters also reach beyond the Imperial Household Department to show how the emperors' household bureaucracy and finances were intertwined with those of the public.[13] Moreover, the Board of Work (*Gongbu* 工部) and the Ministry for Ruling

10 For eunuchs' extensive function in the Ming dynasty, see Shih-shan Henry Tsai, *The Eunuchs in the Ming Dynasty* (Albany, NY: State University of New York Press, 1996).

11 For an initial exploration of the bureaucratic structure of the Imperial Household Department up to the Qianlong reign, see Preston M. Torbert, *The Ch'ing Imperial Household Department: A Study of Its Organisation and Principal Functions, 1662-1796* (Cambridge, MA: Harvard University Press, 1977); and Qi Meiqin 祁美琴, *Qingdai neiwufu* 清代內務府 (The Qing Imperial Household Department) (Beijing: Zhongguo renmin daxue chubanshe, 1998).

12 In the past thirty years, art historians and cultural historians have published extensively on many specific art workshops in the Imperial Workshops (*Zaobanchu*), but the structural operation of the institution can be found in Wu Zhaoqing 吳兆清, 'Qingdai zaobanchu de jigou he jiangyi 清代造辦處的機構和匠役 (The Institution and Personnel of the Imperial Workshops of the Qing Dynasty)', *Historical Archive* 歷史檔案 04 (1991): 79-89; and in Chi Jo-hsin 嵇若昕 'Cong "huojidang" kan yongqian liangchao de neiting qiwu yishu guwen 從 "活計檔" 看雍乾兩朝的內廷器物藝術顧問 (The Advisors for Decorative Art to Emperor Yung-chen and Emperor Ch'ien-lung: Based on the Artisans of the Imperial Workshops)', *Soochow University Journal of History* 東吳歷史學報 16 (2005): 53-105.

13 See especially chapters Five and Ten on the intertwining of private industries (porcelain and pharmacy) and the court.

Outer Provinces (*Lifanyuan* 理藩院) are two public agencies addressed in the volume that also tended to the palace machine's needs and demands.[14]

Establishing the Imperial Household Department was an ingenious move, satisfying the multiple agendas of the Qing emperor in one stroke: keeping the Manchu nobility who had helped put the Aisin Gioro family on the throne gainfully occupied, eliminating dangerous residual power structures, managing the enormous economic interests and stakes of the royal house, as well as creating a propaganda, money-making, and 'ruling machine' for the Qing emperors.[15] The Yongzheng (r. 1723-1735) and Qianlong (r. 1736-1796) emperors completed this work by developing the institution into a hierarchical structure with several levels and numerous sub-units that continued to run the palace and the emperor's personal coffers until the very end of the Qing rule.[16] While some of these sub-units were veritable bureaucracies in themselves, and over time acquired a certain de facto autonomy in decision-making, each and every sub-unit had to report to the centre – the Central Administration of the Imperial Household Department (*Neiwufu zongguan* 內務府總管) – and were held ultimately accountable to the emperor. By design and in practice, the Imperial Household Department was an elaborate and, as will be seen, generally efficient machine.

Viewing the Qing palace as a machine highlights two main themes of this anthology: first, the material and tangible nature of the palace's operation, especially its enormous appetite for the money, labour, and materials that served as its 'fuel'. Second, it reveals the dynamic nature of the interwoven parts and coordinated workflows, as continuously unfolding processes within a set frame of rules and regulations. Machines are as much about

14 The Ministry for Ruling the Outer Provinces was a unique Qing bureau that managed relations with Mongolia, Tibet, and the new territories in the northwest. See Dittmar Schorkowitz and Ning Chia, eds, *Managing Frontiers in Qing China: The Lifanyuan and Libu Revisited* (Leiden: Brill, 2017).

15 See Chang Te-Ch'ang, 'The Economic Role of the Imperial Household in the Ch'ing Dynasty', *The Journal of Asian Studies*, vol. 31, no. 2 (Feb. 1972): 243-273, and Torbert, *The Ch'ing Imperial Household Department*, 1-26, on the evolution and strategic background of establishing the Imperial Household Department. For a book-length exploration of the Imperial Household Department as a whole see also Qi, *Qingdai neiwufu*.

16 Each sub-unit in addition had different levels of officials. Torbert counts four levels in the Imperial Workshops and six in the Grand Storage Office. Torbert, *The Ch'ing Imperial Household Department*, 34. In 1796 the Imperial Household Department employed 1,623 officials. In the late-19th century it controlled up to 56 sub-departments (Torbert, ibid., 28-29). For the evolution of departments in the Kangxi period, see the table in Qi, *Qingdai neiwufu*, 61-21. For descriptions of the duties of each office, see ibid., 64-84.

stillness and regularity as they are about motion and flow; they embody abstract design principles as much as they occupy concrete physical space.

Methods and Key Themes of this Anthology

In focusing on the Imperial Household Department, a key institution that has so far not received the academic attention it deserves, this volume seeks to demonstrate a new approach to Qing history in the longue durée. This approach builds on, yet departs from, previous scholarship under the rubric of institutional history, which has tended to focus on the structural and static aspects of bureaucratic organization and its relationship with monarchical power.[17] The chapters in this book show that much more is at stake. Extensive archival and artefactual source materials that have become available in the recent decades render the Imperial Household Department an ideal case to explore the technological, organizational, and knowledge-making processes that made the complex system work. It was through these processes, this book argues, that such mundane attributes as technical expertise and managerial skills became coextensive with political power.

The dynamic perspective adopted in this book reveals not only the tensions between action or motion and resistance in the Qing machine but also the entanglements between the inside and outside of the palace. Like all mechanical devices, the palace machine needed constant maintenance and repair, a supply of new or re-configured old parts, as well as a steady injection of fuel and the disposal or recycling of waste. The palace machine was neither a self-sufficient nor self-perpetuating entity. Taking a long-term view of this process from the beginning to the end of the Qing and beyond, the chapters of this book reveal a history wrought of different rhythms than those afforded by conventional political or social history. As time (and the machine) ground on, systematic reforms became necessary in the 19th century. Growing infrastructural failures such as broken dikes in hydraulic projects resulted in catastrophic floods in the northern provinces; a civil war raged in the southern heartland.[18] The increasingly threatening presence of

17 Torbert's 1977 study of the Imperial Household Department is an example of this. See also Etienne Balazs, *Chinese Civilization and Bureaucracy* (New Haven: Yale University Press, 1966) and others on bureaucratic versus monarchical power.

18 See the study of both bannermen and Han Chinese officials' work on water conservancy in Randall Dodgen, *Controlling the Dragon: Confucian Engineers and the Yellow River in the Late Imperial China* (Honolulu: University of Hawai'i Press, 2001).

Western powers on East Asian territories posed an additional danger. The palace machine was able to innovate in the face of these challenges, thus adapting to drastically altered realities in the empire and the global order. In the mid- to late-18th century and again at the end of the 19th century, periods commonly construed as times of imperial decline, the Imperial Household Department underwent major overhauls that cut across various subdivisions, although smaller and less remarkable changes were always part of its routine operation.[19]

While the temporal coverage of this book encompasses the entire Qing dynasty, its spatial reach also extends far beyond the palace compound. The Imperial Household Department machine appeared to be omnipresent in the empire. To complete large projects, it routinely joined forces with other administrative agents in the formal, 'public' bureaucracy, especially the Board of Revenue and the Board of Work. The Department also collaborated with regional garrisons and provincial governors to exert control over borderlands and isolated local counties. Most important of all, the Department was in charge of several enormous manufacturing and financial apparatus scattered in the provinces: the Ceramic and Textile Manufactories,[20] Custom Houses,[21] and the bureaus overseeing salt production and trade.[22] The Department used two ways to exert control over these remote offices: first, by appointing supervisors from the court and sending them to those places, where they also served as the emperor's 'spies', and second, by claiming sovereign ownership of their funding, materials, and products.

The temporally dynamic and spatially dispersed frame of this book reveals a simple but profound argument: that the Imperial Household Department was present beyond the capital city and its activities, far exceeding the

19 Some of the salient late-Qing institutional innovations include: the creation, modification and merging of key sub-units, the transformation of the functions of some sub-units, and new working relations between the Imperial Household Department and the Board of Works (*Gongbu*).

20 Jonathan Spence, *Ts'ao Yin and the K'ang-hsi Emperor: Bondservant and Master* (New Haven: Yale University Press, 1966).

21 Chen Kuo-Tung 陳國棟, 'Qingdai zhongye yihou zhongyao shuichai zhuanyou neiwufu baoyi danren de jidian jieshi 清代中葉以後重要稅差專由內務府包衣擔任的幾點解釋 (A Few Explanations on the Booi's Exclusive Appointment from the Imperial Household Department to Custom Houses since the mid Qing)', in Hsu Cho-Yun 許倬雲 et al., eds., *Di'erjie zhongguo shehui jingjishi yantaohun lunwenji* 第二屆中國社會經濟史研討會論文集 (Taipei: Hanxue Yanjiu ziliao ji fuwu zhongxin 漢學研究資料及服務中心, 1983), 173-204.

22 Wang Shih-Ming 王士銘, 'Ji shi guanyuan yeshi nucai: qianlong chao changlu yanzheng 既是官員也是奴才: 乾隆朝長蘆鹽政 = Either a government official or a private representative of the Emperor – A study of the supervisory officers to the Chang-lu Salt Administration'. MA thesis, National Chi Nan University, 2007.

provisioning of the imperial family, encompassed those of the bureaucratic state and the commercial market. As such, the Department affords a unique window into the manoeuvrings of the Qing court in its efforts to extend its control over multiethnic human subjects, animals, plants, technology, natural resources, material cultures and art forms[23] – all subjects of Qing statecraft. Indeed, understanding how the Qing palace machine worked means understanding how the Qing empire worked.

Organization and Chapters

Investigating the design, working principles, and practice of such a complex and extensive machine requires the collaboration of scholars from multiple disciplines and knowledge cultures. Eight of the nine chapters of this volume were first developed as part of an international project led by Martina Siebert and Kai Jun Chen at the Max Planck Institute for the History of Science in Berlin. The project brought together a team of researchers from the academy and museums in China, Taiwan, Germany, and the U.S., representing fields as diverse as economic history, history of technology, art history, labour history, textile studies, and material engineering. These chapters are grouped into three parts, each focusing on one design aspect of the Qing palace machine. Each part opens with a short introduction and a vignette essay that places one object or document at centre stage.

Part One explores the basic operating principles of the palace machine. Two salient principles are revealed in all three chapters of Part One: the conformity to hierarchy and genealogy in the allocation of roles, and the reliance on paper-tools to regulate and document every step of a procedure. In Chapter One Moll-Murata explains how 'Regulations and Precedents' (*zeli* 則例) and personal accounts allows historians to examine the personnel driving the palace machine, from lowly maids to imperial family members. The career trajectories of a unique group of experts, the Manchu bannermen, are examined across several generations in Chapter Two, by Chen. This kinship-based perspective reveals shifts in family expertise in accordance with the Qing court's changing technical demands. Chapter Three, by

23 The Imperial Household Department appears to be understudied, especially when compared with two Manchu institutional innovations in charge of military and diplomatic affairs, namely the Grand Council (*Junjichu* 軍機處) and the Court for Ruling Outer Affairs (*Lifanyuan*). See Beatrice S. Bartlett, *Monarchs and Ministers: The Grand Council in Mid-Ch'ing China, 1723-1820* (Berkeley: University of California Press, 1991); Schorkowitz and Chia, *Managing Frontiers in Qing China*.

Y. Wang and Bae, turns from the movement of people to the circulation of material, by following the flow of *kupiao* 庫票 (acquisition tickets) in and out of the palace workshops and storages. This chapter also elucidates the logic of the four-pillar accounting system used in the palace workshops and the commercial houses as a sophisticated modern device.

Part Two examines three categories of material artefacts that contributed to the visual and cultural splendour of the Qing court: porcelain, jade, and gilded roofs and statues. The Qing exerted firm fiscal control over the production of imperial porcelain, a time-honoured material embodiment of Chinese technological and cultural sophistication. The careful management and disposal of misfired pieces studied by G. Wang in Chapter Four shows the symbolic and material value that china had to the court. The same is true for jade. In Chapter Six Wu describes a key transitional moment when the territory of Xinjiang was added to the Qing empire, thus giving the court access to quality jade boulders. The logistical challenges involved in transporting these boulders over long distances and the dangers of embezzlement, however, reveal the shaky nature of the dominion claimed by the emperor. Chapter Five by Su and Lai investigates the procurement procedures and technology needed for gilding artefacts using such precious metals as gold, silver, and copper in the 18th century. The gilded roof tiles and Buddhist statues of the newly-built religious complex in the imperial summer residence of Chengde are veritable expressions of Qing prowess. The perfection of an advanced fire-gilding technique from Tibet and the emperor's desire to attract Mongol pilgrims, like acquiring jade boulders from Xinjiang, signify the cosmopolitan and multiethnic nature of the high Qing empire. With the availability of such new human, material, and symbolic resources, the palace machine that fuelled the expanded Qing mandate had to adapt accordingly.

Part Three probes the Qing palace machine's handling of plants and animals, exploring how these less predictable components were incorporated into its workings. Each chapter focuses on a different ecology of integration and usage of organic matter. In Chapter Seven Siebert explores the history of the imperial lotus ponds in and around the palace grounds in Beijing and the sale of lotus roots grown in the lakes of the imperial Westpark. She ponders the disjuncture between the miniscule income and the comprehensive set of regulations devised by the Imperial Household Department. Guan's study of the provisioning of medicinal herbs and minerals for the emperor and his family in Chapter Eight reveals a different logic and value system. To secure the best ingredients from every locale in the country, the palace machine utilized established tribute networks and commandeered experts from

commercial medicine shops. The economic world outside the palace walls was thus incorporated into the body politic. The transport of elephants, a tribute animal from Vietnam, to the capital studied by Yu in Chapter Nine reveals the precarity of preserving life and the challenges this posed to the palace machine.

Taken together, the handling of lotus plants, medicinal herbs and minerals, and elephants reveals a sensitivity toward the finitude of time and the precariousness of living matter which had to be integrated into economic rationality as an underlying principle driving the Qing palace machine. Thus, while Part One reveals the commitment to hierarchical ordering and techniques of accounting that made this economic rationality practicable, and Part Two recognizes both the economic and symbolic values of material things as the political rationale behind this economic rationality, Part Three exposes the challenges posed by the preservation and integration of unpredictable living organisms into this rationality.

In summary, this book seeks to illuminate the hidden design, working principles, and values that guided the operation of the Qing palace machine, by examining them as a set of dynamic and complex material processes. It does not aim to provide an exhaustive survey of the Imperial Household Department or any of its subdivisions. In the final analysis, the palace machine was at once animate and inanimate, organic and inorganic, hierarchical and dispersed. It was a machine wrought from sub-machines, from materials and objects, rules and routines, as well as from human and non-human beings. These entities are rendered visible in this book as agents in co-producing the myriad life-worlds within and beyond the palace that constituted the Qing empire.

About the Authors

Martina Siebert works as subject librarian at the East Asia department of the Staatsbibliothek zu Berlin and as independent scholar. She researches and publishes on the history of Chinese exploration into nature and technology with a focus on the styles and agendas of presenting and organizing that knowledge in writing.

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in the global circulation, collection, and replication of luxury artifacts, especially porcelains.

A native of Hong Kong, Dorothy Ko is Professor of History at Barnard College, Columbia University. She is a cultural historian of early modern China whose research focuses on gender, technology, and material culture. Her recent book, *The Social Life of Inkstones: Artisans and Scholars in Early Qing China* (Washington, 2017) is a finalist of the Morey Prize of the College Art Association. An earlier book, *Cinderella's Sisters: A Revisionist History of Footbinding* (California, 2005) won the Joan Kelly Memorial Prize of the American Historical Association.