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Alexander Akin

East Asian Cartographic Print Culture

The Late Ming Publishing Boom and its Trans-Regional Connections

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Introduction

The year 1975 marked five hundred years since a hefty tome published in Lübeck, the *Rudimentum Novitorum*, had incorporated a simple map of the world printed from two woodblocks. This quincentennial of the first printing of a map in a European book was widely celebrated among bibliophiles. The cartographic historian Arthur H. Robinson termed it a milestone in the annals of communication:

> To appreciate properly this momentous event, we must remember that in all preceding time maps had existed only in manuscript form. That basic fact allows two important assertions: first, there could only be a few maps and, second, one could never be sure whether the content of a map was the work of the original maker or merely reflected the independence, or carelessness, of a copyist. Obviously, both inhibited scholarship.
> The capability of printing maps immediately opened the way for countless numbers of exact duplicates that, for the first time, allowed scholars easily to compare many geographical portrayals, consider their characteristics, and plan ways to produce even better images of the emerging world. No doubt it also had a very considerable psychological impact on mapmakers, since the realization that their work could be widely subject to critical review probably served as an incentive to some and an inhibition to others. To the age-old art and science of mapmaking a tremendously significant new element had been added – the printer.[1]

Scholars of Asian cartography might point out that this anniversary celebration was off by hundreds of years, given that East Asian printed maps survive from as early as the twelfth century. Despite this fact, European maps remain the sole focus of much work on cartographic history. What is perhaps more surprising than Robinson's omission, however, is the degree to which the effects of publishing on cartography in East Asia differ from what we find on the European scene.

1 Robinson, 'Mapmaking and Map Printing: The Evolution of a Working Relationship,' p. 1.

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We know a fair amount about the competition that arose between printers in some parts of Europe, and the ways such rivalry propelled the evolution of cartographic representation. For example, James Elliot has discussed the 'peer pressure' that Sebastian Münster felt after he illustrated a number of cities with woodblock prints in the 1544 edition of his popular *Cosmographia*. Only four years later, Johannes Stumpf's *Schweizer Chronik* raised the stakes by presenting 'the first realistic views of Swiss cities, the accuracy of which represented a great advance in geographical illustration.' Münster responded by revising the *Cosmographia*, including 'substantial improvements in both the quantity and quality of the town views [...] thus providing Renaissance scholars with their first comprehensive view of urban Europe.'[2] Furthermore, not only increasingly sophisticated maps, but also books about *making* maps came onto the market. The 1559 *Cosmographical Glasse* discussed the principles one would need to master for cartographic compilation.[3]

In East Asia, no such dramatic technical transformations in map publication appeared around this time, nor did more than very cursory materials on surveying or map composition see public circulation. As we shall see, the form and function of printed maps changed little from a wide range of precedents that had already been established by the twelfth century. A very large proportion of maps in late Ming books were simply copied from earlier works. And yet, by the beginning of the seventeenth century, when the printed word (and image) was unprecedentedly accessible to a general audience, we find that something has indeed changed. This transformation was not so much in the nature of the maps themselves as in the ways they were deployed, contrasted, and combined.

This book examines how the 'publishing boom' of the late Ming dynasty, beginning in the mid-sixteenth century, affected the nature and circulation of cartographic materials in East Asia. Rather than focusing on the beautiful, colorful, and rare large-format maps that (understandably) form the core of most cartographic histories, it looks instead at the smaller, often smudgily reproduced black and white maps that were carved into wooden blocks to be printed as illustrations in books, and occasionally, as stand-alone works – in short, maps for the masses. By examining contemporaneous developments in neighboring Chosŏn Korea and Japan, highlighting local responses to Ming publications as well as differences from late Ming publishing culture, the study demonstrates that it is imperative to consider the broader East Asian sphere in the early modern period as a network of communication and

2 Elliott, *The City in Maps: Urban Mapping to 1900*, p. 19.

3 Cunningham, *The Cosmographical Glasse*.

publication, rather than focusing on countries as discrete units with separate cartographic histories. It also reexamines the place of Jesuit cartographic materials across these same political and cultural boundaries, arguing that these Catholic missionaries printing maps on Ming soil should be seen as participants in the local cartographic publishing boom and its trans-regional repercussions.

In the course of examining a series of pathbreaking woodblock-printed works from the late sixteenth and early seventeenth centuries, in genres including general geographical education, military affairs, local administration, and history, we get a sense of the ways in which maps achieved unprecedented penetration among published materials, even in the absence of transformative theoretical or technological changes. We see no panoply of technical or stylistic transformations of the sort that dramatically changed the appearance of European maps over the same period; nor was there any late Ming equivalent of the horizon-widening explorations sponsored by various European courts, or the subsequent waves of colonization, that generated continuously updated representations of far-flung lands. Instead, most new maps were drawn on the basis of older charts and textual records. By the late Ming, certain oft-reprinted maps had become part of the patrimony of civilization, handed down to scholars of the time to be shared and borrowed.

Most of the techniques used to create maps in the Ming, and the models these maps followed, can be traced to Southern Song examples from centuries earlier. Maps dating back to the Song period that were used to elucidate the Classics, or to clarify dynastic history, attest to the importance of the civil service examination system: Students needed such resources to aid their studies. However, many of these maps continued to be reprinted right through the Ming and Qing, often with little modification. Classic early works, supplemented by a relatively small number of pathbreaking texts first published during the Ming, formed the core reservoir from which the majority of later printed maps were copied.

Despite this repetition of certain cartographic themes, there was a late Ming profusion of publishing genres that touched upon geographical issues, accompanied by what many scholars believe to have been a broadening audience of readers. New types of texts began to include cartographic illustrations. Moreover, works in the same genre often retained earlier maps even as they added new ones. For example, treatises on military affairs reflected both historical events and emerging threats. In the 1550s the focus of such works shifted from the northern Mongol frontier to the eastern seaboard, where piracy and tumult in coastal towns inspired distress.

In the late sixteenth and early seventeenth century, attention moved up to the northeastern frontier where the Manchu polity was taking shape, foreshadowing disaster for the Ming dynasty. Each period of focus on a particular region left its own cartographic tradition that became part of a cumulative store of maps that were reprinted in later works on similar topics. By the same token, local prefectural or county gazetteers, which sometimes included maps as early as the Song period, became dramatically more likely to include cartographic elements by the late Ming. The types of maps that might be included in a single gazetteer, their styles and reasons for compilation, became more diverse.

In the printed record we find, again and again, that existing works were cannibalized, with or without citation, and their maps reused.[4] In Chapter One, which addresses the issue of intertextual cartographic repetition in more detail, we see numerous examples of both text and maps taken from earlier publications. Rather than a struggle to supersede and replace earlier images, we often see a cumulative recapitulation of earlier maps that were considered authoritative, with the presentation of diverse perspectives in a single work.

Why were people drawing maps in the first place? The answers to this question cannot simply be transplanted from the research that has been done on European or colonial contexts. Despite the recent academic emphasis on cartography as a function of early modern state formation, many cartographic traditions derive from a framework of scholasticism and textual analysis rather than military or political needs. Beginning in the Song dynasty, a Classics-based curriculum for examination candidates had a significant influence on map production. In order to help students interpret the geography of the texts of the Confucian tradition and the dynastic histories, cartographic illustrations were printed, copied by hand by students, or engraved in stone on monuments at schools. Such historical maps, atlases, and treatises coexisted with other types of mapping that fit more comfortably into the narrative of state building and governance, as well as with other genres that had different purposes.

4 Craig Clunas makes a point in passing that is directly relevant to the study of cartography in the late Ming. In discussing the authorship of the *Chang wu zhi* 長物志 (*Treatise on Superfluous Things*) by Weng Zhenheng 文震亨, Clunas notes that much of its text is copied from an earlier work by Tu Long 屠隆. Clunas remarks that 'Post-Renaissance European concepts of "plagiarism" and "originality" are here of very little help as tools of analysis.' He describes Ming writing on connoisseurship as 'constituting a single "text", repeated and reaffirmed by a number of separate individual writers' (Clunas, *Superfluous Things*, p. 28).

What changes in the late Ming publishing boom is therefore less the technology or typological repertoire of maps than the ways in which they are presented, combined, contrasted, and analyzed. In Zhang Huang's late sixteenth-century *Tushu bian* 圖書編 (Compendium of illustrations and texts), we find in one collection a distillation of the entire cartographic record, from historical maps depicting the age of the Sage Kings to contemporary maps of the Grand Canal, a Buddhist depiction of the continent of Jambudvīpa, and even copies of newly introduced Jesuit world maps. Zhang is not content, however, with the novelty of simply presenting Jesuit and Buddhist worldviews alongside the Sinocentric and state-centric tradition of official cartography. He uses these maps as illustrations for his discussion of larger themes, debating the contrasting epistemological foundations of different worldviews and offering one of the earliest extant serious considerations by a non-convert of the Jesuit claims about the form of the earth. Zhang's example highlights the often-complex reaction of individual authors and editors to both longstanding indigenous traditions and newly imported Jesuit theories.

As the publishing boom made this wide variety of cartographic materials more accessible, a broad range of conceptual frames – contending cartographies – came into direct contact. This book will illustrate how this diversity of coexisting schools of cartographic thought and practice rode the crest of the late Ming publishing wave. The proliferation of new works as well as reprints facilitated exposure to competing theories. This book will not attempt to form a master scheme of 'traditional Chinese cartography' because it was no less than the sum of many diverse and often contradictory threads, represented by individual human beings and their relationships with one another in person or on the page, shaped by the sources to which they had access and the ideologies that informed their worldviews. It has been argued that the long-standing dominance of 'Confucian geography' was first seriously challenged only at the end of the Qing.[5] As the works discussed in this book reveal, however, diversity in cartographic thought was in fact much older, ranging from historical reconstructions based on revered texts, to statements of Buddhist religious dogma, to compilations based on actual ground surveys.

Chapter Two singles out one genre, historical cartography, for deeper examination, tracing its development from the earliest extant examples to the end of the Ming dynasty to show how the conditions of the publishing boom fostered their recombination and adaptation to new contexts. This

5 Tang Xiaofeng, *From Dynastic Geography to Historical Geography*, Chapter 2.

chapter examines historical maps in a broad range of formats, including works compiled for administration, for education, and for religious purposes. Because of its utility in contextualizing classical works, this genre was intimately intertwined with the publishing industry that emerged around the national examination system, but historical maps could also challenge and undermine administrative and Sinocentric perspectives.

The third chapter takes a Ming-centric approach to the Jesuit cartographic project under Matteo Ricci and his immediate successors. I discuss reactions to the missionaries' maps and their citation in works published by Ming scholars. Of all the empires in which the Jesuits set foot, the Ming was the first in which they encountered an already highly developed cartographic culture, leading to an unusually prominent role for cartography in their proselytization. Examining the issues they addressed through maps, and their methods of production, distribution, and influence, I argue for an understanding of their publications as part of the late Ming publishing boom.

The two final chapters follow exported Ming publications, and the cartographic trends they incorporated, into Korea and Japan. The preeminent gazetteer of Chosŏn, the *Tongguk yŏji sŭngnam* (Newly augmented geographical survey of the Land of the East), was directly inspired by the *Da Ming yitong zhi* (Gazetteer of the Great Ming's unification), a widely circulated state-sanctioned gazetteer of the Ming. Even long before the emergence of a substantial commercial publishing industry, the maps of the *Sŭngnam* penetrated the consciousness of Chosŏn's *yangban* gentry through the widespread hand-copying of atlases passed from scholar to scholar. The chaotic variety of later Ming works tended to be rejected in Chosŏn, however, in favor of adherence to orthodox precedent. For reasons I touch upon in Chapter Five, Japan was not as bound by established cartographic models, but even in the context of Japan's comparatively direct contact with Dutch, Portuguese and other European cartographic traditions, influential Ming texts such as the *Sancai tuhui* (Illustrated compendium of the three fields of knowledge) and the *Huang Ming zhifang ditu* (Administrative atlas of the Imperial Ming) appeared in both printed and manuscript Japanese editions, and their maps are copied in Japanese works. Ming works about Japan were assiduously collected and republished there, even works that reflected rather crude biases.

Although these last two chapters focus mostly on works that responded to Ming and European precedents, they also discuss the existence of an inverse phenomenon, the importation of materials from Japan and Korea into Ming China. Chapter Four examines one such work in some detail, the *Chaoxian tushuo* (Annotated maps of Chosŏn), printed in 1600 by a Ming military

officer returning from the Korean peninsula. Thus we see that, although Ming works set precedents for many Chosŏn and Japanese publications, the flow of cartographic texts was to some extent multidirectional, linking nodes of cartographic and geographic synthesis within a broader web of influence.

Methodology

This project began with an attempt to address a few simple questions about local cartography in gazetteers from Jinhua prefecture in Zhejiang province. In the course of this research I discovered that scholars working with early modern Chinese maps had often drawn conclusions based on the map images themselves without taking into consideration the relevant textual explanations or prefaces contained within the works concerned, which often explain the compiler's intent (which can vary substantially from our expectations of modern maps). The first of my methodological considerations has therefore been to consider maps as integrally related to textual material, the *latter* usually being the author's or editor's primary tool in conveying detailed information.

The inclusion of textual information together with maps reflects a manner of reading in which details are sought in words rather than in the illustrations; maps in books usually serve as illustrations to the text rather than as independent documents. This presumed incompleteness of maps without textual context is demonstrated in Ming works by the use of notes like 'Where there is an image, there must be an explanation to express its meaning' (有圖必有說以發其義也).[6] This nesting within a larger text is one of the major features distinguishing most printed cartography from large, colorfully painted maps. While a map painted on a roll of silk can be considered as a work complete unto itself, a map contained within a printed text should not – even if it is a copy of that painted scroll – because its new context almost always provokes new readings.

Despite such caveats, much cartographic history has focused on the maps alone, without close examination of the text. This can lead to pitfalls such as evaluating the degree to which Western maps were understood in East Asia by the apparent skill (or lack thereof) in copying them in books. While these maps are indeed poorly copied in crudely woodblock-printed books, so are the copies of their indigenous counterparts. What does the accompanying *text* tell us about the ways in which they were understood?

6 Zhang Huang, *Tushu bian*, *fanli* p. 1b.

When long textual passages copied from Matteo Ricci's preface to his world map get incorporated into Ming works, even in the Japanese *Wa-Kan sansai zue* at a time when citation of Christian works was theoretically a capital offense in Japan, it becomes clear that we cannot make such judgments based on imagery alone. Examining both maps and text becomes particularly important when addressing the encyclopedic works of the late Ming, with their extensive sections on geography.

My study of Jinhua gazetteers also revealed how frequently maps were copied from earlier publications, and how poorly the assumed motivation of state building explained the actual diversity of maps included in gazetteers. When new maps were provided, an accompanying textual explanation sometimes noted how and why this happened. It became clear that cartographic materials moved both up and down the administrative chain, with county maps being gathered together and reproduced in prefectural gazetteers, while text about the locales cited in the county gazetteers often came from authoritative higher-level works. When private publishing in turn took these maps and texts out of their official contexts, source materials were drawn from every type of publication, both 'highbrow' and 'low,' not to mention countless locally available manuscript resources and military maps that were available for consultation at the time but have now been lost.

In search of a way to track down the sources of uncited text, I started with the *Siku quanshu* full-text database. Despite the fragmentary nature of the record preserved by the *Siku quanshu*, and its biases against many late Ming works on border affairs (which often contained maps, but were censored if they offended Manchu sensibilities), the database remains useful in tracing possible sources for later works, as well as identifying later texts that cited works I was studying. In the *Siku quanshu* the maps themselves are poor copies that are of little use in studying the original representations, but the searchability of the textual parts of these works is very handy. Another method for examining the changes wrought by the publishing boom has been to examine different editions of important late Ming works to which I had access, searching for changes made by those who republished them. In some cases entirely new maps were added to later editions due to the influence of a new work that had appeared in the interval between printings.

The least systematic methodology, but one that was serendipitously fruitful time and time again, was to search the relevant stacks of the Harvard-Yenching library for cartographic works by the armful, paging through to find superficial trends or anomalies that could then be examined more systematically. The sheer volume of material available, even if limited to

texts from the Ming and earlier, could easily supply the raw material for dozens of books before even the foundations of the topic are sketched out.

It is ironic that international scholars working with cartographic materials – maps held hostage to concerns about 'national security,' even if centuries old – may most fruitfully pursue research in this field at libraries outside of the People's Republic of China. One outcome of this unfortunate situation, which ended up becoming a silver lining for my larger project, was that it forced me to shift my focus away from the magnificent court-sponsored works, military charts, and other manuscripts of limited circulation that researchers ache to see in Beijing and at various provincial archives. I turned instead to the crudely produced monochromatic woodblock prints that were used as illustrations in mass-produced books, the types of maps that far more people saw at the time. This fundamentally changed the direction of my work: Rather than taking a genre of maps, such as national maps, and examining all of the different forms in which they appear, my goal has been to examine all of the major genres in which maps were *printed*, from the highest registers to the humblest, and trace their interconnections.

Why maps matter

Why were maps significant to people of the Ming dynasty? Why are Ming maps important to scholarship today? To address such questions we must first decide what we mean by 'map.' This is a sufficiently contentious question in English, but it becomes more so when working across linguistic boundaries. J.B. Harley and David Woodward have proposed a transcultural answer to this question in their preface to the monumental series *The History of Cartography*, in which they define maps as 'graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world.'[7] While these very broad criteria may be vague, they are explicitly designed to include artifacts typically excluded from the category of 'maps' due to their incongruence with modern Western expectations of that category. Thus, geomantic diagrams or depictions of inner space are treated as worthy of discussion, alongside the atlases of Abraham Ortelius.

Mary Elizabeth Berry, a scholar of Japanese history whose work on cartography is seminal to the field, defines a map as 'a form of graphic representation that takes as its frame of reference the physical environment,

7 Harley and Woodward, 'Preface,' in *The History of Cartography, Volume 1*, p. xvi.

which it normally treats from an aerial perspective, with some attention to verifiable spatial distribution. Furthermore, a map relies on a combination of codes – particularly an iconic code – to construct that environment.'[8] Clearly closer to the expectations most modern readers have of their maps, this definition incorporates a bird's-eye view and adheres to some sort of scale. The use of 'codes' can be explicit or intuitive. Among Ming works the symbols used on maps for mountains, town walls, bridges and other features are generally treated as self-explanatory; it was unusual (though not unheard of) to provide an explicit key to standardized symbols.

What were the classical Chinese terms for 'map,' and how closely did they correspond with the definitions above? Examining the lists of map titles from the *Tushu bian* (Compendium of Illustrations and Texts) and the *Sancai tuhui* (Illustrated compendium of the three fields of knowledge), two late Ming encyclopedias, we see that one of the few consistencies is that *yutu* 輿圖 is only used for the most 'map-like' maps, while *tu*, on a lower register of specificity, can be applied to any type of illustration, sometimes with an identifying marker such as *biantu* 邊圖 (map of the frontier) or *shantu* 山圖 (a more painterly depiction of a mountain). I suggest that the ancient term *yuditu* 輿地圖 and its abbreviated variants *yutu* 輿圖 and *ditu* 地圖 can be translated as 'map' without falling far afield of Berry's definition, even if the stylistic characteristics or intended uses of such works do not exactly correspond with the expectations of a modern viewer.

Just as there were various types of 'maps' in early modern China, there were a variety of types of 'publication.' Stone stelae with maps engraved upon their faces were sometimes erected on the grounds of schools, enabling students or visitors to make their own rubbings on paper. A map carved on an immobile stone could thus circulate around the empire through its paper impressions. When Mao Huang cites the *Yujitu*'s depiction of the Heishui River in the twelfth century, or the later Yuan writer Chen Shikai cites the same stele, they were almost certainly writing with their eye on a paper rubbing, rather than examining the stone itself.[9] These stelae, which might be considered as heftier versions of woodblocks, often stood at the same prefectural schools that might have stored the printing blocks for local gazetteers. I suggest that they should be considered part of cartographic

8 Berry, *Japan in Print*, p. 61.

9 Mao Huang 毛晃, *Yugong zhinan* 禹貢指南, *juan* 2, p. 30b; Chen Shikai 陳師凱, *Shucai shi zhuanpang tong* 書蔡氏傳旁通, *juan* 1中, p. 21a. The list of works used at the beginning of the latter work includes it alongside numerous books and other maps (*yinyong shumu* 引用書目, p. 1b). There were other maps with this generic title, but the use of the prefix Chang'an appears to identify the reference specifically.

print culture. The earliest extant examples of the 'published' world map, if thus considered, would be the highly detailed *Yujitu*禹跡圖 (Tracks of Yu) of 1136 and the slightly later *Huayitu*華夷圖 (Map of Chinese and Barbarian [Lands]) engraved on the reverse of the same stone. The practice continued for centuries, well into the period I address in this book; even Matteo Ricci's world map in Chinese was committed to a stone block in the 1590s (sadly long lost).

Given the endless array of features, natural and artificial, that might be included on a map, the first problem for a cartographer is to narrow down the categories of data to be included. Such choices are informed by cultural and ideological factors, whether overt or subliminal. A cartographer's construction of a map involves choices between available strategies for creating a two-dimensional rendering that will be not only recognizable, but also useful to the reader. Richard Smith has enumerated many of the purposes for which maps were designed, including education, either for the student, or for a magistrate familiarizing himself with a new post; intelligence for the emperor or the battlefield commander; the planning of engineering projects; assertion of territorial claims, and even for undertaking a 'spiritual journey.'[10] Most maps have multiple functions, and if we wish to judge them critically we should do so not based on how closely they resemble modern cartographic styles, but by how well they suit their intended purpose, to the extent that this purpose is discernable today.

The question of 'accuracy'

Theoretical discussions of East Asian cartography, including Chinese cartography, have occasionally expanded their purview to consider spatial depictions that differ from what David Woodward has called the 'Western model of scaled orthogonal representations of the physical world.'[11] Woodward himself suggests that 'It is our preoccupation with our view of reality that inhibits Westerners' understanding of "Eastern" cartographies on their own terms.'[12] I have a certain degree of sympathy with this position, but would suggest that there is too much discussion of cartographic accuracy in early Chinese sources for us to dismiss it, even if it raises questions of privileging 'Western' expectations. 'Accuracy' in its modern cartographic

10 Smith, 'Mapping China's World: Cultural Cartography in Late Imperial Times,' p. 58.
11 Woodward, 'Preface' in *The History of Cartography: Volume Two, Book Two*, xxiv.
12 Ibid.

sense was not an alien concept. The 1136 *Yujitu* reflects far greater exactitude over a vast area of the earth's surface than any other map of its time from anywhere in the world.[13] Numerous Chinese cartographers and mathematicians from Pei Xiu (223-271) onward sought better ways of measuring and visually representing the types of data that are fundamental to modern cartography, and contemporary critics discussed the perceived accuracy of maps along with other features such as their aesthetic quality. Witness, for example, the frustration expressed by the famous Southern Song writer Hong Mai, who searched an historical atlas for its depiction of his native region only to be dismayed at its errors. He notes that the distances given are wrong, and claims that anyone who has traveled to the places it depicts will notice its mistakes.[14]

Luo Hongxian tells us in his mid-sixteenth century preface to the *Guang yutu* 廣輿圖 (Enlarged atlas) that he was so dissatisfied with the inexactitude of contemporary maps of the realm, which were replete with errors and inconsistent scale, that when he discovered a technically sophisticated grid-scale map (now lost) compiled in the Yuan by Zhu Siben, he took it as the model for his own work.[15] Both Joseph Needham and Ullrich Libbrecht have helped to provide important understanding of specific technical practices related to the construction of such maps. Libbrecht's annotated translation of a textbook by Qin Jiushao, originally published in 1247, includes sample problems of precisely the sort encountered in mapping a town or determining the distance and relative heights of natural features.[16] Rather than dismissing 'accuracy' as a term laden with Eurocentric connotations, it makes more sense to deduce what accuracy meant in different contexts.

13 For a discussion of this map, including mathematical analysis of its distortion, see Akin and Mumford, '"Yu Laid out the Lands": Georeferencing the Chinese *Yujitu* [Map of the Tracks of Yu] of 1136.'

14 Hong Mai, *Rongzhai suibi*, *juan* 10, 14b-15a.

15 Lu Liangzhi 卢良志, *Zhongguo ditu xue shi* 中国地图学史, p. 102; Fuchs, *The 'Mongol Atlas' of China by Chu Ssu-Pen and the Kuang-Yü-Tu*, pp. 7-8. When emperors appointed geographers, surveyors, and cartographers to undertake major expeditions such as the attempts to locate the source of the Yellow River during the Yuan and Ming, accuracy was not disregarded as an ideal trait of the eventual report, though this was more likely to be reflected in the textual record of such expeditions rather than in their graphic component. The map portion of the 1280 *Huang He yuan tu*, for example, is very simplistic in its layout, although the brothers who compiled it surveyed the route in person and recorded their journey in great textual detail in their report to the emperor.

16 Ullrich Libbrecht notes mistakes in the calculations used in sample problems for finding height and distance of a mountain (Libbrecht, *Chinese Mathematics in the Thirteenth Century*, p. 123).

In modern maps we often judge accuracy by the consistency of a map's depiction to scale, but this is not the only measure of precision. On a subway map, for instance, scale might be inconsistent, but riders certainly do demand that the stations be shown in the right sequence on the right lines. In a period when geodetic surveys were not only extraordinarily costly but also beyond the technical skills of most cartographers – and therefore not expected by the audience – 'accuracy' was more likely to mean the correct relative positions of landmarks. The most frequently performed measurement done in preparation for a new edition of a local gazetteer or other reference – usually the *only* measurement – was a tally of the distances along roads. This was done, not so much with maps in mind, as for the gazetteer's textual list of directions and distances to other towns and landmarks. A reader would not turn to the gazetteer's map for such information but would search for it in written form.

Though it falls outside the temporal scope of this study, the 1692 *Yiwu xianzhi* offers some insights into perceptions of accuracy in gazetteer maps. The 1692 work praises the high quality of the illustrations incorporated in Xiong Renlin's 1640 edition, noting a division of labor in their preparation (those who drafted the general scheme and calculated the distances gave their work to a professional engraver for commitment to woodblock plates). The method used for calculating distances is described as having relied on topography rather than the distance via roads.[17] A number of years later, the Kangxi emperor was willing to appoint European missionaries to manage cartographic surveys, demonstrating that he sought precise results, not merely a new mandala of spatial power upon which to meditate.[18] In cases where cartographers state that their goal is to create rigorously objective maps, it is fully appropriate for modern scholars to evaluate their accuracy, as it helps us to understand the cartographer's data-gathering resources and theoretical tools. Most maps, however, evince little effort to spread cognitive space over a precisely mathematically proportioned framework. In such cases it is clear that mapmakers had other purposes foremost in mind.

Spatial illustrations that are based on cultural beliefs or that are otherwise not evidentially anchored belong to a different category of illustration in most modern typologies, but in some of the works addressed in this study

17 '計里之法以形不以塗.' Wang Tingzeng 王廷曾, ed., *Yiwu xianzhi* 義烏縣志, *juan* 1, *tu shuo*: p. 1a-b.

18 Yee's 1992 essay 'A Cartography of Introspection: Chinese Maps as Other Than European' takes the latter position to an extreme; his articles in *The History of Cartography* are more evenhanded.

it is difficult to discern where one ends and the other begins. Furthermore, because maps of even imaginary space possessed real meaning in the minds of many as tools for understanding their 'place' in the cosmos, such maps have much to tell us about their makers' understandings of the world.

Given this study's focus on woodblock printed cartography, it is also important to note that the process of publication, transferring the draft of a map to a carved woodblock, and the subsequent printing of prints from this engraving, introduced many opportunities for variance from the cartographer's original vision. When a later publication copied these maps, even more changes could be introduced, sometimes as dramatic as the omission of spatial grids, or the inversion of images.

Problems of cartographic preservation

While this study attempts to survey the diversity of the printed cartographic record in the late Ming context, it is important to recognize that any effort to create a representative sample of the extant record will encounter a monumental problem: the differential survival of various types of cartographic materials. Wall-mounted maps deteriorate far faster than maps kept in less-exposed conditions; certain types of maps may be intentionally destroyed when they become out of date or when political changes forbid their preservation. Unbound paper ephemera like sheet maps tend to deteriorate much faster than pages bound in books, resulting in a disproportionately large sample of the often-crude little maps that were used to illustrate texts. Useless materials may lie undisturbed in storage and ultimately survive in greater numbers than dog-eared references that were thumbed to death. In a field like cartography, much information, such as trade or military secrets, was kept confined within a certain class of users rather than reproduced for a broader audience in ways that might boost its chances of surviving into the present. The destructive effects of war and the selective patterns of collectors and libraries have all affected the formation of the extant cartographic record. It is important to keep in mind that some works that were highly respected in their time are inaccessible to us today.

As R.A. Skelton has noted, 'Generalizations founded by historians of cartography on surviving examples must be taken with a pinch of salt. Many links in the chain of transmission are lost. The discovery of a hitherto unknown map may, like the turning of a kaleidoscope, recast the accepted pattern of thought and hypothesis or provide a "missing link" whose

existence had been conjectured.'[19] James Hargett's figures on the survival rates of early geographical treatises provide some fodder for consideration. Of sixteen Tang-period *tujing* known from records, only fragments of two are extant, and those survive only in later copies.[20] Of sixty *tujing* known to have existed in the Northern Song, only one survives essentially complete.[21] Even the much later large-format sheet maps of the Jesuits, printed in large numbers as part of their missionary effort around the turn of the seventeenth century, survive in just a handful of copies representing several editions, some of them actually locally printed imitations.

When considering Ming maps, the imbalance of the record can be interrogated to some degree by consideration of the factors affecting the survival of different types of materials. Not only the physical properties of cartographic media come into play here; political and religious factors play a role in the shaping of the record. Examples include the suppression of Jesuit works in 1616-1617, and the grand censorial project that accompanied the creation of the *Siku quanshu*. The latter dramatically influenced the survival of texts related to military affairs on the Jurchen-Manchu frontier, many of which included maps, because works considered offensive to the Manchus were (with varying degrees of success) purged from the historical record. Aside from the basic question of whether an item endures or is destroyed, and whether even discarded items are in some way accessible to later researchers, we face the problem of where to find those that have survived. The usefulness of taking formation processes into consideration can be concretely illustrated by Li Xiaocong's efforts to track down maps in European institutions by determining which European groups would have been likely to obtain what maps at which times and places.[22]

The thinness of the earlier cartographic record plays a significant role in Mary Elizabeth Berry's argument in her chapter on maps in *Japan in Print*, her highly regarded discussion of the cultural transformations enacted and reflected by the publishing industry in Tokugawa Japan. She posits that a profound shift took place around the seventeenth century, a move from medieval to early modern cartography, based on 'the ability of ideologues to think generically about the space of the nation.'[23] The power of the shogunate

19 Skelton, *Maps: A Historical Survey of Their Study and Collecting*, p. 26.

20 Hargett, 'Song Dynasty Local Gazetteers and their Place in the History of *Difangzhi* Writing,' p. 411.

21 Ibid., pp. 412, 414.

22 Li Xiaocong, *Ouzhou shoucang bufen Zhongwen gu ditu xu lu = A Descriptive Catalogue of Pre-1900 Chinese Maps Seen in Europe*, p. 16.

23 Berry, *Japan in Print*, p. 60.

to limit and shape the ways in which space was understood through maps, Berry argues, hinged on this transformation in public understanding.

Berry sums up in a few words the essence of much recent scholarship when she writes that, 'Because mapmaking is code-making, and because communicable codes rely on social conventions, historical cartography is very deeply the study of spatial ideology.'[24] She notes that 'Maps, and all taxonomic schemes, require order and focus, dominant and subordinate motifs, the elision of unruly material. They require, in effect, organizing ideas that discipline evidence into normative structures of meaning.'[25]

When Berry asks why 'the regime was actually able to impose a cartographic logic on Japan,'[26] she privileges the state as a node of cartographic generation, echoing one of the dominant themes of current cartographic theory – the map as imposer of a mensurate framework on an otherwise tumultuous and colorful reality, speaking with a logic that inherently favors the regime in power. In short, early modern Japanese cartography imposed a regime of universality on what had been the particularity and idiosyncrasy of classical and medieval maps, but it did so only because the transformation of society and politics, first through the chaos of war and then through the reconstitution of unity under a newly unified Tokugawa state, had made such an imposition possible.

An anecdote about a colleague searching for a medieval map of Kyoto launches Berry's discussion of the lack of early city maps. Berry argues that these lacunae are not due so much to loss of the cartographic record, as to an absence of such a record in the first place. She states point-blank, 'I don't think maps of Kyoto were made at all in the medieval period.'[27] Among Berry's arguments for why maps would *not* have been made during the centuries when Kyoto was the capital are the difficulty of penetrating the complexity of the city's 'spatial politics,' and the danger that 'cartographic belligerence' could endanger the fragile balance of power among its elites.[28] Only after this local competition had been overwhelmed by the general unification of the nation as a whole did anyone dare to map Kyoto.

While I don't disagree with Berry's general argument that mapmaking was 'selective and irregular, far from comprehensive and routine, until rather recent times,'[29] and that we should not be surprised to find that maps

24 Ibid., p. 69.
25 Ibid., p. 48.
26 Ibid., p. 60.
27 Ibid., p. 54.
28 Ibid., p. 77.
29 Ibid., p. 56.

were not made of some subjects that might appear natural and obvious to us today, her thesis triggers concerns about the nature of negative evidence and the processes that form the cartographic record. Given that a similar perspective has inspired the cartographic theorist Denis Wood and others, it merits critical attention.[30]

In the parts of East Asia that felt the influence of the Tang, the construction of new capitals on the model of Chang'an was heavily laden with both cosmological and practical significance, from the selection of a site to the layout of streets. The city was a functioning representation of both the domestic realm and its universal context. This is evident in the layout of the Heian capital, now Kyoto. Certainly the layout of streets, the siting of markets and military institutions and their positioning relative to the main palace, would have been done with written plans or maps. Once captured on paper or silk, is it plausible that no one, either state actors or private individuals, dared to reproduce or update these maps in the Kamakura or Ashikaga periods? Is it more plausible to accept that maps may have been lost, than to view Kyoto's denizens as consciously deciding, repeatedly, for generation after generation, not to depict their city for fear of social consequences?

The fact that a handful of isolated examples survive – some in later copies – of a scattering of paddy maps, outlines of Japan, and even a Buddhist worldview depicting the route of a Tang pilgrim to India, shows that cartography as such was not alien to the medieval Japanese experience. The cosmography that placed Japan at the fringe of the Jambudvīpa continent suggests something of a 'totalizing vision,' a systematic organization of the world in which Japan and its subsidiary parts form a concrete portion. The cautious observer must admit, however, that the record is so clearly incomplete, its surviving fragments shaped by the contingencies of history, that it can never be definitively reconstructed. The discovery of a handful of ancient manuscript maps from Nara in 1833, maps that had been stored away and largely forgotten for centuries, has turned Japanese cartographic historiography in a direction it could not possibly have followed in the absence of such evidence. If a single box of Kamakura maps had survived in some unremembered alcove, what would our story of the medieval period look like? One danger to Berry's argument, unlikely though it may be at this late date, is that such evidence might yet appear some day.

To remind us of how unstable a form of evidence is the *lack* of surviving maps, we need only to consider the mapping of the Tang capital, Chang'an. No even remotely contemporary street maps of Chang'an exist on paper. In

30 See Wood, *Rethinking the Power of Maps*.

1080 Lü Dafang 呂大防 had a map of Tang-era Chang'an engraved in stone based on an old, presumably Tang-period, map supplemented with data from observations of the surviving layout of the original city. Despite having been engraved on stone – the very epitome of permanence – this 1080 map is only known today because its broken fragments were unearthed during the Qing period. Thus the only reason we can say with confidence that the Tang mapped the streets of its capital is because of a few fragments of a stone stele that was smashed and buried, barely escaping the oblivion of total disappearance. If not for this chance discovery of the fragments of a stone tablet that was itself a Northern Song scholar's salvaging of an older map of Chang'an, Berry's argument could easily be transferred to Chang'an with no solid evidence to disprove it.[31]

In addition to the normal destructive factors that pare down the cartographic record, there may be more locally relevant explanations for the paucity of earlier Japanese maps. For example, Japan's well-known tradition of tradesmen's secret transmission of knowledge tended to make specialized skills something to be guarded and passed down rather than broadly circulated.[32] The notion that maps should be printed for general education (perhaps inspired in part by the maps increasingly used to illustrate late Ming texts) appeared comparatively late, much as did the printing of other types of texts that had existed in only small circles before, written in manuscript form if at all. Maps preserved only in manuscript are, in simple statistical terms, far more likely to disappear from the record than are printed maps.[33]

31 Images of the 1080 map fragments can be found in Cao Wanru's *Atlas of Ancient Maps in China* 中國古代地圖集*: From the Warring States Period to the Yuan Dynasty*, Plates 45-48. For a broader discussion of Chang'an's layout, and city planning during the period, see Steinhardt, *Chinese Imperial City Planning*, Chapter 5.

32 On the role of secret transmission in the pre- and early Tokugawa periods, and the role of physician/printers in unraveling it, see Bartholomew, *The Formation of Science in Japan: Building a Research Tradition*, pp. 43-45. Unno notes more specifically that the system of master-apprentice secret transmission accounts for the paucity of texts explaining survey methods before the eighteenth century (Unno, 'Cartography in Japan,' p. 359).

33 Berry argues for a high point of cartography during the classical period, followed by a flat or declining curve in production during the medieval period; this analysis is based on her statistics for extant manuscript maps: thirty-one maps from the Nara period (710-784), thirteen from Heian (794-1185), fifty-five from Kamakura (1185-1333), fifteen Northern and Southern courts (1336-1392), and 111 Muromachi and Warring states periods (1392-1600) (Berry, *Japan in Print*, p. 58). However, almost all of the Nara maps are from one cache discovered at the Shōsōin, the storehouse of the Tōdaiji temple. The Tōdaiji in Nara was, as Unno notes, 'one of the major land reclaimers in the eighth century,' and this secular role led to the collection of paddy maps in the temple's archives (Unno, 'Cartography in Japan,' pp. 351-352). Without the role of Buddhist temples in landholding during this period, and the resulting storage of paddy field maps at a

The cultural marketplace vs. the State

In 'The "Spatial vernacular" in Tokugawa Maps,' Marcia Yonemoto describes a process whereby standardization developed in commercial maps as a way of making space 'comprehensible and usable to the reader by visually decoding cities, roads, and the Japanese archipelago itself.'[34] This perspective challenges the conception that cartography predominantly served the state's desire to shoehorn the diversity of reality into a standardized form. We are forced to recognize that 'standardization' is a double-edged sword; it may indeed serve government interests, but without it maps simply cannot fulfill the needs of their popular audiences. The usefulness of a map derives not only from its *presentation* of information, but from its *elimination* of extraneous information.

Yonemoto's focus on commercial printing, and on maps as artifacts sharing a cultural stage with the *ukiyo-e* and other prints for the developing market, leads her to emphasize the demand-driven side of this question, as well as some of the more playful and unexpected aspects of Tokugawa cartography. She observes that 'appreciating and cultivating knowledge was not only utilitarian, for one might argue that knowledge-seeking was, in a word, pleasurable.'[35]

In contrast to approaching maps as ideological tools imparting claims of durability to the state or other institutions, an approach which has its merits but is easily oversimplified and overextended, Yonemoto discusses maps that are self-consciously transitory, particularly those that depicted Edo and other major urban centers. Of course the nature of the map has much to do with the degree to which novelty is valued: City maps were marketed in seventeenth century Japan on the basis of up-to-date revisions, whereas antiquarian Gyōki-style maps intentionally retained their outdated forms.[36] Yonemoto observes that administrative cartography was shared with publishers with the consequence that 'The free flow of geographic information had the unintended effect of leaving the discursive

longstanding Buddhist institution, these maps would most likely have been dispersed and lost, as have any government maps or other commercial or legal charts of the same period. The number of surviving maps is too small, too localized, and too subject to the vagaries of preservation to draw any statistically meaningful conclusions about vectors of change in map production.

34 Yonemoto, 'The "Spatial Vernacular" in Tokugawa Maps,' p. 648.

35 Ibid., p. 661.

36 In his discussion of print commercialization, Peter Kornicki briefly addresses the marketing of city maps and their updating through alterations to woodblocks (*The Book in Japan: A Cultural History from the Beginnings to the Nineteenth Century*, pp. 60-62).

field of mapping open to the innovations and interpretations of non-elites. Ultimately, then, it was not the shogunal government or local officials but artists, writers, mapmakers and their commercial publishers who were most effective at spreading the texts and images of mapping to the public.'[37]

Though Berry and Yonemoto never challenge one another in so many words, their visions of the driving forces behind cartography diverge more dramatically than they might at first appear. In her conclusion Yonemoto challenges Benedict Anderson: 'Mapping was not highly politicized, it was not dominated by governing authorities, nor was it the vehicle of hegemonic power [...] The power dynamic of the modern map as described by Anderson is thus inverted in the early modern Japanese map.'[38] Though the manner and degree to which the state was imbricated in cartographic production varied not only between northeast Asian states but over time within each state, the reader will find in the rest of this book that my own reading of cartographic history generally endorses the spirit of Yonemoto's conclusions. The desire of the state to impose its spatial vision on the reading public accounts for a significant subset of printed cartography, but there were many other forces at play.

Perspectives on the late Ming publishing boom

As Kai-wing Chow has written, 'The cultural history of printing and the history of reading are now on the agenda of China historians.'[39] A coterie of scholars has focused specifically on the late Ming publishing boom and what it might signify about social and economic changes of the time.[40] Some of these studies address late Ming phenomena that are directly relevant to

37 Yonemoto, *Mapping Early Modern Japan: Space, Place, and Culture in the Tokugawa Period, 1603-1868,* p. 4.

38 Ibid., p. 177.

39 Kai-Wing Chow, 'Writing for Success: Printing, Examinations, and Intellectual Change in Late Ming China,' p. 120.

40 K.T. Wu, Cynthia Brokaw, Lucille Chia, Craig Clunas, and many others have linked the proliferation of printed texts to social and economic changes. An entire volume of the journal *Late Imperial China* was devoted to discussions of the place of publishing in late imperial society (Volume 17, no. 1, June 1996). None of these articles address cartography, however; nor does the subsequent revised collection that emerged from this issue (Cynthia J. Brokaw and Kai-wing Chow, eds, *Printing and Book Culture in Late Imperial China*). A collection edited by Lucille Chia and Hilde De Weerdt, *Knowledge and Text Production in an Age of Print: China, 900-1400*, includes an essay by De Weerdt on cartographic printing of an earlier period (De Weerdt, 'The Cultural Logics of Map Reading: Text, Time and Space in Printed Maps of the Song Empire').

cartography, but without drawing maps under their umbrella of discussion. For example, Julia K. Murray describes the role of printed illustrations in developing a common and widely distributed 'Chinese' culture during the sixteenth and seventeenth centuries, but without focusing on maps.[41] Robert E. Hegel examines illustrated fiction of the Ming and Qing, perforce addressing a different category of illustration. He traces book illustrations to two different sources, namely, popular religious art and traditions of elite painting.[42] Though the influence of landscape painting can be found in gazetteer maps in some late Ming works, and such depictions blossom in the high Qing, elite painting is generally quite far removed from the sorts of maps we will see in this book.[43] Nor do maps come from a tradition of religious painting, though the Buddhist works addressed in Chapter Two and in their Japanese iterations in Chapter Five clearly do demonstrate linkages to such a heritage. For the influential printed maps of the Song, the depictions of the *Yugong* or of shifting dynastic administrations, it is clear that there was a third source: the explication of historiography for an audience largely, if not primarily, consisting of students of the Classics and those preparing for examinations. A tradition of administrative cartography as applied to both civil and military purposes became wedded to this historiographical genre with some interesting results, a merger we see especially clearly in the Ming.

Lucille Chia, one of the foremost scholars of the nuts and bolts of the Ming publishing industry, has raised doubts as to the accuracy of modern impressions of an ***unprecedented*** publishing boom in the late Ming. She notes that destruction of the record makes it difficult to determine whether the larger number of extant late Ming works, as opposed to Song or Yuan publications, is the result of increased publication or of an accident of preservation.[44] What is beyond a doubt is a change ***within*** the Ming, with an increase of commercial publishing towards the end of the dynasty, but again Chia challenges a common assumption by questioning whether this increase correlates with a higher literacy rate.[45] Although cartographic works do not help to resolve the latter question, and much of the cartography in

41 Murray, 'Didactic Illustrations in Printed Books,' p. 417.

42 Discussed in Hegel, *Reading Illustrated Fiction in Late Imperial China*, Chapter Four.

43 An example of the painterly depiction of a country seat, immediately following a very different schematic map of its administrative buildings, can be found in the 1637 edition of the Jiaxing gazetteer (Luo Kai 羅炌, *Chongzhen Jiaxing xianzhi* 崇禎嘉興縣志), maps following *juan* 1, p. 37.

44 Chia, 'Mashaben: Commercial Publishing from the Song to the Ming,' p. 302.

45 Ibid., p. 284.

Ming publications can ultimately be traced to earlier sources, there is a clear expansion of the cartographic repertoire visible in late Ming publications.

This study has benefited from Kai-wing Chow's exploration of transformations wrought by commercial publishing on the production of literary culture, as discussed in *Publishing, Culture, and Power in Early Modern China*. Though he only mentions maps in passing, a number of Chow's arguments are relevant to cartographic questions. Chow argues that the 'literary public sphere' was profoundly impacted by printing, especially after printed works superseded manuscript in the sixteenth century; he unearths evidence of changes in the social status of the *shishang* (merchant literati) involved in publishing, changes that have been hidden by a pervasive rhetoric obscuring their commercial interests. Chow places the turning point for 'print culture' in the Wanli reign of the Ming dynasty. By the time Matteo Ricci arrived as an outside observer in the late sixteenth century, he expressed surprise at the widespread ownership of books in contrast to the places he had visited before. Liu Chengfan recorded him as having said in 1592, 'I have visited more than one hundred lands in ten years and yet I did not see a single person carrying a book.'[46]

Though he rejects the concept of a 'public sphere' in Habermas' sense, Chow convincingly argues for the interpretation of the term *gong* 公 as 'a public space shared by the literate population,' emphasizing the 'centrality of print in constituting the public – a community of readers scattered over immense geographical space of China and yet connected by means of their ability to read and access printed texts.'[47] Though this process can certainly be seen before the Ming, most of the changes in literary culture discussed by Chow take place from the 1550s to the 1630s. It is no coincidence that these dates are close to those I have chosen based on the publication dates of influential works in the field of cartography.

To borrow a page from Mary Elizabeth Berry and her discussion in *Japan in Print* of the materials available to a man-about-town in Tokugawa Japan, let us consider what someone interested in cartography might have found in circulation at the beginning of the Ming's last, and most culturally tumultuous, century. In the 1540s, a student would already have had a broad range of cartographies with which to contend. The standard histories, those monumental evaluations of each dynasty compiled by their successors, did not contain maps; however, the *Da Ming yitong zhi*, a national gazetteer of the current dynasty first published in 1461, had already provided a model for

46 Cited in Hsia, *Matteo Ricci and the Catholic Mission to China*, p. 75.

47 Chow, *Publishing, Culture and Power in Early Modern China*, p. 12. I would add that the range of circulation included more than China alone.

combining province-by-province summaries of geographical information in a systematic set of categories, illustrated with basic sketch maps to outline the broad contours of the empire and its subdivisions. This gazetteer was widely disseminated to schools and other public institutions around the empire, reprinted numerous times, and its influence was strongly felt beyond Ming borders.

Our hypothetical student could supplement this state-oriented, mostly textual work containing a mere handful of maps by finding a recent reprint of the *Lidai dili zhizhang tu* 歷代地理指掌圖, a densely illustrated historical atlas first published more than three centuries earlier (discussed below in Chapter Two). This atlas vividly depicts the changing boundaries and shifting urban centers of past regimes. Other more recent additions to the repertoire available to our student would have included the handful of illustrated defense-related texts that had already been published, books such as Xu Lun's *Jiubian tulun* 九邊圖論, which discussed the problems of the northern borderlands.

Our student could focus on smaller areas by examining maps in local gazetteers depicting individual prefectures, counties, or towns. An increasing number of gazetteers were by this time issued with simple maps, a trend which became more pronounced later in the dynasty. On an even more local level, if the student's clan had a genealogy, he could crack it open in hopes of finding a geomantic map of the family's ancestral graves.[48] Turning from the local to the cosmic scale, he could seek out a *fenye* 分野 map to see how the principles of cosmic resonance used for siting graves were applied to determining subtle linkages between the twenty-eight constellations of the zodiac and the regions of the earth.

With sufficient dedication our student might have finagled a way to see a copy of the extraordinarily large world map compiled in the early years of the Ming dynasty from Yuan sources, the *Da Ming hunyi tu* 大明混一圖 (Amalgamated map of the Great Ming), depicting lands as far away as western Europe with names transliterated from Persian into Chinese characters.[49] If our student passed through an urban center, he might take a trip to the prefectural school to see if there were any educational maps engraved on stone monuments from which a rubbing could be made to order

48 For a discussion of geomancy with notes on its cartographic representation, see Bennett, 'Patterns of the Sky and Earth: A Chinese Science of Applied Cosmology.'

49 Today this map is known only from an example in the Number One Historical Archives in Beijing (probably a later copy) and Chosŏn Korean versions, but some version of it must have circulated more widely because, as discussed below, a portion of it showing Africa is reproduced in several late Ming atlases.

and taken home – a depiction of the empire's river network, for example, or even an image of the town as it once appeared, preserved for posterity in lines incised on stone. Perhaps our student is not a would-be literatus but instead a Buddhist who dismisses the Sinocentric bias present in almost all of these maps, finding solace instead in the worldviews depicted in a copy of the *Fozu tongji*, a Song Buddhist encyclopedia which placed the Buddha's homeland at the center.

But our student is dissatisfied. These books, sheet maps and paintings are rather difficult to get hold of. Furthermore, in no single book can one find everything of interest. One solution might be to compile a new work, copying sources out as they become available and organizing the contents in a manner that follows reasonable precedent but tweaks it a bit to fit one's own purposes. Of this broad range of precedents, which to follow? How to combine them? These questions became central to cartography after the 1550s, as the passionate students of the age became the authors of new texts, and the market for books developed new channels for their circulation. The publishing of maps in the late Ming marked not so much a rupture from cartographic traditions as a continuation in new forms. Much of the new material would trace its lineage from preexisting models, but by 1610, we can find examples of almost every type of map cited above *combined in a single work*.

The proliferation of maps in gazetteers is a striking trend over the course of the Ming. As early as the Southern Song (1127-1279), it was not unusual to include a map in the local gazetteer, a textual record of a county or prefecture's history, administration, and culture. Out of twenty-nine extant Song gazetteers, nine contain maps; Hu Bangbo's examination of these gazetteers leads him to argue that this phenomenon emerged in the Song because the increasing centralization of power produced a need for 'the kind of books which could provide comprehensive reference about each local division for both local and central governments.'[50] This perspective grants precedence to the state, and the needs of its actors, above other factors.

Admittedly, the stereotype of the newly assigned district magistrate picking up a copy of the most recent gazetteer to get a handle on the local conditions of his posting did not become a cliché by accident. Joseph Dennis has explored in nuanced detail the role of gazetteers in linking the local to the imperial, and vice versa.[51] James M. Hargett has, on the other hand,

50 Hu Bangbo, *Cartography in Chinese Administrative Gazetteers of the Song Dynasty (A.D. 960-1279)*, p. 41.

51 Dennis, *Writing, Publishing, and Reading Local Gazetteers in Imperial China, 1100-1700*, especially Part I.

drawn attention to the role of the gazetteer as a 'scholarly monograph' rather than an administrator's tool, the audience for which 'now extended to virtually everyone who was literate and interested in local affairs.'[52] Peter Bol has enumerated a diverse range of reasons for gazetteer compilation, ranging from reasons of civic pride and utility, to the literary enthusiast's desire to impart his writings with local flavor from never-visited locales, as in the case of the *Fangyu shenglan* 方輿勝覽 (Exhaustive survey of the realm).[53] Rather than assuming that the maps in gazetteers are always, or even generally, tools or tokens of state power, a more fruitful analysis is possible if we consider a broader range of uses and audiences.[54]

In the late Ming we see an increasing number of maps in print, not only because more books that included maps were printed in the first place, but also because more types of works had come to include maps, and the average number of maps in such texts had increased. The typical local gazetteer might have included only one or two general maps in the mid-1500s, but by the end of the Ming it was not unusual to have a dozen or more maps, some of them adopting fundamentally different modes of representation. It is possible in a single late Ming gazetteer to find a map of the county in the present, paired with one showing it a century earlier; a map showing the location of the state apparatus in the center of town, followed by a map in which the government buildings are nowhere to be found but the turrets of scattered pagodas, shrines and monasteries pepper the suburbs around a simple representation of the town. At the prefectural level or above, a gazetteer also becomes more likely to include separate maps of the counties or other administrative units subsumed within its administration.

While such striking cartographic diversity was new to the local gazetteer in the late Ming, only in rare cases did it exhibit anything new to printed Chinese cartography in general. Everything from the blueprint-like

52 Hargett, 'Song Dynasty Local Gazetteers and their Place in the History of *Difangzhi* Writing,' p. 427.

53 See Bol, 'The Rise of Local History: History, Geography, and Culture in Southern Song and Yuan Wuzhou.'

54 The assumption that gazetteers were made for the aid of the state holds more truth in the Song, where this is a specific purpose cited in prefaces (Hu Bangbo, *Cartography in Chinese administrative Gazetteers*, p. 55) than in the late Ming, when it becomes common to see prefaces cite the need to commemorate the worthies of a locale or to present models for future generations of a local region. Local gazetteers, particularly from the county level, are much more idiosyncratic than those from the higher levels of administration, for which government agency more broadly applies. Some local gazetteers were compiled by scholars independently and submitted to the local magistrate as *faits accompli*, while this is not the case with provincial gazetteers.

depictions of urban centers to the concept of the historical map series can be found in extant maps from the Song, many of which may in turn be based on now-lost earlier precedents. Fairly accurate and labor-intensive means of surveying were not unheard of, and have left their traces in some extraordinary monuments such as the *Yujitu* maps, but these were very rarely used, and there do not appear to have been any formal institutions for transmitting more than basic skills to students for the use of property owners or the state. Thus, it bears repeating: What changes in late Ming cartography is context and quantity more than technology.

There are exceptions, of course. Multicolor printing did more than make the printed page prettier when it was introduced in the latter decades of the Ming dynasty; it had practical applications, as with the depiction of current and former place names in different colors on historical maps. The use of red and black to denote past and present place names had been used before in *manuscript* maps since at least the time of Jia Dan in the Tang, but the technique for publishing large numbers of printed books using this method appears to have arrived only in the Ming.[55] Conventions of labeling also became better established, with the *Guang yutu* offering for the first time an extensive and systematic key to symbols used on the map. Though most later cartographers did not trouble themselves with such details as a key, the use of consistent symbols was considered one of the features distinguishing a better map, and the replacement of older maps with ones that adopted such features was seen as something to boast of in the prefaces or *fanli* of later-edition gazetteers.

In these prefatory pages I have laid out some basic points that will be addressed in greater detail in the following pages. Even without significant technological changes to the process of creating or printing maps, cartography proliferated on the printed page to an unprecedented extent during the late Ming. The purposes of maps reflected the diversity of their users' social interests, spreading far beyond the administration of the state or the training of future functionaries. In the following chapter, I will turn to a sequence of works that might be considered landmarks in Ming printed cartography, exploring the ways they overlapped and intersected to make possible the weaving of a new tapestry by the final decades of the dynasty.

55 The *Jiu Tang shu*'s biography of Jia Dan 賈耽 states that he used this method on an important painted map. Liu Xu 劉昫, *Jiu Tang shu* 舊唐書, *juan* 138, p. 3786.

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