

10 • Cartography in Korea

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INTRODUCTION

Koreans have been making and using maps for more than fifteen centuries. Since most of their country's borders were naturally determined by the sea, they had a general concept of Korea's outline at an early date, and their deep consciousness of *samch'ölli kangsan* (three thousand *li* of mountains and rivers) gave their mapmakers a general idea of what went within that outline.¹ Underlying these imprints on the national psyche were a strong tradition of administrative and cultural geography and a nationally conceived theory of geomantic analysis. All these factors contributed to the production of interesting maps. While naturally emphasizing their own country, Korean cartographers also showed an enduring interest in the shape of their neighbors' lands and territories; and looking beyond these to the greater world, they produced several carefully studied world maps as well as more traditional cosmographies. Just as Korea's culture freely absorbed many of the features and institutions of Chinese civilization yet retained a strong individual Korean identity, so too Korea's mapmakers, applying general cartographic norms developed in China, adapted these norms to their own circumstances and created maps of both utility and beauty.

That much said, by East Asian standards the antiquity of Korea's surviving cartographic artifacts is not great. As in other countries, time, war, and carelessness have taken a heavy toll on all written artifacts, but especially on paintings and maps. The oldest Korean map to survive today is an important world map dated 1402 (known in three copies, of which the earliest was made around 1470). But even that date is early in terms of the surviving cartographic corpus taken as a whole, which dates mostly from the sixteenth to the nineteenth century. For maps before 1402, we must rely on written records and reasonable inferences that can be based on the general trends of East Asian and Korean cultural history. An inquiry along these lines will show that whereas mapmaking before 1402 emphasized the nation and its local districts, a twelfth-century scholar had already produced a map of the world along Buddhist lines, and a fourteenth-century man had compiled a historical map of Korea and China.

The description of the latter is conceived in terms very similar to those evident in the 1402 world map and provides an appropriate link from the unseen to the visible corpus.

It seems convenient to organize Korean maps into four broad categories, proceeding from the more general world and national maps to the more particular regional and local ones. Although this scheme will involve a few chronological discontinuities, the existing corpus is such that most of the more interesting world maps appear relatively early, whereas the great majority of local and topical maps come from the later centuries.

The category of world maps is very heterogeneous, including a few genuine maps of the world, a great variety of East Asian regional maps, and the numerous prints and copies of the quasi-cosmographical *ch'önhado*. Korean scholars sometimes use this term, which can be broadly translated "world maps," for this whole group, but in this chapter it will be reserved for the popular and generally recent maps, often with the terms *ch'önha* or *ch'önhado* in their titles, that present the Sinocentric world—China, Korea, and their proximate East Asian neighbors—surrounded by peripheral rings of exotic or mythical lands and peoples. The origin and development of the *ch'önhado* presents many problems on which scholars still have their differences, but there is no disagreement on the great vogue these maps enjoyed during the eighteenth and nineteenth centuries. They easily account for most of the world map category. Although in terms of the development of maps they are late and perhaps better explained in terms of folklore than of science, still they had a real place in Korean life and have their own absorbing story to tell. The cartographically more significant world maps and East Asian regional maps, though less numerous, have infinitely more variety than the *ch'önhado*, and they generally come earlier. Explaining this seemingly reversed typological development will be one of my major tasks.

1. The phrase *samch'ölli kangsan* has long been a part of Korean folklore. The significance of "mountains and streams" in Korean national geomantic theory is evident as early as the tenth century; see the discussion beginning on p. 276 below.

Then there were maps of Korea alone, understandably a large and varied category. The oldest cartographic depiction of the country to survive is the representation of Korea on the 1402 world map, although we have a number of written references to earlier national maps, including one interesting description of a map of Korea said to have been made in the twelfth century or earlier. During the fifteenth century there was an abundance of geographic research, but unfortunately none of the many maps known to have been produced in that period seem to have survived to modern times. However, a map completed in 1463 by Chōng Ch'ok had great influence and is believed to have been taken as a model by later mapmakers, so that we have a reasonably good idea of how the peninsular outline was conceived as well as of the cartographic detail involving rivers and mountains, place-names, and other features. During the early eighteenth century the mapmaker Chōng Sanggi and his family achieved a genuine revolution in cartographic technique, producing a dramatically improved understanding of the nation's borders, both the long coastlines and the much harder to grasp northern frontier. These techniques were refined and perfected by the nineteenth-century master Kim Chōngho, who was both a mapmaker and a publisher and popularizer. Although he was familiar with Western mapmaking techniques and made use of geodetic coordinates in his work, the visual appearance of his late traditional maps stayed completely within the evolutionary lines of native cartographic practice. Korea's shift to the styles and methods of Western cartography occurred only toward the end of the nineteenth century, as the nation struggled to come to terms with a new Western world order led (as far as Korea was concerned) by Japan, which was much more threatening than reassuring.

Provincial maps were popularized in the late fifteenth century as part of an important compendium of administrative geography, and they achieved high levels of quality in the eighteenth century, when Chōng Sanggi made maps of all the provinces on a unified scale, so that they could be used as separate maps or combined to make a single national map. Reforms introduced in 1791 promoted extensive local surveys and were a key impetus both to the mapping of counties and towns and to the compilation of local histories. But whereas national and provincial maps came to achieve a certain level of standardization and cartographic professionalism, town and county maps were made by a great variety of local hands, some very skilled, others quite crude. As we shall see, the background of these country mapmakers was more in painting and drawing than in cartography, and the results are evident in hundreds of local maps that might also pass for bird's-eye-view landscapes, a style that is

also well documented for China (see above, chap. 6, esp. pp. 135–37, 144–47).

The last of the four major categories of Korean maps is the so-called defense map, or *kwanbangdo* in the traditional term. These range from long scrolls representing frontiers thousands of *li* long and reaching far beyond Korea to maps of local mountain fortresses. The variety is very great. Many were mounted on screens that probably stood in the offices of defense officials in Seoul or provincial governors; others were in more portable scrolls or folios that were an essential part of the equipment of frontier commanders and military officers. One very interesting variety of defense map was oriented to coastal defense and navigation. The evident purpose of maps in this category was principally to clarify terrain and communications from a military perspective, while cartographic scale, so important in the later national and provincial maps, is decidedly a lower priority. The considerable skill and painterly talent evident in these maps shows that they were mostly made and used in the central government or high military commands, where the resources for maintaining staff artists and mappers were readily available.

THE PRESENT STATE OF KOREAN CARTOGRAPHIC RESEARCH

As I have already shown, the corpus of existing Korean maps goes back nearly six hundred years. But the organization of this corpus into a field of study has mainly occurred in the past forty years. Most of the extant artifacts of this long tradition are in Korean collections. The Library of Congress in Washington, D. C., has a substantial Korean map collection, which while mainly devoted to modern holdings also has some significant premodern items, including many of the maps collected by Shannon McCune during his years in Korea. There are some important individual maps in Japanese and other foreign map collections. Aside from an unnamed collection (or collections) of Korean maps in the northern Democratic People's Republic of Korea,² the chief holdings are in the southern Republic of Korea. Of these the most important are those of the National Central Library (Kungnip Chung'ang Tosōgwan) in Seoul and the Seoul National University Library (Sōul Taehakkyo Tosōgwan). The latter contains, in addition to its general cartographic collection, the important Kyujanggak (Royal Library), founded in 1776 and built around the books and writings

2. See Mok Yōngman, *Chido iyagi* (Map conversations) (P'yōngyang: Kunjung Munhwa Ch'ulp'ansa, 1965). The illustrative material, presumably from northern collections, is of very limited use because of poor reproductions and paper.

assembled by the research librarians of King Chôngjo (r. 1776–1800) and his immediate successors. The Kyujanggak has many excellent maps and is notable for its nearly complete collection of district (*ūp*) maps, although most of these come from the very late years of the tradition.

Most other Korean universities also have cartographic collections. Although they cannot all be mentioned here, two of particular distinction are Koryō University Library (Koryō Taehakkyo Tosōgwan) in Seoul and Soongsil (Sungsil) University Library in Seoul. The latter collection was assembled by Kim Yangsōn, a lifetime student of maps who made many scholarly contributions to the field.³ It contains some particularly important Western maps in the Sino-Jesuit tradition, including one of the few known copies of Matteo Ricci's world map of 1603. This collection is also distinguished for the relatively good dating of the maps in its catalog. Most Korean university collections have catalogs abounding in entries of the category "author unknown, date unknown." Of course this reflects the reality that in the great majority of cases Korean maps have no indication of either mapmaker or date. Still, many of these maps could be dated approximately with a little research and professional judgment; that they have not been limits the value of the catalogs as research tools.

The understanding of Korean maps would be very much less developed were it not for the efforts of Yi Ch'an (Chan Lee), for many years professor of geography at Seoul National University. In addition to a number of specialist articles, he has compiled a comprehensive, large-format album of Korean cartography, *Han'guk ko chido* (Old Korean maps).⁴ It contains nearly 120 large reproductions, including 17 in color and many others on double- or triple-sized foldout pages. The tiger's share (Korea has no lions) of the illustrations come from the superb National Central Library (Kungnip Chung'ang Tosōgwan) collection. In the back of the book is an excellent introduction to Korean maps, with a helpful English synopsis, a bibliography, and a list of the principal holdings of eight important map collections (including those named above). This work has virtually defined the field for the present generation of scholarship and has been indispensable in the preparation of this chapter. I have also benefited greatly from the shorter but conceptually different monograph by Pang Tong'in, *Han'guk ūi chido* (Korean maps).⁵ Pang takes a more developmental approach and provides a very useful summary of Korean cartographic methods. Unfortunately the small format of his book ruled out satisfactory illustrations. Apart from Yi's book, relatively little adequately reproduced illustrative material is easily available.

The research literature to date shows a pronounced emphasis on the bibliographical approach and publica-

tion by library organizations and specialists. This is fundamental, and more work along these lines is needed. But with few exceptions, Korean cartographic research so far has not been much concerned with the general cartographic context for Korean maps, especially in reference to Chinese and Japanese map studies. On the other hand, much remains to be done to connect Korean maps to the social, economic, intellectual, and art-historical trends of Korean history. Until we have better understanding along these lines, the full significance of many Korean maps will escape us.

The present essay commences with a summary of historical references to Korean maps and mapping before the fifteenth century. This leads to a discussion of the world map of 1402, the earliest Korean map to survive, and other world maps including those deriving from Western sources of the seventeenth century or later and medieval and late cosmographies based on East Asian traditions. These maps were all based on international literary or cartographic sources of one kind or another and were not the result of Korean explorations or surveys. I then investigate the cultural and technical foundations of Korean national cartography as it developed from the early fifteenth to the late nineteenth century, considering first maps of Korea as a whole, then maps of its provinces and localities, and finishing with the important genre of defense maps that flourished from the seventeenth century on. The conclusion considers the relation of Korean cartography to Korean social, cultural, and historical forces and ends with observations on the circumstances in which traditional cartography, which for several hundred years had strongly resisted the influence of Western cartography, expired virtually overnight when the latter reentered the Korean peninsula driven by the demonic force of Japanese imperialism.

KOREAN MAPS BEFORE THE FIFTEENTH CENTURY

As we have seen, Korean cartography has roots in a distant past far predating "the world map of 1402," whose sophistication is in itself evidence of a long mapping his-

3. For the principal contributions of Kim Yangsōn, whose pen name was Maesan, see *Maesan kukhak san'go* (Selected writings in Korean studies by Maesan) (Seoul: Sungjōn Taehakkyo Pangmulgwan, 1972).

4. Yi Ch'an, *Han'guk ko chido*, map commentaries by Che Honggyu (Seoul: Han'guk Tosōgwanhak Yōn'guhoe, 1977). Note should also be made here of the same author's *Han'guk ūi ko chido* (Old maps of Korea) (Seoul: Pōm'usa, 1991). This is a completely new and different work, with over 250 illustrations in large format, mostly in color, and a greatly expanded text. Unfortunately it became available too late to be used in writing this chapter.

5. Pang Tong'in, *Han'guk ūi chido* (Seoul: Sejong Taewang Kinyōm Saōphoe, 1976).

tory. In the course of surveying this preartifactual development, it will be convenient to give, along the way, a sketch of the broader trends in Korean history.

The earliest Korean state to be mentioned in historical sources is Ko Chosŏn (Old Chosŏn), so named to distinguish it from the later Chosŏn dynasty. The origins of this state are not known, but it was certainly in existence by the fourth century B.C. Although it conducted trade and war with Zhao and Yan, two northeastern Chinese states of the Zhanguo (Warring States) period (403–221 B.C.), and shared a border with the latter, it was a fully independent entity based on a local cultural tradition. Ko Chosŏn, whose territory was limited to the eastern Liaodong area and the northwestern part of modern Korea, was conquered by the armies of Han China in 108 B.C. and suffered the partition of its lands into four Chinese commanderies (*jun*), two of which lasted down to the early fourth century. During this time, most of the ancestors of the Koreans lived beyond the Chinese pale, principally the Koguryŏ and Puyŏ peoples in what is now the Dongbei area (formerly Manchuria) of China and the Mahan, Chinhan, and Pyŏnhan peoples in the southern half of the Korean peninsula. Chinese occupation never reached into the southern areas; for all practical purposes it was limited to the region of the modern provinces of North and South P'yŏng'an and North and South Hwanghae. However, the Han military authorities had trade and diplomatic relations with many of the southern peoples, and under the short Wei dynasty (220–65) these ties reached to Japan as well.

By the first century A.D. there was an effective Koguryŏ kingdom, usually beyond Chinese control; and by the third and fourth centuries the southern peoples had organized the states of Paekche, Silla, and Kaya (Korean historiography claims earlier legendary dates for all of these states). Kaya was absorbed into Silla in the sixth century, and Koguryŏ, Paekche, and Silla (the Three Kingdoms) coexisted in relations of alternating alliance or hostility until the year 668. For most of this time, China was divided into the Northern and Southern dynasties, with the north controlled mainly by non-Chinese regimes, so that the three Korean kingdoms suffered little Chinese pressure and were able to develop their own highly individual political and cultural institutions. There was Chinese cultural influence, but it was highly indigenized. Beginning with the unification of China in 589, however, the Korean states began to feel the pressure of Chinese expansionism, and each of them developed either military (Koguryŏ) or diplomatic (Silla and Paekche) strategies to resist it. Silla proved the most adroit, enlisting Tang Chinese help in destroying Paekche and Koguryŏ, thus emerging in 668 as the state called "Unified Silla" (668–935) by modern historians. During the years of the unification struggles (roughly 598–668), there was consid-

erable Chinese institutional influence in all the kingdoms, but especially in Paekche and Silla. One price of the Tang-Silla alliance was the loss of all of Koguryŏ's Manchurian territory, and even some of its peninsular lands south of the Yalu River, to Tang China. From that time, in spite of a Koguryŏ element that survived in partnership with other Manchurian peoples in the state of Bohai (pronounced Parhae in Korean), Manchuria lay outside the limits of Korea's military power if not its political aspirations. By the middle of the eighth century Tang itself lost its position in the northeast, and China would not again establish its presence there until more than five hundred years had passed; for most of the intervening period the Khitans (Qidans), Jurchens, and Mongols dominated the region. In 668, the Korean frontier met that of its northern neighbors in the neighborhood of the modern city of P'yŏngyang, and only over long centuries regained all the land south of the Yalu-Tumen River line (figs. 10.1 and 10.24).

The earliest evidence of Korean maps comes from the Koguryŏ kingdom. A drawing that seems to be a town plan has been found painted on the wall of a tomb near Sunch'ŏn, about fifty kilometers north of P'yŏngyang in northern Korea. The map is labeled *Yodong sŏng* (Liaodong city) and shows, according to those who have seen it, walls, streets, buildings, and a river and mountains.⁶ Evidently the occupants of this tomb, though far from Liaodong itself, wished to be associated with it in their eternal rest. During most of the fifth, sixth, and early seventh centuries, Liaodong was within Koguryŏ territory, and this particular tomb probably dates from the earlier part of that period. As with similar contemporary drawings known from China, and many more in both China and Korea almost down to modern times, this map partakes of some of the features of a painting; for instance, not only is the location of gates indicated, but the gates themselves are depicted.

The first literary evidence of mapmaking also comes from Koguryŏ. In 628, during a diplomatic interlude in its long struggle with the Sui and Tang dynasties, Koguryŏ presented a map of its territory, entitled *Pongyŏk to* (Map of the infeudated region), to the Tang court.⁷ The title

6. Yi Chinhui, "Kaihō go Chōsen kōkogaku no hatten: Kōkuri hekiga kofun no kenkyū" (The development of postwar Korean archaeology: Studies of Koguryŏ wall-painted tombs), *Kōkogaku Zasshi* 45, no. 3 (1959): 43–64, esp. 51–53; the illustration on 52 is too poor to permit interpretation.

7. Liu Xu et al., *Jiu Tang shu* (Old history of the Tang, compiled 940–45), 199A.5321; see the edition in 16 vols. (Beijing: Zhonghua Shuju, 1975); Ouyang Xiu et al., *Xin Tang shu* (New history of the Tang, compiled 1032–60), 220.6187; see the edition in 20 vols. (Beijing: Zhonghua Shuju, 1975). The report in *Samguk sagi* is derived wholly from these earlier Chinese notices and unfortunately contains no Korean perspective on this map; Kim Pusik (1075–1151), comp., *Samguk sagi*

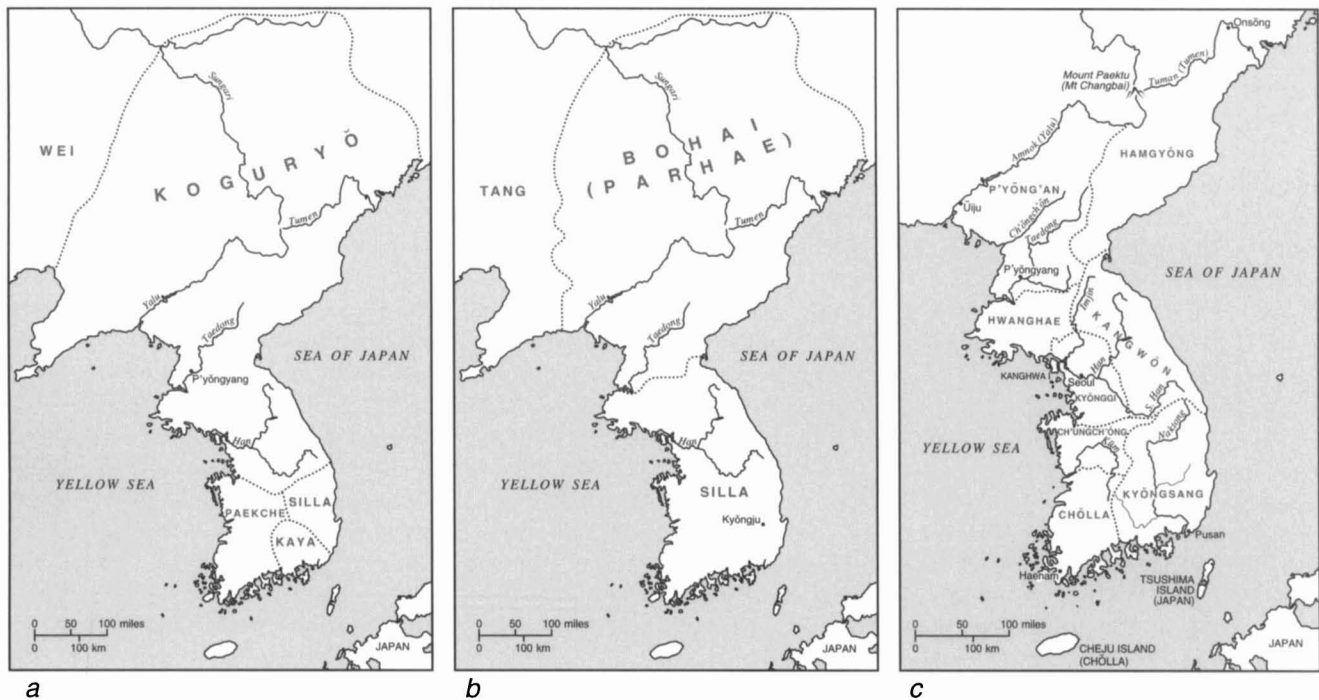


FIG. 10.1. (a) THE KOREAN KINGDOMS IN THE SIXTH CENTURY. Kaya was absorbed by Silla in 562. Paekche, the most active of the Korean states in cultural relations with China and Japan, was conquered by a Silla-Tang alliance in 660. Koguryō fell to the same combination in 668; its territory went largely to Tang, but by 712 it was the home of Bohai (Korean, Parhae), a state dominated by proto-Jurchen peoples and Koguryō military elements.

(b) The kingdoms of Silla and Bohai from the late seventh to the early tenth century. Silla was absorbed by Koryŏ in 935; Bohai was overcome by the Khitans (Liao) in 927. Korean peoples had played a leading role in the Bohai state, but with its fall they permanently lost their position in Manchuria.

(c) Korea during the Chosŏn dynasty (1392–1910), showing provincial and district names mentioned in the text. For details of the evolution of the northern frontier, see figure 10.24.

neatly sums up the tributary rhetoric of the era but gives no hint of any cartographic detail. Such a map was probably a part of the tributary ritual at that time. In spite of a long (though by no means continuous) tributary association with Chinese dynasties, however, this is the only known case of the ritual presentation of a Korean map.

The kingdom of Paekche, in the early seventh century just before the unification wars, is known to have used “maps and registers” (*tojŏk*) in its local administration.⁸ Although we find no reference to maps in Silla’s written remains, which are not abundant, Silla in the seventh century could not have been cartographically behind Paekche; its later regional administrative system, which carried out extensive cadastral surveys on the Tang model, could not have functioned without maps. Nor is it likely that the extensive wars of the unification era could have been prosecuted without maps.

The state of Silla during its unified era (668–935) passed through two distinct phases in its political and cultural development. During the first phase, which actually had begun several decades before unification, there was a heavy importation of Chinese institutions and learning. Although so thoroughly adapted to local circumstances

that a modern historian of China would hardly recognize them, these institutions brought about Chinese-style results: a centralized administration under which the regional powers and traditional aristocracy were weakened while the royal center in Sŏrabŏl (modern Kyŏngju) was both represented and protected by a strong bureaucracy. During this period, the end of which may be marked by King Hyegong’s assassination in 780, Silla reached its cultural high point, represented by the famous monastery Pulguksa, the exquisite Buddhist grotto Sŏk-kuram, and the astronomical observation tower the Ch’ŏmsŏngdae, all of which survive today. During the second phase the old aristocracy and regional forces came back to prominence, while central authority was reduced to a shadow. Chinese-style institutions and culture fell back before a wave of nativism. In this atmosphere

(History of the Three Kingdoms, 1145), 20.13b; see the edition in 9 vols. (Kyŏngju, 1512; reprinted Seoul, 1931). For the role of maps in tributary ritual, see above, pp. 72–73.

8. Iryŏn (1206–89), *Samguk yusa* (Legends of the Three Kingdoms) (Kyŏngju, 1512; reprinted Seoul, 1932), 2.25a; for a modern text, see *Samguk yusa*, ed. and trans. Yi Pyŏngdo (Seoul: Tongguk Munhwasa, 1956), 72.

coastal magnates carved out independent positions for themselves in international trade and manipulated the central government, while secession movements evoking the old kingdoms of Paekche and Koguryō arose in the areas of their former strength. In 918 the latter, adopting the abbreviated form Koryō for its name (from which the name Korea ultimately comes), founded a new dynasty, and from its position of strength it bided its time until both Silla and Later Paekche submitted (935–36).

During the long Koryō dynasty (918–1392), much of Korea's culture was elaborated and defined. The Koryō kingdom began during a period of chaos and fragmentation in China (the Ten Kingdoms in the south, 902–78, the Five Dynasties in the north, 907–60), and therefore launched its enterprise totally free of Chinese manipulation or meddling. This fundamental fact accounts for the generally independent character of the entire period, in spite of on-again, off-again tributary relationships with Northern Song (960–1126; there were no relations with Southern Song, 1127–1279) and only grudging or forced relations with the various non-Chinese peoples, the Khitans (Chinese, Liao), Jurchens (Jin), and Mongols (Yuan). These latter peoples variously invaded, threatened, or occupied Koryō but never interrupted its dynastic continuity or took over its internal administration, quite in contrast to their practice in China or the parts of it they controlled, where the Chinese dynasty was replaced by their own and the bureaucracy was headed by members of the conquering elite. Beginning in 950, the Koryō kings put a heavy emphasis on Chinese-style institutions. These left a durable imprint on the organs of the central bureaucracy (which have a Tang, not a Song, look to them), on the social structure (in the form of a Confucian patrilineal ritual and descent system), and on the literature (mostly in classical Chinese and expressed in Chinese genres). The Confucian influence became particularly strong during the period of Mongol occupation of both China and Korea, when the currents of Neo-Confucianism, elaborated in Song during the eleventh and twelfth centuries, flowed into Korea and nurtured patterns of culture and thought that to some degree still remain part of Korean life. On the whole, however, Koryō counted itself a Buddhist-kingdom, inheriting and strengthening the strongly indigenized Buddhism of the Silla period. It was this Buddhist dimension that reinforced Koryō's independence and nativism, sometimes much to the annoyance of the elite Confucians, who characteristically favored more Chinese ways. But except at the very end of the Koryō period, in the late fourteenth century, the general result of this mix was a Buddhist-Confucian eclecticism.

Although no authentic Koryō maps are known to survive, there is no doubt that Koryō had a very respectable cartographic tradition. The level of state organization and local administration dictated a need for maps. Indeed,

from 1275 until nearly the end of the dynasty, the department of revenue was known as the directorate of “registers and maps” (*p'ando sa*).⁹ Another factor arguing for a sophisticated development of cartography was the near mania in Koryō times for geomantic analysis on the national as well as the local level—a phenomenon I will return to (see below, pp. 276–79). It is hardly conceivable that the numerous professional specialists known to have operated in this field over the Koryō centuries could have done so without good maps. Finally, references to maps in Koryō historical sources are not uncommon. We see, for instance, the twelfth-century scholar Yun P'o composing a Buddhist-inspired map of the Five Indias;¹⁰ we note a Mongol envoy asking for a map of the Koryō kingdom in 1281;¹¹ and we observe Koryō officials, in the course of their expulsion of the Mongols in 1356, relying on their maps to reassert national control over a sector of northeastern frontier territory north of Ch'ollyōng (Iron Pass), which had been under direct Yuan rule.¹²

In addition, Koryō had a cartographic curiosity that is probably unique in the world: it had a unit of money whose shape resembled the outline of the Korean peninsula. A notice of 1101 reads: “In this year the silver vase [*ünbyōng*] was put into use as [a unit of] exchange. As for the design, it was made with one *kūn* of silver and resembled the territorial outline of this country.”¹³ The precise weight of a *kūn* during the Koryō period is unknown, but it would have been in the vicinity of half a kilogram or more—hardly a coin that the average person would often see; indeed, not a coin at all. “Silver vases” seem to have been used mainly in large financial transactions and as ceremonial gifts or rewards. They went out of circulation about the middle of the fourteenth century. (For a possible evocation in the fifteenth century, see below, pp. 295–96.)

Koryō's cultural relations with China also show maps

9. Chōng Inji (1396–1478) et al., comps. and eds., *Koryō sa* (History of Koryō) (Seoul, 1451; reprinted in 3 vols., Seoul: Yōnhūi University Press, 1955), 76.16a.

10. See the memorial inscription on stone “Yun P'o Myoji,” erected in Kaesōng in 1154, and collected in Chōsen Sōtokufu (Government-General in Korea), ed., *Chōsen kinseki sōran* (A comprehensive survey of ancient Korean inscriptions), 2 vols. (Seoul: Chōsen Sōtokufu, 1919), 1:369–71. See also below, pp. 255–56.

11. *Koryō sa*, 29.3b (note 9).

12. *Koryō sa*, 111.32b (note 9). During its Mongol period, most of Koryō's territory had been under direct Koryō administration with general Mongol oversight. But one area, corresponding roughly to modern Hamgyōng Province, had been annexed outright by the Mongols and administered by the Yuan court and its Korean collaborators. This was the territory in question here. Later Ming Chinese claims to this area precipitated the crisis that led to the internal overthrow of the Koryō dynasty.

13. *Koryō sa*, 33.11a (note 9). The *kūn* was standardized at six hundred grams in 1902.

figuring in the exchange. Diplomats on their trips to the Song capital were avid buyers of Chinese written materials of all kinds, and these certainly included maps. We have already seen, in an earlier chapter, an instance in which Korean map purchases in China were treated by Song officials as cartographic espionage.¹⁴ Not too many years after that affair, Song authorities heard rumors of long-lost Chinese bibliographical treasures that had survived in Korea, and they requested that the Koryŏ court send copies of any Chinese editions in Korean collections that it deemed rare or unusual. Among the items sent in response, in 1091, were two geographical works that may have contained maps, the *Yudi zhi* (Monograph on the [Imperial] territory, sixth century) in thirty scrolls by Gu Yewang, and the *Guadi zhi* (Inclusive geographical monograph, 638) in five hundred scrolls by Xiao Deyan and Gu Yin.¹⁵ (These works are now lost both in China and in Korea.) Such notices suggest a broader cartographic flow, the details of which can no longer be known.

Going in the opposite direction, there are representations of the Korean peninsula on a few of the older Chinese maps still surviving, and it is likely that some of these images derive from Korean maps that found their way into China one way or another. The oldest such case seems to be on the *Hua yi tu* (Map of Chinese and foreign lands, see above, fig. 3.13). Some believe, apparently because of the similarity of the titles, that this was based on the famous but long lost *Hainei Hua yi tu* (Map of Chinese and foreign lands within the seas), compiled in 801 under the direction of Jia Dan (730–805). The *Hua yi tu* was engraved on stone in 1136 and is now in the Shaanxi Provincial Museum in Xi'an. Although the representation of the peninsula is primitive and cut off on the eastern side by the margin, the mouths of the rivers on the northwest coast are passably close to reality. The depiction of Korea on a slightly earlier map, the *Gujin Hua yi quyū zongyao tu* (General map of the ancient and present territories of China and foreign countries), has a mere suggestion of the peninsula, and its maker probably had no cartographic image of Korea in front of him (see above, figs. 3.23 and 6.30; it was first published in the period 1098–1100 and is available from a woodblock edition of 1162).

Another Chinese representation of Korea is that in the *Guang yutu* (Enlarged terrestrial atlas, ca. 1555) of Luo Hongxian (1504–64) (fig. 10.2). The problem is how to date it, and this is tied to the difficulty of knowing to what degree Luo followed or departed from his model, the now lost *Yutu* (Terrestrial map, 1320) of Zhu Sibēn (1273–1337). Although Luo gave this piece the title “Chaoxian tu” (Map of Chosŏn), Korean cartographic specialists consider his rendering of Korea to be ultimately based on a Koryŏ map, apparently because of the Zhu Sibēn connection and because its peninsular outline

does not look like that on any known later map.¹⁶ For our purposes it is enough to know that Zhu Sibēn included a map of Korea in his atlas. Zhu flourished in a period of broad cultural exchange between Korea and China, occasioned by the Mongol requirement that Korean princes reside in Beijing until the death or abdication of their predecessors on the throne in Korea. These princes presided over miniature courts of their own, attended by dozens of Korean officials and advisers whose residence in China sometimes lasted for decades. It is likely that in this period maps of Korea were easy to come by in Beijing.

We can get a reasonably clear idea of the information available on at least one map of Koryŏ from a preface that was probably written in 1402, just a decade after the dynasty's fall. The official Yi Ch'ŏm, in the introduction to his abridged version of a history of the three former Korean kingdoms of Koguryŏ, Paekche, and Silla, described at some length a scroll-mounted map of Koryŏ that he had come across.

Such a map of Koryŏ could only have appeared after the unification, but we do not know from whose hand it has come. You can observe the line of mountains winding down from Whitehead to the Iron Pass, where the Maple Peaks suddenly spring up. Then [the line] splits to become both the Greater and Lesser Whites, forming Bamboo Pass, Cockstand, Three Rivers Pass, and Surging Sun Mountain. The central highland stretches down to Cloudrest, from which point neither the earth features nor the map scroll go any farther south, into the sea; rather, the pure and pristine matter here mingles and accumulates, which is why the mountains are so high and steep. Indeed, no other mountains can be as great as these. West of this mountainous spine we have the Sal, Pae, Pyŏngnan, Imjin, Han, and Ungjin rivers, all making their courses westward to the sea; but east of it there is only the Kaya River, flowing to the south. Primal matter here flows and there solidifies, and the mountains and rivers form their separate zones. The different climatic areas and

14. See p. 83, above. The shrill complaints of Chinese officials over what they regarded as cartographic espionage were motivated by the belief that the Koreans were really acting for the Khitans (Qidan), the Song dynasty's perennial enemy in the northeast. For excellent background on these matters, see Michael C. Rogers, “Factionalism and Koryŏ Policy under the Northern Sung,” *Journal of the American Oriental Society* 79 (1959): 16–25, and idem, “Sung-Koryŏ Relations: Some Inhibiting Factors,” *Oriens* 11 (1958): 194–202.

15. *Koryŏ sa*, 10.23b (note 9). The list of books sent on this occasion goes on for several pages and includes 124 titles in some 4,800 scrolls. For the map, see Luo Hongxian (1504–64), *Guang yutu*, 2.82b–83a; 6th ed. (1579; reprinted Taipei: Xuehai Chubanshe, 1969), 379–81. Notes on Korea and an anachronistic table of Korean provincial organization (Chosŏn provinces and many Koryŏ districts) follow, 83b–85a (382–85).

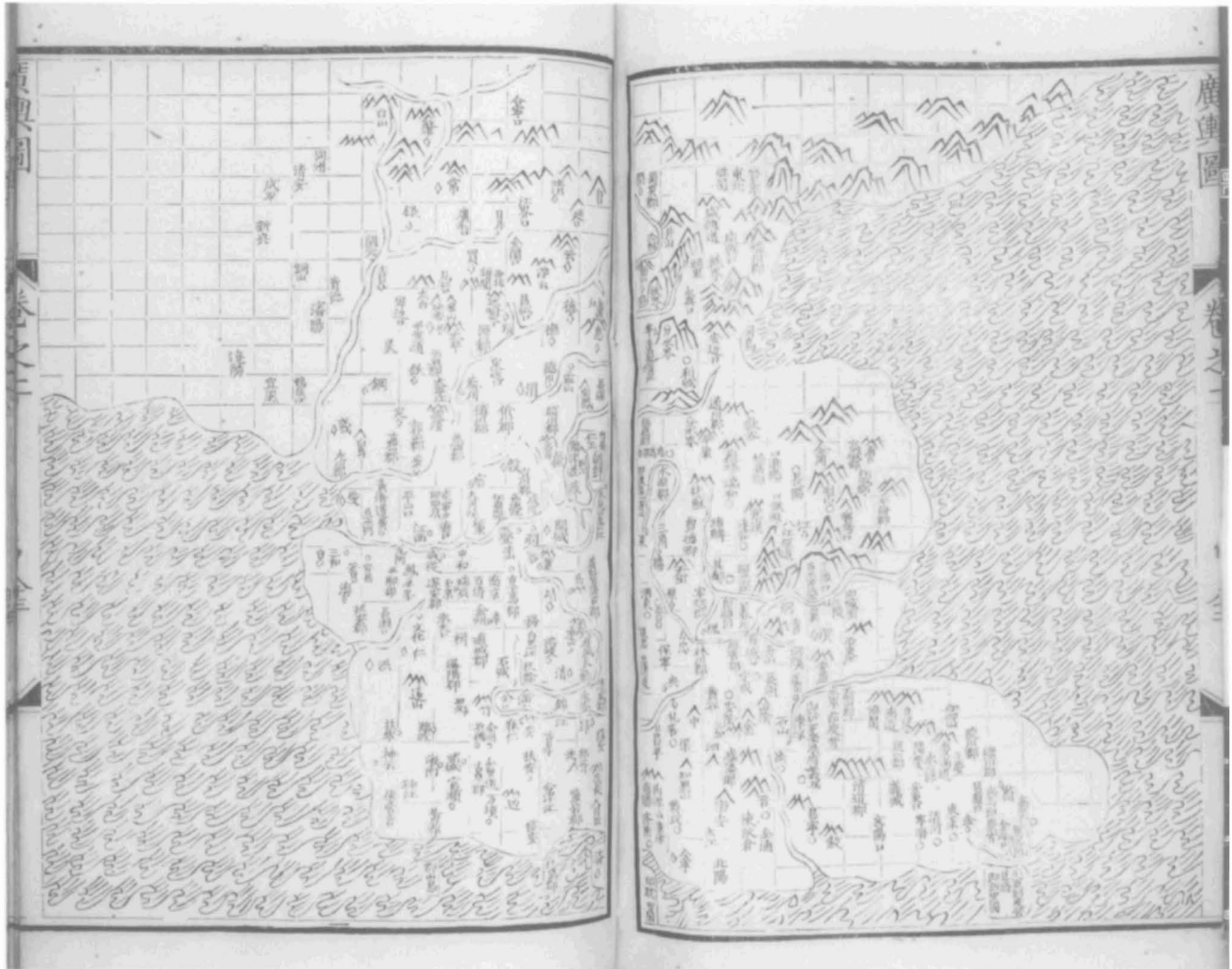


FIG. 10.2. "CHAOXIAN TU" FROM LUO HONGXIAN'S *GUANG YUTU*. Since Luo presumably took this map over from the earlier *Yutu* by Zhu Siben, it is believed to be based on a fourteenth-century Koryŏ map provided with Zhu's distinctive grid. However, the name Chosŏn, the Chosŏn dynasty provincial organization in Luo's accompanying tables, and the indi-

cation of the Chosŏn rather than the Koryŏ capital are not features that could have come from Koryŏ or Zhu Siben. Given such problems, and the bizarre distortions of the map itself, this map defies intelligible historical placement. Size of the original: 28.5 × 39.5 cm. By permission of the British Library, London (15261.e.2).

the borders between one county and another can be seen just by unrolling the map.¹⁷

I shall comment later on some of the geomantic thought evident in this passage (below, pp. 278–79); for now it is enough to note that mountain ranges and river courses were prominently indicated, and that both natural climatic zones (*p'unggi chi kuyŏk*; literally, wind and air zones) and administrative boundaries could be seen. I am not aware of any later Korean map that depicts climatic zones, and I suspect that in this very impressionistic description Yi Ch'ŏm meant only to suggest that such zones were implicit in the areas marked off by mountain ranges. But the important point is that he conceived of a map

17. Yi Ch'ŏm, "Samgukto husŏ" (Postface to a map of the Three Kingdoms), in *Tongmun sŏn* (Korean literary anthology), ed. Sŏ Kŏjŏng et al. (1478; reprinted Seoul: Kyŏnghŭi Ch'ulp'ansa, 1977), 92.12b–14a. By "unification" in the quotation, Yi refers to Koryŏ's unification of the Later Three Kingdoms, 935–36. He identifies the occasion of his seeing the Koryŏ map as a tour of duty in the "new capital" (Seoul) in 1396, but the preface was probably written after he was assigned by King T'aejong to a committee for the preparation of an edition of the *Samguk sagi* in 1402; see *T'aejong sillok* (Annals of King T'aejong, r. 1400–1418), 3.31a (see bibliographic note in next paragraph). His review of Korean maps was stimulated by his desire to include maps of the three kingdoms in this new edition of the *Samguk sagi*. But it is also significant that work on the 1402 world map was going on at precisely this time and that Kwŏn Kŭn, who wrote the preface for that map,

as a means to convey such information. Many of the names of mountains and ranges used here are no longer current (although all are identifiable), so it seemed just as well to translate them and give some of the flavor of this man's interaction with the map.¹⁸ But Whitehead (or Mount Paektu), Maple Peaks (P'ung'ak, a name for the Kūmgang san, or Diamond Mountains, in the autumn), Iron Pass (Ch'ollyōng), and the Greater and Lesser Whites (the T'aebaek and Sobaek mountain ranges) are all key features of Korean physical geography, and we shall come back to them again.

Late in the Koryō period, a man named Na Hūngyu (fl. 1315–76) is said to have compiled a historical map of Korea and China, in which he “set forth the traces of the rise and fall of emperors and kings and of the sundering and joining of territories and regions since the beginning of time.”¹⁹ Na had a reputation for learning and a highly interesting career. According to his biography, in addition to making maps he operated a tutoring service for candidates who failed examinations, supervised palace building projects, presided over the production of sculptural decorations such as carved dragons, served as a royal poet and court jester for King Kongmin (r. 1351–74), and in 1375, at an advanced age, went as ambassador to Japan, only to be thrown in jail for a time by his suspicious hosts, who had not seen a Korean ambassador in many years. Na said of his map that “gentlemen of breadth and refinement who love antiquity can look at it and grasp all of heaven and earth in their imaginations.”²⁰ Na's more fanciful claims for his map must be categorized as rhetorical flights. Some of them, such as its showing all territorial changes “since the beginning of time,” probably referred to the use of textual notes on the map, in the manner of the later work by Kim Suhong (below, pp. 267–68). Others, such as showing “the rise and fall of emperors and kings,” may have been accomplished by lists on the map's margins, as on the world map of 1402. Thus his work, which we can only imagine, serves as a good link to that map, bearing the formal title *Honil kangni yōktae kukto chi to*, to which we now turn.

WORLD MAPS AND EAST ASIA REGIONAL MAPS

The founder of the Chosōn dynasty (1392–1910) was Yi Sōnggye, a military man and native of the northeastern frontier who had risen to fame for his resistance to the Japanese marauders that had plagued Korea throughout the fourteenth century. These were veritable armies, sometimes two or three thousand strong, whose coastal raids often penetrated far into the interior. No town anywhere in the southern provinces was safe from them. Yi's successive victories over this menace throughout the

1380s had brought him a national following. He came to power in 1389 in a spectacular military coup. In 1388 the Ming dynasty (1368–1644), which had just ousted the Mongols from the Liaodong area, demanded that the Koryō rulers turn over the lands northeast of the Ch'ollyōng that had been administered directly by the vanquished Yuan dynasty—the same lands we have seen Koryō repossessing with its maps in 1356. Koryō refused and ordered Yi Sōnggye to attack Ming forces in Liaodong; but Yi, thinking this policy foolish and ill advised, took over the government instead. The Ming forces, given the change, did not push their demands, and the northeastern territories stayed with Koryō. Three years later Yi took the throne himself, bringing the Koryō dynasty to an end after almost five centuries of rule.

This was no mere dynastic change. Into power with Yi Sōnggye came a movement of Neo-Confucian reform that within a generation remade Korea into a completely different kind of kingdom. With the dispossession of the old Koryō aristocracy and the disestablishment of Buddhism as a state-protected religion, the reformers launched a political program that proclaimed Confucian priorities in social policy, educational reconstruction, and cultural development. Thousands of monks were laicized and a multitude of slaves manumitted, all to reinvigorate the revenue-producing peasantry, on lands often confiscated from monasteries. A small but dynamic corps of Confucian ideologists rewrote the legal codes, redesigned government institutions and the civil service, and in countless other ways turned the Neo-Confucian intellectual revolution of the Chinese philosopher Zhu Xi

was on the same *Samguk sagi* committee. Yi Ch'ōm's “primal matter” (*wōn'gi*) refers to the original physical matter from which the earth, in his Neo-Confucian belief, had been formed. He evidently saw it as gaseous or liquid matter that gradually congealed into solid mountains.

Concerning the structure of the *sillok* (royal annals) collection and its editions: the twenty-seven kings of the Chosōn dynasty (1392–1910) each have official *sillok*, compiled upon their deaths from contemporary court records. The annals of the first twenty-five kings are gathered in *Kuksa P'yōnch'an Wiwōnhoe* (National History Compilation Committee of the Republic of Korea), ed., *Chosōn wangjo sillok* (Royal annals of Chosōn), 48 vols. (Seoul: Kuksa P'yōnch'an Wiwōnhoe, 1955–58). The annals of a given king will be cited by that king's posthumous name, followed by the word *sillok* (e.g., *T'aejong sillok*, *Sejong sillok*) with the original *kwōn* and page numbers, which are photolithographically reproduced along with the text.

The modern volume and page numbers provided by the editors of the *Chosōn wangjo sillok* are omitted in the citations in this chapter. Not only are they prohibitively general, since one page of the *Chosōn wangjo sillok* contains four pages of the original *sillok*, but they detract from the integrity of the original *sillok*, which were separately compiled by different people in different circumstances over the centuries.

18. The river names too included many old names: the Sal (modern Ch'ōngch'ōn), Pae (Taedong), Pyōngnan (Yesōng), Ungjin (Kōm), and Kaya (Naktong).

19. *Koryō sa*, 114.27a–b (note 9).

20. *Koryō sa*, 114.27a–b (note 9).

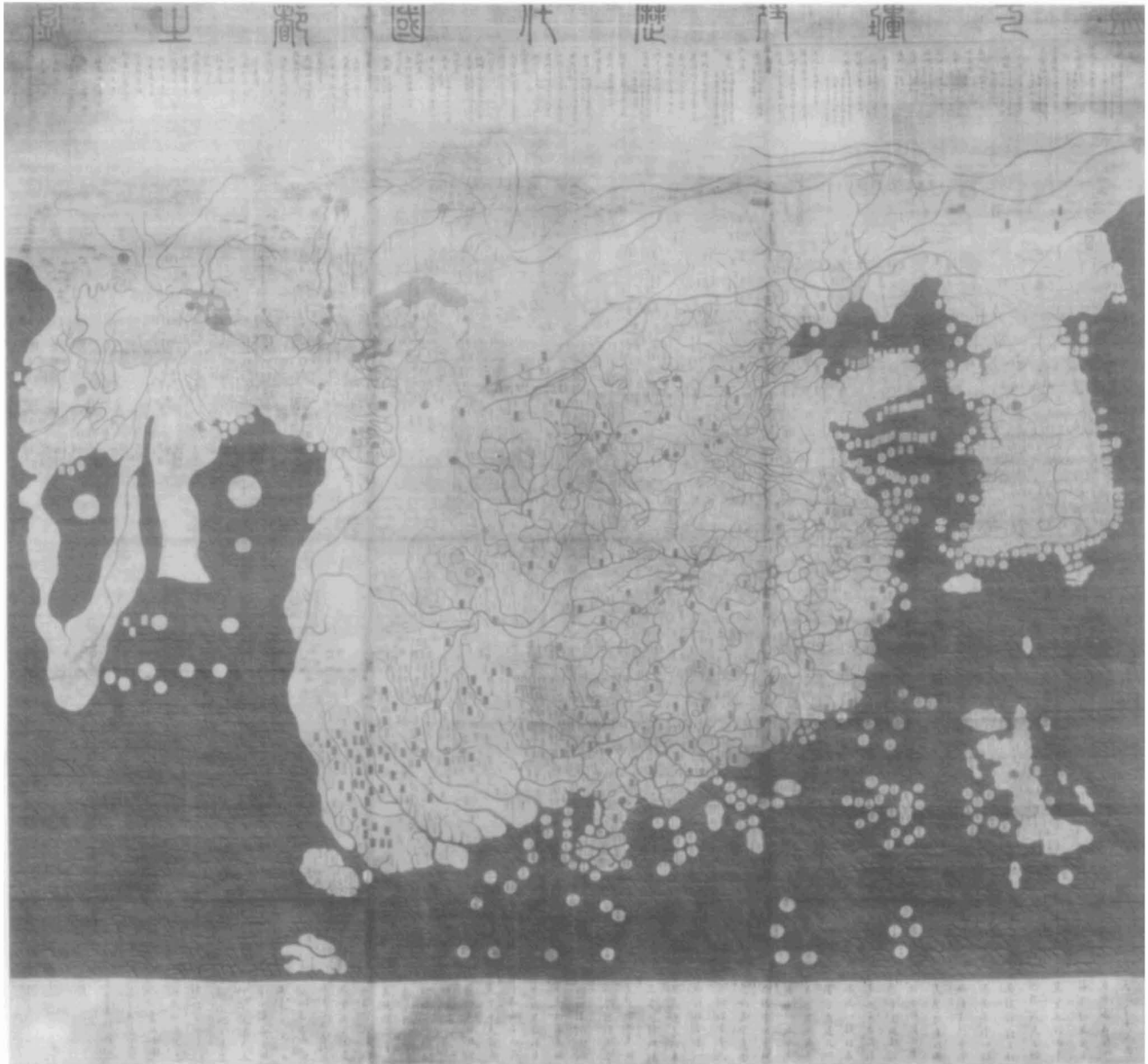


FIG. 10.3. *HONIL KANGNI YŎKTAE KUKTO CHI TO* (1402), BY YI HOE AND KWŎN KŪN, FROM A COPY OF CA. 1470. The *Kangnido*, as it is commonly called, is the earliest known map of the world from the East Asian cartographic tradition and the oldest surviving Korean map. Based on fourteenth-century Chinese maps, one of which had among its sources an unknown Islamic map, the *Kangnido* has clear delineations of Africa and the Arabian Peninsula and a recognizable outline of Europe, but India is submerged in the general Chinese

(1130–1200) into state orthodoxy. These men, who saw their regime as having the classical “mandate of heaven,” had a keen awareness that they were effecting millennial change. Their vision became concrete in a 518-year rule, which apart from China’s chronologically problematical Zhou dynasty (ca. 1027–256 B.C.) and Japan’s very dif-

ferent monarchical institution, is the longest dynastic duration in East Asian history.

Size of the original: 164 × 171.8 cm. By permission of Ryūkoku University Library, Kyōto, Japan.

THE WORLD MAP OF 1402

It is no accident that among the early cultural projects

of this new regime we should find a map of the world and a map of the skies—heaven and earth themselves redefined and proclaimed within the cadre of Korea’s cultural revolution to demonstrate the new dynasty’s cosmic legitimacy. Nor is it mere coincidence that the official guiding both of these projects, Kwŏn Kūn, was one of the key Confucian scholars among the reformers.²¹ The star map, which purports to be a revision of an ancient Koguryŏ map, was engraved on stone in 1395; it is discussed elsewhere in this book (see pp. 560–68). Here I limit myself to consideration of the world map.

The *Honil kangni yŏktae kukto chi to* (Map of integrated lands and regions of historical countries and capitals), hereafter referred to as the *Kangnido*,²² was completed in 1402. It easily predates any world map known from either China or Japan and is therefore the oldest world map surviving in the East Asian cartographic tradition, and the only one before the Ricci world maps of the late fifteenth and early sixteenth centuries. Although the *Kangnido* is no longer preserved in Korea itself, there are three versions in Japan, of which the oldest is that held by the Ryūkoku University Library (Kyōto), which is dated based on internal evidence to about 1470 (fig. 10.3). The principal distinguishing characteristics of the Ryūkoku copy are its generally excellent condition and its preservation of the original Kwŏn Kūn preface. Painted on silk and still preserving its colors well, it is a very large map, nearly square at 164 by 171 centimeters. It was first brought to scholarly notice by the Japanese historical geographer Ogawa Takuji in 1928.²³

The place to begin discussion of this very unusual map is with its preface, the crucial part of which is translated here from the text on the Ryūkoku copy, with reference to the closely similar version in Kwŏn Kūn’s collected works, the *Yangch’on chip*.

The world is very wide. We do not know how many tens of millions of *li* there are from China in the center to the four seas at the outer limits, but in compressing and mapping it on a folio sheet several feet in size, it is indeed difficult to achieve precision; that is why [the results of] the mapmakers have generally been either too diffuse or too abbreviated. But the *Shengjiao guangbei tu* [Map of the vast reach of (civilization’s) resounding teaching] of Li Zemin of Wumen is both detailed and comprehensive, while for the succession of emperors and kings and of countries and capitals across time, the *Hunyi jiangli tu* [Map of integrated regions and terrains] by the Tiantai monk Qingjun is thorough and complete. In the fourth year of the Jianwen era [1402], Left Minister Kim [Sahyŏng] of Sangju and Right Minister Yi [Mu] of Tanyang, during moments of rest from their governing duties, made a comparative study of these maps and ordered Yi Hoe, an orderly, to carefully collate them and then combine them into a single map. Insofar as the area east of the

Liao River and our own country’s territory were concerned, Zemin’s map had many gaps and omissions, so Yi Hoe supplemented and expanded the map of our country and added a map of Japan, making it a new map entirely, nicely organized and well worth admiration. One can indeed know the world without going out of his door! By looking at maps one can know terrestrial distances and get help in the work of government. The care and concern expended on this map by our two gentlemen can be grasped just by the greatness of its scale and dimension.²⁴

Both Kim Sahyŏng (1341–1407) and Yi Mu (d. 1409) held high offices during the formative years of the Chosŏn dynasty, although Yi Mu fell afoul of King T’aejong (r. 1400–18) and was later executed for his alleged role in a political plot. Both went to China on diplomatic business during their careers, and it is believed that Kim’s trip, completed in the summer of 1399, was the occasion for obtaining the Chinese maps mentioned by Kwŏn Kūn.²⁵ Both Kim and Yi probably had administrative experience with maps, since they had reported to King T’aejong on the progress of the land surveys of the northern frontier area in the spring of 1402, just a few months before the world map was made.²⁶ As high ministers, however, they probably had little time for actual cartographic work. Kwŏn’s own role was probably important, even though he insists that he only stood in the background and “enjoyably watched the making of the map.”²⁷ But he was being modest and tactful, since he was younger in age and junior in rank to the two ministers. The real cartographer, even though Kwŏn minimizes his role, was Yi Hoe, whose entire career was in rather low-ranking but often special positions. We will come back to him when I discuss Korean national maps.

21. Even though the two projects were seven years apart, the prefaces for both appear next to each other in Kwŏn’s collected works, *Yangch’on chip* (Collected writings of Kwŏn Kūn) (Chinju, 1674; reprinted Seoul: Chŏsen Sŏtokufu, 1937 [Chŏsen Shiryŏ Sŏkan (Korean historical sources series), no. 13]), 22.1a–2b.

22. This is the title on the Ryūkoku University copy of the map; the short form *Kangnido* is standard in the literature. The title indicated in Kwŏn Kūn’s preface is *Yŏktae chewang honil kangnido* (Map of historical emperors and kings and of integrated borders and terrains); *Yangch’on chip*, 22.2a (note 21).

23. Ogawa Takuji, *Shina rekishi chiri kenkyū* (Studies in Chinese historical geography), 2 vols. (Tokyo: Kobundō Shobō, 1928–29), 1:59–62.

24. The translation is from the text transcribed from the map by Ogawa, *Shina rekishi chiri kenkyū*, 1:60 (note 23); see also Aoyama Sadao, “Gendai no chizu ni tsuite” (On maps of the Yuan dynasty), *Tōhō Gakuhō* (Tokyo) 8 (1938): 103–52, esp. 110–11. These texts differ very little from that in the *Yangch’on chip*, 22.2a–b (note 21).

25. *Chŏngjong sillok* (Annals of King Chŏngjong, r. 1398–1400), 1.17a (note 17). Yi Mu’s trip took place in 1407, after the map was finished.

26. *T’aejong sillok*, 4.10b–11a (note 17).

27. *Yangch’on chip*, 22.2b (note 21).

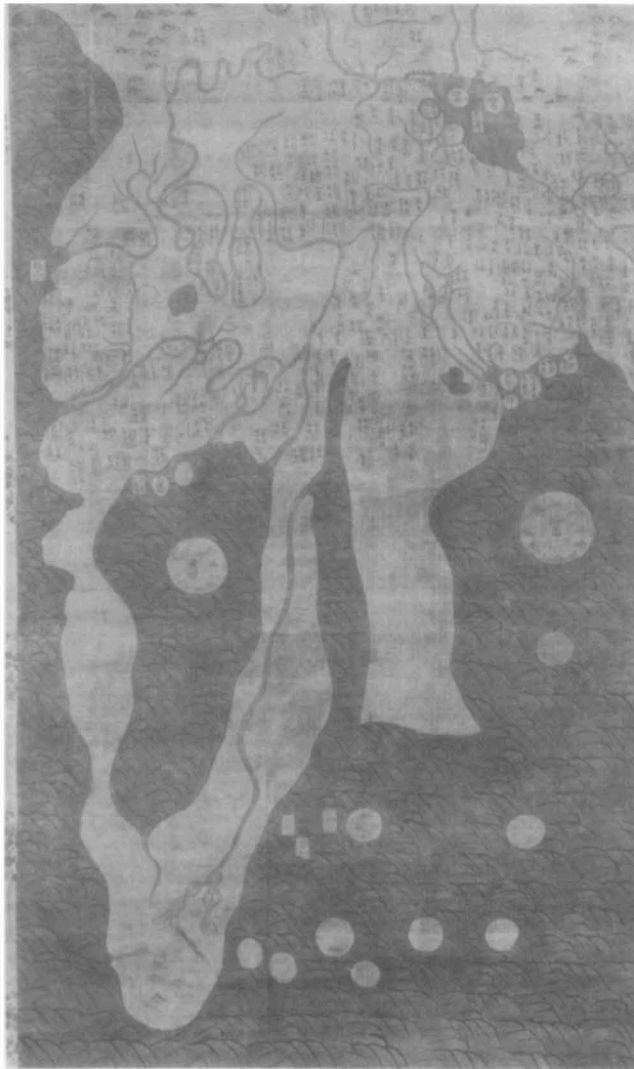


FIG. 10.4. DETAIL OF EUROPE FROM THE *KANGNIDO*. Either the original cartographers or the copyist neglected to provide wave patterns for the Black and Mediterranean seas and the Persian Gulf. Size of the detail: ca. 48 × 37 cm. By permission of Ryūkoku University Library, Kyōto, Japan.

Judging by Kwōn's description of the monk Qingjun's *Hunyi jiangli tu*, it was probably an ordinary historical map of China, compiled in the late fourteenth century. Qingjun (1328–92) was a close adviser to the Hongwu emperor (r. 1368–98),²⁸ who was the founder of the Ming dynasty and himself an erstwhile monk. Apart from its use as a source for the *Kangnido*, nothing is known of Qingjun's map. Its chief contribution to the *Kangnido* is believed to have been the Chinese historical dimension—the indication of the areas and capitals of the earlier dynasties, which was accomplished by a combination of textual notes and cartographic devices. Other than that, the main feature of the *Hunyi jiangli tu* that stuck with

the Korean map was probably its name, which reads *Honil kangnido* in Sino-Korean.

The international dimension of the *Kangnido* unquestionably came from Li Zemin's *Shengjiao guangbei tu*. Li is mentioned by the Ming cartographer Luo Hongxian as a contemporary and possibly as an associate of Zhu Siben.²⁹ Aoyama's careful study of the Chinese place-names on the *Kangnido* shows them in general accord with those on Zhu's map, as preserved in Luo's *Guang yutu*, but with variants that would indicate place-name changes made in 1328–29. This suggests that the *Kangnido*'s source map was made about 1330. Since Zhu explicitly excluded most non-Chinese areas from his map,³⁰ Aoyama and others have reasoned that Li Zemin must have found his cartographic sources for these areas elsewhere, the only plausible source being Islamic maps, which made their appearance in China under Mongol rule.³¹ Luo Hongxian's probable use of the *Guangbei tu* is deduced from his maps of the southeast and southwest maritime regions, and it could well be from the *Guangbei tu* that the *Da Ming hunyi tu* (Integrated map of the Great Ming) derives. But for the missing or incomplete detail in the eastern areas of Manchuria, Korea, and Japan, the latter map, now in the Palace Museum in Beijing, bears a very close resemblance to the *Kangnido*.³²

Takahashi Tadashi has shown that the *Kangnido*'s Chinese transcriptions of place-names in Southwest Asia, Africa, and Europe come from Persianized Arabic originals. Although some of Takahashi's matches do not command credence in early modern Chinese phonological terms, he generally makes a convincing case. One of the more interesting correspondences is the name placed by the mountains near the Ptolemaic twin lakes that are the source of the Nile. Though it is not on the Ryūkoku copy of the *Kangnido*, the Tenri copy shows the Chinese transcription Zhebulu Hama, which Takahashi identifies

28. Aoyama, "Gendai no chizu ni tsuite," 122–23 (note 24).

29. See Luo Hongxian's preface to the *Jiubian tu* (Map of the nine frontiers), partly quoted in Aoyama, "Gendai no chizu ni tsuite," 123 (note 24).

30. Zhu's preface to his lost *Yutu*, preserved in Luo's *Guang yutu*, quoted in Aoyama, "Gendai no chizu ni tsuite," 105 (note 24). The exclusion, in Zhu's own words, was "the areas southeast of the overflowing seas and northwest of the sandy wastes, and all the bordering tribes and strange territories."

31. See Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954–), vol. 3, with Wang Ling, *Mathematics and the Sciences of the Heavens and the Earth* (1959), 551–56.

32. On this map see the illustration and description of Walter Fuchs, "Pekin no Mindai sekaizu ni tsuite" (On the Ming-period world map in Beijing), *Chirigakushi Kenkyū* 2 (1962): 3–4, with 2 pls.; reprinted in *Chirigakushi kenkyū* (Researches in the history of geography), 2 vols., ed. Chirigakushi Kenkyūkai (Society for Research in Historical Geography) (Kyōto: Rinsen Shoten, 1979), 2:3–4 and pls. 1–2.

with Persianized Arabic Djebel al-Qamar (Mountains of the Moon).³³ All in all, there are about thirty-five names indicated on or near the African continent, most of them in the Mediterranean area.

The European part of the map, which is said to contain some one hundred names, has not yet been the object of an individual study (fig. 10.4). The Mediterranean is clearly recognizable, as are the Iberian and Italian peninsulas and the Adriatic, but until the place-names can be read and interpreted it will be impossible to come to any firm understanding of its sources.³⁴

Kwŏn Kūn observed in his preface that the *Guangbei tu* gave only sketchy treatment to the area east of the Liao River and of Korea. His language suggests that some image of Korea, however deficient, was on the original *Guangbei tu* and that this was supplemented and expanded by Yi Hoe. Yi is known to have produced a map of Korea, called the *P'altodo* (Map of the Eight Provinces),³⁵ and it was probably a version of this that appears on the *Kangnido*. In any case, this version is the oldest Korean map of Korea to survive. I will discuss it more fully when we consider Korean national maps.

The last major element of the map to be supplied, as far as the Koreans were concerned, was Japan. At this particular time, Korea's relations with the Japanese were very difficult owing to the continuing problem of Japanese marauders, who were beyond the ability of the Ashikaga shogunate to control. Diplomatic initiatives were in progress, and coastal defenses and strategies were undergoing constant development. All of this was backed by a general Korean effort to improve the government's knowledge of Japan, and this involved maps in particular. Pak Tonji, a military man and diplomatic specialist in Japanese affairs, made at least two trips to Japan, one in 1398–99, the other in 1401–2, and the second visit resulted in a map. A later report quoted his statement that in 1402 he had been given a map by the “Bishū no kami, Minamoto Mitsusuke,” which “was very detailed and complete. The entire land area was on it, all but the islands of Iki and Tsushima, so I added them and doubled the scale.” In 1420, this report states, he formally presented this map to the board of rites, the branch of the Chosŏn government that handled foreign affairs.³⁶

It is generally assumed by Korean cartographic specialists that this map was the basis for the representation of Japan on the *Kangnido*. Compared with other maps of Japan in this period, this outline is unusually good: the positioning of Kyūshū with respect to Honshū is quite accurate, and the bend north of the Kantō area is indicated better than on many of the Gyōki-style maps then current. Except for the joining of Shikoku to Honshū, the three main islands make a very decent appearance. But this splendid effort seems to be vitiated by orienting the Japanese islands with west at the top. Furthermore,

the whole ensemble is positioned far to the south, so that the first impression a modern observer gets is that the Philippines, not Japan, are under view. A probable explanation is that the mapmakers had run out of space on the right (east) edge of the *Kangnido* and so had to place Japan in the open sea to the south. On the other hand, Chinese maps had long shown Japan off China's southern coast, and the *Kangnido*'s treatment may well reflect this (see below, pp. 272–73). As for the orientation with west at the top, it is possible that this was copied from the map Pak Tonji received from Minamoto Mitsusuke. Indeed, the earliest known map of Japan (805) has this orientation.³⁷ Interestingly, the Korean makers of the Tenri and Honmyōji copies of the *Kangnido* corrected the Japanese orientation to the north even while substituting more conventional Gyōki-style outlines.

The overall disposition and bulk of the different components of the *Kangnido* at first make an odd appearance. On the one hand, there is nothing formulaic or mandated about its structure, such as a T-O scheme, or the wheel

33. Takahashi Tadashi, “Tōzen seru chūsei isurāmu seikaizu” (Eastward diffusion of Islamic world maps in the medieval era), *Ryūkyoku Daigaku Ronshū* 374 (1963): 86–94. Takahashi cites a number of features that are on the Tenri but not the Ryūkyoku map, mainly in the African part.

34. Takahashi, “Tōzen seru chūsei isurāmu seikaizu,” 89 n. 9 (note 33), cites four Chinese transcriptions from the European part of the map and matches them with names from al-Idrisi's maps. Without knowing where on the map these names are, however, it is hard to evaluate them. The one hundred names from the European part still await a thorough study by the appropriate specialists. See below, p. 266 and fig. 10.13, for discussion of the *Kangnido*'s Mediterranean area in another context.

35. This may have been the same map as the “map of this country” presented by the State Council to King T'aejong on 6 June 1402 (*T'aejong sillok*, 3.27a [note 17]). This date coincides with the period when Yi Hoe would have been working on the *Kangnido*, which must have been completed by the eighth lunar month of 1402—solar 19 August to 16 September—the date of Kwŏn's preface. Yi Hoe's death date is unknown; the last mention of him I have seen is during May–June 1409, when he was appointed to a supernumerary post in the censorate (*T'aejong sillok*, 17.35a). It is only many years later, in 1482, that Yi Hoe's authorship of the *P'altodo* finds documentary confirmation in a list of maps that the official Yang Sŏngji was seeking to have restricted to official use; see *Sŏngjong sillok* (Annals of King Sŏngjong, r. 1470–94), 138.10b (note 17).

36. These events of 1402 and 1420 are reported retrospectively in 1438; see *Sejong sillok* (Annals of King Sejong, r. 1418–50), 80.21a–b (note 17). For Pak's 1398–99 mission to Japan, which lasted more than seventeen months, see *Chŏngjong sillok*, 1.13a–b (note 17). The Bishū no kami (governor of Bishū) Minamoto Mitsusuke is not otherwise identified. Iki and Tsushima were well-known pirate bases of special interest to the Koreans. On the question of scale, see below, p. 284.

37. See the *Yochi zu* (Land map), pp. 370 and 459. The original map is lost; only a mid-seventeenth-century copy survives. This circumstance suggests the possibility that such a map was available for Pak Tonji in the early fifteenth century. See the illustration in Akioka Takejirō, *Nihon chizu shi* (History of maps of Japan) (Tokyo: Kawade Shobō, 1955), pl. 1.

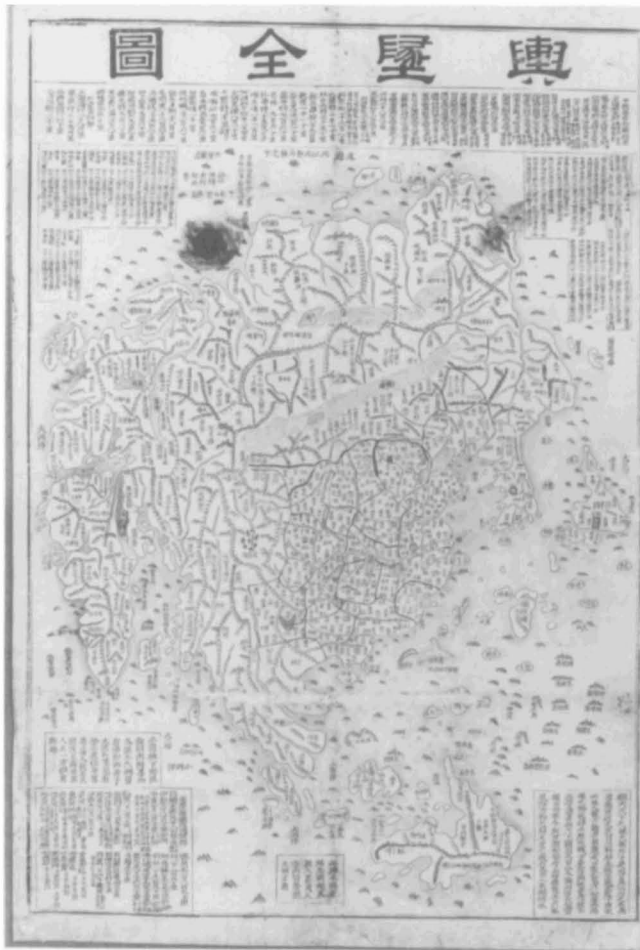


FIG. 10.5. YŌJI CHŌNDO, A PARTLY HAND-COLORED WOODCUT OF CA. 1775. This world map, although visibly influenced by seventeenth-century Sino-Jesuit maps then available in Korea, yet evokes the coverage and outline of the *Kangnido* of 1402.

Size of the original: 86.3 × 59.5 cm. By permission of Yi Ch'an, Seoul.

arrangement of the quasi-cosmographic *ch'ŏnhado*, to be discussed shortly. The attempt here was to study the best maps available in China, Korea, and Japan and put together a comprehensive, indeed integrated (*honil*), map that included every known part of the world, truly a breathtaking objective by the cartographic standards of any nation at that time. The result is inevitably strange to our eyes. China and India, like a monstrous cell that has not yet divided, make up a dominating mass that overfills the center of the map. To the west the Arabian Peninsula, with a clearly delineated Persian Gulf, and the African continent, with its tip correctly pointing south (not east, as on many early European maps), hang thinly but with assurance, as if they belong exactly where they are. At the top of Africa the Mediterranean supports a less securely grasped Europe, and the entire north fades into mountains and clouds. On the eastern side of the

map a relatively massive Korea, easily occupying as much space as the whole African continent (which, to be sure, is unduly small), identifies itself as a very important place, while Japan, as if randomly flipped off the fingers into the ocean, floats uncertainly in the South China Sea. The relative size and disposition of the three major East Asian countries reflects a plausible Korean view of the world in the early fifteenth century: Korea projecting itself as a major East Asian state, refurbishing its traditional view of China as the major center of civilization and playing its eternal game of keeping Japan as far away as possible. On the other hand, Koreans were telling themselves that theirs was not just an East Asian country but part of the larger world. Their ambition and ability to map that world would validate their position in it.

To say this is to begin to answer the question, What was this map for? A map whose composition was guided by the nation's top educator and Confucian ideologist, and presided over by two ministers of state, was surely destined for a prominent, central place in the capital. It was probably displayed on a screen or a wall in some important palace building frequented by the king and senior officials. But a good understanding of its function is hampered because we know nothing of its history after its completion. The Ryūkoku *Kangnido*, judging by Korean place-name indications, is a copy reflecting place-name changes made about 1470.³⁸ If its source map was the 1402 *Kangnido*, then this is the last that is heard of this original.

We know little about how the *Kangnido* came to Japan, but the copies probably arrived there independently on three separate occasions. Both the Ryūkoku and Honmyōji copies were evidently part of the loot from Hideyoshi's invasion of Korea (1592–98). The Ryūkoku map was reportedly given by Hideyoshi to the Honganji, an important Buddhist temple in Kyōto. This institution ultimately was divided into two branches, east and west, and the latter (Nishi Honganji) is today associated with Ryūkoku University, which explains the map's present location.³⁹ The Honmyōji copy, a paper scroll titled

38. Aoyama, "Gendai no chizu ni tsuite," 143–45 (note 24).

39. See Aoyama, "Gendai no chizu ni tsuite," 110 (note 24); and Takahashi, "Tōzen seru chūsei isurāmu sekaizu," 85 and 89 n. 1 (note 33). Takahashi examined an unpublished catalog of the Honganji's books and manuscripts compiled during the 1840s and 1850s and found an item titled *Rekidai teikyō narabini sengi no zu* (The capitals of historical emperors, together with a usurpatious map). The *rekidai* (Korean *yōktae*) evokes the Korean title of the map. The "usurpatious" probably reflects Japanese umbrage either at Japan's being made part of a world map that listed only foreign "emperors and kings" or at Japan's incorrect orientation and position on the map, both of which could have been seen as detracting from the dignity of the Japanese imperial institution. Such nationalist attitudes were very strong in some Japanese scholarly circles in the mid-nineteenth century, when the Honganji's catalog was being compiled.

Daiminkoku chizu (Map of the Great Ming), was given to that institution by Katō Kiyomasa, its major patron and one of the senior Japanese commanders on the Korean expedition.⁴⁰ Nothing is reported concerning the provenance of the Tenri copy, a silk scroll with no title (fig. 10.12 below), but according to a study by Unno it is a “sister map” to the Honmyōji scroll. His persuasive analysis of the place-names indicates that both maps were copied in Korea about 1568, from a version already cartographically distant from the Ryūkyō copy.⁴¹

This information permits the conclusion that the *Kangnido* was probably often copied in Korea during the fifteenth and sixteenth centuries. There is an arguable possibility that its fortunes intersected with those of the *ch'ōnhado* in the sixteenth or seventeenth century (see below), and other evidence could extend its existence down to the eighteenth century. The very interesting *Yōji chōndo* (Complete terrestrial map) dated about 1775, while clearly influenced by a Sino-Jesuit world map, also shows a strong structural similarity to the *Kangnido*, as its owner, Yi Ch'an, has pointed out (fig. 10.5).⁴² Thus Japan is righted and put in its proper place, the respective masses of Korea, China, and Africa are brought into more accurate relation, and England and Scandinavia emerge from Europe. But the map as a whole, and particularly its treatment of India and Africa, strongly evokes the *Kangnido*. This is good evidence that the *Kangnido* tradition was not broken by the Hideyoshi wars but stayed alive in Korea for two more centuries.

AN EIGHTEENTH-CENTURY TERRESTRIAL GLOBE

If the *Kangnido* of 1402 bears witness to a Korean contact with the Islamic cartographic tradition as filtered through Yuan China, a terrestrial globe of the eighteenth century represents a Korean encounter with the new Western cartography as it came into Korea from Ming and Qing China. It is the earliest known Korean application of European cartographic knowledge.

Korea's first news of the West arrived in 1521, when an envoy returning from Beijing reported that a people named the Folangji had conquered a place called Manla and then tried to get permission to trade in Canton.⁴³ This was of course an echo of the Portuguese conquest of Malacca in 1511. The Folangji were the Feringhi, or Franks, since the time of the Crusades a general term in Islamic lands and waters (including Malacca) for western Europeans of Roman Catholic faith. Although Portuguese missionaries and traders were well established in both China and Japan by the middle of the sixteenth century, they never had any direct contact with Korea. Nor did the Spanish or the Dutch ever establish relations with Korea before the twentieth century.

Yet the West had a significant impact on Korea in both

the intellectual and religious spheres, and it was all done, so to speak, by diplomatic pouch. From the time Matteo Ricci (1552–1610) arrived in Beijing, Korean diplomats regularly returned from the Chinese capital with news and books relating to the Jesuits. Thus Ricci's world map of 1602, the *Kunyu wanguo quantu* (Complete terrestrial map of all countries), was brought back to Korea in 1603. Ricci's 1603 edition, titled *Liangyi xuanlan tu* (Map of the heavens and the earth as seen from obscurity), was acquired in 1604. It is held today by the Soongsil University Museum and is one of only a few copies of this edition now in existence.⁴⁴

In 1631 the envoy Chōng Tuwōn returned with “three or four hundred ounces [silver] worth” of European books, maps, and manufactures, including the famous *Zhifang waiji* (Unofficial accounts of foreign countries, 1623) by Giulio Aleni (1582–1649), together with a separate five-sheet set of its maps entitled *Wanguo quantu* (Complete maps of all countries); books by Ricci and others on astronomy and mathematics; a telescope with an instruction manual; star maps of both the Northern and Southern hemispheres; a European cannon with an instruction manual; an alarm clock; and many other items. Moreover, Chōng Tuwōn continued to maintain contact with the Jesuits through correspondence.⁴⁵

In 1645 the Korean crown prince Sohyōn, released by the Manchus after nine years of detention in Shenyang as a hostage, spent two months in Beijing before returning home. He is said to have developed a close acquaintance with the Jesuit Johann Adam Schall von Bell (1592–1666), who gave him, in addition to religious writings and articles, books on astronomy and mathematics and a globe.⁴⁶

40. See Akioka, *Nihon chizu shi*, 80–81 (illustration) (note 37).

41. Unno Kazutaka, “Tenri toshokan shozō DaiMin kokuzu ni tsuite” (On the ‘Map of Ming’ held by the Tenri University Library), *Ōsaka Gakugei Daigaku Kiyō* 6 (1958): 60–67, with 2 pls. See below, p. 289, note 166, for further discussion of the Honmyōji map.

42. Yi, *Han'guk ko chido*, 41 (note 4). There is another copy of this map in the Soongsil University Museum (Seoul).

43. *Chungjong sillok* (Annals of King Chungjong, r. 1506–44), 41.11b–12a (note 17).

44. Kim, *Maesan kukhak san'go*, 227–29 (note 3). On 197–213 Kim provides a complete transcription of all of the original prefaces and geographic notes found on this very rare copy of the *Liangyi xuanlan tu*. The Chinese title of this map is highly allusive. *Liangyi* (the twin instrumentalities) refers to yin and yang, earth and heaven, etc.; *xuanlan* is a Daoist term connoting the seeing and understanding of things that are impenetrable.

45. Yi Nūnghwa, *Chosōn kidokkyo kŭp oegyo sa* (History of Korean Christianity and foreign relations) (Seoul: Chosōn Kidokkyo Changmun Sa, 1928), 3–4; Kim, *Maesan kukhak san'go*, 232–33 (note 3). The value in modern terms of three to four hundred ounces (silver) is beyond certain estimation. But it was a large amount of money, and the cannon and the telescope probably represented most of it.

46. Kim, *Maesan kukhak san'go*, 245–46 (note 3); Yamaguchi Masayuki, “Shōken seishi to Tō Jakubō” (Prince Sohyōn and Tang Ruowang

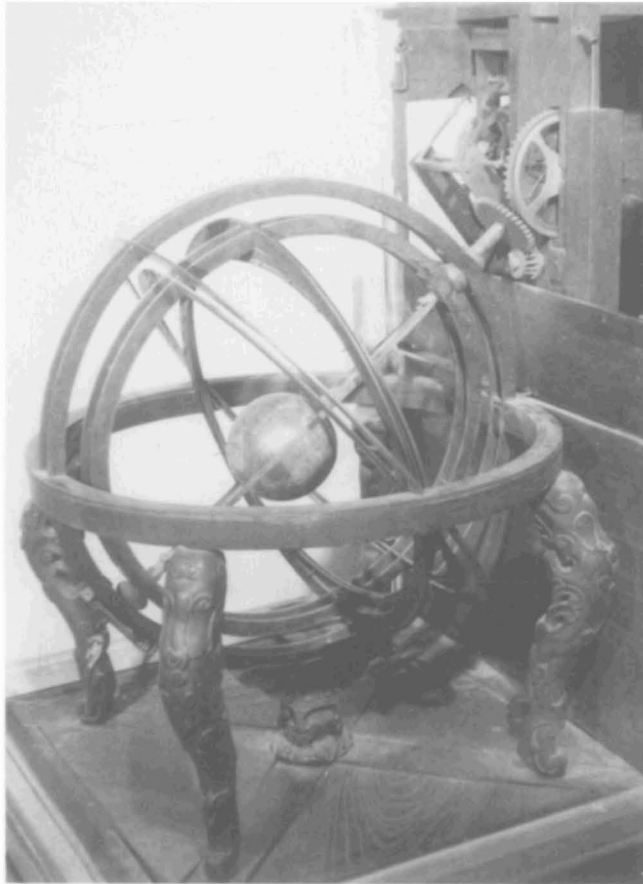


FIG. 10.6. THE KORYŎ UNIVERSITY SŎN'GI OKHYŎNG (DEMONSTRATIONAL ARMILLARY SPHERE). Believed by Needham and others to be the *Sŏn'gi okhyŏng* described in Korean records as having been made in 1669 and repaired and copied during the eighteenth century, but argued here to be of the second half of the eighteenth century. The armillary ring assembly is shown. In addition to a fixed terrestrial component, consisting of the outer horizontal ring with intersecting meridian (double) and equator (single) rings, there were clock-driven rotating solar, sidereal, and moon-path components, although the solar component is now missing. (For the terrestrial globe, see figs. 10.8 and 10.9.)

Diameter of the outer horizontal ring: 41.3 cm. Koryŏ University Museum, Seoul. Photograph courtesy of Gari Ledyard.

Thus there was an abundant background for Korean cartographic responses to the West. Most of these took the form of copies of various Western maps, which continued to be imported as they were acquired either through gift or purchase by Korean official travelers to Beijing. Thus, in 1708 King Sukchong (r. 1674–1720) directed that a copy be made of a map titled *Kunyu tu* (Terrestrial map), said to have been made by Schall von Bell. Judging from its title and cartographic details, this map, of flattened spherical projection, was a reedition of one of Ricci's maps. Two Korean copies resulting from this project are known, each in the form of an eight-

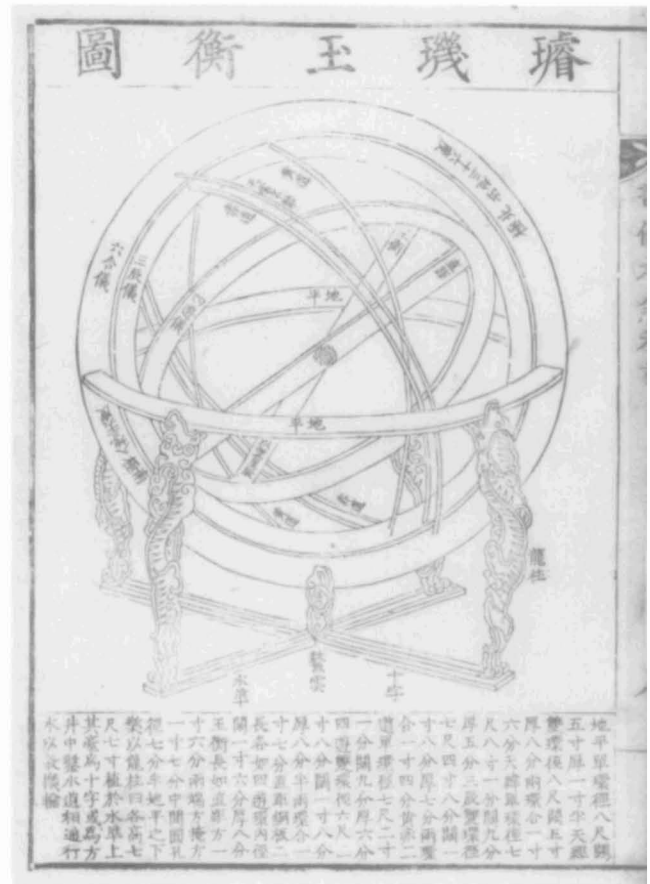


FIG. 10.7. THE SŎN'GI OKHYŎNG AS DEPICTED IN A 1620 KOREAN EDITION OF THE SHUZHUAN DAQUAN. The *Shuzhuan daquan* (Complete commentaries on the Book of History), a Ming work, was consulted by the makers of the *Sŏn'gi okhyŏng* in 1669. Note the absence of any earth model. Size of the original: ca. 24.5 × 18 cm. By permission of the British Library, London (MS. 15215.e.10, fol. 15v).

panel screen with the 1708 preface of Ch'oe Sŏkchŏng (1646–1715), then Sukchong's chief minister.⁴⁷ We will return to this text shortly.

[Adam Schall]], *Seikyū Gakusō* 5 (1931): 101–17, esp. 105 and 113. Yamaguchi's Japanese translation uses the term for "celestial globe," but the text he translates from, a French version of a Latin original, says simply *sphère*.

47. Kim, *Maesan kukhak san'go*, 229–30 (note 3). One of the copies, once in Pongsŏn monastery, southeast of Seoul, was lost in the Korean War; Kim gives the text of Ch'oe's preface that was on that screen. Another copy is illustrated in Chŏsen Sŏtokufu ([Japanese] Government-General in Korea), *Chŏsen shi* (History of Korea), six series comprising thirty-seven vols. (Seoul: Chŏsen Sŏtokufu, 1932–37), ser. 5, vol. 6, pl. 8, where it is stated to be held by Keijō Imperial University. The present whereabouts of this copy is uncertain; it cannot be found in a map list of that institution's successor, Seoul National University; see Sŏul Kungnip Taehakkyo Tosŏgwan (Seoul National University Library), comp., *Han'guk ko chido haeje* (Bibliographical notices of old Korean maps) (Seoul: Seoul National University, 1971). Although this map, as pictured in the 1930s, was in bad condition, most of Ch'oe's

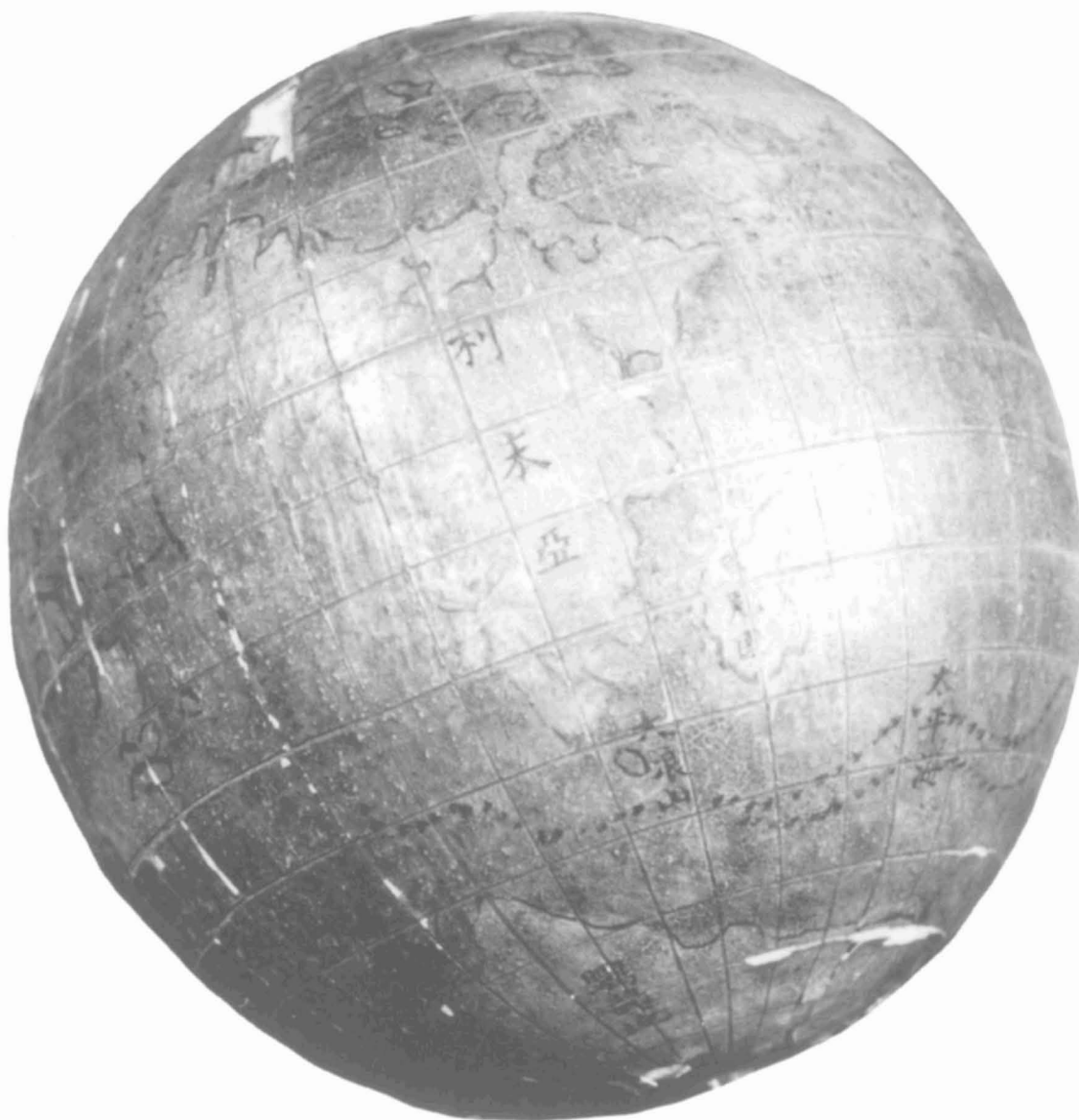


FIG. 10.8. THE TERRESTRIAL GLOBE IN THE SŒNGI OKHYŒNG. The globe was originally stationary and is so today, but evidence in the machinery (including the missing solar component) suggests that an attempt was once made to effect a diurnal rotation. Meridians are indicated at ten-degree intervals. The view here shows Africa (Liweiya, a transcription of

“Libya,” but miswritten “Limoya”). The Cape of Good Hope is called Talang Shan, “Big Wave Mountain,” Antarctica is Yingwu Di, “Place of Parrots.”

Diameter of the globe: ca. 9 cm. Koryŏ University Museum, Seoul. Photograph courtesy of Gari Ledyard.

A much more interesting response, because it represents a creative Korean *application* of Western cartography, is the Western-derived terrestrial globe mounted in a clock-driven armillary sphere of distinctly East Asian inspiration. This instrument, called the *Sŏn'gi okhyŏng* (a kind of armillary sphere), is preserved in the museum of Koryŏ University in Seoul. According to the studies of Joseph Needham and his collaborators, it combines a mid-seventeenth-century armillary assembly with a weight-driven clock mechanism based on a Japanese design, or perhaps imported as an entire movement.

When it functioned, the clock not only announced the time with ringing bells and a visual display, but also indicated the movements of the sun and the moon in their regular cycles by means of moving pegs on the appropriate armillary rings (figs. 10.6 and 10.7). At the very center of the circling rings is set planet Earth, its polar axis mounted at an angle of 37°41' to correspond to the latitude of Seoul. The globe is made of wood and covered

preface is legible in the *Chŏsen shi* illustration. Both of these copies include seventeenth-century Western-style ships and sea monsters floating in the ocean spaces, which were not on Ricci's original editions.

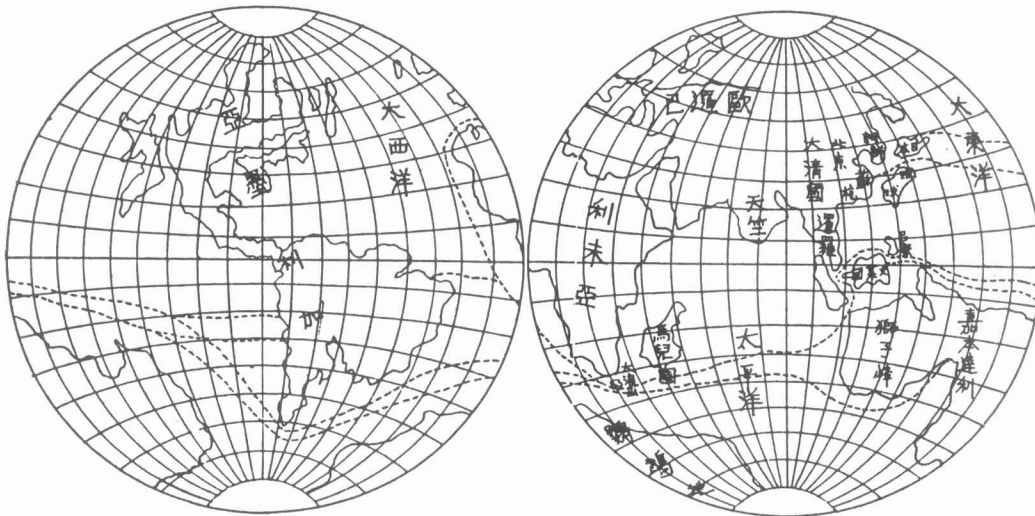


FIG. 10.9. THE SURFACE OF THE TERRESTRIAL GLOBE IN THE SŎN'GI OKHYŎNG, DRAWN IN TWO PLANISPHERES.

From W. Carl Rufus and Won-chul Lee, "Marking Time in Korea," *Popular Astronomy* 44 (1936): 252–57, esp. 257.

with a very fine skin of oil-painted paper (fig. 10.8). On the surface is a very accurate rendering, according to standards achieved by the late seventeenth century, of the earth's lands and seas, including Europe, Africa, the Americas, a continent looking like Antarctica (called Yingwu Di, or Place of Parrots—an echo of penguins?), and Australia, labeled Jiabendaliya (Carpentaria) (fig. 10.9). The globe was not originally intended to rotate diurnally, but there are indications that someone may once have tried to alter the mechanism to include this feature.⁴⁸

Beyond the rough indication given above, the date of this terrestrial globe is not easy to determine, largely because of ambiguities in the evidence for the date of the remarkable instrument of which it is a part. The Korean historian of science Sang-woon Jeon has maintained that this instrument is the *Sŏn'gi okhyŏng* known to have been built by Song Iyŏng (fl. 1661–69) in 1669, although the identification is more asserted than argued.⁴⁹ Needham and his co-workers have followed Jeon in this conclusion. Although they point out problems in the interpretation of the written sources concerning the 1669 machine and note several occasions when it was repaired, rebuilt, or copied, they conclude that the *Sŏn'gi okhyŏng* in the Koryŏ University Museum is at least the linear descendant of the 1669 device and do not hesitate to refer to it as Song Iyŏng's armillary clock.⁵⁰

Most of the documentation on the 1669 instrument making refers to the water-driven armillary sphere made by Yi Minch'ŏl (fl. 1669–1713).⁵¹ It is not at all clear that this instrument featured a terrestrial globe within its rings. A recollection of this device written in 1687 gives the following details: "The sun and moon each had their

rings, and in the centre there was not an alidade, but instead a terrestrial plane [*chip'yŏng*] made of paper with painted mountains and seas."⁵² It would stretch the Sino-Korean term *chip'yŏng* (Chinese, *diping*) beyond semantic possibility to interpret it as a globe, for which by this time there was a well-established term, *chigu* (Chinese *diqu*). Indeed, the more usual meaning of *chip'yŏng* in connection with armillary spheres is the horizontal and flat terrestrial horizon ring to which the main nest of rings is affixed.

48. Needham, *Science and Civilisation in China*, 3:339–82 (note 31), and Joseph Needham et al., *The Hall of Heavenly Records: Korean Astronomical Instruments and Clocks, 1380–1780* (Cambridge: Cambridge University Press, 1986), 115–52.

49. Sang-woon Jeon (Chŏn Sang'un), *Science and Technology in Korea: Traditional Instruments and Techniques* (Cambridge: MIT Press, 1974), 68–72.

50. Needham et al., *Hall of Heavenly Records*, 106–14 (note 48). The authors say that the 1669 description "of Song Iyŏng's armillary clock would have remained merely a tantalising glimpse . . . were it not for the survival, against all odds, of that clock down to the present day" (p. 114).

51. Needham et al., *Hall of Heavenly Records*, 104–11 (note 48), citing and translating extensively from the account of the 1669 work by Kim Sŏkchu (1634–84) included in Hongmun Kwan (Royal Library), comp., *Chŭngbo Munhŏn pigo* (Documentary reference encyclopedia, expanded and supplemented) (Seoul: Empire of Korea, 1908), 250 *kwŏn* in 50 fascicles (cited hereafter as *Munhŏn pigo*), 3.2a–3b, and the description by King Yŏngjo (r. 1724–76) of a copy of the 1669 water-driven instrument made by An Chung'ae in 1704 and refurbished by him in 1732, in *Munhŏn pigo*, 3.6a–7b. See also *Sukchong sillok* (Annals of King Sukchong, r. 1674–1720), 17.35a–b (note 17).

52. *Munhŏn pigo*, 3.3a (note 51). The translation follows Needham et al., *Hall of Heavenly Records*, 107 (note 48), but rephrases their last clause, "but instead an earth-model of paper with mountains and seas drawn upon it to represent the surface of the earth [*chip'yŏng*]."

The very brief 1669 description of Song Iyŏng's clock-driven armillary sphere, which supposedly is the grandfather of the Koryŏ University Museum instrument, if not the thing itself, says nothing about a terrestrial globe, but simply notes that its armillary assembly is the same as that of Yi Minch'ŏl's water-driven device except that the movement is powered by a weight-driven clock of Western type. Thus it would have had nothing substantially different from the paper "terrestrial plane" already described. King Yŏngjo's description of the 1704/1732 copy of Yi Minch'ŏl's instrument says, "From the south-polar pivot there projected an iron rod bending toward the earth center [*chisim*, Chinese *dixin*, literally earth heart]. It was in the shape of a claw or fork that held a map of mountains and rivers [*sanhaedo*, Chinese *shanhai tu*]."53

If these contemporary texts give no support for a terrestrial globe in the 1669 instrument, the Koryŏ University Museum globe itself offers internal evidence that virtually rules out a 1669 date: the name "Carpentaria" (Chinese Jiabendaliya, Korean Kabondallia). This name, now belonging to the great gulf west of the Cape York peninsula of Australia, appeared on some mid-seventeenth-century European maps as a regional name for the northeastern coast of the continent. The earliest appearance is on a Dutch map of 1648; it was commonly seen throughout the 1650s and 1660s.⁵⁴

It would seem to have been impossible that the Koreans, who had to wait for their European knowledge to be filtered through the Sino-Jesuit medium, could have received knowledge of Carpentaria by 1669. The earliest East Asian cartographic appearance of the name is on the *Kunyu quantu* (Complete map of the earth), published in 1674 by Ferdinand Verbiest (1623–88). But the earliest evidence of this map in Korea comes only from 1721.⁵⁵ In 1708, as we have seen, the Koreans were still copying the older Ricci maps, which were too early to reflect the name Carpentaria or the identity of Australia as a separate continent.

The evidence thus points to a general eighteenth-century date for the terrestrial globe in the Koryŏ University's *Sŏn'gi okhyŏng*. Although it is possible that its association with that instrument resulted from an eighteenth-century reconstruction or repair of Song Iyŏng's 1669 *Sŏn'gi okhyŏng*, it is equally possible that the globe is evidence against the identification of the Koryŏ University piece as Song Iyŏng's armillary clock or its direct descendant, and indeed this is my belief.⁵⁶

However and whenever this Western global map was mounted at the center of the armillary assembly of a traditional yet innovative *sŏn'gi okhyŏng*, the combination represented a remarkable marriage of Western and East Asian emblems and concepts. As far as I have been able to determine, it is the only known instance of such

a combination. It must have been conceived by a mind deeply knowledgeable in East Asian scientific tradition and at the same time appreciative of and open to Western ideas.⁵⁷

53. *Munhŏn pigo*, 3.3a and 7a (note 51); translation altered from Needham et al., *Hall of Heavenly Records*, 108 (note 48). The representation of the earth by the incorporation of a flat or square earth model within the rings of an armillary sphere goes back at least to the third century in China, as Needham has shown; see *Science and Civilisation in China*, 3:350, 383–86 (note 31).

54. *Nova totius terrarum orbis tabula*, by Joan Blaeu (1648); see Günter Schilder, *Australia Unveiled: The Share of the Dutch Navigators in the Discovery of Australia*, trans. Olaf Richter (Amsterdam: Theatrum Orbis Terrarum, 1976), 370–71 (map 64). Of the last fourteen maps on Schilder's list (maps 75 to 88), dated from 1652 to 1666, most give Australia the general name Nova Hollandia (or the inverted form), but eight of them also add Carpentaria as a regional name. Thus this name was gaining currency at the very time the Koreans were building their armillary sphere.

55. Kim, *Maesan kukhak san'go*, 234 (note 3). Kim cites the autograph copy of *Yŏnhaengnok* (Record of a journey to Beijing) of Yu T'akki, an official on the Korean embassy of 1721–22. The manuscript is in the Soongsil University Library, Seoul.

56. Other indications also argue against this identification. From the 1669 notice until modern times, no other documentary reference to Song Iyŏng's armillary clock is known, although references to its water-driven mate are relatively abundant. Given that a clock mechanism is more likely than a water drive to go awry, it seems improbable that such a clock could have reached the twentieth century in as good condition as the Koryŏ University instrument. Furthermore, if the information I have cited is true, that the armillary assembly of Song's piece was generally the same as Yi Minch'ŏl's, we have to consider that the 1704/1732 copy of the latter device, which on King Yŏngjo's testimony (*Munhŏn pigo*, 3.7a [note 51]) had a circumference of 12 [Zhou] feet, or about 239 centimeters, was considerably larger than the Koryŏ University instrument, which with a reported diameter of 41.3 centimeters for the largest ring (Needham et al., *Hall of Heavenly Records*, 134 [note 48]) would have a circumference of only 129.7 centimeters. Finally, while the 1669 pieces featured a visual jack-work display to announce the hours, the Koryŏ University piece has a rotating set of twelve medallions for this function. Admittedly, there are many unknowns in our chain of knowledge that could invalidate these observations, but what we know weakens more than strengthens the case for the identity or close relationship of the two armillary instruments.

57. Hong Taeyong (1731–83) was such a man. A genuine polymath—Confucian scholar, traveler to China, mathematician, musician, and expert in military thought, who was knowledgeable about the West and a successful district magistrate—he built and operated a weight-driven armillary clock in his personal study, one of the rare known instances of the private execution of such a project. The instrument took three years to build and was completed before Hong's trip to China in 1765–66. The description of it by his friend Kim Ian (1722–91) is too involved to explicate here, but one phrase is of particular interest: "Its instrumentalities were two, its rings ten." See Hong Taeyong, *Tamhŏn sŏ* (Writings of Tamhŏn, or Hong Taeyong) (Seoul: Sin Chosŏnsa, 1939; reprinted Seoul: Kyŏng'in Munhwasa, 1969), appendix, 8b. The term *liangyi* (twin instrumentalities), which we have already observed in the title of Matteo Ricci's world map of 1603, is a classical phrase connoting "heaven and earth." Kim Ian's similar phrase hints at the inclusion of an earth model within the rings, which themselves would have represented heaven. The Koryŏ University instrument also has ten rings, and its size corresponds to that of Hong's machine, which

The kind of thinking such a mind would have been up against can be gauged by the remarks of Ch'oe Sökch'ong in his preface to the 1708 copy of the Ricci map mentioned above. In presenting this flattened spherical projection of the world to his compatriots, Ch'oe took pains to remind them that although the Westerners saw the world as round, the view considered orthodox in Korea was that "the way [*dao*] of the earth emphasizes quiescence, and its inherent character [*de*] is squareness." He went on, "The Western theories are far reaching but devious and boastful; they stray into the unattested and uncanonical. But their learning has been transmitted and received, and we should not be disrespectful or too quick to criticize it; rather, we should preserve it to broaden our knowledge of things foreign."⁵⁸

Part of the reason for such ambivalence was to protect oneself from the political attacks of Korean Confucian zealots. But behind that concern was the existence of an ideological dimension to the Western cultural traffic, for besides science and mathematics, of course, Catholicism itself issued from Beijing's rectories. The same Jesuit who handed out maps and copies of Euclid in Chinese translation also dispensed holy pictures and scapulars. Korean enthusiasm for the science and gadgets was balanced by official apprehension over religious activity of any kind. Neither the Jesuits nor the Koreans ever forgot the double dimension of this cultural traffic. In 1759 Father August von Hallerstein (1703–74), then director of the Qing government's bureau of mathematics, elucidated the point in a letter to his brother in Laybach (now Ljubljana): "We have not come here to promote and correct astronomical tables. But since astronomy is necessary to protect and preserve, if it can, the interests of religion, we will do all that we can to that end."⁵⁹

By the end of the eighteenth century the Jesuits' greatest hope and the Koreans' greatest fear had come to pass: the baptism in Beijing of a Korean diplomatic traveler had engendered in Korea a major Catholic movement that, in the end, not only resisted suppression but in doing so generated ninety-four Korean martyr-saints, far more than have so far been canonized from all other East Asian countries combined. In this kind of atmosphere, there was an understandable hesitation on the part of many officials to have any contact with things Western. But it helped that Korea's cultural tradition provided a large native niche for maps, and the government itself had in the past sponsored the study and copying of Western maps. The *sirhak* (practical learning) scholars of the eighteenth century took an active interest in Western maps and included them in the map albums made for their own studies. In 1834 the scholar Ch'oe Han'gi (1803–77, see below) enlisted the help of his friend, the mapmaker and publisher Kim Ch'ongho (fl. 1834–64), in reprinting a Western-style hemispheric map of the world

that had been issued in China. This map, entitled *Chigu ch'önhudo* (Map of the front and back [hemispheres] of the globe), had many new names of English rather than Latin origin, and it sent to anyone alert enough to notice a cartographic signal that English mercantilism was replacing Latin Catholicism in speaking for the West in China.⁶⁰ By 1860, when British and French marines occupied Beijing and forced the Chinese to accept a new international order, that transfer was complete, and Koreans expected their own capital to be next. Perhaps to refamiliarize Koreans with the West, an unknown printer in that year made the last known Western cartographic import from China: an 1856 Canton reprint of Verbiest's map, which he then reprinted in Seoul.⁶¹ He would have been more up to date had he reprinted Kim Ch'ongho's map of 1834.

KOREA AND MAPS IN THE BUDDHIST TRADITION

In importing the famous maps of Ricci and Verbiest and copying them on any number of luxuriously painted screens, the Koreans were responding not so much to new cartographic science as to a new vision of the world. I have already emphasized that Western maps had little impact on Korean cartography in general, and we will see even stronger confirmation of this when we consider Korean national maps in another section. Yet the Western view of the world, with its globes, hemispheres, and graticules, was undeniably intriguing to Koreans. A Korean viewer of these maps, whether knowing much about geography or not, could see that they had to be taken seriously. So far as historical records reveal, no one ever said

in the impression of Kim Ian took up space "enough to seat a man." Although there is no specific mention of a terrestrial globe in the device, Hong Taeyong was the first Korean to champion the idea of the diurnal rotation of the earth (reported by his friend Pak Chiw'ŏn [1737–1805]; see *Tamh'ŏn s'ŏ*, appendix, 1a), and the already mentioned signs that someone may once have tried to adapt the Kory'ŏ University instrument to include such a movement are at least interesting. In my opinion, Hong Taeyong is more plausible than Song ly'ŏng as the maker of that instrument.

58. Translated from the preface of Ch'oe Sökch'ong, as written on the map illustrated in *Ch'ŏsen shi*, ser. 5, vol. 6, pl. 8 (note 47).

59. Aloys Pfister, *Notices biographiques et bibliographiques sur les Jésuites de l'ancienne mission de Chine, 1552–1773*, 2 vols. (Shanghai: Mission Press, 1932–34), 2:754. Father Hallerstein received frequent visits from Koreans during the 1750s and 1760s.

60. Kim, *Maesan kukhak san'go*, 235–246 (note 3). For Ch'oe Han'gi's hemispheric map, see Yi Kyuy'ŏng (pen name, Oju), *Oju y'ŏn-mun changj'ŏn san'go* (Oju's extended essays and lengthy notes, undated manuscript of ca. 1840s), 38.180ab–ba; modern edition 2 vols. (Seoul: Tongguk Munhwasa, 1959). Yi identifies the map reprinted by Ch'oe and Kim Ch'ongho as the *Wanguo jingwei diqiu tu* (Graticuled global map of all countries) by Zhuang Tingping. Judging by details in Zhuang's preface to the maps, which Yi quotes (but which Ch'oe Han'gi omitted), this map was first produced sometime after the famous Macartney mission to China in 1793.

61. Yi, *Han'guk ko chido*, pl. 4 and p. 29 (note 4).

“there is no continent here” or “that island is out of position.” These maps commanded respect.

Still, the world thus mapped, with all its strange shapes, unpronounceable transliterations, and unimaginable distances, could not have presented much for Koreans to relate to. Their concept of the world, deeply implanted by school primers and reinforced through a literate life, would have conditioned them to a very different kind of map, one that related to the classics, the histories, and the geographical concepts of China and Korea. This is why the more or less primitive but incomparably more relevant *ch'önhado* (map of all under heaven), which circulated in great numbers from the seventeenth century on, was in the end more appealing to Koreans. Before dealing with this genre, however, it is necessary to briefly consider an earlier kind of world map, a Buddhist variety, that may have enjoyed Korean esteem in an earlier age. We shall have to investigate this cartographic genre in any case, since some believe it played a role in the origin of the *ch'önhado*.

Buddhist world maps, as they are known today, are essentially a Japanese phenomenon of the period lasting from the middle of the fourteenth to the middle of the eighteenth century. Unno sketches this Japanese development later in this volume.⁶² The *Gotenjiku* (Five Indias) genre of maps was inspired by the travels of the Tang monk Xuanzhuang (602–64), as recorded in his famous *Da Tang xiyu ji* (Record of a journey to the western regions of Great Tang). The *Saiiki zu* (Map of the western regions, 1736), formerly at the Hōshō-in Temple, is the clearest Japanese representative of this tradition (this map was destroyed in World War II). It goes back through a lost copy to an earlier lost map that was in Tō Temple in Kyōto and is accompanied by a text saying that the storied monk Kūkai (774–835) brought it back to Japan upon the completion of his studies in China, even implying that it was the original drawn by Xuanzhuang himself. Nobody takes this note literally, but Nakamura believes that it was still a map of Kūkai's time.⁶³ Unno calls the story a “legend . . . [that] may have been concocted as part of the biography of Kūkai” (see below, p. 374). Nakamura, Unno, and Muroga all assume that the original of the *Gotenjiku* map was Chinese, but after years of searching no one has found even a mention of such a missing link, let alone the item itself.⁶⁴ Given the Chinese concept of the “Middle Kingdom” (see pp. 172–73), it is not particularly surprising that a cartographic genre that had only a tiny place for China on the eastern edge of the continent should have failed to gain favor with the Middle Kingdom's inhabitants.

The fact is that the oldest documentary record of a *Gotenjiku* map, and the first known use of such a term, comes from Korea, where the pronunciation of *Goten-*

jiku is *Och'ōnch'uk*. The text is a memorial inscription on stone, erected in Kaesōng in 1154 for Yun P'o, an aged official who died in that year. In its account of his life, we read: “He also presented an *Och'ōnch'uk* to [Map of the lands of the Five Indias] based on the *Xiyu ji* of Dharma Preceptor Xuanzhuang of Tang. His Highness admired it and gave him seven spools of Yan thread.”⁶⁵ The map has long since been lost, and there are no known copies in Korea. Nor is there much sign of any other explicitly Buddhist cartography remaining in Korea.⁶⁶

In spite of this apparent dead end, the Koryō official Yun P'o, in the present state of our knowledge, seems to have the most solid claim to be the originator of this map genre, which ultimately found patronage only in Japan. Unno and Muroga have indeed considered Yun's map as a possible origin for the Japanese maps, rightly pointing out that two constant factors in the latter are the concept of Five Indias (*Gotenjiku*) and the character of a Xuanzhuang itinerary, both of which were explicitly present in Yun's *Och'ōnch'uk*. But they point to the lack of any indication of Korea on the earliest *Goten-*

62. Chapter 11, esp. pp. 371–76. I have also relied on the thorough study by Muroga Nobuo and Unno Kazutaka, “Nihon ni okonowareta Bukkyō kei sekaizu ni tsuite” (On Buddhist world maps in Japan), *Chirigakushi Kenkyū* 1 (1957): 67–141; reprinted in *Chirigakushi kenkyū*, 1:67–141 (note 32), and their related article, “The Buddhist World Map in Japan and Its Contact with European Maps,” *Imago Mundi* 16 (1962): 49–69.

63. Nakamura Hiroshi, “Chōsen ni tsutawaru furuki Shina sekai chizu (Mappemondes antiques chinoises conservées chez les Coréens),” *Chōsen Gakuhō* 39–40 (1966): 1–73, esp. 43–44 (Western pagination). The article, in spite of its Japanese title, is in French except for the opening and concluding parts. It is a correction and expansion of Nakamura's “Old Chinese World Maps Preserved by the Koreans,” *Imago Mundi* 4 (1947): 3–22.

64. Muroga and Unno, “Nihon ni okonowareta Bukkyō kei sekaizu ni tsuite,” 78–79 (note 62). On 92–108 they discuss the Buddhist-inspired maps in the *Fozu tongji* (History of Buddhism in the [true Tiantai] lineage, written and published during the years 1265–71) and the well-known Renchao map of 1607 (fig. 7.3), but even the earlier work is more than a century after the date of the first Korean reference to *Xiyu ji*-related maps. Compare Muroga and Unno, “Buddhist World Map,” 50 (note 62). Nakamura's search will be noted below in the discussion of the sources for the *ch'önhado*.

65. *Chōsen kinseki sōran*, 1:369–71 (note 10). *Koryō sa*, 18.3a (note 9), notes his death on 13 June 1154 but gives no other details of his career. “Yan thread” is probably silk thread from northeastern China, possibly intended for a luxury copy of the map. Yan is the classical name for the Beijing area.

66. The only reference I have seen to any Buddhist cartography in Korea is not to a conventional map but to a schematic plan of Xuanzhuang's itinerary, showing his route beginning in Dunhuang and ending in Sri Lanka. This itinerary plan, executed in 1652, was seen by Nakamura Hiroshi in the T'ongdosa, a Buddhist monastery in Yangsan county northwest of Pusan. Korean historians of cartography do not seem to have mentioned this work, so I have no information on whether it still survives. See Nakamura, “Chōsen ni tsutawaru furuki Shina sekai chizu,” 55–56 (note 63).

jiku maps as a reason to doubt the connection.⁶⁷ However, the memorial inscription gives no grounds for suspecting that Korea was on Yun's map. It was certainly never visited by Xuanzhuang, so why should Yun have included it? It is true that the evolution of this tradition in Japan was away from a mapped itinerary in India and Central Asia and toward a genuine world map: thus Japan makes an early appearance, China grows and grows, and Korea itself ultimately ends up depicted, even with indication of all eight of its provinces. But this was not the early situation, and in the only record we have, Yun's map made no claim to be anything but a map of Xuanzhuang's travels.

But Unno asks the right question. Whoever drew the first map of the great monk's itinerary must have had a base map of some kind: What was that map? Five Indias, as a geographical concept, relates specifically to the Indian subcontinent of Xuanzhuang's day. But Buddhist literature made abundant mention of an earlier concept of India and its world as being the southernmost of the four huge continents thought to make up the terrestrial part of the earth's surface. (The other three were considered uninhabited; therefore all inhabited lands had to fit somehow into the southern Jambūdvīpa.) The Sino-Japanese transcription of this name, Nan (south) sembushū, shows up frequently on the *Gotenjiku* maps.⁶⁸ There must have been some tradition of Jambūdvīpa maps that would have provided a foundation on which Yun P'o—or whoever initiated the Five Indias map tradition—traced Xuanzhuang's itinerary.

The case for Yun P'o as the originator of this tradition is of course weakened by the absence of any Korean map that can be traced to him. But nobody has a stronger documentary claim to be the founder, and he should be given more consideration than he has so far received from those who are now the chief custodians of the *Gotenjiku* legacy.⁶⁹ That both China and Korea now have so few remaining traces of Buddhist cartography is surely a function of the persecution or neglect of Buddhism during the centuries of the intellectual and social ascendancy of Neo-Confucianism in those countries. In Korea in particular, as we have seen, Confucian-inspired legislation against Buddhism promoted an atmosphere in which donors and patrons would direct their support to other purposes—usually Confucian schools. Japan's Buddhism was institutionally more secure, with patronage strong throughout society, and such Confucian pressures as there were came weakly and only very late. Thus what was once a broader East Asian Buddhist map tradition came to be confined to Japan.

THE POPULAR “WHEEL MAPS” OF THE CH'ŌNHADO TRADITION

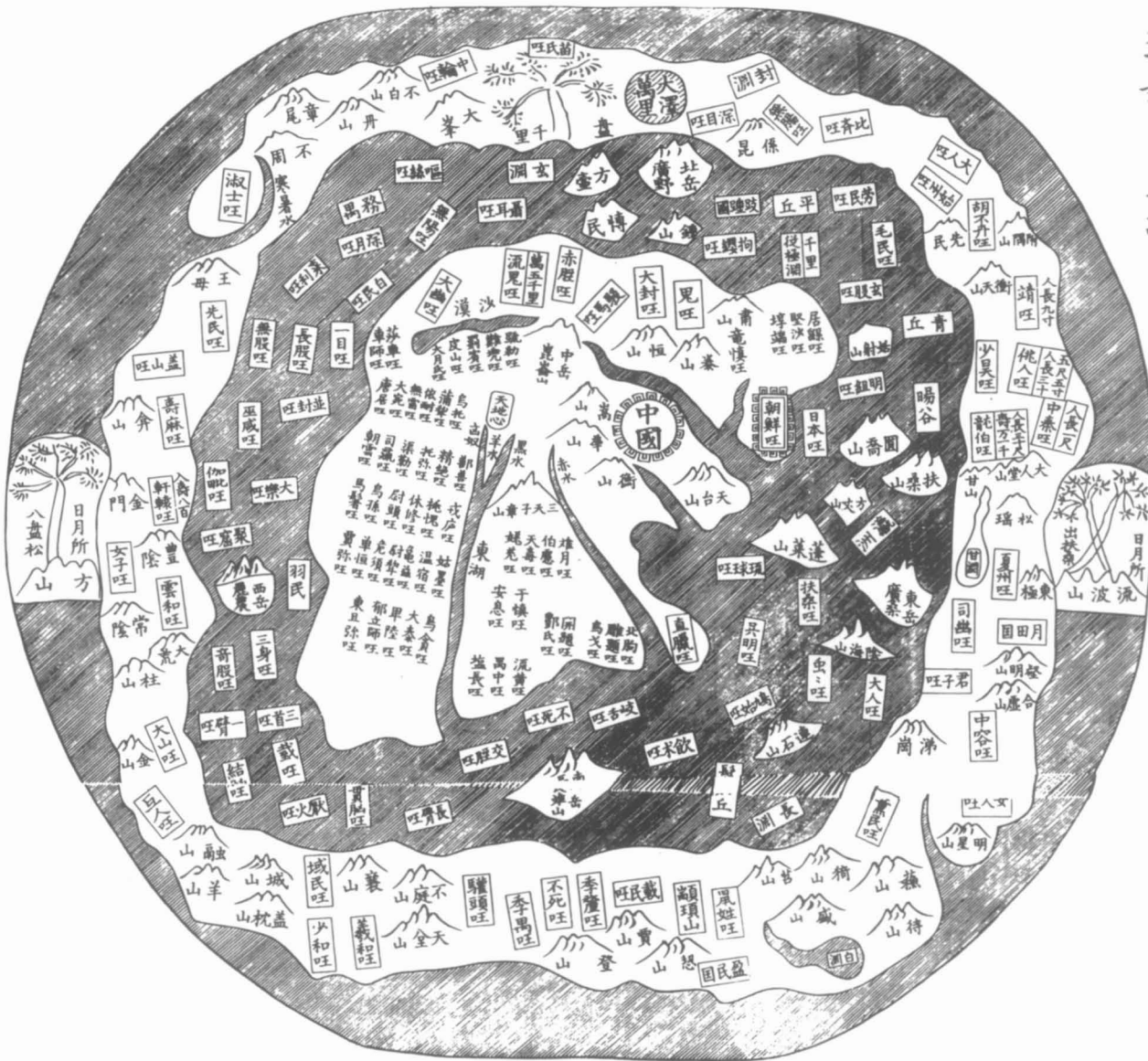
Whatever their merits, the *Kangnido* of Kwōn Kūn and Yi Hoe and the *Och'ōnch'ukukuk to* of Yun P'o did not survive in their native land. But the *ch'ōnhado* (map of all under heaven), which made a silent and utterly unnoticed debut at a date we cannot pin down even to the century, steadily gained admirers—and therefore adapters and printers—and by the end of the nineteenth century existed in copies beyond count and could already be found in museums around the world. Scientifically it was naive in the extreme compared with the other world maps we have discussed, but it appealed to all classes of Koreans and to many foreigners.

What was the source of this appeal? For foreigners it was the exotic and the curious. Somehow it was a great Korean souvenir. Nobody could recall seeing anything like it in China or Japan, and it seemed to capture the country for them. For the Koreans, the appeal was of course more complicated, and much harder to explain. On the one hand, the earth of the *ch'ōnhado* was flat, and in spite of some astute and already venerable Korean writings to the contrary, most Koreans in traditional times either believed the earth was flat or wanted to. Then too, China was in the middle, and that was where the Middle Kingdom belonged. Korea, being a peninsula, always stood out on the map and was close to China, the classical center of civilization. Japan was always shown smaller than Korea, and that too seemed right to most Koreans. Beyond the immediate East Asian region, the geography

67. Muroga and Unno, “Nihon ni okonowareta Bukkyō kei sekaizu ni tsuite,” 78–79 and 90 n. 12, and idem, “Buddhist World Map,” 50–51 (both note 62). In the former article the authors say, “In general, most maps drawn in Korea are almost exact copies of Chinese maps,” so that it is more reasonable to see Yun's map as based on a Chinese map. But as we have seen, no maps of any kind survive from the Koryō period, so there can be no basis whatever for this kind of generalization, quite apart from the fact that no earlier Chinese map of the Five Indias is known either. In the latter article the authors even spell Yun P'o's name “Yin-pu,” as if he were Chinese—an indication of how hard it has been to get any recognition of the Korean dimension of this question.

68. *Sembu* and the occasionally seen *embu* go back to Middle Chinese transcriptions of the Sanskrit *jambū*. *Shū* is the Japanese form of the Chinese *zhou* (large island or landmass), which was not a transcription but a translation of Sanskrit *dvīpa*. In the form *embudai*, the *-dai* represents the first syllable of *dvīpa*.

69. Until the past decade there were about a dozen Buddhist religious paintings in Japan that had always been called Chinese and attributed to the Song or Yuan dynasty. But a conference and exhibition mounted by the Yamato Bunkakan in Nara in 1978 demonstrated that almost all of these were of Korean origin, dated to the Koryō period. See Kikutake Jun'ichi and Yoshida Hiroshi, eds., *Kōrai butsuga* (Korean Buddhist paintings of the Koryō dynasty), exhibition catalog (Nara: Yamato Bunkakan, 1978). Perhaps a parallel reexamination of “Chinese” Buddhist cartography is in order.



天下諸國圖 一百五十三

FIG. 10.10. UNDATED *CH'ŎNHA CHEGUKTO* (MAP OF THE COUNTRIES OF THE WORLD). Maurice Courant, its early owner, dated this map after 1712, but the criterion for this is unclear. Such a dating would apply to all but a very small number of surviving *ch'ŏnhado*. This version is similar to the *Ch'ŏnha ch'ongdo* (General map of the world) in the British Library and shares with it the peculiarity of showing more than fifty countries not found on ordinary versions of the *ch'ŏnhado*,

most of them historical countries of Central Asia in contact with China during the Han or Tang dynasty. Although this map has most of the usual fictional countries found on the *ch'ŏnhado*, the extra historical countries give it a more “real” appearance.

Size of the original: unknown. Present whereabouts unknown. From Maurice Courant, *Bibliographie coréenne*, 3 vols. (Paris: Ernest Leroux, 1894–96), vol. 2, pl. 10 (facing 480).

became less real and more exotic—“the land of the tree eaters,” “the land of the hairy people,” “the land of righteousness and harmony,” and so forth. But as we shall see, these countries, though strange and unbelievable, had a long life in literature; and though no credible person had ever seen them, they were not unfamiliar. The Chinese geographical tradition, long since internalized by Koreans and their “civilized” neighbors, had early on

claimed this foreign world by naming it, and the user of the map knew the names. The *ch'ŏnhado*, then, both related to and validated the cultural rearing of its users.

Another important feature of the *ch'ŏnhado* was its context. Although occasionally these maps were found on screens or in some other individual format, the usual mode of publication was as the first map in an atlas. After one looked at the world, one could turn the page and

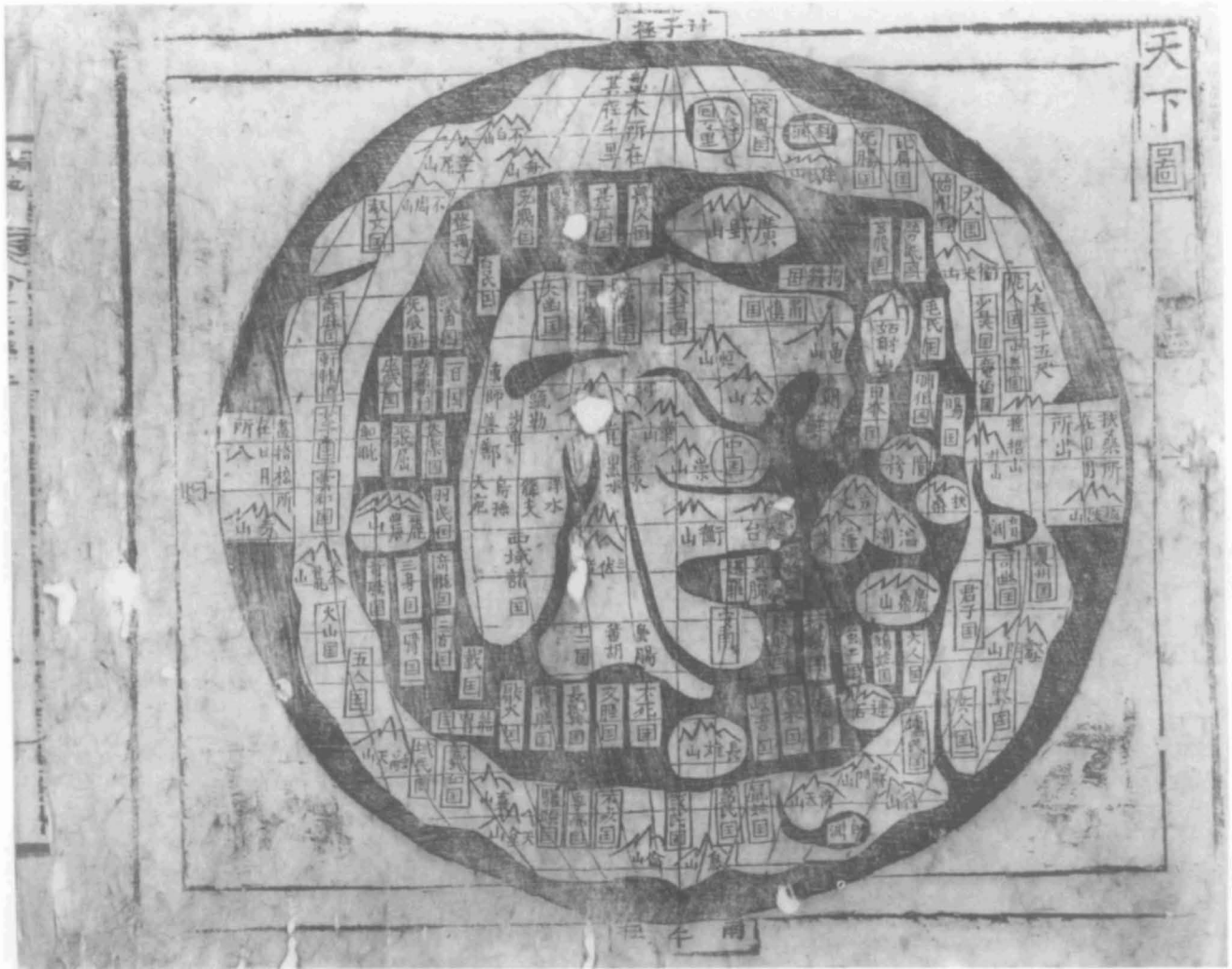


FIG. 10.11. *CH'ŎNHADO* (MAP OF THE WORLD) WITH GRATICULE. Woodcut, probably late nineteenth century. An example of a late “degenerate” *ch'ŏnhado*, in which an enterprising publisher has attempted to make the map look more modern, and perhaps “scientific,” by superimposing a spherical graticule over the flat surface of the world. This version is also

unusual for eliminating the trees, although the written legends for them remain.

Size of the original: unknown. Courtesy of the Geography and Map Division, Library of Congress, Washington, D.C. (G2330 .Y651 176-? Vault).

peruse more detailed maps of the countries that were important because of their proximity, whose people many Koreans had met and talked with and who shared with Koreans the classical Chinese language, no matter what their vernacular: such were China, Japan, and the Ryūkyūs. These were followed by a general map of Korea and individual maps of its eight provinces. Many such albums also had tables indicating the locations of postal and military stations, figures on population and annual rice production by province, and other notes on history, scenic sites, and such. The albums thus went from the general to the particular, acquainting the user with the world, then proceeding through the neighboring countries to Korea itself, then to the provincial maps and their indi-

cation of every one of the country's 328 county seats.

Koreans viewing Western maps of the world could relate to that world only with difficulty, and given the history of the West's relations with East Asia in the nineteenth century, later users might even have found themselves filled with apprehension and fear. This was quite different from the security and familiarity they could find in the *ch'ŏnhado*, which in part flowed from the concept of *ch'ŏnha* itself. This term (Chinese *tianxia*) very much connoted a Chinese world, in which China was at the center, with China's Confucian ethical system the accepted moral basis for civilized life. Even if China's writ did not run everywhere “under heaven,” as the term implied, in theory it ought to have. Korea could be and

was remarkably aloof from this imperial China, but until the last years of the nineteenth century it never considered itself aloof from its civilization.

Although *ch'ŏnhado* show infinite variety in style and occasionally differ from one another in details of place-names or orthography, the more salient fact is their invariable structural regularity (see plate 16 and fig. 10.10). Most of the countries shown are imaginary, but the roster of them is virtually identical from map to map, and their respective positions on the map are relatively fixed. Thus, while *ch'ŏnhado* appear to be a whimsical assortment of countries and features, in fact nothing is left to the imagination. From the oldest known examples (perhaps from the sixteenth century) to almost the end of the tradition, the content and structure of these maps, somewhat in the manner of a mandala, changed very little. Some late examples show the attempts of enterprising publishers to be "modern" by irrelevantly imposing curved graticules of Western inspiration (fig. 10.11) or by trying to rearrange a Western map of the world in imitation of *ch'ŏnhado* style.⁷⁰ However, these degenerate forms simply show that when they were made the day of the *ch'ŏnhado* was coming to its end.⁷¹

The structure of the *ch'ŏnhado* is simple (see plate 16). A main continent occupies the center of the circular map; it is surrounded by an enclosing sea ring, which itself is surrounded by an outer land ring. Beyond this outer land ring is what appears to be another sea ring, but this area bears no name and is not home to any island or place (with the single exception of the map in the British Library). In the north, on the outer land ring, is a "thousand-*li* coil tree," adjacent to a pond one thousand *li* in circumference. On the east and west sides of the outer land ring are a pair of trees, one marking the place where the sun and moon rise, the other the place where they set. These trees are sometimes shown on the land ring itself, as the northern tree always is, and in one or two examples they are on islands in the sea beyond; but usually they appear as peninsular features solidly joined to the outer shore of the land ring. From the general annular structure of the surrounding sea and land rings comes the term "wheel-map," popularized by Yi Ch'an.

The main continent contains China and Korea, a number of other historically known countries, some well-known mountains and rivers, and a small number of fictional countries and a fictional mountain, for a total of thirty-two place-names. The inner sea ring contains fifty-seven names of island countries, including Japan and the Ryūkyūs, but also Cambodia and Siam likewise treated as islands. All other names in the inner sea ring are fictional. The outer land ring shows fifty-five place-names, all of them fictional countries, peoples, mountains, ponds, or trees.⁷² Neither the borders of countries nor the outlines of the islands are drawn; just the names are

indicated, usually in cartouches. The names of ponds and lakes are given in circles or ovals; those of mountains are written underneath a mountain symbol.

There is a modest literature on the *ch'ŏnhado*, but it has so far not resolved the principal questions raised by the genre: When and where did it originate? Why was such a seemingly primitive map so popular so late, to the prejudice of more accurate and generally available world maps of Western origin? To the latter question I suggested an answer at the beginning of this section, and I will come back to it again in summing up. The matter of origins is more difficult.

Copies of the *ch'ŏnhado*, as all investigators have accurately lamented, never bear any original date or maker's name. Many *ch'ŏnhado* atlases, including one I own, feature a preface by a man named Yō On, self-styled as Kūmho San'in, "Indigent of Kūmho," dated according to the sexagenary cycle in the year *kiyu*. This might be 1849 or any other year at sixty-year intervals forward or backward. Kim Yangsōn assigns 1789, while Nakamura argues

70. For the graticules, see Shannon McCune, "The Chonha Do—A Korean World Map," *Journal of Modern Korean Studies* 4 (1990): 1–8; for both aberrations, see Yi Ch'an, "Han'guk ūi ko segye chido" (Old Korean world maps), *Han'guk Hakpo* 2 (1976): 47–66 with 9 plates, see esp. pls. 5–6.

71. I suspect that this judgment might also apply to the much-noticed *ch'ŏnhado* in the British Library, which was the object of a study by Henri Cordier, *Description d'un atlas sino-coréen manuscrit du British Museum*, Recueil de voyages et de documents pour servir à l'histoire de la géographie depuis le XIII^e jusqu'à la fin du XVI^e siècle, section cartographique (Paris: Ernest Leroux, 1896), 6–12; and to the map published in Maurice Courant, *Bibliographie coréenne*, 3 vols. (Paris: Ernest Leroux, 1894–96), vol. 2, pl. 10 (facing 480) (item 2187). Whereas other *ch'ŏnhado* have only a general indication of "various countries of the western regions" (meaning Central Asia) and "twelve countries of neighboring barbarians," without any individual names, the Cordier and Courant maps and a few others add approximately fifty other names, mostly from the *Han shu* (History of the Former Han, compiled first century A.D. by Ban Gu), but some from the *Shanhai jing*. Cordier says that the British Library manuscript is of the eighteenth century, but this was just his guess, since he was convinced that the genre was very ancient. Courant indicates no date. Nakamura Hiroshi, who owned two copies of this variety, said that "for the most part they are of the late period." See Nakamura, "Chōsen ni tsutawaru furuki Shina sekai chizu," 67 (note 63), where there is also a list of the added countries. To my way of thinking, the very fact that these copies depart from the general norm argues for their lateness. Four out of five known copies of this version are owned by foreign individuals or institutions.

72. See the analytical list of names in Nakamura, "Chōsen ni tsutawaru furuki Shina sekai chizu," 62–68 (note 63). There are also numbered lists in Homer B. Hulbert, "An Ancient Map of the World," *Bulletin of the American Geographical Society of New York* 36 (1904): 600–605, reprinted in *Acta Cartographica* 13 (1972): 172–78; Yi Ik Seup (Yi Iksūp), "A Map of the World," *Korean Repository* 1 (1892): 336–41, esp. 339–40; Yi Ch'an, "Han'guk ūi ko segye chido," pls. 5–6 (note 70); and idem, *Han'guk ko chido*, 191–92 (note 4). Unfortunately, all of these enumerations are different. I follow Nakamura's systematic list, which is based on the structure of the map.

TABLE 10.1 Sources of *Ch'önhado* Place-Names

| <i>Ch'önhado</i> Division | Total Number of Place-Names | <i>Shanhai jing</i> | Classics | Histories | Daoist Works | Unknown |
|---------------------------|-----------------------------|---------------------|----------|-----------|--------------|---------|
| Continent | 32 | 14 | 3 | 14 | | 1 |
| Inner sea ring | 56 | 40 | | 5 | 7 | 4 |
| Outer land ring | 55 | 49 | 2 | | 2 | 2 |
| Total | 143 | 103 | 5 | 19 | 9 | 7 |

Note: This table is based generally on the tables in Nakamura Hiroshi, "Chōsen ni tsutawaru furuki Shina seikai chizu (Mappemondes antiques chinoises conservées chez les Coréens)," *Chōsen Gakuhō* 39–40 (1966): 1–73, esp. 62–68, but categories and some data have been revised in

accordance with my own research. Since some names appear in more than one source category, the assignments here are sometimes arbitrary, but in general the category has been chosen that best fits the pattern of the unambiguous data.

for 1849.⁷³ This is the only fixed date that can be associated with the *ch'önhado*, but Yō On, whoever he was, was not the maker of the map, which certainly existed before either 1789 or 1849. He was merely a publisher or an editor and characterized himself only as a lover of maps.

An early modern commentator, Yi Ik Seup (Yi Iksüp), thought the *ch'önhado* an ageless cultural artifact, calling it "the authorized Chosēnese map of the world from time immemorial."⁷⁴ Kim Yangsōn moved in the direction of a more useful date when he said that the map goes back to late Koryō or early Chosōn times (fourteenth and fifteenth centuries), but he could suggest as support for this only some similar-sounding map titles, such as *ch'önhado*, *ch'ōnha ch'ongdo*, and *ch'ōnha chido*, found in fifteenth- and sixteenth-century records. All these names, and others besides, have been found attached to the *ch'önhado*, but as Kim himself concedes, the fifteenth- and sixteenth-century sources he cites show it is far more likely that they then referred to Ming maps of China, which often were so named.⁷⁵ Nakamura, in an especially valuable study that exploits the largest comparative corpus of *ch'önhado* prints and manuscripts in the literature, many of them in his personal collection, concluded that the map in its present form probably did not go back earlier than the sixteenth century.⁷⁶ This remains the best consensus view, nobody having made a convincing case for an earlier or a later date.

But this distinctive world map did not spring up out of whole cloth in the sixteenth century. It had much earlier sources, and these are best approached through a study of the place-names. Nakamura made a good start in this area, but many problems remain to be solved. Among them, the filiation of existing manuscript and printed versions has not been satisfactorily organized, variant and corrupt names remain to be sorted out, and a number of names are still unidentified as to source. Above all, why were these names chosen and not others, and what is the basis for their virtually fixed locations on the map?

Nakamura listed 143 names as the basic *ch'önhado* toponymic corpus, classified them according to their positions on the map, and sought out their textual sources, which are summed up in table 10.1. As can be seen, the *Shanhai jing* (Classic of mountains and seas) dominates the *ch'önhado* as a whole, accounting for over 72 percent of its place-names. But the map's central continent has relatively few names from the *Shanhai jing* and a relatively strong representation from the classics and histories. Of the fourteen *Shanhai jing* names, half mark real places and might have been assigned to the classics or histories. None of the names from Daoist literature, all of them fabulous, appear on the central continent. In all, only eight of the continental names are fictional. Thus the core continent of the *ch'önhado* consists primarily of the real and the familiar. It is only when we get to the inner sea ring and the outer land ring that the character of the map turns fabulous.

The *Shanhai jing* contains very ancient Chinese geographical lore that probably achieved its status in a distinct book during the Former Han dynasty (206 B.C.–A.D. 8) but with much later material interwoven with the text. It registers a very early Chinese mental organization of the world, which itself includes fallout from an even earlier mythical tradition that was already in an advanced state of fragmentation when the work was compiled. The eighteen chapters of the received text can be divided into five principal groups:

73. Kim, *Maesan kukhak san'go*, 218 (note 3); Nakamura, "Chōsen ni tsutawaru furuki Shina seikai chizu," 29 (note 63). Kim does not say what led him to 1789, but Nakamura quotes a specific dating formula from a printed copy owned by him that points unambiguously to 1849. In spite of this evidence, Nakamura believes, based on the pseudonym given for Yō On, that this person was not Yō On at all but a sixteenth-century personage named Im Hyōngsu (1504–47). It does not seem to have occurred to Nakamura that Im's life span does not include a *kiryu* year (the only proximate *kiryu* years are 1489 and 1549).

74. Yi, "Map of the World," 336 (note 72).

75. Kim, *Maesan kukhak san'go*, 216–26 (note 3).

76. Nakamura, "Chōsen ni tsutawaru furuki Shina seikai chizu," 49 (note 63).

TABLE 10.2 Distribution of *Ch'önhado* Place-Names in the *Shanhai jing*

| <i>Ch'önhado</i> Division | (1) <i>Shanjing</i> (mountains) | (2) <i>Haiwai</i> (beyond the seas) | | | | (3) <i>Hainei</i> (within the seas) | | | | (4) <i>Dahuang</i> (great wasteland) | | | | (5) <i>Hainei</i> (within the seas) | |
|------------------------------|------------------------------------|--|---|----|---|--|---|---|---|---|----|----|---|---|---|
| | | N | E | S | W | N | E | S | W | N | E | S | W | | |
| CONTINENT (14) | 2 | | | | | 1 | 1 | 2 | 3 | | | | | | 5 |
| SEA RING (40) | | | | | | | | | | | | | | | |
| North (7) | | 5 | 2 | | | | | | | | | | | | |
| East (9) | 1 | | 6 | | | 1 | 1 | | | | | | | | |
| South (12) | 1 | | | 9 | 1 | | | | | | | 1 | | | |
| West (12) | | 5 | | 1 | 6 | | | | | | | | | | |
| LAND RING (49) | | | | | | | | | | | | | | | |
| North (13) | | | | | | | | | | 11 | | | | 2 | |
| East (10) | | | | | | | | | | 1 | 9 | | | | |
| South (18) | | | | | | | | | | | 4 | 14 | | | |
| West (8) | | | | | | | | | | | 1 | | | 7 | |
| TOTAL (103) | 4 | 10 | 8 | 10 | 7 | 2 | 2 | 2 | 3 | 12 | 14 | 15 | 9 | | 5 |

Note: This table is based on the tables of Nakamura Hiroshi, "Chōsen ni tsutawaru furuki Shina sekai chizu (Mappemondes antiques chi-

noises conservées chez les Coréens)," *Chōsen Gakuhō* 39–40 (1966): 1–73, esp. 62–68, with the same qualifications as noted for table 10.1.

1. the mountain courses (*shanjing*) in the four directions and in the center (chaps. 1–5);
2. the areas in the four directions beyond the seas (*haiwai*, chaps. 6–9);
3. the areas in the four directions within the seas (*hainei*, chaps. 10–13);
4. the areas in the four directions of the great wasteland (*dahuang*, chaps. 14–17); and
5. the area within the seas (*hainei*), a chapter of disparate and often redundant matter (chap. 18).⁷⁷

Of these, groups 1–3 are generally regarded as the earliest textually, while groups 4 and 5 are considered to have been added after the book had taken form. As can be seen in table 10.2, it is groups 2 and 4 that have provided most of the *Shanhai jing*'s contribution to the Korean *ch'önhado*.

There is a clear pattern to the distribution of names. Those *Shanhai jing* names that appear on the *ch'önhado*'s central continent (not a large number) are all from group 1, 3, or 5, that is, the mountain and *hainei* (within the seas) sections, and half of these represent real geographical features or places, as already noted. (The term *hainei* itself, in general literature, is a synonym for the known—i.e., Chinese—civilized world.) The situation is very different for the inner sea ring, most of whose names come from the *haiwai* group (2), and the outer land ring, toponymically supplied exclusively by the *dahuang* group (4). In these areas the mythical and the fanciful hold sway.

Another point made strongly by table 10.2 is the general congruence of directional relationships between the *Shanhai jing* and the *ch'önhado*. Thus a place-name associated with north on the land and sea rings of the Korean

map will generally be found in the northern chapters of groups 2 and 4 in the *Shanhai jing*, and likewise for the other directions. This tendency is even stronger than it appears because of perceptible shifts on the *ch'önhado*. In breaking down the land and sea rings by direction, Nakamura's analysis has been kept in table 10.2, because he seems to have divided the rings into directional sectors at the most natural points. But in tracking the names in these corner positions to their respective chapters in the *Shanhai jing*, we find some assigned to a direction ninety degrees off. Thus Nakamura's number 73, Yibi Guo (Land of the One-Armed), is in his southern sea ring on the *ch'önhado* but in the eastern sector of the *haiwai* group, while number 100, Buzhou Shan (Mount Defective), is in his northern land ring on the *ch'önhado* but in the western *dahuang* in the *Shanhai jing*. If these names in corners are corrected for this shift, then fully thirteen that appear to be directionally incongruent between map and text will become congruent, greatly strengthening an already strong tendency in the data. These shifts show regular patterns: those in the inner sea ring move counterclockwise from their *Shanhai jing* source, while those on the outer land ring shift clockwise from the same.⁷⁸

77. I use the excellent modern edition of the *Shanhai jing* edited by Yuan Ke, *Shanhai jing jiaozhu* (Edited and annotated *Shanhai jing*) (Shanghai: Shanghai Guji Chubanshe, 1980), which includes the standard Guo Pu (third century A.D.) and Hao Yixing (1804) commentaries as well as many helpful notes by Yuan himself.

78. In the inner sea ring, Nakamura's no. 73 goes from west in the *Shanhai jing*'s *haiwai* section to south on the *ch'önhado*, nos. 86–88 go from north to west, and nos. 33–34 go from east to north—all counterclockwise shifts. On the outer land ring, nos. 100–101 go from west in the *Shanhai jing*'s *dahuang* section to north on the *ch'önhado*, no. 103 goes from north to east, and nos. 118–21 go from east to

The only conclusion to be drawn from these facts is that the maker or makers of the *ch'önhado* used the *Shanhai jing* in elaborating the basic structure of the map. Other names were added from the histories (the *Han shu* [History of the Former Han, compiled first century A.D.] in particular), from Daoist works (especially in the rings),⁷⁹ or from common knowledge (Japan, the Ryūkyūs, Siam), but these were mainly seasoning for a *Shanhai jing* stew. The fact that these other sources were freely used and, more important, that only a sampling of the many available *Shanhai jing* place-names were actually selected for inclusion shows that it was not the intention of the makers of the *ch'önhado* to actually make a map of the *Shanhai jing*. It must rather have been their purpose to make a world map, for which they used this ancient Chinese mine of fabulous geographical lore only as their principal source.

The question arises, then, whether the makers had at their disposal an earlier map of the *Shanhai jing*. The great Qing commentator Hao Yixing (1747–1825) believed there had once been actual *Shanhai jing* maps that “must have contained mountains, rivers, roads, and stages,” but that these were already long lost by the time of Guo Pu’s commentary in the third century.⁸⁰ The *tu* (graphic depictions including maps, illustrations, and charts) mentioned by Guo seem to have been only pictures of the strange people and freakish beasts that inhabited the *Shanhai jing*’s universe. Scholars generally believe that the occasional mention of *tu* in ancient and medieval bibliographic citations in the *Shanhai jing* are all of this genre. The fact is that in the earliest notices of this book in the Former Han, it was already thought of more as a bestiary than as a work of geography.⁸¹ Whether or not there were once maps of the *Shanhai jing*, it appears that no later Chinese cartophile ever attempted to fill the void. The only map that comes close to this function is the *ch'önhado*.

The inner sea ring and the outer land ring are theoretical depictions of the *haiwai* and *dahuang* sections of the *Shanhai jing*. No textual foundation for this ring structure is evident in the *Shanhai jing* itself, nor is there any text that would rule it out. It is one possible theoretical construct. But what of the inner continent, the more or less real core of the *ch'önhado*? What was its cartographic model?

Nakamura believed that it derived from some Chinese map in the Buddhist tradition. It had to come from China, since, in his deeply held view, Koreans had historically not created their own culture but had “slavishly” borrowed it from China.⁸² And it had to be a Buddhist map because there was no other tradition of world maps in China. (He believed that Xuanzhuang himself had created the Five Indias genre in the seventh century.) His study of *ch'önhado* place-names showed that none of them

came from works compiled later than the eleventh century, so he examined various likely Chinese possibilities between then and the sixteenth century, by which time the *ch'önhado* must have been fixed in its currently known form. At first he thought he saw some signs of the *ch'önhado* in the *Sihai Hua yi zongtu* (General map of Chinese and foreign territory within the four seas; illustrated above, fig. 7.4), which appeared in the famous *Tushu bian* (Compilation of illustrations and writings, completed in 1577), compiled by Zhang Huang (1527–1608). Zhang had attributed this “map of southern Jambūdvīpa within the great sea” to some unnamed Buddhist source. But Nakamura could find no cartographic antecedents for this map earlier than the thirteenth century. Moreover, since typologically it seemed to be only a hybrid between a Buddhist antecedent and the supposed Chinese ancestor of the *ch'önhado*, the latter had to be earlier in date and in any case had to go back to at least the eleventh century. He then explored a Sino-Tibetan map, which had been brought to Japan in the ninth century from Xuanzhuang’s own monastery. This showed a greater geographic extent than the Xuanzhuang itinerary

south—all clockwise shifts. I believe these shifts originated not from the *ch'önhado*’s original compiler(s) but from Nakamura’s perceptions as to where the directional sectors on the rings were to be marked. He took the understandable course of marking the borders more or less in the northeast, southeast, southwest, and northwest corners, but the original compilers seem to have (implicitly) marked them more flexibly.

79. For instance, the Five Marchmounts (*wuyue*) of the Daoist *xianjing*, or Transcendent spaces, i.e., Mounts Guangsang (east), Li’ning (west), Changli (south), Guangye (north), and Kunlun (center), are shown in a diagram titled *Yuzhong xianjing* (Transcendent spaces in the Ecumene) in the Daoist work *Shangqing lingbao dafa* (Great Praxis of the supernal magic treasure), 10.14a (in the *Zhengtong Daozang* [Daoist canon of the Zhengtong reign period (1436–49)], 1120 fascicles [Shanghai: Shangwu Yinshuguan, 1923–26], fasc. 945). Mount Kunlun is on the central continent of the *ch'önhado*, while the rest are all found in its *neiyang* (inner sea). Aside from the center mountain, none of these mountains are found in the *Shanhai jing*. I do not therefore call the *ch'önhado* a Daoist map; but given these correspondences, the case for doing so would be much better than the case for calling it a Buddhist map.

80. *Shanhai jing jiaozhu*, appendix, 484 (note 77).

81. See Liu Xiu’s original presentation notice (late first century B.C.) in *Shanhai jing jiaozhu*, appendix, 477–78 (note 77). Compare Needham, *Science and Civilisation in China*, 3:504–7 (note 31). So pervasive is this view that Needham, writing here in the geography section of his great work, laments (507) that no one has ever made a biological study of the monsters! What we have always needed, and still need, is a study that will clarify the geographical foundations of the *Shanhai jing*.

82. Speaking of the origins of the *ch'önhado*, Nakamura writes: “Such material will come, it is to be hoped, from Chinese sources rather than Korean, for this mappemonde is purely Chinese. It bears no trace of anything specially Korean, which is understandable when we consider that the sciences and the arts of Korea were almost always slavishly modelled upon those of China” (Nakamura, “Old Chinese World Maps,” 13 [note 63]). The same statement, in French, is made in Nakamura, “Chōsen ni tsutawaru furuki Shina sekai chizu,” 36 (note 63).

and therefore had better qualifications as a world map. In addition it was diagrammatic, indicating place-names in relative position in blocked cartouches, just as in the *ch'önhado*. This convinced him that there had been a Chinese prototype of the *ch'önhado* in existence already in the seventh century, which, though later lost in China, would have survived in Korea, where by the sixteenth century it would have achieved its final form.⁸³

In spite of all his labors, Nakamura still did not prove that this supposed Chinese prototype was a Buddhist map. It would only have served as one antecedent for the Sino-Tibetan map, which was Buddhist. But his two-sentence argument even for this is totally unconvincing. This alleged Buddhist connection has nonetheless been widely accepted and is now virtually fixed in the Western literature on the *ch'önhado*. Indeed, it has grown. One writer says that the *ch'önhado* “shows how the facts of geography were pressed into the a priori format of a Buddhist diagrammatic view of the cosmos.” Another speculates that the trees found at the northern, eastern, and western extremities of the *ch'önhado* may be “Buddhist symbols.” Others assert that the *ch'önhado* usually appears as a map in a “Buddhist atlas.”⁸⁴

Japanese and Korean scholars have been more reluctant to go along with Nakamura.⁸⁵ Indeed, beginning with his sadly biased initial preconception that Koreans are incapable of any cultural originality and following to the end of his argument, one finds more assumptions than evidence. The extra points added by others are also dubious: the atlases that typically contained the *ch'önhado* are utterly without any feature that could be called Buddhist. The famous trees come from the *Shanhai jing*, along with most of the other *ch'önhado* names;⁸⁶ of course the *Shanhai jing* itself has no connection with Buddhism. The *ch'önhado* does have two names that are not in the *Shanhai jing* and may have some Buddhist echo: Mount Tiantai, famous for its monasteries and the great syncretic sect that bears its name (but which could just as well have a Daoist resonance), and possibly the name Jiabi (anciently Ka Pi), which is otherwise unexplained but might be an abbreviation for Kapilavastu, kingdom of the Sakyas and birthplace of the historical Buddha. Both of these names were common in general literature and have been counted as historical in table 10.1. No other *ch'önhado* names have any Buddhist associations.

Cartographically, the *ch'önhado* feature that might lead some to see a Buddhist connection is the central mountain, Kunlun, and the four rivers that flow from it. But there are many differences between it and Mount Sumeru on the Five Indias and Jambūdvīpa maps. Kunlun has its own pre-Buddhist, ancient Chinese origin in the “Yu gong” (Tribute of Yu) chapter of the *Shu jing* and in a large body of autochthonous Chinese myth, as

reflected in the *Shanhai jing* among many other sources.

The conclusion has to be that the argument for a Buddhist origin for the *ch'önhado* is without merit. Indeed, the sixteenth century would have been one of the least likely periods in Korean history for the ascendancy of any Buddhist artifact as an icon of popular culture, much less literary culture. That period saw the extension of Confucian belief and practice to all classes of Korean society through a network of approximately 325 state-supported schools, perhaps another 200 private Confucian academies (*sōwōn*), and thousands of informal village schools (*toksōdang* or *kūlppang*) where young children sang out their Confucius and Mencius. Buddhist temples were banished from the cities and towns, and the monks, deprived of any significant patronage, managed a bare survival in mountain monasteries. This was not a setting in which Korean society was likely to find fascination with Five Indias, Jambūdvīpa, or any of their putative cartographic offspring.

The Korean cartographic historian Kim Yangsōn has found a quite different origin for the *ch'önhado*, explaining it as a mapping of the world according to the theories of the ancient Chinese naturalist philosopher Zou Yan (third century B.C.). In support he cites a book called *Hwanyōng chi* (Description of the Ocean World), written by Wi Paekkyu (1727–98), who is well known as a geographer and naturalist. Wi attributed the following state-

83. Nakamura, “Chōsen ni tsutawaru furuki Shina sekai chizu,” 36–56 (note 63).

84. A. L. Mackay, “Kim Su-hong and the Korean Cartographic Tradition,” *Imago Mundi* 27 (1975): 27–38, esp. 31; McCune, “Chonha Do” (note 70); Norman J. W. Thrower and Young Il Kim (Kim Yōng'il), “Dong-Kook-Yu-Ji-Do: A Recently Discovered Manuscript of a Map of Korea,” *Imago Mundi* 21 (1967): 30–49, esp. 32. Thrower and Kim refer to the *ch'önhado* by one of its alternative titles, *Sahae ch'ongdo* (General map of the four seas), which I note here with standard romanization and my own translation.

85. For instance, Muroga and Unno, “Buddhist World Map,” 51 n. 7 and 57 n. 16 (note 62); Yi, “Han'guk ūi ko segye chido,” 57–58 (note 70).

86. *Shanhai jing jiaozhu*, 9.260, 14.354, 16.394, 17.423 (note 77). There are some variants in the names, but there can be no doubt that all of the *ch'önhado*'s trees come from the *Shanhai jing*. Interesting material on the northern tree that cannot be found in the received text has been found quoted in standard Han works by editor Yuan Ke. According to this, the tree in the north had branches in a 3,000 *li* “coil” (*pan*) and was the residence of two gods who controlled the world's ghosts. The lack of any connection with Buddhism is patent. Mackay suggests that the trees are “perhaps the Cosmic Trees of the Shamans of north-east Asia.” This is more plausible than the Buddhist explanation but still not likely. Chinese shamanism connects to the Southeast Asian variety rather than to that of northern and northeastern Asia. His interpretation of the northern tree's name as “axle-tree” is incorrect. Chinese commentaries make it clear that *pan* means “coil” in this name. In spite of the shamanist angle, Mackay generally advocates a Buddhist explanation of the *ch'önhado*. Mackay, “Kim Su-hong,” 31–33 and caption to fig. 5 (note 84).



FIG. 10.12. UNTITLED MAP, CALLED “CHUGOKU ZENZU” (COMPLETE MAP OF CHINA). It is in fact a copy of, or in the tradition of, the *Honil kangni yöktae kukto chito* (or the *Kangnido*, see fig. 10.3). This map, thought of as a “sister map” to the *Kangnido* example in the Honmyōji (in Kumamoto), has been determined by Kazutaka Unno to have

been copied in Korea ca. 1568. It differs from the two other examples of the *Kangnido* in that the continent is shown completely surrounded by water. Size of the original: 135.5 × 174 cm. By permission of Tenri Central Library, Tenri, Japan.

ment to Zou Yan: “As for the sea around China in the four directions, I call it ‘the tiny sea’ [*bihai*]. Beyond that sea there is a great continent that rings it, and beyond the great continent there is a vast ocean sea circling around. It is only here [that one comes to] the edge of the earth.”⁸⁷ This description is an excellent evocation of the configuration of the *ch’ōnhado*. The problem is that this statement cannot be located among the fragments of Zou Yan’s long-lost writings that are quoted in authentically ancient works.⁸⁸ His biography in Sima Qian’s *Shi ji* (Records of the grand historian, completed ca. 91 B.C.) has a similar though still quite different concept of the world, in which China is one mere *zhou*

(island or isle-land, signifying continent) out of eighty-one that exist under heaven. As Sima Qian explains Zou’s idea, there are nine China-sized *zhou*, “[each] ringed by ‘tiny seas’ and mutually impenetrable by man or beast, but within a single sector, what [Zou Yan] calls one

87. From Wi Paekkyu, *Hwanyōng chi*, as quoted in Kim, *Maesan kukhak san’go*, 217 (note 3). I have been unable to find a copy of Wi’s original book.

88. None of Zou Yan’s writings survive intact. The quotation cannot be found in Ma Guohan’s authoritative compendium of quoted fragments of ancient lost writings, Ma Guohan, comp., *Yuhan shanfang ji yishu* (Fragments of lost writings collected in the Jade Box Mountain Studio, compiled 1853), bk. 77 (Zou Yan).

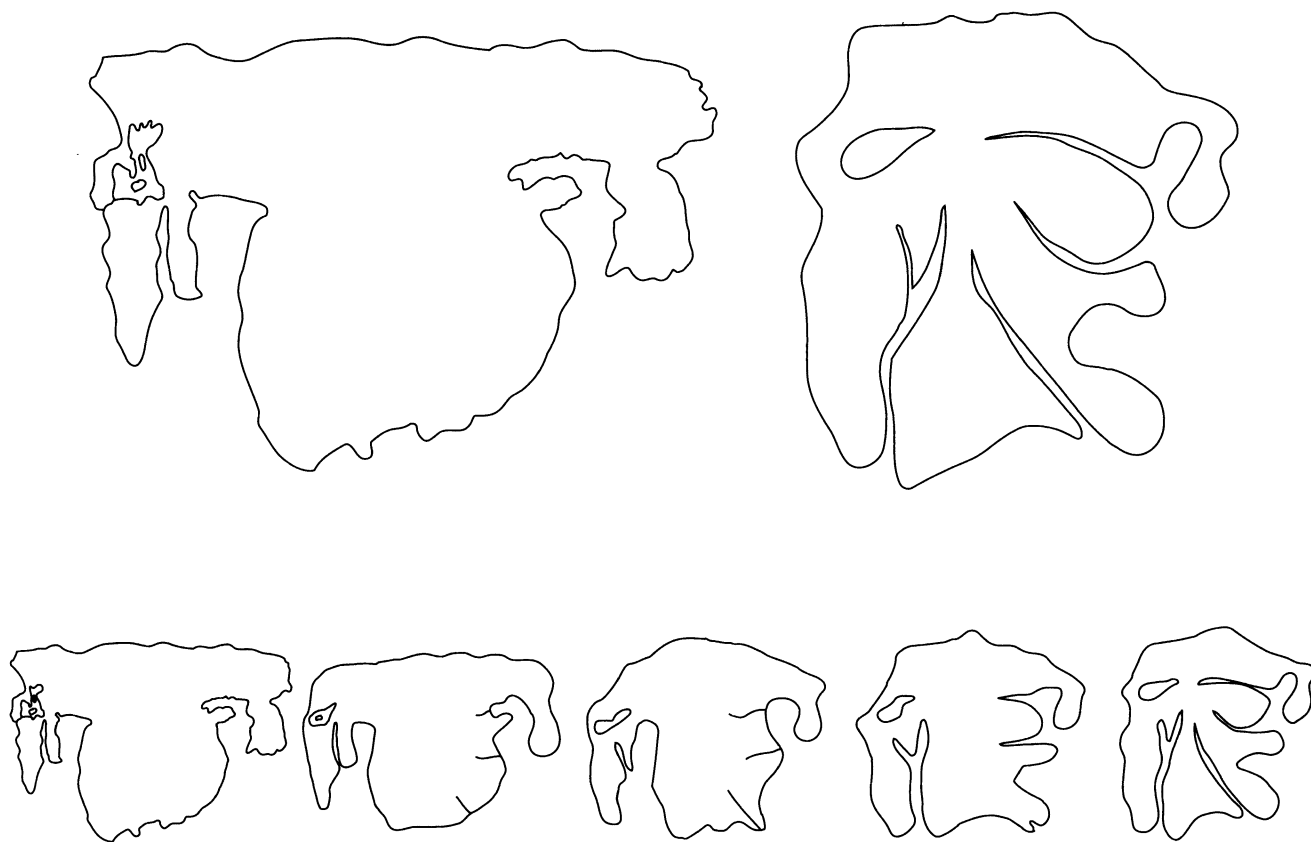


FIG. 10.13. COMPARISON OF CONTINENTAL OUTLINES BETWEEN THE KANGNIDO AND THE CH'ŐNHADO. At the upper left, the outline of the Tenri *Kangnido*; at the upper right, the outline of a typical *ch'ŏnhado*. The sequence at bottom proposes a development by which the outline of the

ch'ŏnhado's inner continent might have evolved. A key element in this hypothetical development is the Arabian Peninsula, which with the Red Sea and the Arabian Sea forms a peninsula between the two rivers on the *ch'ŏnhado*.

[great] *zhou*. There are nine of these, with a vast ocean sea ringing their outer reaches where heaven and earth meet."⁸⁹

There is enough in this account to suggest some typological connection with our puzzling Korean map and perhaps to justify Kim Yangsŏn's term, "the Zou-Yan-style *ch'ŏnhado*." But one wonders if Wi Paekkyu, trying to make sense of Sima Qian's well-known but unclear summary, didn't interpret (and then quote) it while looking at a *ch'ŏnhado*, which was in its heyday during his lifetime.

On the other hand, the toponymic relationship of the map to the *Shanhai jing* is beyond doubt, and its inner sea and outer land rings are filled in a systematic way with *Shanhai jing* names and features. They can only be theoretical projections of the *Shanhai jing*'s geographical divisions, perhaps with some distant influence from Zou Yan's geographic thought.

The outline of the *ch'ŏnhado*'s inner continent, however, is not theoretical, even though it may be in part

imaginary. The Korean peninsula, the Yellow and Yangtze rivers, perhaps the bend of the southeastern coastline suggesting the Gulf of Tonkin, the Kunlun Mountains, and other features show a certain basis in cartographic experience and provide enough material to encourage a morphological analysis of the inner continent as a whole. The very awkwardness and asymmetry of its outline suggests something other than a theoretical or imaginary model.

I suggest that the *Kangnido* of 1402, being a documented Korean map of the world and known to have been copied in Korea as late as about 1568, is a plausible candidate for that model. Especially interesting is the Tenri copy because, unlike the other two surviving exam-

89. Sima Qian, *Shi ji*, 74.2344; see the edition in 10 vols. (Beijing: Zhonghua Shuju, 1959). This text is obscure, and Sima Qian, who was not fond of Zou Yan and his doings, certainly brought no clarity to his concepts. For another translation, see Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954-), vol. 2, with Wang Ling, *History of Scientific Thought* (1956), 236.

ples of that map, it presents a single landmass completely surrounded by water (fig. 10.12). Even Africa is shown clearly as a peninsula hanging from Europe, not as an independent continent. An outline of the Tenri map is juxtaposed with that of a typical *ch'önhado* in figure 10.13, together with an inset showing hypothetical transitional stages from one to the other. Two principal clues to such a transition are found on the *ch'önhado*. The first is the triangular peninsula on the inner part of the western half of the continent, just below Mount Kunlun. It is formed between the long Hei Shui (Black River), which flows south into the sea, and the short Yang Shui (Welling River), which flows into the Black. Both are fictional rivers stated in the *Shanhai jing* to rise on Mount Kunlun.⁹⁰ It is important to emphasize that this interior peninsular configuration is unique in the overall layout of the continent, being the only case of an inland feature outlined by water and the only case showing a tributary to a river. The second clue is in the large body of water just to the northwest of this peninsula. The most frequently seen name for this feature is Sule (anciently pronounced *su-lek*), but there are variations, and it is likely that it originally had no name at all.⁹¹ This body of water is also unique on the *ch'önhado*, being the inner continent's only inland sea. Other than these two features, the continent is nothing but nine mountains, four large rivers, the Korean peninsula, and the curving coastline.

If we now look at the western part of the *Kangnido* landmass and imagine Africa merged into the main bulk of the continent in such a way that the Arabian Sea and the western Indian Ocean become a long, south-flowing river, as postulated in figure 10.13, the *ch'önhado*'s triangular peninsula emerges as the remains of the Arabian Peninsula and the large inland sea as the residue of the Mediterranean and Black seas. The *Kangnido*'s Arabian Sea and the western Indian Ocean have become on the *ch'önhado* the Black River, and the Red Sea has become the Welling River. To this revised continent it is necessary only to introduce some rounding and contraction (particularly of Korea) and to insert the Yellow, Yangtze, and Chi Shui (Red River) in order to arrive at the *ch'önhado*'s basic outline.

The suggested evolution from the *Kangnido*'s outer continental coastline is concededly arbitrary, dictated by a "known" target outline. It is the inner evolution, that involving the *Kangnido*'s Mediterranean/Black, Red, and Arabian seas and the Arabian Peninsula into their *ch'önhado* counterparts, that is morphologically more significant. This inner evolution is not arbitrary but is morphologically meaningful for its creation of two forms that do not otherwise occur on the *ch'önhado*—an inland sea and a river with a tributary.

Although the judges of the court of plausibility must render their verdict on this explanation of the shape of

the *ch'önhado*'s inner continent, it can be argued that every significant landmass on the *Kangnido* can be found in some way folded into its flexible shores. In a way that might seem perverse given the "scientific" content of the *Kangnido* and the "primitive" character of the *ch'önhado*, the latter has achieved a much better balance in the continental landmass; by critically placed rivers it has divided the continent into intelligible parts; and by gentle curves it has suggested the Indian subcontinent and the contour of Vietnam. Historically, the timing is right for the emergence of the *ch'önhado*, which cannot be documented before the seventeenth century but has been reasonably inferred to have arisen sometime in the sixteenth. The Tenri copy of the *Kangnido*, as we have seen, contains Korean place-name changes (vis-à-vis the Ryūkoku copy) that according to Unno's research are datable to about 1568.

If this hypothesis is permitted, the known evolution of the *Kangnido*'s landmass into a single water-surrounded continent may have created the primary cartographic condition for the emergence of the *ch'önhado*'s inner continent. This geographical form, once achieved, would have been supplemented by some clever spirit engrossed with the fantasies of the *Shanhai jing*. Finding the Chinese-character transcriptions of the Arabic names on the African and European parts of the map quite unintelligible, the maker would have ignored them and adapted the forms of Africa and Europe themselves to the requirements of historical imagination. In this way Europe became a narrow strip of land north of the inland sea, and Africa turned into the *xiyu* (western regions) of the Chinese histories, ending up filled with the names of Central Asian "barbarians." On this explanation, the *Kangnido* did not disappear but rather evolved into the *ch'önhado*.

Those who favor the glory of scientific progress over the comforts of culture might consider such a development degenerate. But it does not take much thought to realize that the original *Kangnido*, however great and unique a cartographic achievement, did not and could not relate to the traditional geographic culture of Korea or of East Asia as it existed at the beginning of the fifteenth century.⁹² It was a sport, produced by Kwön Kün

90. *Shanhai jing jiaozhu*, 2.48 and 11.297 (note 77).

91. Sule is the name of a historical Central Asian kingdom (identified with Kashgar) found in Han and Tang historical writings. It is not connected in any way with a sea or lake. Some versions of the map have the lake nameless with the name Sule adjacent to it, along with the names of other ancient Central Asian kingdoms. I suspect that this was the correct appearance. A few versions identify this body of water as a river (while clearly showing it as a lake or sea) named Ruo (weak), Ni (drowning), or Niao (urine) depending on the reading or graphic variant.

92. This point is also made by Pang, *Han'guk ūi chido*, 76 (note 5).

and Yi Hoe before its time, that could have had only limited cultural meaning to all but a few of those who beheld it. But if my guess is correct, its continental structure, aided by some precocious armchair plate tectonics, found new life through indigenization—as part of the *ch'ŏnhado*.

KOREAN MAPS OF CHINA AND JAPAN

Although up to now the *ch'ŏnhado* has been discussed as a map of “all under heaven,” its subject matter was always somewhat more ambiguous given the age-old use of that term to connote the Chinese world specifically, the area where the prestige, if not the actual authority of the emperor of China, held sway. During the Ming (1368–1644) particularly, Koreans commonly referred to maps of China as *ch'ŏnhado* or some close variation. Maps of China were particularly popular after the beginning of the Ming because China was once more Chinese after nearly two and half centuries during which part or all of its territory had been under the rule of alien dynasties. The Mongols were the first non-Chinese people in history to rule not just a part of China but all of it, and for a protracted time. With this situation put to an end, one could once more use classical expressions like *ch'ŏnha/tianxia* without embarrassment.

I have already referred to Na Hŭngyu's lost map of China, probably made sometime in the 1370s, and to the Chinese maps that Koreans imported early in the fifteenth century and incorporated into the *Kangnido*. Although there were definitely Korean-made maps of China—we know of one drawn up in the Hongmun Kwan (Royal Library) in 1469 in addition to Na's and the *Kangnido*⁹³—in general most Korean maps of China during the fifteenth and sixteenth centuries were probably made in China and imported.⁹⁴ In ordinary cases, Korean-made ones would necessarily have had the character of copies rather than original works.

The conquest of the Ming dynasty by the Manchus (1644) provided a direct stimulus for Koreans to produce their own maps of China. Bitter Korean experiences at the hands of the Manchus, among them invasions in 1627 and 1636–37, a forced severance of relations with the Ming rulers, a humiliating oath of allegiance extracted from the king, and the Manchus' taking of dozens of hostages from the royal family and other leading Korean families, resulted in a nationwide anti-Manchu hostility. At the same time, the role of Ming military forces in aiding Korea against the Japanese invasions of the 1590s had nurtured strong pro-Ming sentiments among Korean literati. One expression of this was the popular (though unofficial) Korean use throughout the Qing centuries of a Ming year title (*nianhao*) in dating; the use of the title Chongzhen, formally restricted to the period 1628–44,

was extended by the Koreans down to the late nineteenth century. Another one was a fondness for maps of China showing the Ming capitals and provincial organization rather than those of the Qing.

The Ming dynasty had two capitals (Nanjing and Beijing) and thirteen provinces, for a total of fifteen major units of regional administration. The Qing system corresponded generally with the Ming except that there was only one capital (Beijing), while the old southern capital region and Huguang Province were split into two provinces each and an additional province (Gansu) was added in the west. These were relatively minor changes, but of course everything lay in the symbolism: the changes were those of an illegitimate dynasty as far as the Koreans were concerned. And since Korea insisted on its own standard of legitimacy, it had to produce its own maps of China. The practice must have been widespread, because every published Korean map of China that I have seen from traditional times shows the Ming organization.⁹⁵

An elaborate example of this kind of map is the Kim Suhong woodcut of 1666, a rare case of a Korean map with printed indication of both author and date (fig. 10.14). Titled *Ch'ŏnha kogŭm taech'ong pyŏllamdo* (Comprehensive and synoptic map of the ancient and modern world), it not only gives the Ming organization of the country but displays a cultural panorama of Chinese civilization reaching back to antiquity. Published reproductions of this very interesting work are not legible, but one scholar who has studied it asserts that its legends note “antiquities, scenic wonders, old monasteries, famous men, and filial sons” in appropriate places all over the map.⁹⁶ In an earlier chapter, Cordell Yee emphasized the close association of map and text as a perennial feature of East Asian cartography (above, chap. 5), and Kim Suhong's map is a splendid example of the phenomenon in Korea. It might be described as a text on civilization in the shape of a map of China. Although Kim's map appears to have some material of his own, it strongly evokes earlier Chinese maps, notably Liang Zhou's *Qian-*

93. *Yejong sillok* (Annals of King Yejong, r. 1468–69), 6.15a–b (note 17).

94. Two maps of China mentioned in a list of maps discussed in 1482 are not identified by author, as are all the Korean maps in the same list, so presumably they were imported; *Sŏngjong sillok*, 138.10b (note 17). A map mentioned in 1511 is impossible to identify as either Chinese- or Korean-made; *Chungjong sillok*, 14.21a (note 17). Efforts or successes in importing maps of the Ming dynasty are reported during the years 1536–38; *Chungjong sillok*, 81.51b–52a, 84.31b, and 89.9b.

95. For example, Yi, *Han'guk ko chido*, 40–45 and pl. 5 (p. 18) (note 4). The latter bears a date corresponding to 1747.

96. Kim, *Maesan kukhak san'go*, 223–25 (note 3). Kim's copy, now in the Soongsil University Museum, appears to be a manuscript version. Mackay has described two manuscript copies owned by him in “Kim Su-hong” (note 84). A woodblock print of this map, owned by Yi Ch'an, is illustrated in his *Han'guk ko chido*, 40 (note 4).



FIG. 10.14. *CH'ŎNHA KOGŬM TAECH'ONG PYŎLLAMDO*, BY KIM SUHONG, 1666. This copy appears to be the only surviving example of a woodcut edition; three hand-copied versions are known. Typically for late Korean maps of China, this map continues to show the Ming dynasty provincial system well after it had been replaced by that of the Qing dynasty. The style, with its dense textual material, imitates a Ming genre that featured references to well-known historical individuals, events, and scenic sites.

Size of the original: 142.8 × 89.5 cm. By permission of Yi Ch'an, Seoul.

kun wanguo quantu gujin renwu shiji (Complete map of the myriad countries of heaven and earth, accounts and reminders of famous people of antiquity and the present) of 1593.⁹⁷

Kim Suhong (1602–81) had a curious and disastrous public career. His official obituary in the Chosŏn dynasty annals is not only critical but slanderous, saying that he was “eccentric and foolish, shunned by all,” and that he was “an experienced pervert, contemptibly wicked . . . everyone loathed him.”⁹⁸ He apparently earned this

opprobrium by opposing the standard-bearers of his own party and siding with the opposition in rancorous court debates in 1659 and 1674. This behavior was all the more unusual because of his membership in the Andong Kim lineage, one of the backbone forces of the conservative, anti-Manchu western faction (a local reference with no connection to Western culture or science), led by the famous Song Siyŏl (1607–89), which was then in power. Among many items on Song's agenda was the continued use of the Ming dynasty era title “Chongzhen” for dating purposes. In order to irk Song, Kim Suhong is said to have used the then-current Qing title “Kangxi.” In the eyes of his enemies this constituted unfiliality, the most heinous of crimes to a Confucian, because Kim's grandfather, Kim Sangyong, had been a glorious anti-Manchu martyr. On his last stand at Kanghwa fortress in 1637, he had mounted some bags of gunpowder and blown himself up rather than submit to the Manchus. A Western writer admiringly argues that in using the Qing year title Kim had “acknowledged change” and was thus siding with the “progressives” against the “reactionaries.”⁹⁹ But even allowing for the obviously biased opinion against him, there is little if any evidence for such a view, which in any case fails to consider the highly charged ideological atmosphere. A cartographic jury would have to deliver a contrary verdict: twenty-two years after the establishment of the Manchus in Beijing, Kim's map shows the Ming provincial system without a hint of the existence of the Qing dynasty.

As with Kim's map, so it was with virtually all other Korean maps of China down to the mid-nineteenth century. From elaborate, large-sized sheet maps down to the map of China generally found in atlases, it was the Ming provinces and capitals that were presented to Korean readers. Possibly some of the atlases associated with the *sirhak* (practical learning) school were exceptions to the general phenomenon, but if so they were few. Apart from the Ming organization, which included written indication of the distance of each provincial center from Beijing, a typical atlas map of China emphasized bold and abstract delineation of major features: the Great Wall, the Yellow and Yangtze rivers, the important mountains of the classical and literary tradition, and the principal towns of the empire (fig. 10.15). It was basically in the same carto-

97. This map was once in the Phillips Collection in London; it is illustrated in Sotheby's catalog, *The Library of Philip Robinson*, pt. 2, *The Chinese Collection* (day of sale, 22 November 1988), 76–77 (no. 85), and less satisfactorily in Howard Nelson, “Maps from Old Cathay,” *Geographical Magazine* 47 (1975): 702–11, esp. 708.

98. *Sukchong sillok*, 12.12b (note 17). The date of the obituary corresponds to 4 October 1681. According to data in this notice, Kim would have been born in 1602, not 1601 as found in several published references.

99. Mackay, “Kim Su-hong,” 27 (note 84).

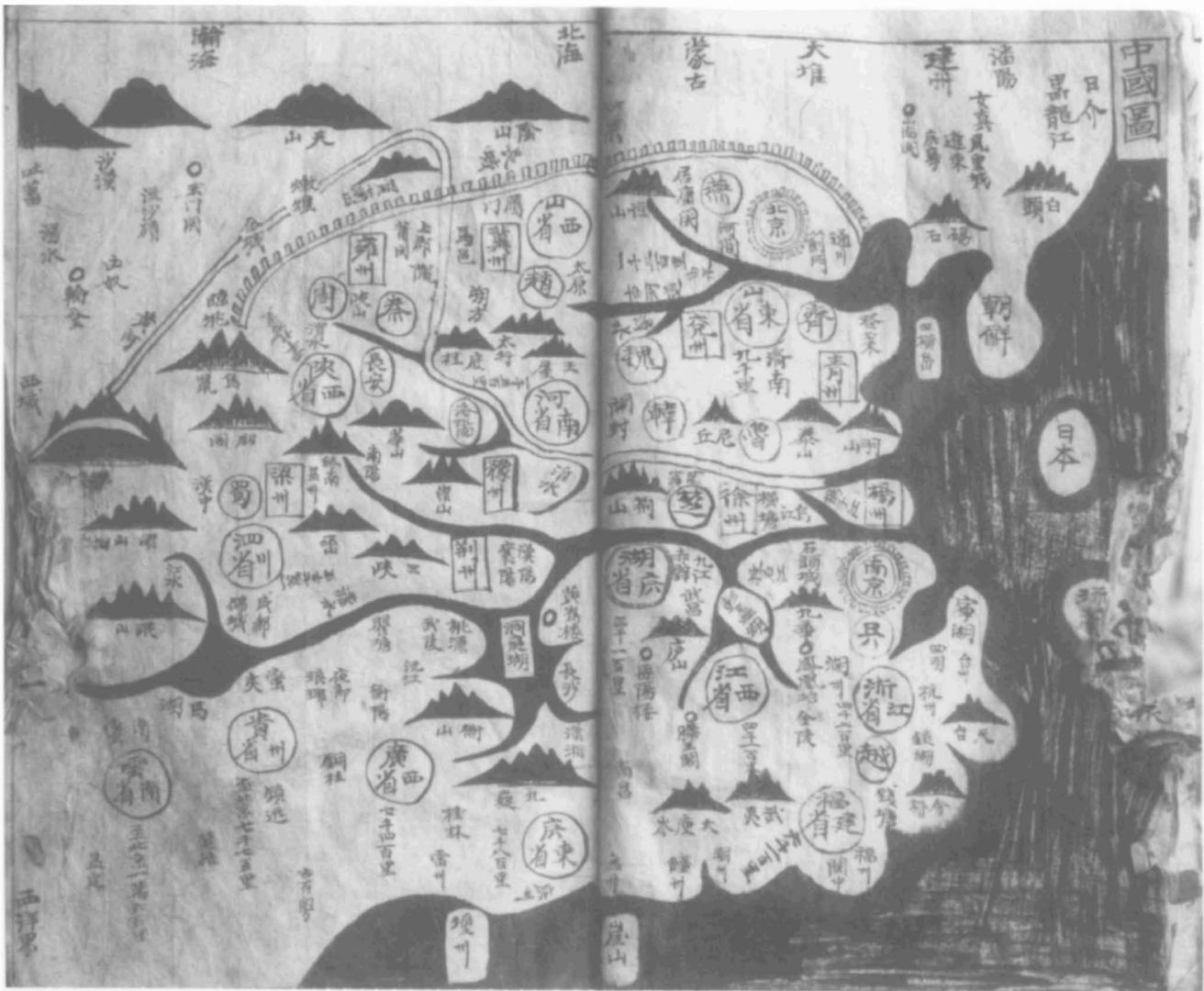


FIG. 10.15. "CHUNGGUKTO" (MAP OF CHINA). From a hand-copied and well-thumbed atlas, with a preface that can be dated 1849. Still indicating, in large circles, the Ming provincial arrangement (discontinued in 1644), this map also shows, with rectangles, the classical "Nine Isle-lands" (*jiu zhou*) marked out by the legendary Yu when he drained the floods; the major states of the Spring and Autumn period, in small

circles; principal districts and mountains; and a few historical sites. No attempt is made to reflect the real China of the nineteenth century; rather, it is the China of the Ming dynasty and the classics that is offered. Size of the original: 32.4 × 26.8 cm. Author's personal collection.

graphic style as the *chönhado* and could be considered an enlarged detail from it.

Korea's other major neighbor, Japan, was also a traditional object of cartographic concern on the part of Korea's statesmen and mapmakers, as we have seen in detailing the construction of the world map of 1402. By the standards of most maps of Japan during the Chosŏn dynasty, that effort had produced a superior outline of the Japanese archipelago, even if it was poorly positioned and oriented on the world map itself. Even by comparison with the surviving fourteenth- and fifteenth-century Japanese maps of Japan its outline was unusually good. Except that the island of Shikoku was grafted onto Hon-

shū, with the resultant loss of the Inland Sea, it might have been counted among the best. But of course this map was an adaptation based on a Japanese map brought to Korea in 1402 by Pak Tonji, and at root it represented one particular stream of Japanese cartography.

As is noted below (p. 370 and note 100), the oldest known printed map of Japan was a Korean product published in Sin Sukchu's *Haedong cheguk ki* (Chronicle of the countries in the Eastern Sea) of 1471.¹⁰⁰ This was not

100. Sin Sukchu, *Haedong cheguk ki* (Seoul, 1471; reprinted Seoul: Chōsen Sōtokufu, 1933 [Chōsen Shiryō Sōkan, no. 2]), front section. Although some material was added to this book in later printings, there is no evidence that anything in the original part was ever changed. The

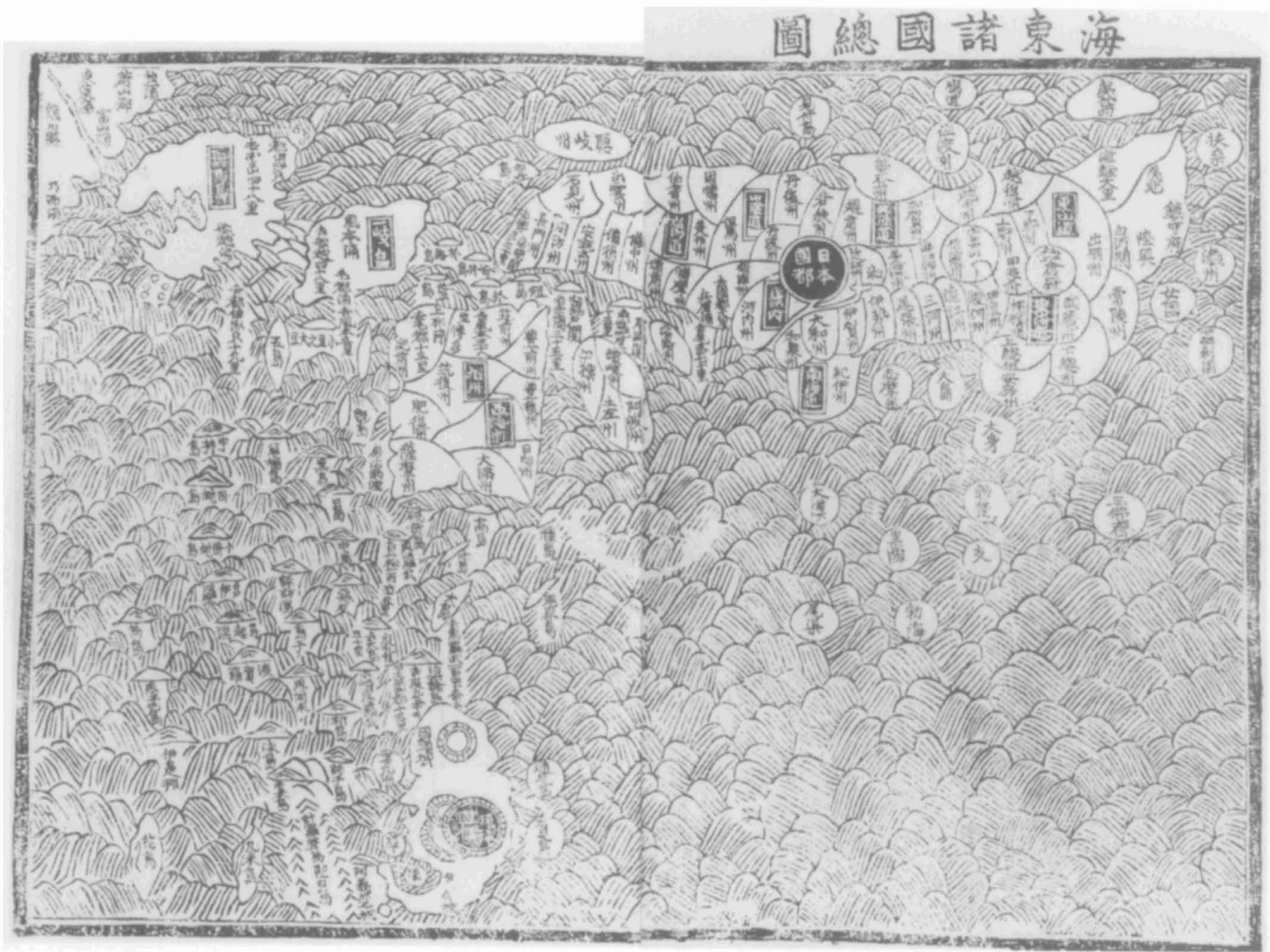


FIG. 10.16. "HAEDONG CHEGUK CH'ONGDO." From the *Haedong cheguk ki* (Chronicle of the countries of the Eastern Sea), by Sin Sukchu, 1471. This is the first of a set of six maps relating to Japan and the Ryūkyūs, the earliest maps of Japan to be printed anywhere. This map establishes the overall spatial relationships within the Japanese archipelago, between it and the Ryūkyūs, and between both of them and Korea. For its time, this map was far ahead of Chinese and even other Korean

maps, which often placed Japan at the latitude of the Yangtze and even farther south. The two islands of Iki and Tsushima, in the straits between Korea (upper left corner) and Japan, are grossly exaggerated.

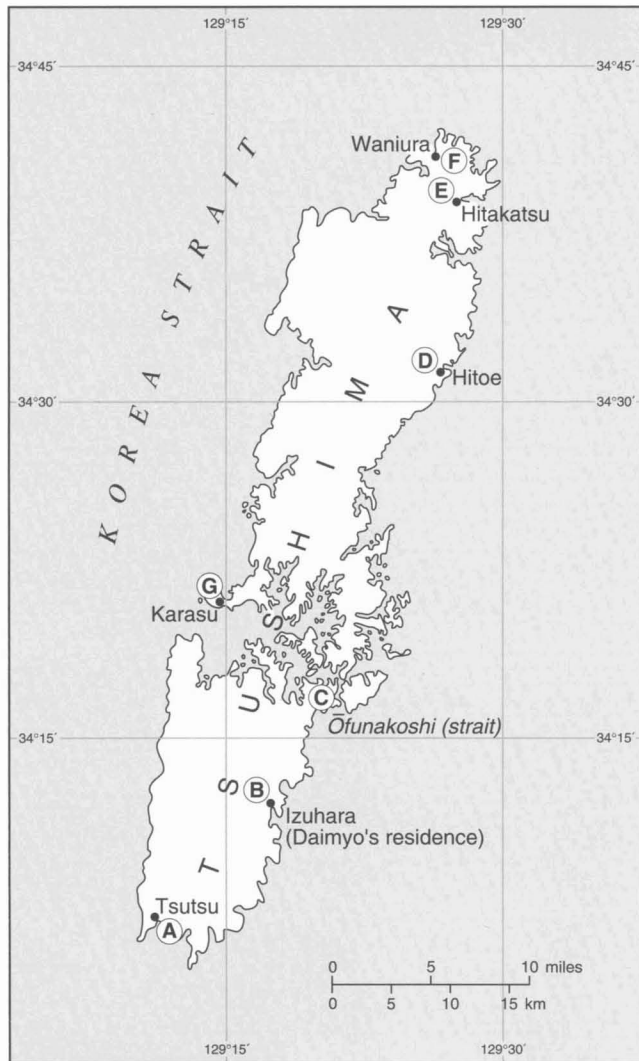
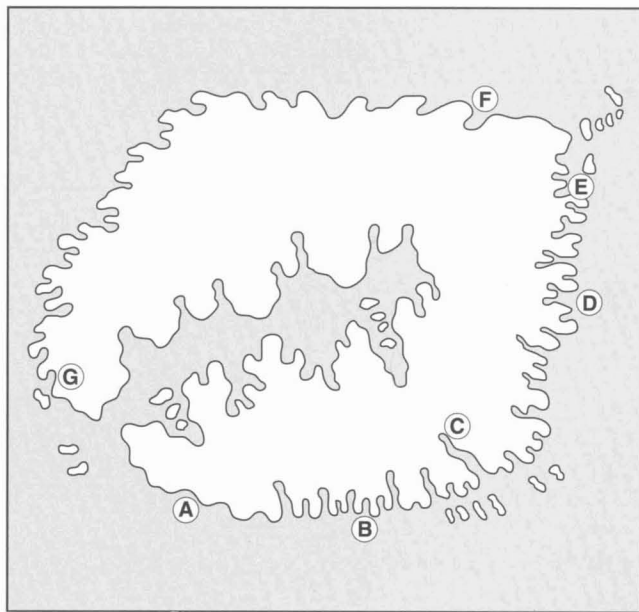
Size of each page: 17.6 × 12.3 cm. From a 1933 photolithographic reprint of a movable-type edition of the *Haedong cheguk ki*, ca. 1506. Photograph courtesy of the Harvard-Yenching Library, Harvard University, Cambridge, Massachusetts.

simply a map of Japan but a collection of maps showing both Japan and the Ryūkyūs and some enlarged cuts of the two islands Iki and Tsushima. Sin Sukchu (1417–75), who in his earlier career had participated in many of the technical research projects of King Sejong (r. 1418–50), served as secretary on an important embassy to Japan in 1443. It was this mission that marked the end of Japanese piracy on Korean shores and laid the foundation for diplomatic exchanges that lasted until the Hideyoshi invasions. Later, as a longtime president of the board of rites, he supervised all of Korea's foreign relations for over a decade. The *Haedong cheguk ki* was a compendium of Japanese and Ryūkyū history, geography, and customs,

together with a digest of events, precedents, and protocol related to Korea's relations with the two countries. Sin's lifetime concern with Japanese affairs led him to take the Japan-Korean relationship very seriously. It is said that he petitioned King Sōngjong (r. 1470–94) from his deathbed never to permit a break in peaceful relations with Japan.

The map collection in the *Haedong cheguk ki* was based on various maps maintained at the board of rites since the early part of the fifteenth century. Pak Tonji's

book proper was printed with movable type, but the map section was produced by woodblock printing.



of the Korean peninsula, indicating the three ports where Japanese traders were permitted (fig. 10.16). This general map, showing the relative disposition of all these areas on a single page devoted to them alone, appears to be unique in either Korea or Japan. Following this are two maps, one showing Honshū and Shikoku, the other Kyūshū.

Also of special interest in this mini-atlas is the single-page “Ilbon’guk Taemado chi to” (Map of Japan’s Tsushima Island) (fig. 10.17). This island was of special importance to Korea, both as a neighbor and as a regular stop for envoys and other travelers between the two countries. The daimyo of Tsushima was the formal contracting party in relations between the Korean court and Japan. He monopolized the Japanese side of the Korea-Japan trade and was de facto Japan’s hereditary agent for Korean affairs. In diplomatic form, Korea considered Tsushima its tributary, but Sin’s title for this map, with its “Japan’s Tsushima,” makes it unambiguously clear that this did not mean it was considered Korean territory. The horseshoe shape given to Tsushima seems to have begun as a convention to get the whole island, which is about seventy-two kilometers long from north to south but only fifteen kilometers wide at its widest point, on a single square page (fig. 10.18). Several writers have expressed puzzlement that Korean maps consistently show Tsushima as one island rather than as two. However the traditional cartographers were completely correct. The Japanese navy, about the turn of the twentieth century, removed the natural isthmus between the upper and lower islands for strategic reasons (a move vindicated by the Japanese victory over the Russian fleet in the battle of Tsushima in 1905). Thus Tsushima’s history as two islands has been relatively short.

A persistent problem in representing Japan, shared by cartographers in both China and Korea, was its general location in the eastern sea. The earliest Chinese itinerary to Japan, resulting from an embassy of A.D. 238 (reported in the *Sanguo zhi* [History of the Three Kingdoms] of 297),¹⁰² left the impression, caused by either confusion or deception, that Japan stretched far to the south, with its center roughly at the same latitude as the mouth of the Yangtze and with a climate similar to that of Hainan Island (center at 19°N). The consequences of this early but false impression remained evident on Chinese and Korean maps down to late traditional times. Ming maps

102. See Gari Ledyard, “Yamatai,” in *Kodansha Encyclopedia of Japan*, 9 vols. (Tokyo: Kodansha International, 1983), 8:305–7.

FIG. 10.18. TSUSHIMA ISLAND. Above is the outline of the 1471 map with Roman letters marking some place-names. Below those places are shown on a modern map of Tsushima.

routinely show Japan as a small island off the central-southern Chinese coast. I have already noted an even more southerly lay on the Korean *Kangnido* of 1402, and although I attributed it to a paucity of space on the east side of the map, it cannot be ruled out that this was one more reflection of the old problem. Atlases current in Korea in the nineteenth century still show Japan generally south rather than east of Korea. Simple attention to Sin Sukchu's written information would have avoided this error. In the preface to the *Haedong cheguk ki*, he had given a much more accurate indication of Japan's extent and location: "Its territory starts from north of [the mouth of] the Heilong [Amur] River and reaches to the south of our Cheju Island, touching the Ryūkyū Islands; it is extremely long."¹⁰³ This would have put Japan's northern tip about at the north end of Sakhalin Island, far beyond its northernmost reach then or ever, but at least it was an error in the needed direction. Since the Japanese themselves are not known to have defined the nation's northern limit in such terms as early as the fifteenth century, Sin's statement probably came from intelligence arising from relations with Manchurian peoples on Korea's northeastern frontier, which were in a very active state during his lifetime.

The maps in the *Haedong cheguk ki* represented the high point in Korean maps of Japan. The book was reprinted in both full and abridged versions at various times down to 1629. In the early eighteenth century it was functionally replaced by another book that served as an official guide to both Chinese and Japanese relations, but that book did not contain maps. Japanese maps in the popular atlases were primitive by the earlier standards. Perhaps this cartographic decline reflects a corresponding psychological deterioration in Korea's relations with Japan following the Hideyoshi wars.

THE FOUNDATIONS OF KOREAN CARTOGRAPHY

The world and regional maps examined so far involved a Korean development or reworking of maps and source materials that for the most part had come into Korea from China, or in the case of the Islamic and Western influences, through China. This cartographic activity did not rest on the Koreans' own direct observations of geographical phenomena or involve their own application of mensuration or graphic projection techniques. Rather, it was a reprocessing—interesting and innovative to be sure—of the maps of others. In making the earlier maps of their own country, which no longer survive but for which I have reviewed the written evidence, they would have had to deal with the more fundamental levels of cartography, in which observed geophysical reality, and not just someone else's maps or data, had to be translated

to the dimensions of a piece of paper. It is to these fundamental levels—general geographical knowledge, geomantic conceptions, mensuration techniques, and the problems of projection and scale—that we now turn.

GEOGRAPHICAL STUDIES

Administrative geography has a long and distinguished tradition in Korea. In the main, it followed Chinese models of great antiquity. Common to both countries was a consistent and durable model of bureaucratic centralism, wherein the central government directly administered the nation down to the local level. There was no principle of local autonomy within the state. The emperor or king appointed provincial governors and district magistrates. On lower levels the people chose their own leaders by consensus of the local gentry, but the centrally appointed magistrate had the power, even if it was not often invoked, to replace such leaders. Such a system provided a uniform and systematic structure to local administration and was conducive to centrally compiled directories of regional and local government in which were registered data on population, landholdings, natural resources, and other information affecting revenue and governance. These government files periodically provided the material for the monographic descriptions of the system that over the centuries appeared in the dynastic histories.

The historical aggregate of such sources reflects the administrative history of Korean local communities. Since the central government constantly tinkered with the system in response to various fiscal or political conditions, there were frequent changes to record. A given district may at one time have had its own centrally appointed magistrate but at another time been subordinated to a neighboring district, often incurring a name change in the process. Korean districts were ranked according to their political, economic, and military importance, and these rankings too could change. A rebellion in a given district, for instance, could result in a district's rank being diminished or lost altogether by subordination to another district, usually with unfavorable tax consequences and the loss of some privileges for its residents, while a district that achieved some nationally notable success would be correspondingly promoted. The typical treatise of administrative geography (*chiri chi*) usually began with a chronological account of such changes over long periods.

The earliest surviving treatise on Korean geography is found in the *Samguk sagi* (History of the Three Kingdoms), compiled in 1145 by Kim Pusik.¹⁰⁴ This was an official history, ordered by the king and utilizing govern-

103. Sin, *Haedong cheguk ki*, preface, 1b (note 100).

104. Kim, *Samguk sagi*, chaps. 34–37 (note 7).

ment as well as general sources. For his monograph on geography, Kim relied on an earlier compilation, possibly written as early as the eighth century, whose information reflected the organization of localities as it was during the time of Silla's King Kyōngdōk (r. 742–65). Understandably, it has fuller and more reliable data on Silla than it does on the partly contemporary kingdoms of Koguryō and Paekche. It is especially valuable for its preservation of Korea's oldest known place-names, which frequently were vernacular forms. Most of these were replaced by the Sinicized forms preferred by Kyōngdōk and his age. The official history of the Koryō period, the *Koryō sa*, compiled on royal order by a team headed by Chōng Inji (1396–1478) and published in 1451, has a similar treatise on the changes of the Koryō period, written principally by Yang Sōngji (1415–82),¹⁰⁵ who as we will see was one of the major cartographers of the fifteenth century. Because of these two works, it is generally possible to know the historical outlines of most of Korea's districts back to the Three Kingdoms period (approximately fourth century to 668).

As would be expected, the Chosōn dynasty made many changes in local administration after it came to power in 1392. These were already numerous when King Sejong ordered a comprehensive survey of the nation's provinces and districts in 1424.¹⁰⁶ We are fortunate to have good detail on this survey because of the preservation of the uniform questionnaire sent to every governor and magistrate in the country in that year. The Seoul authorities asked for a great variety of data from each local official. They wanted to know the complete administrative history of his district and its present subordinate areas, its borders and population, distances to neighboring districts, physiographic features, and details on all kinds of economic, social, and religious matters. Thus Seoul had a broad range of data, systematically collected over a uniform reporting period from every one of the 334 districts in the country. The raw responses to this questionnaire survive for a single province, Kyōngsang on the southeastern coast, which with sixty-six districts was the largest and richest.¹⁰⁷ Of key importance for cartography were the precise data on distances from district to district, collected in a way that could provide a mapmaker with a high degree of redundancy and verification. These materials were supposedly consolidated in the *Sinch'an chiri chi* (Newly compiled geographical monograph), presented to the throne in 1432.¹⁰⁸ This compilation was supposedly incorporated in the geographical monograph in the appendixes to Sejong's official annals (*Sejong sillok*); however, that monograph lacks any reference to many of the categories in the original 1424 questionnaire.¹⁰⁹

These survey data were updated and supplemented for government files in 1469, when additional data were

sought from each district concerning an extensive list of economic and military categories. Of particular interest to mapmakers was the information sought on shipping routes and distances to Seoul, and on the postal network.¹¹⁰ Much of this information, particularly the military data, was for government use only and was never systematically published. But it would have been available to those responsible for the various cartographic projects that went forward during this period.

In the following decade a much more thorough project was launched that resulted in 1481 in the *Tongguk yōji sūngnam* (Complete conspectus of the territory of the Eastern Country [Korea]),¹¹¹ a comprehensive geographical reference work along the lines of the *Da Ming yitong zhi* (Comprehensive gazetteer of the Great Ming, 1461), by Li Xian et al. Refined and updated over the following half-century, the *Sūngnam* is known today through the final edition of 1531.¹¹² After that date the Chosōn dynasty did not again publish a survey of the nation's administrative geography until 1770, when a new summation appeared in the encyclopedia *Munhōn pigo* (Documentary reference encyclopedia). The final edition of this work, *Chūngbo Munhōn pigo* (Documentary reference encyclopedia, expanded and supplemented),

105. *Koryō sa*, chaps. 56–58 (note 9).

106. *Sejong sillok*, 26.25a (note 17).

107. *Kyōngsangdo chiri chi* (Administrative geography of Kyōngsang Province, draft dated in twelfth lunar month of 1425 [January 1426]), and *Kyōngsangdo sokch'an chiri chi* (Administrative geography of Kyōngsang Province continued, draft dated 1469) (both reprinted Seoul: Chōsen Sōtokufu Chūsuin, 1938).

108. *Sejong sillok*, 55.7b (note 17).

109. *Sejong sillok chiri chi*, in *Sejong sillok*, chaps. 148–55 (note 17).

110. *Kyōngsangdo chiri chi* and *Kyōngsangdo sokch'an chiri chi*, *samok* (specifications), 1–3 (note 107).

111. According to the original preface to the *Tongguk yōji sūngnam*, dated during the spring of 1481, the compilation began in 1478. Its chief compilers were listed as No Sasin, Kang Hūimaeng, and Sō Kōjōng, but in 1482 Yang Sōngji—probably justly—claimed it as his work (see *Sōngjong sillok*, 138.9b [note 17]). Beyond its function as a reference source for administrative geography, the *Sūngnam* had the character of a literary anthology, since poems and literary essays of particular relevance to the scenery, culture, and history of Korea's districts were liberally scattered throughout the text. In this it followed the model of the *Fangyu shenglan* (Complete conspectus of the [imperial] territory), a Song geographical work whose title is echoed in the Korean work's title (*sūngnam* is equivalent to the Chinese *shenglan*). See the prefatory matter in Yi Haeng et al., comps., *Sinjūng Tongguk yōji sūngnam* (New and expanded *Tongguk yōji sūngnam*) (Seoul, 1531; reprinted Seoul: Tongguk Munhwasa, 1958). This work is cited simply as *Sūngnam* in later notes.

112. Parts of the original edition and of another edition that appeared during the reign of Prince Yōnsan (r. 1495–1506) survive in various rare book collections, but the edition of 1531 was thoroughly revised and expanded, being longer than the original by five chapters (*kwōn*). A comparison of the *Sūngnam* with the *Da Ming yitong zhi* shows many points of structural and cartographic similarity, and the Ming work was specifically cited in the *Sūngnam*'s original preface.

appeared in 1908.¹¹³ Although the *Munhŏn pigo* was in some respects more up to date than the *Sŭngnam*, its geographical section was not as complete or as well produced as the latter and never replaced it in popularity or prestige. The *Munhŏn pigo* was a vast reference encyclopedia covering many subjects and fields and was not widely available until 1908, whereas the *Sŭngnam* was a more conveniently produced work of geographical reference only. Another factor affecting usefulness was the inclusion of provincial maps in the *Sŭngnam*, in contrast to the lack of maps in the *Munhŏn pigo*. I will discuss these maps later in this chapter.

In addition to these officially compiled works, the Chosŏn period saw a number of privately written works of great distinction. The *sirhak* scholars of the seventeenth and eighteenth centuries were active in geographical studies and were especially concerned to reconstruct or refine knowledge of the nation's historical territory and boundaries. But for a connection with cartography, no private work was of higher quality than the *Taedong chiji* (Administrative geography of the Great East [Korea]) of Kim Chŏngho.¹¹⁴ Kim is unquestionably Korea's greatest cartographer, and this work, which was not quite complete at his death, shows that behind his maps there was a broad and deep knowledge of his country. His coverage of each district was not as thorough historically or culturally as that of the *Sŭngnam*, but he provided a greater variety of quantitative data, especially on distances and locations. Aside from the usual administrative history and physiographic data, he gives the names and locations of *myŏn* (subdistrict units) and of such sites as granaries, pastures, bridges, and signal towers. Nor are schools and shrines ignored. Each site is precisely located with respect to the district seat. Each provincial section concludes with detailed sets of tables showing interdistrict distances, and for each district the area under cultivation, the number of households, the number of individuals, and the number of individuals owing military service (i.e., commoners) are provided. There are succinct summaries of the postal and military signal networks, and provincial numerical totals for everything from people to bridges, dikes, and shrines. Especially important are Kim's data, unfortunately incomplete, on geodetic coordinates for several dozen towns and cities.¹¹⁵ In many of these categories Kim was the first to assemble systematic information nationwide. His rich data base is broadly reflected on his maps.

Behind the official compiling activity were the needs of the bureaucracy, on both national and local levels. Even many of Kim Chŏngho's data must have come from government information, either published or unpublished. But the seventeenth and eighteenth centuries brought significant economic development and diversification to Korean life, and information that had formerly

been assembled for the benefit of officials was now required by merchants and travelers of all kinds and was published in handbooks and maps that circulated among the general population. Figure 10.19, which is from a late eighteenth- or early nineteenth-century album of provincial maps, shows a triangular table giving interdistrict distances for all the towns of Hamgyŏng Province.

Other private geographical writers, such as Yi Chung-hwan (1690–1753), took a more humanistic approach to the land. His *T'aengni chi* (On selecting a village), probably written in the 1730s or 1740s, is a remarkable investigation on a nationwide scale of physical terrain, climate, soil quality, economic conditions, interesting scenery, and even human behavior and character in the different parts of the country, all with the purpose of finding a place where a gentleman can live.¹¹⁶ His assessments of his country's regions and localities, some deeply admiring and others devastatingly critical, show him to have been an astute, sometimes opinionated, but always interesting critic of land and landscape. Yi's commentary is marked by an especially deep familiarity with Korea's mountains and rivers and the ways they organize the overall structure of the land. In his sensitivity to the relative balance of mountain ranges and plains, of rivers and watersheds, he shows himself to be one of the most articulate links in Korea's long geomantic tradition.¹¹⁷

113. The *Munhŏn pigo* (note 51) has a total of twenty-seven chapters (*kwŏn* 13–39) devoted to geography. These are organized on historical principles and have great reference value. Major headings are: territorial extent and borders, administrative history by districts, mountains and rivers, roads, defense fortifications, naval defense, maritime routes, and a few miscellaneous sections. In spite of its late date, the information in this work is solidly traditional in both content and institutional classification.

114. Kim Chŏngho, *Taedong chiji* (manuscript dated 1864) (Seoul: Hanyang Taehakkyo Kukhak Yŏn'guwŏn, 1974). The original manuscript is not completely integrated, and toward the end of the work there are significant differences in format from one chapter to another. The problems include some missing tables and two whole missing chapters. Kim Chŏngho is believed to have died in 1864 and clearly had not completed editorial work on the text. Although this 1974 photolithographic edition, ed. Yi Pyŏngdo, is of great importance, the work deserves a more systematic modern editing to make it fully useful as a reference.

115. Kim includes these coordinates together with a set of coordinates for China's provincial capitals and other miscellaneous information on Korean-Chinese itineraries; Kim, *Taedong chiji*, chap. 28 (note 114).

116. Yi Chung-hwan, *T'aengni chi* (manuscript, no date), reprint ed. Ch'oe Namsŏn (Seoul: Chosŏn Kwangmunhoe, 1912). Korean writers also cite this work under the title *Tongguk sansurok* (Record of Korean mountains and rivers), a rare manuscript in the Kyujanggak Collection in the Seoul National University Library.

117. See Ch'oe Ch'angjo, "Chosŏn hugi sirhakchadŭl ūi p'ungsu sang" (The geomantic thought of "practical learning" scholars in the late Chosŏn dynasty), *Han'guk Munhwa* 11 (1990): 469–504.



FIG. 10.19. "HAMGYŎNG TO" (HAMGYŎNG PROVINCE). From a late eighteenth- or early nineteenth-century album of national and provincial maps entitled *Tong'yŏ chido* (Map of the Eastern Territory [Korea]). The indication of Changjin as a district dates the execution of this map after 1787. The upper margin has the text of the 1712 boundary inscription

and notes on the neighboring Manchu areas of Ula and Ninguta, Mount Paektu, and the history of the province. The modern-looking table of intraprovincial distances is a special feature of this map.

Size of the original: 48.6 × 57.5 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 61-48).

KOREAN GEOMANCY:
THE SHAPES AND FORCES OF THE LAND

The geomantic approach to land and life coexisted with the bureaucratic concern for the more practical approaches to geography. It was a more intuitive way of seeing the land, combining various emotional and religious elements in landscape perception with an often insightful and shrewd analysis of the physical features of the earth. Its roots in Korea extended deep into the past. Geomancy, as generally conceived, was a system of beliefs and theories about the land applied to the aus-

picious siting of graves and dwellings.¹¹⁸ Even today most communities in Korea do not lack for experts in such knowledge, but in earlier times the general belief in such lore created a great demand for geomantic professionals

118. Two works of great value as introductions to East Asian geomantic theory and practice are Sophie Clément, Pierre Clément, and Shin Yong Hak, *Architecture du paysage en Asie orientale* (Paris: Ecole Nationale Supérieure des Beaux Arts, 1982); and Steven J. Bennett, "Patterns of the Sky and Earth: A Chinese Science of Applied Cosmology," *Chinese Science* 3 (1978): 1-26. Bennett urges the abandonment of the term "geomancy" in favor of "topographical siting" or simply "siting," arguing that the Western practice of geomancy, such

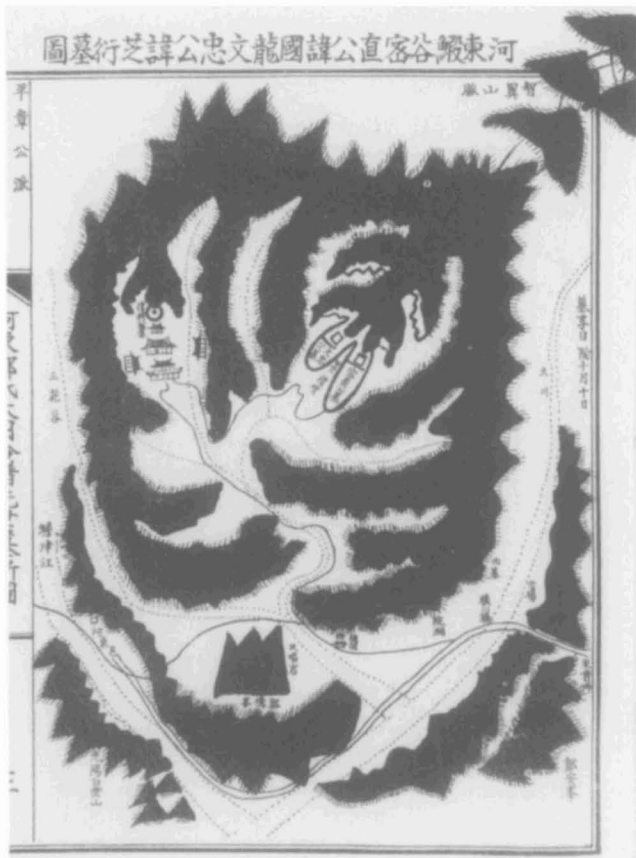


FIG. 10.20. MAP OF A GRAVE SITE. This is a typical woodblock print, of the kind commonly found in genealogies and family histories, of a grave site and surrounding terrain, the most basic type of shapes-and-forces (*hyŏngse*) map. The mountainous ground is in sharp black, rivers and streams are shown as dotted lines doubled to indicate width. At left, a grave and shrine buildings; at right, two grave mounds with the directional phrase “aligned east by northeast.” At upper right, a chain of peaks going off the map with the legend “Chirisan artery,” graphically emphasizing the arriving forces from Mount Chiri, the dominant mountain of the southern peninsula. The graves belong to two principal ancestors of the Hadong Chŏng lineage, of which the famous eighteenth-century cartographer Chŏng Sanggi is also a member.

Size of the original: 31 × 19 cm. From *Hadong Chŏngssi taedongbo* (Comprehensive genealogy of the Hadong Chŏng lineage), 1:3; published in 1960 in Seoul, copying and updating countless earlier editions. Photograph courtesy of the Harvard-Yenching Library, Harvard University, Cambridge.

and consultants. These experts in *p’ungsu* (wind and water, Chinese *feng shui*), as they were popularly known, or *kam’yōga* (specialists in celestial and terrestrial forces, Chinese *kanyujia*), as they referred to themselves, produced over time a sizable body of technical knowledge. Their geomantic siting practices generated some specialized mapping conventions that are still commonly seen on maps of burial places (fig. 10.20).

Yet if the geomantic arts had been applied only to the siting of graves and dwellings they would probably be of limited interest for the present chapter. In earlier times geomancy played a broad role on the Korean national stage as well, and its terms and conventions were a significant part of the general political and cultural discourse. Buddhist monasteries and shrines, which during the Koryŏ period were generally patronized by the state, were often sited with the purpose of “supplementing” (*pibo*) terrain perceived to be geomantically defective, a matter of political as well as popular interest. More important, geomancy was indispensable to the selection or evaluation of sites for capitals, whether on the national, regional, or local level. Since the claims of any given area to be a national or branch capital were seen to involve the spiritual relation of that region to the country’s entire body politic, geomantic analysis had to be applied within a national framework. The geophysical and geopsychic conclusions the specialists reached thus left a deep impression on Korean national consciousness and identity.

Many elements of Korean geomantic practice have roots in commonsense insights and closeness to the land that go back to the beginnings of communal life. But in the organized and systematized form that swept Korea beginning in the mid-ninth century, geomancy was an import from China.¹¹⁹ Its theory had undergone much refinement in Chan (Korean Sŏn, Japanese Zen) Buddhist centers in southern China during the late Six Dynasties and Tang periods (317–907). Geomancy was not in itself a matter of Buddhist belief, but rather was an age-old body of Chinese lore long predating the arrival of Buddhism, which the Chan monks applied in seeking the ideal

as it is, has nothing to do with the East Asian practices in question. The argument is correct; the proposed solution is not. “Siting” comes nowhere near describing the Korean dimensions of the geomantic theory and practice that will be treated throughout the rest of this chapter. Precisely because geomancy in the West is of such insignificant consequence (Bennett, p. 1, implicitly ridicules its simple-minded childishness) and is a word most Westerners will never hear in their lives, it is an ideal vessel for refilling with old and new content from East Asian experience. (We have done this with great success for the word “dragon,” much to the enhancement of the Western reputation of that much maligned species.) Also in favor of “geomancy” is its easy grammatical convertibility into adjective and adverb; “siting” is an extremely awkward term to use in actual writing, although it is still very useful in general geomantic discussion. Of these two works, that by Clément et al., in spite of its poor apparatus and romanization, is more relevant to Korean concerns and makes good use of Korean source material, much of which it unfairly hides behind an overuse of Chinese romanization in the discussion. It makes particularly good use of Korean maps.

119. See Ch’oe Pyŏnghŏn, “Tosŏn ūi saeng’ae wa Namal Yŏch’o ūi p’ungsu chiri sŏl” (Tosŏn’s career and geomantic theory in late Silla and early Koryŏ), *Han’guk sa Yŏn’gu* 11 (1975): 102–46; and Michael C. Rogers, “P’yŏnnyŏn T’ongnok: The Foundation Legend of the Koryŏ State,” *Korean Studies* 4 (1982–83): 3–72, esp. 26–30.

mountain sites for their monasteries. There were a number of schools, but the one that became important in Korea was the *xingshi* (shapes-and-forces, Korean *hyōngse*) school associated with the late ninth-century Chinese master Yang Yunsong (fl. 874–88). It regarded mountains and streams as conduits for distributing the inner energies of the earth, which, in accordance with physical and environmental conditions and perceptions of yin and yang forces, could be either beneficent or threatening. The object was to find sites where the beneficent influences were dominant by analyzing all the factors. Such a place was often called a *mingtang* (bright hall, Korean *myōngdang*). Much of the technical vocabulary of such analysis evoked medical lore. Thus mountain chains were arteries (*me* or, in the frequently seen Chinese colloquial reading, *mai*; Korean *maek*), and a geomancer was a kind of earth physician who by taking the pulse of the hills could determine the health of the land.¹²⁰

Such ideas found a ripe area for application in Korea, where it is hard to stand anywhere and not see mountains on the horizon, and usually closer. During the ninth and tenth centuries the mountain paths must have been thronged with monks and geomancers searching out the secrets of the nation's arterial system. At an early date a picture of Korea's montane network had evolved in which Mount Paektu (Whitehead, 2,744 m), a majestic volcanic peak with a spectacular crater lake (Ch'ōnji, the Pond of Heaven), the source of the Yalu, Tumen, and Sungari (Songhua) rivers, turned out to be also a spiritual power plant that sent potent legitimating forces coursing through Korea's veins. Geomantic theory was one of the chief factors legitimizing the Koryō dynasty, whose capital Songdo (modern Kaesōng) was home to Mount Song'ak, supposedly the terminus of one of Paektu's most efficacious conduits. The monk Tosōn (827–98) is said to have inspected Mount Song'ak in 875 and confirmed the Paektu connection, predicting that a future king would be born in Songdo because of this.¹²¹ Two years later there duly occurred the birth of Wang Kōn, founder of the Koryō dynasty. After this auspicious beginning and for the remainder of the dynasty, geomancy was routinely involved with political matters of all kinds, especially with schemes to move the capital or to accord or deny some special favor to Koryō's branch capitals in P'yōngyang, Hanyang (now Seoul), and Kyōngju, on occasion contributing to serious political instability.¹²² The influence of geomancy on the national stage continued to be felt in the Chosōn dynasty, especially in its early years when the new capital at Seoul was established.

During the Koryō period it clearly had a major impact on cartographic development. Tosōn's own epiphany as a geomancer had its setting in a curious map story. Having retired to a hermitage on Mount Chiri, he was one day

visited by a stranger who said that he had something important to tell him and would do so at a certain time on the banks of a river by the southern sea. He then disappeared. Tosōn went down the mountain to the appointed place and once more encountered the mysterious man, who molded the sand on the beach into a model to demonstrate "the concordant and refractory forces of the mountains and streams." As Tosōn studied the sand map the man vanished again, never to return.¹²³ The story was later remembered in the name of the nearby settlement, which was called Sado Ch'on (Sand Map Village).¹²⁴ Thus Tosōn's geomantic thought, which not only dominated his age but for the rest of the Koryō dynasty inspired imitators to claim his mantle for whatever scheme they wished to pursue, was born in a map in the sand. Unfortunately, none of Tosōn's writings now survive except in remarks or dicta attributed to him by others.

Although there were indubitable excesses associated with geomancy during the Koryō years, the craze did stimulate a positive interest in geophysical exploration, contributing to a growing knowledge of the dimensions of the country and its various regions. Such explorations could hardly have proceeded without extensive mapping. The heightened consciousness of the river and mountain

120. See the useful discussion of this point in Bennett, "Patterns," 6–7, and especially Clément, Clément, and Shin, *Architecture du paysage*, 77–79, 85–87 (note 118). On the translation of the Chinese term *xingshi* (Korean *hyōngse*), Bennett gives "forms and configurations" (p. 2), Clément et al. speak of "l'Ecole des formes," "la force des formes," and "les aspects des configurations" (p. 85). It is ill advised to take the two syllables *xing* and *shi* as being in possessive relation; a coordinate relation is overwhelmingly shown by the texts. Of all these suggestions, the definition "force" for *shi/se* most effectively suggests the *qi* or energy that surges through those arteries and is the most appropriate for the geomantic contexts under discussion here. I adopt the hyphenated form "shapes-and-forces" to emphasize the tandem character of this unitary concept.

121. "Koryō segye" (Koryō genealogy), prolegomena to the *Koryō sa*, 7b (note 9). See also Rogers, "Foundation Legend," 10–11, 47–50 (note 119); and Yi Pyōngdo, *Koryō sidae ūi yōn'gu* (Study of the Koryō period) (Seoul: Ūryu Munhwasa, 1954), 3–61.

122. Agitation in the first half of the twelfth century by the monk Myoch'ōng to move the capital from Songdo (Kaesōng) to P'yōngyang, on the ground that the former was geomantically depleted, led to a civil war and seriously threatened Korea's stability at a time when the nation was under pressure from the Jurchen peoples of Manchuria. See Michael C. Rogers, "The Regularization of Koryō-Chin Relations (1116–1131)," *Central Asiatic Journal* 6 (1961): 51–84, esp. 68, and Yi, *Koryō sidae ūi yōn'gu*, 174–233 (note 121).

123. Memorial inscription for Tosōn (posthumously National Preceptor Sōn'gak) by Ch'oe Yuch'ōng (1095–1174), in *Tongmun sōn*, 117.20b (note 17); see Rogers, "Foundation Legend," 30–31 (note 119).

124. *Sūngnam*, 39.9b, 40.27a (note 111). By the time of this fifteenth- or sixteenth-century notice, the name of the village, in the district of Kurye in Chōlla Province, had been corrupted from Sado (Sand Map) to Sadūng (Sand Stairs).

arteries also promoted their careful depiction on national maps. I have already drawn attention to Yi Ch'öm's prose description of a Koryō map he had studied during the 1390s. In this essay, virtually his entire cartographic attention was taken up with mountain ranges and drainage basins. His prose pulsed with such remarks as: "Primal matter here flows and there solidifies, and the mountains and rivers form their separate zones" and the "pristine matter here mingles and accumulates, which is why the mountains are so high and steep."¹²⁵ Yi Ch'öm's terminology, true to his own age, was Neo-Confucian, but his application of it melded well with Koryō geomantic sensibility. Not only did a geomantic perspective emerge from the clear delineation of the mountain ranges and watersheds on the map, but Yi's own perceptions as a cartographic critic were influenced by that perspective.

MAPPING AND MENSURATION IN EARLY CHOSŎN

The general Korean word for map is *chido* (Chinese *ditu*), meaning "earth chart" or "land picture." The second syllable (pronounced *to* in initial positions or when following *-l* or voiceless consonants, *-do* between vowels and after nasals) can mean "map" by itself when attached to other names or terms, such as *chōndo* (complete map), or *ūpto* (district map). The semantic range of *to/-do* is very broad, covering just about any kind of pictorial representation and extending to schemes, plots, and other kinds of mental pictures. Schematic representations of philosophical systems, moral concepts, and other such formulations also fell under the rubric of the *to*.¹²⁶

The *hyōngsedo* (shapes-and-forces map), as we can guess from the term, was particularly associated with geomancy. It is frequently mentioned in the records of the early Chosŏn period, first in connection with the surveys conducted in preparation for moving the capital to Hanyang, and later when King Sejong and his son King Sejo (r. 1455–68) were pushing projects to map the country and its districts. Thus in 1393 we find references to shapes-and-forces maps of Hanyang (Seoul) and its principal building sites,¹²⁷ and also for certain cult facilities that were to be sited in the district of Chindong in Chōlla Province.¹²⁸ None of these maps survive, but most likely they were terrain charts showing the shapes-and-forces of mountains and streams and provided with compass readings to indicate the orientation of principal features. Two late traditional examples of this kind of map are shown in figures 10.21 and 10.22.

I have already noted King Sejong's geographical survey of 1424–25, which, in seeking detailed figures on the distances from the seat of each district to its borders in all directions, seems to have envisioned a broad data base for precise maps on both the national and local levels. This is nothing less than we would expect of Sejong, who

is justly famous for the scope and quality of his many scientific projects. But Sejong certainly included geomancy within his concept of science. Soon after launching the survey, he recalled the government's records on geomantically positioned monasteries and shrines,¹²⁹ as well as documents relating to the "shapes-and-forces of mountains and streams" in the nation's various localities, and ordered this material to be moved from a branch archive in Ch'ungju to the Spring and Autumn Hall (*ch'unch'ugwan*, or office of history) in Seoul, which was handling the geographical survey.¹³⁰

The instructions to governors and magistrates had not mentioned maps, nor were any maps mentioned when the office of history presented its report on the survey, the *Sinch'an chiri chi*, in 1432. But once Sejong had absorbed its results, he inspected the maps on file in the board of war and found them wanting. In 1434 he issued another order to localities for the collection of five kinds of information: the disposition and orientation of all government buildings, the "incoming arteries" of mountains and streams, route distances, distances to district boundaries (once again), and finally, "full and detailed maps."¹³¹ In 1436 he chose Chōng Ch'ök (1390–1475), then a middle-level official in the board of rites, to conduct on-site surveys in the three northern provinces.¹³² Just as there

125. See the translation of Yi Ch'öm's complete remarks from "Samgukto husō" above, pp. 241–42 and note 17.

126. We see such an extended usage in the name *Ch'ip'yōngdo* (Map of order and peace). It was not an earth map but a schematic arrangement of Confucian concepts, each in a box or circle, that were important in the cultivation and activity of a ruler (for example, rectitude of mind, self-cultivation, acceptance of criticism, delegation of authority). It was presented in 1454 to the boy-king Tanjong (r. 1452–55) by Yang Sōngji (see *Tanjong sillok*, 10.24b–25a [note 17]), who just a few months earlier had been put in charge of a vast project to compile national, provincial, and local maps. Jeon erroneously discusses this "map" in connection with Yang's administrative cartography (*Science and Technology in Korea*, 295 [note 49]). Although Yang was an experienced cartographer, in this instance he was acting more in the tradition of Neo-Confucian philosophers, who had a great fondness for such diagrams. Yang's moral map does not survive, although its outlines could be reconstructed from the notice in the *Tanjong sillok*. Such diagrams are maps in the broad definition accepted in the volumes of the present work: as graphic representations that facilitate spatial understanding of things, concepts, conditions, processes, or events in the human world (preface to volume 1 of *The History of Cartography*)—a formulation that fits the Sino-Korean term *to/-do* remarkably well.

127. *T'aejo sillok* (Annals of King T'aejo, r. 1392–98), 3.3b (note 17).

128. *T'aejo sillok*, 3.1b (note 17).

129. During the Koryō period monasteries and shrines were often sited with a view to either making up perceived geomantic deficiencies or adding to geomantic strengths. This was called *pibo* (compensation and reinforcement).

130. *Sejong sillok*, 28.22b (note 17).

131. *Sejong sillok*, 64.30a (note 17).

132. *Sejong sillok*, 71.9a (note 17).

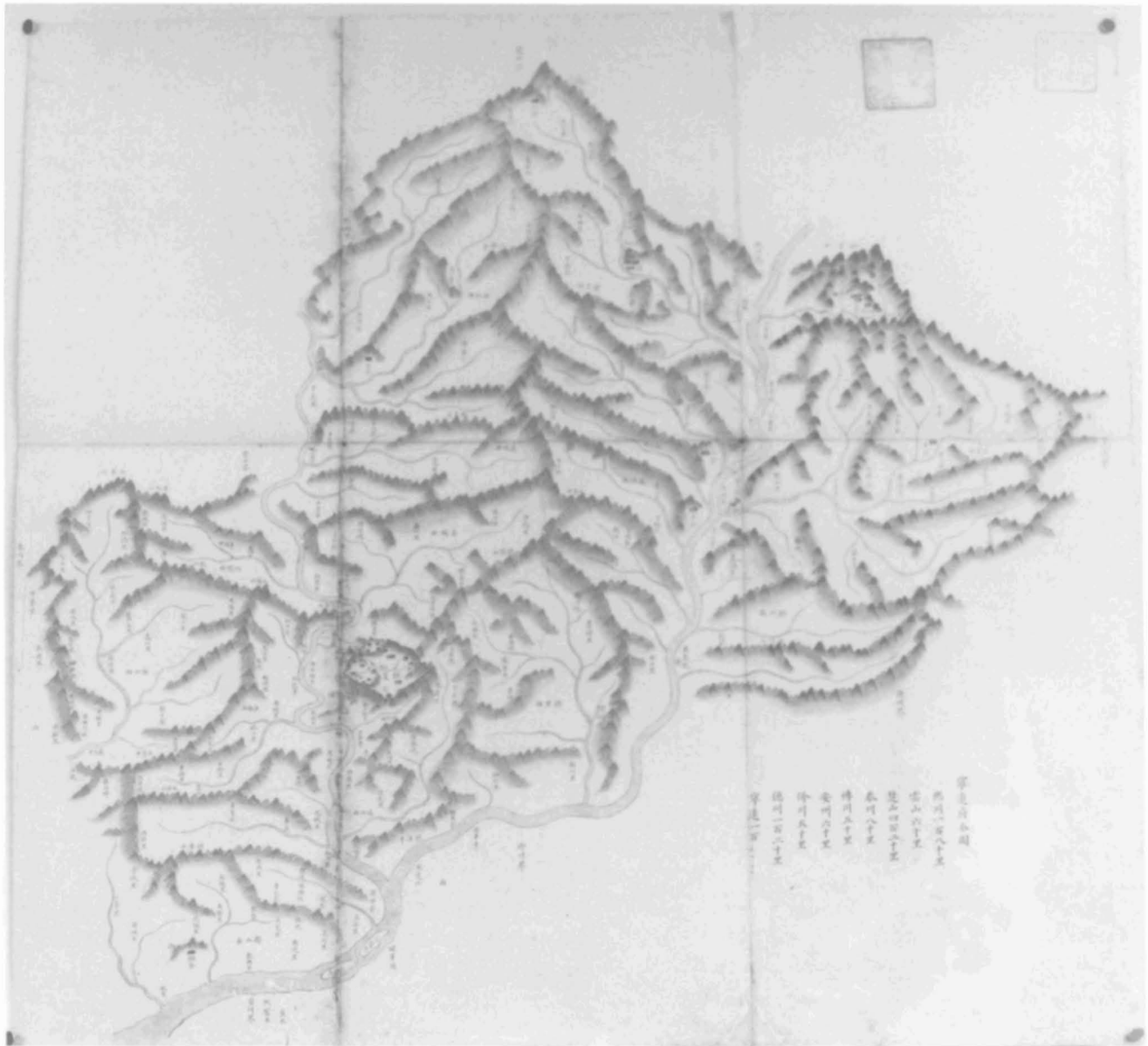


FIG. 10.21. YŏNGBYŏNBŪ CHŏNDO (COMPLETE MAP OF YŏNGBYŏN PREFECTURE). This map, with a strong shapes-and-forces (*hyŏngse*) emphasis, provides a detailed picture of the lay of Yŏngbyŏn's mountains and rivers. Monasteries, shrines, schools, granaries, and post stations are also indicated. The renowned Ch'ŏrong (Iron Jar) mountain fortress,

with its precipitous cliffs on all four sides, dominates the lower left, while Mount Myohyang with its serrated peaks stands out at the upper right. Undated, but probably of the late eighteenth or early nineteenth century.

Size of the original: 69.5 × 75 cm. By permission of the National Central Library, Seoul (cat. no. Ko 2702-18).

was a clear concern for geomantic factors in the 1434 instructions, so Chŏng's appointment also involved shapes-and-forces studies, to be followed by *tohwa* (illustrations). The term *tohwa* is most commonly seen in the sense of paintings, but here it should be interpreted as referring to maps. We are uninformed on the outcome of these events, but Chŏng Ch'ŏk later emerged as a cartographer of importance. Although no map by him is

known to survive, historians of cartography have given his name to one type of national map of Korea that was current from the fifteenth to the seventeenth century. We see him again in map survey activity in 1454, when Prince Suyang (later King Sejo) led a group to the top of a mountain overlooking Seoul to organize a new map of the city. The prince himself did the sketching, but the group included a master cartographer (Yang Sŏngji), a painter,

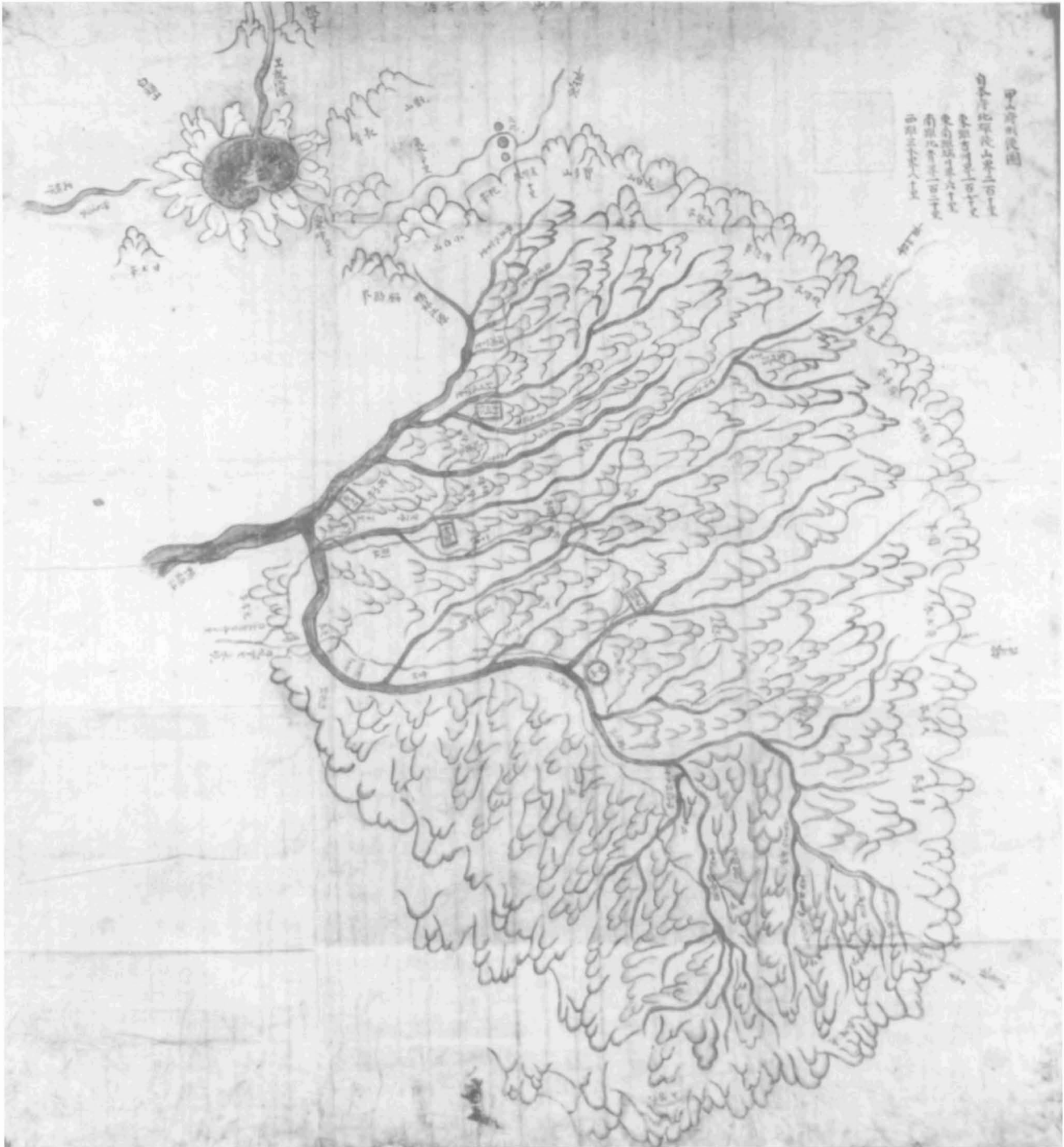


FIG. 10.22. *KAPSANBU HYŎNGPYŎNDO* (SITUATIONAL MAP OF KAPSAN PREFECTURE). The district of Kapsan administered the vast area to the south of Mount Paektu, shown with its Pond of Heaven (Ch'onji) at the upper left. The district town of Kapsan is indicated by the circle in the center. The shapes-and-forces treatment is drawn in a highly unusual style,

giving the mountains and rivers an almost biological appearance. Undated, but probably of the late eighteenth or early nineteenth century.

Size of the original: unknown. By permission of the National Central Library, Seoul (cat. no. Kojo 61-51).

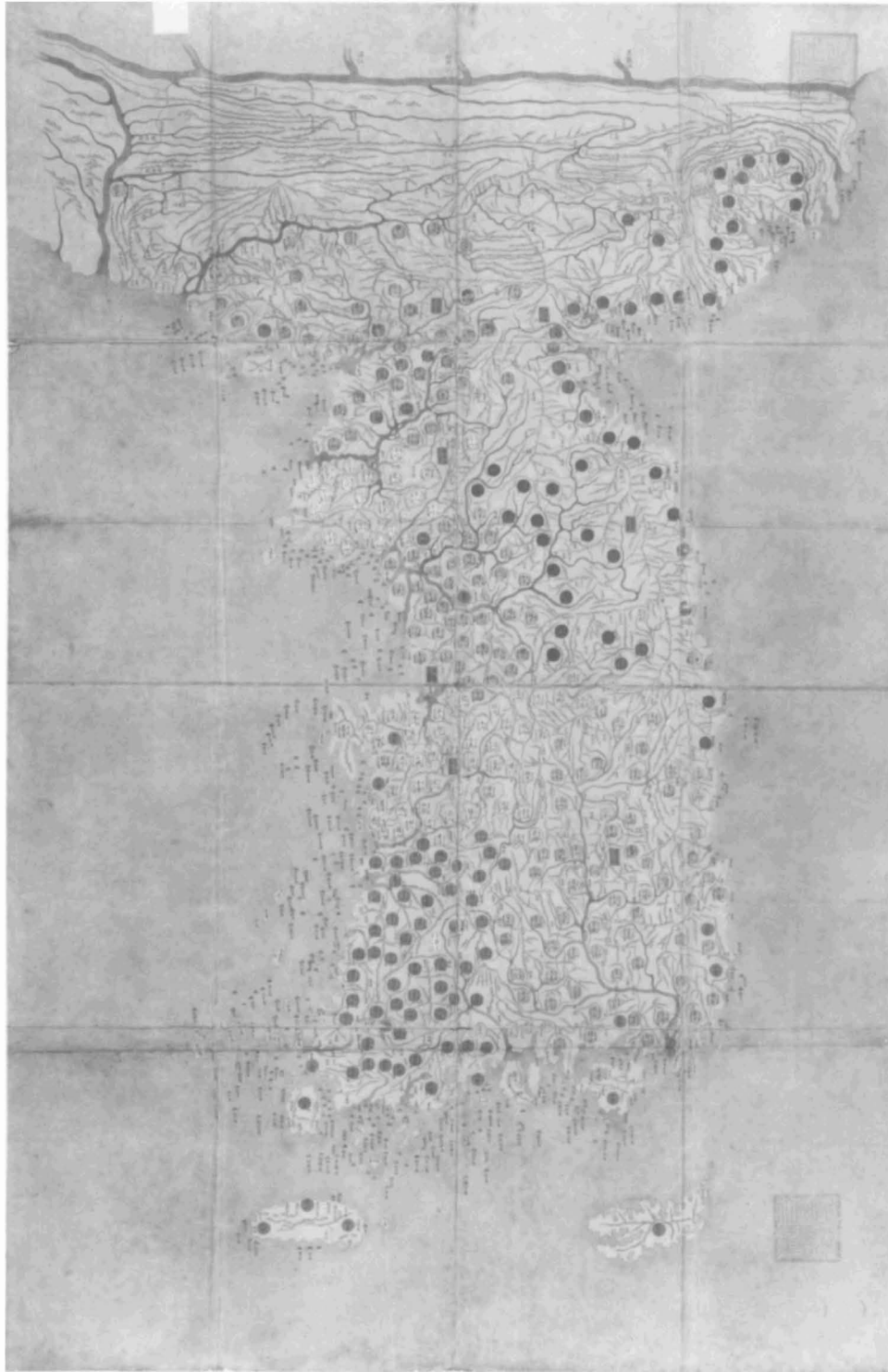


FIG. 10.23. UNTITLED MAP OF KOREA. This map, known as the Naikaku map and in Japan given the title *Chōsenkoku ezu* (Map of Korea), is believed to be a copy of, or in the tradition of, the *Tongguk chido* (Map of the Eastern Country [Korea]) by Chōng Ch'ōk and Yang Sōngji, presented to King Sejo in 1463. Its compressed northern frontier is characteristic of the Chōng Ch'ōk style; in other respects it has a high degree of accuracy for its time. Chōng Ch'ōk, a known shapes-and-

forces specialist, provided a detailed depiction of the nation's mountain ranges (colored green) and river systems (blue), but the map also gives generous indication of district seats, coastal inlets, roads, and islands. The cartouches marking district seats are distinctively colored according to the provinces they are in. Size of the original: In excess of 151.5 × 90.9 cm. By permission of the Cabinet Library (Naikaku Bunko), Tokyo.

a geomancer, a mathematician, and Chŏng, identified as knowledgeable in “shapes-and-forces of mountains and streams.”¹³³

Sejong’s concern for accurate maps, though evident in the sources, seems to have led to only a small cartographic production. A list of maps from a Yang Sŏngji report of 1482 mentions only two maps from Sejong’s reign, and both of them were connected with Chŏng Ch’ŏk.¹³⁴ This apparent lapse of cartographic interest may have been related to the failing eyesight that afflicted the great king during the last decade of his life, or to his growing concern in those years for projects related to language and literature. In his last six years he invented the Korean alphabet and saw through to completion several major publishing projects involving the vernacular language, both epochal events in Korean cultural history.

In any case, his son Sejo picked up on his mapmaking projects and pushed them with considerable energy. In 1453, while still Prince Suyang but already de facto king in the minority of his nephew King Tanjong (r. 1452–55), whom he later ousted and had put to death, he appointed Yang Sŏngji to oversee a project to produce a general map of Korea and separate maps of each of the eight provinces and 330–odd districts.¹³⁵ Compilation of a new geographical monograph was added to his responsibilities in 1455.¹³⁶ Later that year Yang presented maps of three frontier districts that had been newly established during the preceding forty years, but that were proving expensive to administer and defend against the nearby Jurchen tribesmen.¹³⁷ Partly as a result of Yang’s work and recommendations, they were all discontinued as administrative units by Sejo.

In 1456 Yang reported to Sejo that he had been working on mapping steadily for three years. He had investigated everything: mountains and rivers, strategic places, roads and distances, and all the affairs of districts and military garrisons throughout the country. But the great bulk of Yang’s report was concerned with cultural and religious matters—on just what it was that made Korea Korea. He saw it as a combination of geography and culture. He comprehensively listed all the mountains and rivers that deserved the special religious attention of the state, in terms of a hierarchy of mountain and river deities to which the state offered, or should offer, special sacrifices. He then reviewed the heroes and great kings of the past, and what was due them, and praised the enlightened Confucian culture that then prevailed in the land. It is a remarkable report. The cartographic substance filled barely a paragraph at the end of many pages devoted to religious and cultural matters.¹³⁸ This emphasis serves to remind us of the spiritual power of the land, theoretically clarified, perhaps, by the determinations of the geomancers, but reflected long before the dominance of their ideas in the ancient worship of mountains and rivers. These cults remained active until the end of the Chosŏn

dynasty, both on the popular level and through the patronage and officiation of the state and its civil servants.

Thus geomantic conceptions of the landscape, which had become deeply rooted in the national psyche during the long Koryŏ centuries, showed no sign of weakening during the early decades of Chosŏn. This is documented not only in the written sources just reviewed, but in the very few maps of Korea that either date from the fifteenth century or are believed to reflect its style (plate 17 and fig. 10.23). The cartographic approach that might follow from such a shapes-and-forces consciousness is suggested in the following remarks of Sophie Clément and her collaborators concerning the nature of “points where energy is focused or concentrated” on the landscape:

It is essential that [these points], far from corresponding to a system of coordinates such as longitude and latitude and justified through definition in a universal exterior space, instead be located in relation to the internal structure of the organic system created by the [energy] networks. Territory is a living material, in movement, and not a static and inert mass of elevations and rocks. Thus there can be no territorial segregation of any point of ground. All points are situated in correspondence with the veins and arteries represented by the mountains and streams, elements of nature that themselves transmit life.¹³⁹

In this kind of approach, it would be more important to show the mountains and rivers that transmit the energy, with particular emphasis on the nodal points of the distribution system, than to present the precise geometric relation between the cities and towns that are sited with reference to that system. Such an approach is surely reflected on the so-called Naikaku map (fig. 10.23), thought to be a copy, or in the tradition, of the map of Korea made by Sejong’s chief cartographer, Chŏng

133. *Tanjong sillok*, 11.3a (note 17).

134. The two mapping projects were a *p’altodo* (map of the Eight Provinces) and a *yanggye taedo sodo* (large and small maps of the two frontier zones); see *Sŏngjong sillok*, 138.10b (note 17). Chŏng’s map of the frontier zones was actually presented in 1451, after Sejong’s death, and the *p’altodo* was probably the same as the *Tongguk chido* (Map of the Eastern Country [Korea])—which does not appear on Yang’s list—that Chŏng and Yang jointly presented to Sejo in 1463; see *Munjong sillok* (Annals of King Munjong, r. 1450–52), 7.47a, and *Sejo sillok* (Annals of King Sejo, r. 1455–68), 31.25b (note 17). Thus even the projects mentioned for Sejong’s reign seem to have been completed only later.

135. *Tanjong sillok*, 8.21b (note 17).

136. *Sejo sillok*, 2.7a (note 17).

137. *Sejo sillok*, 2.39b–41a (note 17). The maps were accompanied by extensive recommendations by Yang on northern defense matters.

138. *Sejo sillok*, 3.24b–32a (note 17).

139. Translated from Clément, Clément, and Shin, *Architecture du paysage*, 216 (note 118). For a similar appreciation of the dynamic nature of the geomantically seen landscape, see David J. Nemeth, “A Cross-Cultural Cosmographic Interpretation of Some Korean Geomancy Maps,” in *Introducing Cultural and Social Cartography*, comp. and ed. Robert A. Rundstrom, Monograph 44, *Cartographica* 30, no. 1 (1993): 85–97.

Ch'ök. The mountain and river system is meticulously indicated, but no scale is noted and no interdistrict distances are given, even though the government had complete data on these at its disposal.

But this is not to say that spatial relationships were completely ignored. The Naikaku map is a political map and had many features of importance to Seoul administrators, not the least of them the distance of every district seat from Seoul. Moreover, the overall shape of the country was very well grasped: apart from the misshapen northern frontier and the general curve of the east coast (both durable problems to which I shall return), the general dimensions of Korea compare very well with those of modern maps.

Clearly there was a consciousness of scale. The problem is that we have no concrete evidence on how this consciousness was formulated or applied. The earliest indication of scale on a Korean map and the earliest discussion of observed distance and its representation on maps are both due to the eighteenth-century cartographer Ch'ong Sanggi (1678–1752). Korean records reflect no knowledge of the scale maps or writings of Zhu Siben or of his sixteenth-century editor Luo Hongxian, nor any awareness of the famous stone-engraved grid map of Song times (above, esp. pp. 47–48). Even the classical six principles of the third-century Chinese cartographic theorist Pei Xiu (223–71) (above, pp. 110–13), which implicitly reflect a consciousness of scale, do not appear to have become a topic of discussion among Korean mapmakers before the nineteenth century (see below, p. 344).

A vague sense of scale seems evident Kwön Kün's preface to the *Kangnido*, where he remarked on "the greatness of its *kyumo* [scale] and *kungnyang* [dimension]" (above, p. 245). The term *kyumo* (Chinese *guimo*), consisting of two elements meaning respectively "draw a circle" or "compass," and "shape" or "model," classically connotes largeness of vision or planning and has not normally had any reference to cartographic scale in the sense of a ratio between observed distance and its representation on a map. Kwön seems to have simply been referring to the impressive size of the map.

We should also note the remark attributed to Pak Tonji concerning the map he brought back from Japan in 1402: "The entire land area [of Japan] was on it, all but the islands of Iki and Tsushima, so I added them and doubled the scale" (above, p. 247). His term *chungmo* means literally to increase, or double, the size of the model or form. Commenting on this map in 1438, King Sejong, finding the Japanese islands too small for his perhaps already failing eyesight, ordered that a copy be made by the process of *kaemo*, "changing (or correcting) the model."¹⁴⁰ Both remarks clearly suggest an increase in scale. The 1402 version of Pak's map is supposedly the

basis for the representation of Japan on the *Kangnido* (figs. 10.3 and 10.12), but the latter's odd placement of Japan, and its gross magnification of Korea, create distortions so severe (although of quite different character on the two copies illustrated here) that neither version of the *Kangnido* can give us a clue to what Pak was trying to say. On the other hand, if Sin Sukchu's map of Japan (fig. 10.16), has any connection with Pak's—which is entirely possible—it may provide some help. On this map, the size of Iki and Tsushima is grossly exaggerated with respect to the three main Japanese islands, so much so that Pak's meaning may have been that he added Iki and Tsushima and doubled their size only, leaving Japan relatively smaller. In this interpretation, speculative to be sure, the concept of scale would have been applied selectively to only a part of the map, leading not to more accurate representation of the spatial relationships but to their distortion.

These remarks of Kwön Kün, Pak Tonji, and King Sejong all concerned foreign areas and ultimately foreign maps. Precisely because the Koreans had foreign maps but lacked any sense of their relative scales, their incorporation of them into the *Kangnido* created distortions in the relative sizes of China, Korea, and Japan (just to confine ourselves to the East Asian portion of the map). Thus the interpretation of their terms—*kyumo*, *chungmo*, *kaemo*—while perhaps showing instinctive awareness of the concept of scale, cannot help us much in determining what they knew about true cartographic scale, that is, the ratio between empirically grasped real distances and their proportional reduction on a map. To deal with that question we have to come back to their maps of their own country, where actual distance measurement was feasible. Therefore I turn now to the standards and techniques of mensuration that developed in tandem with the survey activity of the fifteenth century.

In spite of useful summaries by Sang-woon Jeon (Ch'ön Sang'un) and Pang Tong'in,¹⁴¹ there is still considerable uncertainty concerning the actual design, function, and application of the mensuration standards and devices developed in the mid-fifteenth century by King Sejong and King Sejo. We are much better informed about Sejong's astronomical instruments, primarily because these were the object of a summary essay in his official annals, whereas land survey methods did not receive comparable research attention and no organized summation was made of the work that was done. I will confine myself here to what is known of the efforts to refine linear measure and measuring instruments, including rulers, ropes, odometers, and triangulation devices. I will also review

140. *Sejong sillok*, 80.21a–b (note 17).

141. Jeon, *Science and Technology in Korea*, 294–96 (note 49), and Pang, *Han'guk üi chido*, 87–90 (note 5).

TABLE 10.3 Traditional Korean Linear Measure

| | | |
|--------------------|-------------------------------|----------|
| 10 <i>ri</i> | = 1 <i>p'un</i> | |
| 10 <i>p'un</i> | = 1 <i>ch'on</i> | “inch” |
| 10 <i>ch'on</i> | = 1 <i>ch'ök</i> | “foot” |
| 6 <i>ch'ök</i> | = 1 <i>po</i> | “pace” |
| 10 <i>ch'ök</i> | = 1 <i>chang</i> | “fathom” |
| 2,160 <i>ch'ök</i> | = 360 <i>po</i> = 1 <i>li</i> | “mile” |

Source: Ch'oe Hang et al., *Kyöngguk taejön* (Great codex of state administration, compiled 1469, revised 1476) (Seoul: Chösen Sötokufu, 1934), 6.1b–2a; Kim Chaero et al., *Sok taejön* (Supplement to the Codex, compiled 1746) (Seoul: Chösen Sötokufu, 1935), 6.1a. *Ri* and *li*, normally both romanized *i*, are for reasons of clarity given irregular spellings here.

the few scant details on the measuring of polar altitude and its possible application to cartography.

Korea adopted China's decimal foot ruler (*chi*, Korean *ch'ök*) at a very early date, and long experience with this linear measure was officially codified in the statutes of the Chosön dynasty, the *Kyöngguk taejön* (Great codex of state administration), formally adopted in 1469.¹⁴² By an apparent oversight, the *Kyöngguk taejön* failed to specify the conversion ratio of the foot to long-distance units such as the *li*. However, the ratio of 2,160 *ch'ök* (360 *po*) per *li* was specified in the supplement to the *Kyöngguk taejön* published in 1746,¹⁴³ and it is implicit in the distance figures given in the *Sünghnam*, as we shall see. Table 10.3 provides a conspectus of these units. Sino-Korean usage stated the name of each decimal place. For example, the length of an object might be given as 4 *ch'ök*, 7 *ch'on*, 2 *p'un*, and 6 *ri*. However, the decimal character of the system permits the reduction of this statement to a simple 4.726 *ch'ök* or 47.26 *ch'on*, for example. The difficulty comes in the fact that there were at least five customary *ch'ök* rulers current during the early Chosön dynasty, each applied for its own specified purposes. Worse still, standards for these varied from place to place and time to time, and the conversion ratios therefore could not be dependably stated.

Sejong's researchers and earlier government specialists, apparently for ideological reasons, wanted to use the *chuch'ök* (Zhou [dynasty] foot) as a general standard for institutional purposes. It appears that this measure had been advocated by the Chinese Neo-Confucian reformers of the eleventh and twelfth centuries, who wanted to restore the linear standard of Confucius's own time. A notice in Sejong's annals in 1437 gives a brief history of the question: Sima Kuang (1019–80) is said to have possessed a rubbing of a Zhou ruler from an ancient stone inscription, and this ruler reportedly had been reproduced in the *Jiali*, a popular compendium of Neo-Confucian household ritual. However, frequent reprinting of that work in different formats had reduced this attempt at definition to chaos. In 1393, Korean officials tried to re-

establish a definition by adopting as a standard the length of ancestral tablets (*sinju*, Chinese *shenzhu*) from the household temples of several apparently strict Confucian ritualists. Evidently the length of these had some direct connection with the Zhou foot.¹⁴⁴ An official length was determined, a model ruler was made, and this measure was formally adopted in 1437, at the time of the completion of the instruments for Sejong's new astronomical observatory. The Zhou ruler was used in producing all its horological and observational instruments, and in addition it was prescribed as the standard for “all ancestral tablets in the household shrines of the gentry, as well as for route distances in *li*, and for pacing rules at the archery range.”¹⁴⁵

It remained to define the ratios between these and the other current rulers, and for this purpose the *hwangjong* (yellow bell, Chinese *huangzhong*) foot was made the integrating standard. *Hwangjong* was the name of the first note of the classical musical scale, the standard tuning note for musical instruments. This unit had been defined in 1425 as a fundamental step in Sejong's project to reconstruct classical music and manufacture a standard set of orchestral instruments. The *hwangjong* pitch pipe was made the foundation for all measurement—length, volume, and weight.¹⁴⁶ The ratios between the *hwang-*

142. Ch'oe Hang et al., *Kyöngguk taejön* (compiled 1469; revised 1476) (Seoul: Chösen Sötokufu, 1934), 6.1b–2a.

143. Kim Chaero (1682–1759) et al., *Sok taejön* (Supplement to the Codex, compiled 1746) (Seoul: Chösen Sötokufu, 1935), 6.1a.

144. I have been unable to confirm this detail. Modern editions of the *Jiali* (Household rituals) have no drawing of the Zhou ruler. The edition deemed the best by the Qianlong emperor's book reviewers in 1781, and reprinted in vol. 142 of the *Wenyuange Siku quanshu* (Manuscript copy of the *Siku quanshu* in the Wenyuange Library) (Taipei: Shangwu Yinshuguan, 1983), 4.24a, does not mention the Zhou ruler in its specifications for ancestral tablets. Of course the *Jiali* has gone through numberless editions, and its text history, beginning with its authorship (the traditional attribution to Zhu Xi has long been rejected), is probably beyond recovery. But the alleged connection of the Zhou ruler with Neo-Confucian ritual would be worth some serious research given its great importance for post-Song East Asian mensuration.

145. *Sejong sillok*, 77.11a–b (note 17). The *Jiali*, 4.24a (note 144), specifies the length of an ancestral tablet as 1 *chi* (foot) 2 *cun* (inches). If the standard is taken to be the Zhou ruler, then five-sixths of the length of a precisely made tablet would equal one Zhou foot.

146. According to the editors of the modern translation and annotation of the *Kyöngguk taejön*, in 1425 King Sejong's chief musicologist, Pak Yön, collected medium-sized millet grains in the district of Haeju, selected one hundred average grains, then lined them up side by side to fix the length of the *hwangjong* foot. The *hwangjong* pitch pipe was defined as a pipe nine *hwangjong* inches long with a circumference of 0.9 inch. The water that would fill that pipe also fixed the standards for volume and weight measures. See Han Ugün et al., eds., *Yökchu Kyöngguk taejön: Chusök pyon* (The annotated *Kyöngguk taejön*: Notes and commentary, translated [from Chinese into Korean] and annotated) (Seoul: Han'guk Chöngsin Munhwa Yöng'guwön, 1986), 751. See also *Munhön pigo*, 91.2b (note 51).

TABLE 10.4 Korean Linear Measurement Standards
Current in the Fifteenth Century

| Unit | Application | Ratio | Metric Equivalent (provisional) |
|------------------------|--|-------|---------------------------------|
| <i>Hwangjong ch'ök</i> | Standard for musical pitch-pipe length | 1.000 | 32.85 cm |
| <i>Chuch'ök</i> | Zhou foot; general linear measurement | 0.606 | 19.91 cm |
| <i>Choryegi ch'ök</i> | Ritual foot; ritual implements | 0.823 | 27.04 cm |
| <i>Yöngjo ch'ök</i> | Architectural foot | 0.899 | 29.54 cm |
| <i>P'obaek ch'ök</i> | Textile foot; standard bolt width | 1.348 | 44.29 cm |

Source: Ch'oe Hang et al., *Kyöngguk taejön* (Great codex of state administration, compiled 1469; revised 1476) (Seoul: Chösen Sötokufu, 1934), 6.1b–2a. The metric equivalents are based on the figure of 19.91 centimeters for the Zhou foot, as determined by Wu Chengluo, *Zhongguo duliangheng shi* (History of Chinese weights and measures) (Shanghai: Shangwu Yinshuguan, 1937), 64–66 (table 15). For the likely applicability of this value to Korea, see note 149. These values should be considered provisional pending further research.

jong foot and other foot measures then in use were determined next, probably during the late 1430s and early 1440s. Cast bronze rulers were sent to all district magistrates during the 1440s,¹⁴⁷ and the official ratios were stated in the statutes in 1469 (table 10.4).

The conversion of these various rulers to metric units remains problematic. Jeon measured the *choryegi ch'ök* (ritual implement foot) printed in the *Sejong* annals and found it to be 28.9 centimeters, and on this basis he derived the length of the *hwangjong* foot as 35.1 centimeters and that of the Zhou foot as 21.27 centimeters.¹⁴⁸ However, studies from the Chinese side have produced values of 19.91 and 24.525 centimeters for the same measure. Since the details of Jeon's ritual foot are still unclear, I have provisionally accepted Wu Chengluo's value of 19.91 centimeters, which also passes a test I devised for its applicability to Korean distance data. Provisional metric equivalents of the Korean measures, based on this value, are given in tables 10.4 and 10.5.¹⁴⁹

147. The bronze standard rulers from the *Sejong* era were lost over the years, mostly during the Japanese invasions of 1592–98. But in 1740 the court learned of a bronze textile ruler (*p'obaek ch'ök*) in the office of the magistrate of Samch'ök bearing an office of standards inscription with a date in *Sejong*'s reign corresponding to the period 18 December 1446 to 16 January 1447. Compared with this ruler, the textile rulers then current were found to be anywhere from a half to a full inch (*ch'on*) shorter. Since the original ratios to the other standard rulers were known, King *Yöngjo* (r. 1724–76) ordered a new set of bronze standard rulers based on the Samch'ök ruler to be cast and distributed;

see *Munhön pigo*, 91.3b–4a (note 51).

148. Jeon, *Science and Technology in Korea*, 134 (note 49).

149. Jeon, *Science and Technology in Korea*, 131–34 (note 49). Jeon does not give any details concerning his measurement of the *choryegi ch'ök* in the *Sejong sillok*. His illustration shows the ruler as depicted in the 1956 photolithographic reprint of the second woodblock edition of 1604. His figure of 28.9 centimeters cannot have been obtained from the 1956 edition (which by actual measurement yields a length of about 18.1 cm). But did this figure come from the 1604 edition or from the original printed edition of 1472 (Seoul National University Library, Kyujanggak #12722)? One hopes it was from the latter, but Jeon does not say.

In addition to Jeon's derived value of 21.27 centimeters for the Zhou foot, there is another that is derivable from table 15 of Wu Chengluo, *Zhongguo duliangheng shi* (History of Chinese weights and measures) (Shanghai: Shangwu Yinshuguan, 1937), 64–66. Wu calculates the ratio of the Zhou foot to the Chinese *shichi* (market foot, 33.3 cm) at 0.5973 and gives a value of 19.91 centimeters for the Zhou foot. Finally, Needham et al., *Hall of Heavenly Records*, 90 (note 48), assume a Zhou foot value of 24.525 centimeters based on the physical measurement of a bronze *liangtian chi* (celestial foot) of Ming times, itself reportedly in agreement with an earlier Chinese "iron ruler" of the sixth century. However, a reading of Yi Shitong, "Liangtian chi kao" (Study of a sky-measuring scale), *Wenwu*, 1978, no. 2:10–17, which Needham and associates cite as their authority, finds no discussion of the Zhou foot and no mention of it as being equivalent to the *liangtian* foot.

In order to decide between these alternatives, I devised a test based on fifteenth-century Korean distance data. I randomly chose from the *Süngnam* (note 111) twenty distances in *li* between points that could with reasonable precision be found on a good modern map of Korea (USAF Operational Navigational Chart ONC G–10, 1:1,000,000, Aeronautical Chart and Information Center, United States Air Force, St. Louis, Missouri, 1964) and that were in areas of relatively flat terrain in different parts of the country. I then used an opisometer to measure the same distances in kilometers on this modern map and translated these figures into *li* using the three standards of Wu, Jeon, and Needham. The aggregate of all twenty measured distances was 614 kilometers, corresponding to 1,423 stated *li*, or an average of 2.318 *li* per kilometer. Against this, Wu's figure (2.325 *li*/km) yielded 1,428 *li*, or just 0.3 percent over the stated *li* total; Jeon's figure (2.17 *li*/km) yielded 1,334 *li* (–6.3 percent); and Needham's figure (1.89 *li*/km) yielded 1,160 *li* (–18.5 percent). Needham's figure, if not already suspect, is thus safely eliminated, at least in connection with the Korean use of the Zhou foot. As for the choice between Wu and Jeon, this experiment clearly favors Wu. This experiment assumes that the roads between the forty points of measurement were more or less the same over the centuries (flat terrain in relatively undeveloped areas was chosen). It also assumes that the distances in the *Süngnam* were correct; even if some were erroneous, twenty different distances in different parts of the country ought to average out reasonably well. Finally, an opisometer moving over a 1:1,000,000 scale map will necessarily smooth out many twists and turns on the road and will therefore tend to produce a kilometer total on the minus side of the actual figure. A correction made on this basis will move *li* totals calculated from Jeon closer to the stated *li* totals while moving those calculated from Wu away from them. Still, according to my test, Wu's value (determined without awareness of the Zhou foot in Korea, thus removing any circularity in the argument) compels respect. Until the uncertainty about the length of the ritual foot, which Jeon used in calculating his Zhou foot length, is resolved, Wu's equivalent of 19.91 centimeters for the Zhou foot seems the more reliable figure, and it will be applied in the rest of this chapter. There are, of course, plenty of other approaches to this problem. Much more research must be done before historical Korean weights and measures are brought under control.

TABLE 10.5 Zhou Foot Units in the Measure of Route Distances

| Unit Equivalents | | | | Metric Equivalents (provisional) | | |
|--------------------|------------------------|----------------|----------------|----------------------------------|----------|----------|
| 1 <i>ch'ök</i> | | | | 19.91 cm | | |
| 6 <i>ch'ök</i> | = 1 <i>po</i> ("pace") | | | 119.46 cm | 1.19 m | |
| 2,160 <i>ch'ök</i> | = 360 <i>po</i> | = 1 <i>li</i> | | | 430.05 m | 0.43 km |
| | 10,800 <i>po</i> | = 30 <i>li</i> | = 1 <i>sik</i> | | | 12.90 km |

Note: This table is derived from Kim Chaero et al., *Sok taejön* (Supplement to the Codex, compiled 1746) (Seoul: Chösen Sötokufu, 1935),

6.1a. Metric equivalents should be considered provisional; see note to table 10.4.

The officials of the Chosön dynasty apparently inherited distance data from their Koryö predecessors. There is an example of the application of such data in 1402. In codifying the laws of banishment and defining degrees of distance from the capital, legal specialists noted that Kyöngwön in the far northeast (a place of first-degree banishment) was 1,680 *li* from the capital and that Tongnae in the far southeast (second-degree) was 1,230 *li* away.¹⁵⁰ This suggests that systematic distance data were available at that time.

The results of a questionnaire in 1469, which among many other things asked for the distance of district seats from Seoul, are available for Kyöngsang Province,¹⁵¹ while comparable data for the whole country can be found in the *Süngnam* (1481; final edition 1531). The latter data are clearly and quite consistently given according to the Zhou foot, but it is interesting to see that the 1469 figures are lower across the board. Aggregate 1469 data from the fifty-five (out of sixty-six) Kyöngsang districts that have coherent figures for distance from Seoul show a total of 31,260 *li*, which compares with a total 39,711 *li* for the same districts in the *Süngnam*. The 1469 figure comes to 78.7 percent of that for the *Süngnam*.¹⁵² The *Süngnam* unit of measure was clearly smaller than the unit used for the 1469 measurements (and therefore it took more of them to measure the same distances), but not by a proportion that matches the ratio of the Zhou foot to any of the other standards in table 10.4. The only conclusion is that linear measurement units were still not actually standardized by 1469, even though official ratios were established by statute in that year, and that the Zhou foot, though prescribed for distance measurement in 1437, was still not being uniformly applied a generation later. Moreover, if we take the figures for the single district of Tongnae—725 *li*, 96 *po* (or 725.27 *li*) from the 1469 results, and 962 from the *Süngnam*—and compare these with the distance of 1,230 *li* given for Tongnae in the banishment discussion of 1402, it seems there was a great variety of customary practice that had to be overcome in the effort to reach national norms.

We have very little information on how measurement was actually carried out. References to surveys of Seoul taken in 1393 speak of crews with rope measures,¹⁵³ and

given the precision of the 1425 reports (with distance measurements stated to the *po*), it is likely that some such method was applied in measuring long distances as well. But Sejong was clearly looking for something better. In 1441 a new device, called the *kiri koch'a* (*li*-counting drummobile) made its appearance on an extended royal excursion to a hot spring in Ch'ungch'öng Province: "On this trip, His Highness for the first time rode in his small chaise and used the *li*-counting drummobile. At each *li* passed by the entourage, a wooden man would automatically beat a drum."¹⁵⁴ Later that same year, we see reference to the use of a "newly made pace-counting measuring stick [*posuch'ök*]" to measure distances in P'yöngan Province. The board of war wanted markers set up or trees planted every thirty *li* along all roads.¹⁵⁵

It is unclear how extensively the drummobile was used. As far as I can tell, Sejong's trip to the hot spring occasions the only reference to it.¹⁵⁶ I suspect that the *li*-

150. *T'aejong sillok*, 4.9b–10a (note 17).

151. *Kyöngsangdo chiri chi* and *Kyöngsangdo sokch'an chiri chi* (note 107).

152. The 1469 data in this discussion are based on figures found in the *Kyöngsangdo sokch'an chiri chi* (see note 107) under the respective headings for the sixty-six counties of Kyöngsang Province. In four cases the data are missing or incomplete. In seven cases the 1469 figures are significantly larger than those in the *Süngnam*, suggesting different routes for the Seoul measurement or some other problem with the data. These figures are not included in the sample. The *Süngnam* data are from the corresponding headings in the *Süngnam*, chaps. 22–32 (note 111).

153. *T'aejo sillok*, 3.3b (note 17).

154. *Sejong sillok*, 92.18b (note 17). Pang, in common with several other writers, says that the wooden man beat the drum every ten *li* (*Han'guk üi chido*, 88 [note 5]). Apart from the dubious utility of such a large unit of measure, the original reference explicitly says "one *li*."

155. *Sejong sillok*, 93.26a–b (note 17). Pang cites this and several other instances as examples of the use of the drummobile for measuring and survey work, but in none of the cases he cites is the drummobile actually mentioned in the sources (*Han'guk üi chido*, 88 [note 5]).

156. As far as we can infer from the sources, the drummobile was a piece of equipment for Sejong's personal use. In this it bears some similarity to its identically named Chinese model, the *jili guche*. Along with the famous *sinan che* or *zhinan che* (south-pointing carriage), the drummobile was part of the imperial equipage of the Western Jin dynasty (265–317) and was treated as a symbol of Chinese imperial prestige. Lost to the barbarians in 317, both of these devices were

counting drummobile was found impractical, if indeed it was ever intended for real survey work. The pace-counting measuring stick would have been much simpler, more accurate, and easier to use. We would expect a distance measure made in 1441 to have been calibrated according to the Zhou foot, yet the 1469 Kyōngsang measurements were clearly based on a longer, perhaps more customary standard. All we can say with certainty is that sometime before or during the early recensions of the *Sūngnam* in 1481, either new measurements were made or the old ones were recalculated according to the Zhou foot.

We are only slightly better informed about the triangulation device, called the *kyuhyōng* (sighting balance), invented by King Sejo in 1467. In the spring of that year, Sejo gave several parties for some friends and technically inclined officials, introducing them to his new gadget, which was also referred to as an *inji ūi* (ground-marking instrument).¹⁵⁷ The editor of the annals defined this as “a thing for measuring ground distances.”¹⁵⁸ A test was arranged out in the country, in the vicinity of Sejong’s tomb, but no information is given on what was actually done or what the results were.¹⁵⁹ A description by one of these surveyors, Yi Yuk, quoted in the eighteenth-century encyclopedia *Munhōn pigo*, leaves no doubt that it was a triangulation instrument of some kind but is frustratingly lean on details.¹⁶⁰ The *kyuhyōng* was used later that year in making a map of Seoul but seems to go unmentioned after that.¹⁶¹ In spite of all the uncertainties concerning the drummobile and the sighting balance, the information we do have shows that Koreans were working to make distance measurement more accurate during the middle years of the fifteenth century, and that sufficient precision had been achieved to result in the internally consistent distance figures recorded in the *Sūngnam* in 1481.

It remains to note efforts to measure the country’s length from north to south by means of polar altitude. In 1437 the designers of Sejong’s observatory measured the polar altitude of Seoul at “38 degrees [plus] a little.”¹⁶² This assumed a celestial circumference of 365.25 degrees. Correction to a 360-degree circle would yield a reading of 37.45°+ as the latitude of Seoul, not unreasonably far off from the modern figure of 37°35′44″N (37.595 degrees). The *Munhōn pigo* reports that during Sejong’s reign he sent three mathematicians to measure the polar altitude at Mount Mani on Kanghwa Island (approximately the same latitude as Seoul), Mount Paektu (symbolically Korea’s farthest point north), and Mount Halla on Cheju Island (close to the nation’s southernmost point). Unfortunately, as the *Munhōn pigo*’s editors also noted, no results were recorded.¹⁶³ But the purpose of such a measurement was most likely to calculate the total length of the nation north and south from the capital. And since distance figures (accurate or not) already

existed for all these points, it was perhaps the intention to perform some kind of check on measured land distances, or perhaps to independently establish a length of the nation for cartographic purposes. Whatever the reason, Sejong might better have sent his team to the town of Onsōng, which his military officials, following extensive campaigns against the Jurchens, had established within the northern bend of the Tumen River in 1440. Onsōng was at that time, and still remains, the northernmost town in Korea (42°57′21″), almost a whole degree of latitude farther north than the Ch’ōnji (Pond of Heaven) in the crater of Mount Paektu (42°00′00″). Korean perception at the time may well have been that Paektu was the farthest point north. We will return to this possibility when we consider the widely noted “flatness” of Korea’s northern border on the so-called Chōng Ch’ōk maps that show Paektu and Onsōng at about the same latitude, and on both the national and Hamgyōng provincial maps in the *Sūngnam*, where Onsōng is latitudinally south of Paektu.

Apart from Sejong’s interesting polar altitude project, we have no other information on geodetic measurement in Korea until after the introduction of Western survey methods. These first appeared in 1713, when a Manchu envoy arrived in Seoul and sent a Jesuit-trained Chinese surveyor to the center of the city to take a measurement. I shall return to this very curious affair in a later section.

THE SHAPE OF KOREA

A few months before his death in 1482, Yang Sōngji reviewed a large number of official compilations that had been edited during his lifetime—many of them in whole or in part by himself—and made proposals concerning their printing and distribution within the government. Prominent among his concerns were maps. He listed twenty important maps, or sets of maps, that were then

recovered, to the Jin emperors’ great relief, by successful Chinese campaigns in 409 and 417. See Fang Xuanling et al., *Jin shu* (History of the Jin, compiled 646–48), 25.756 and 25.764; see the edition in 10 vols. (Beijing: Zhonghua Shuju, 1974). Given the treatment in both the Chinese and Korean cases, it remains to be demonstrated that the *li*-counting drummobile found significant practical application as a distance-measuring instrument.

157. *Sejo sillok*, 41.20b–21a and 41.21b (note 17).

158. *Sejo sillok*, 41.12b (note 17).

159. *Sejo sillok*, 41.22a (note 17).

160. *Munhōn pigo*, 2.32a–b (note 51).

161. *Sejo sillok*, 44.9b (note 17).

162. *Sejong sillok*, 77.9b (note 17). See Jeon, *Science and Technology in Korea*, 102–4 (note 49), and Needham et al., *Hall of Heavenly Records*, 108–9 (note 48).

163. *Munhōn pigo*, 2.10a–b (note 51). The editors cite the *Kwan-sanggam ilgi* (Royal observatory daybook) and identify the three mathematicians by name, but they are not otherwise traceable.

in his custody or within his knowledge. It was a mixed list that included a map of Korea from Koryŏ times and a few imports from China and Japan, but that mostly related to cartographic works by himself and other Korean contemporaries. His list is presented in appendix 10.1. It represented the result of the projects ordered by King Sejo, which I have already noted, and thus contained maps on the national, provincial, and district levels in addition to defense maps and a map showing coastal shipping routes.

Two of the listed maps of Korea may survive today in copies. The Japanese and Ryūkyū maps are probably reflected in the *Haedong ch'eguk ki* (mentioned above). Possibly some echo of the Ming maps might be detected in later Korean or Chinese copies, but apart from this meager residue, the maps on Yang's inventory seem to have left no trace either in other written records or in any identifiable cartographic artifact. This situation is probably at least partly the result of policies favored by Yang himself. He was no champion of the freedom of information. In the same memorial of which this list is a part, he advocated severe restrictions on most government publications. Even the *Koryŏ sa*, the standard history of the Koryŏ dynasty, was "not to be lightly shown to people" lest the details of military campaigns centuries in the past become too well known. As for maps, "they should be put in government offices, but they must not be dispersed among the people."¹⁶⁴ Given such attitudes, most of Yang's maps undoubtedly had very little circulation.

There is one prominent omission on Yang's list. One expects to find the *Kangnido* of 1402, which was almost certainly copied in Seoul during Yang's heyday as a cartographer,¹⁶⁵ but unless item 15, the *TaeMyŏng ch'ŏnhado* (Map of the Great Ming world), is the *Kangnido* in disguise, there is no mention of it.¹⁶⁶ It is the Korea portion of the *Kangnido*, drawn originally by Yi Hoe with Kwŏn Kūn's guidance, that is the most likely correspondent to item 2, Yi Hoe's *P'altodo* (Map of the Eight Provinces). To be sure, the *Kangnido*'s Korea does not show provincial divisions, but the basic outline of the peninsula and other details are likely to be related.

The first feature of Korea as shown on the *Kangnido* to attract attention is the prominent indication of mountain ranges, not only the main north-south trunk along the eastern coast, but the direct "arteries" extending to Kaesŏng and Seoul, demonstrating their clear connection with that trunk (plate 17). The trunk range does not connect directly with Mount Paektu (which is not specially emphasized and is out of place to the southeast from where it should be), but there is a color variation at the spot where the line is broken, suggesting possible damage or incomplete mending at some point. Such indication of mountain ranges is not found anywhere else on the

Kangnido, but it well reflects Korean fascination with the "arterial" system in Korea itself, already noted.

The rivers of the peninsula are decently represented, especially in the central and southern regions; the Han and Naktong systems are remarkably well done. Most of the administrative districts of the country are also shown, with provincial capitals and some key military centers in square cartouches. Seoul is emphasized with a large crenellated circle.¹⁶⁷ The indication of harbors and inlets, in oval cartouches, gives an appreciation of the grain transport and coastal defense organization, which was under severe pressure from Japanese pirates at the time this map was made.

The feature that draws the most criticism from Korean scholars is the general outline of the country, which, though it very well approximates the real coastline in the central and southern parts of the peninsula, is marked by a radical shortening and flattening of the northern border area.¹⁶⁸ At the time the *Kangnido* was made in 1402, most of the Yalu-Tumen frontier was still occupied by Jurchen people (the later Manchus) and had not yet been reached by Korean conquest. Yi Hoe and Kwŏn Kūn very likely followed Koryŏ cartographic models that were already out of date.

Since the flatness of the northern border plagues Korean cartography until the eighteenth century, it will be useful to sketch out the history of the Yalu-Tumen frontier during the Koryŏ and Chosŏn periods. Silla's frontier was marked by a line that stretched from P'yŏngyang in the west to the area just north of modern Wŏnsan on the east coast (for this discussion, see figs. 10.1 and 10.24). In the early years of the Koryŏ period, the new dynasty pushed the frontier north to the mouth of the Yalu River, settling all of the lands in the Ch'ŏngch'ŏn-Taedong basins and successfully holding this territory

164. *Sŏngjong sillok*, 138.10b (note 17).

165. The Ryūkyū copy of the *Kangnido* indicates three Yalu frontier districts (Yŏyŏn, Much'ang, and Unul) as old (*ko*). They were abolished in 1455. On the other hand, it shows two districts, Yewŏn and Such'ŏn, that were discontinued in 1459 and 1466, respectively. The copy therefore seems to have been made by 1470. See Aoyama, "Gendai no chizu ni tsuite," 111–12, 143, and 149 n. 12 (note 24).

166. An argument can be made for this identification. The *Da Ming hunyi tu* (Integrated map of the Great Ming) in the Beijing Museum—which but for the Manchurian, Korean, and Japanese areas strongly resembles the *Kangnido*—and the *Daiminkoku chizu* (Map of the Great Ming), a copy of the *Kangnido* in the Honmyō Temple in Japan, both have "Great Ming" in their titles. See above, at notes 32 and 40. The appearance of the common term *ch'ŏnhado* in the title of item 15 is at least interesting, given my earlier suggestion that the later *ch'ŏnhado* may be an evolutionary sport of the *Kangnido* (pp. 265–67).

167. Needham, *Science and Civilisation in China*, 3:555 (note 31), mistakenly identifies the circle as representing P'yŏngyang.

168. Yi, *Han'guk ko chido*, 198b (note 4); Kim, *Maesan kukhak san'go*, 260–62 (note 3).

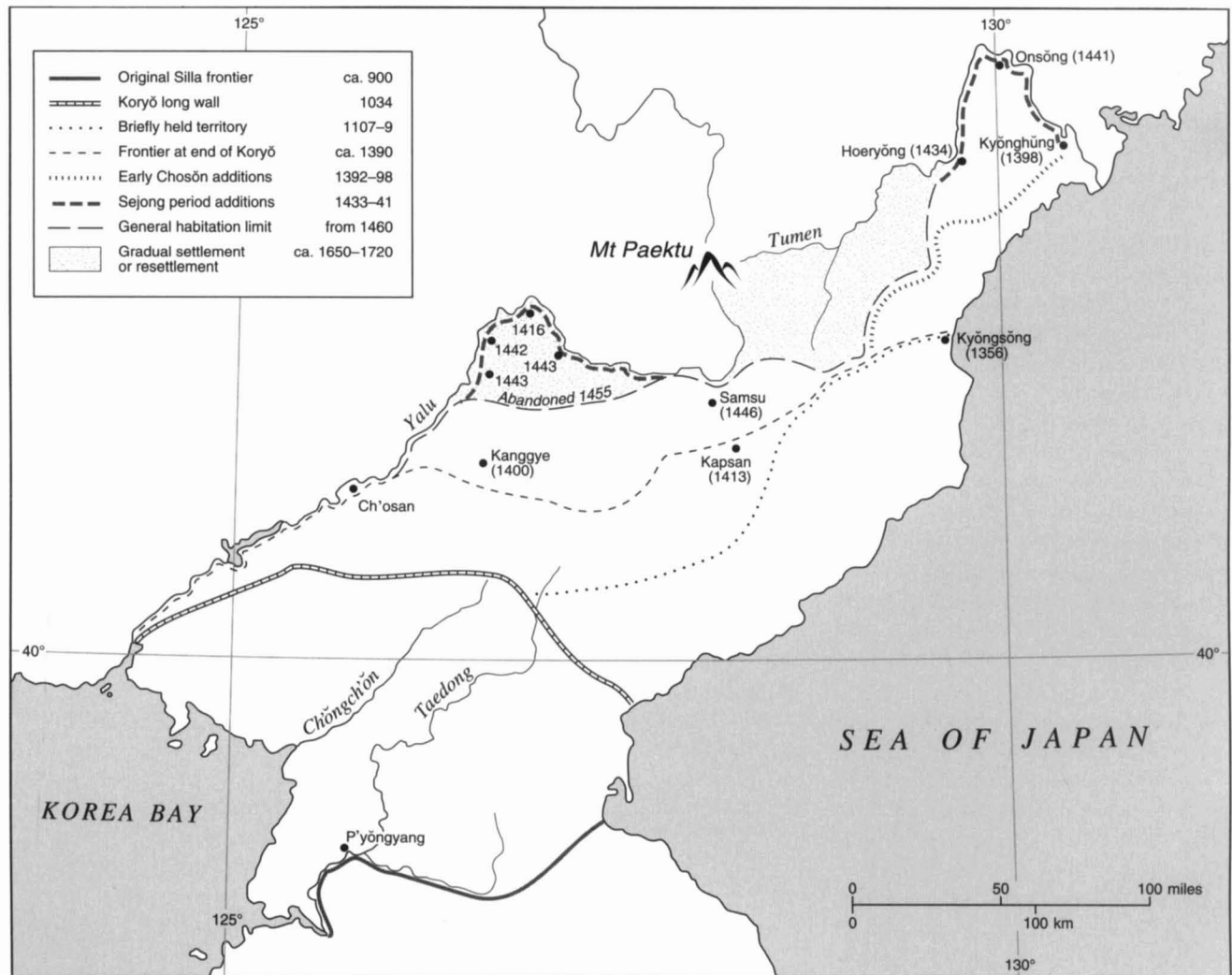


FIG. 10.24. KOREA: NORTHERN BORDER CHANGES FROM THE TENTH TO THE FOURTEENTH CENTURY.

against repeated incursions by the Khitan and Jurchen peoples. This area is clearly marked by the Koryŏ chang-sŏng (Koryŏ long wall), completed in 1034. In 1107, campaigns led by Yun Kwan (d. 1111) drove the Jurchens from an extensive area on the east coast as far north as Kyongsŏng (approx. $41^{\circ}35'N$). Nine towns were established and fortified. The Jurchens took back this area two years later, however, and in the thirteenth century it passed into the hands of the Mongols. Koryŏ did not control it again until 1356, when King Kongmin reclaimed it—on the basis of maps, as we have seen above—in the course of expelling the Mongols. By the end of the Koryŏ dynasty in 1392, Koryŏ administration had reached a line extending from a point east of Ch'osan on the Yalu River on a slightly northeasterly course to Kyongsŏng on the east coast. Yi Sŏnggye, the founder of the Chosŏn dynasty, then extended this coastal strip to Kyonghuhung (formerly Kongju, approximately $42^{\circ}36'N$)

on the lower course of the Tumen River. By 1441, during Sejong's reign, all the lands within the far northern bend of the Tumen had been added. This was the farthest point north reached by any Korean state since Koguryŏ times, and the territory has been held ever since. In the north-central frontier zone Sejong also seized and organized the territory within the northern bend of the Yalu, but it was extremely rough terrain and proved too difficult to hold. Sejo abandoned it in 1455. This land, together with another large and wild region south of the Tumen River in the Paektu area, thereafter remained generally beyond Korean administration. It was not until the seventeenth and early eighteenth centuries that all these uninhabited areas were permanently settled and organized. The frontier from the crater lake and summit of Mount Paektu to the headwaters of the Tumen was fixed by formal agreement with the Qing dynasty in 1712. This was the final step in establishing Korea's present borders.

It can be seen from this discussion and the map in figure 10.24 that, even though most of the cis-Tumen lands had still not been reached by Korean administration when the *Kangnido* was made in 1402, the northern border already slanted visibly northeastward to Kyōnghūng, where some of Yi Sōnggye's ancestors (who had been in Mongol service) were buried. Yi Hoe and Kwōn Kūn put Kyōnghūng, and therefore the area of the mouth of the Tumen, on the *Kangnido*'s Korea section but considerably underestimated how far north it was. Undoubtedly, in 1402 the geography of this region was still poorly understood. (The Ryūkoku copy has the names of other major towns within the northern Tumen bend, but since they were not established until the 1430s and 1440s, they must have been added at the time this copy was made, probably by 1470.) More problematic than the Tumen frontier is the border on the northwestern corner of the peninsula. Yi and Kwōn have the Yalu flowing due westward into the Yellow Sea on virtually a horizontal line. The southwesterly course of the lower Yalu was surely well known during Koryō times, and it is hard to understand how the 1402 cartographers could have arrived at this treatment. The fact is, however, that the "flattened" northern frontier remained a feature of Korean maps for nearly three centuries after the appearance of the *Kangnido*.

Maps of Korea after the *Kangnido* are usually classified by Korean scholars in four groups. These are (1) the Chōng Ch'ōk-style maps, prevalent from the mid-fifteenth to the mid-seventeenth century and identified principally by their flat northern frontier; (2) the *Sūngnam*-style maps in imitation of the maps drawn for the *Tongguk yōji sūngnam*, commonly included in the *ch'ōnhado* albums and popular until the end of the nineteenth century; (3) the Chōng Sanggi-style maps, with the first relatively realistic depiction of the northern frontier and the first use of an indicated scale, which probably began to appear during the first half of the eighteenth century and were common until the mid-nineteenth; and (4) Kim Chōngho's maps, a refinement and completion of the Chōng Sanggi maps and indeed the grand summation of Korean national cartography, produced from 1834 to 1864 but displaced by cartography of Western inspiration from the late nineteenth century on.

MAPS IN THE CHŎNG CH'ŎK STYLE

We have already encountered Chōng Ch'ōk several times in the preceding pages. Although he was King Sejong's principal cartographer and his name is nowadays memorialized in the label for a particular cartographic style, the longish account of his career in his obituary in the *Sōngjong sillok* (Annals of King Sōngjong) says not a word about any work with maps.¹⁶⁹ This is typical of

Korean historiography of the Chosōn period, which did not consider scientific or technical achievements during one's government service as an ornament worth mention. Such specialization went against the Confucian scholarly ideal. Chōng Ch'ōk's forebears, clerks in local administration, had been relatively humble, but in the early years of the Chosōn period a clever person of such circumstances might find opportunities. Chōng passed the civil service examination in 1414 and thereafter rose to the upper-middle reaches of the bureaucracy. He became a favorite companion of Sejong and participated in many of his cultural and scientific projects.

The major map known to have been associated with Chōng Ch'ōk is the *Tongguk chido* (Map of the Eastern Country [Korea]), which he and Yang Sōngji presented to the throne in 1463.¹⁷⁰ This has not survived, but a map of Korea now held by the Cabinet Library (Naikaku Bunko) in Tokyo, bearing the Japanese title *Chōsenkoku ezū* (Map of Korea), is thought to be a copy of it or in its tradition (fig. 10.23). Aoyama Sadao's study of the Naikaku map identified features that suggested a mid-fifteenth-century compilation date,¹⁷¹ and on this basis it is considered to be the prototypical representative of what has come to be called the Chōng Ch'ōk style in peninsular cartography. In any case, it is certainly in the older stratum of Chosōn period maps.

The Naikaku map represents a considerable advance from the standard of the Korean portion of the *Kangnido*. The rivers, marked clearly with thick blue lines, show considerable accuracy of detail. The arterial system of the mountains, as I have noted, is much more developed than on the *Kangnido*. From the latter's indications, more or less confined to the main east coast spine and a few major offshoots only sketchily indicated, the Naikaku map advances to a thorough depiction of the total montane network of the country. A shapes-and-forces emphasis, textually associated with Chōng Ch'ōk in 1436 and 1454 (mentioned above), is evident on this map. One's eye can easily follow a mountainous line from virtually any part of the country directly to Mount Paektu itself. The treatment is extended into Manchuria, a considerable portion of which is included, although it is highly compressed.

The names of the district magistracies in each province are shown in circular cartouches, color-coded according

169. *Sōngjong sillok*, 58.1b–2a (note 17). The date of Chōng's death, and of this notice, corresponds to 1 September 1475.

170. *Sejo sillok*, 31.25b (note 17).

171. Aoyama Sadao, "Richō ni okeru nisan no Chōsen zenzu ni tsuite" (On several Yi [Chosōn] dynasty maps of Korea), *Tōhō Gakuhō* (Tokyo) 9 (1939): 143–71. A fine color reproduction of a Korean copy held by the National History Compilation Committee (Kuksa P'yōnch'an Wiwōnhoe) in Seoul may be found in Yi, *Han'guk ko chido*, pl. 10 (p. 24) (note 4).

to province. The concentration of similarly colored cartouches in each province has the advantage of distinguishing the provinces, which are not indicated by borders, from each other. Aoyama lists the colors (his plate is not in color) as follows:¹⁷²

| | |
|--------------|--------------|
| Kyōnggi | deep yellow |
| Ch'ungch'ōng | light yellow |
| Chōlla | red |
| Kyōngsang | pink |
| Kangwōn | green |
| Hamgyōng | blue |
| P'yōng'an | gray |
| Hwanghae | white |

This system, with occasional variations, is a common though not universal feature of colored maps down to Kim Chōnggho's time. The assignment of colors is generally not fortuitous but responds to the classical Chinese *wuxing* (five phases) system, according to which the center is yellow, east is green (blue), south is red, west is white, and north is black. This provincial color system may also be reflected in an interesting Japanese usage. Hideyoshi's forces in Korea in the 1590s referred to the provinces by color in both military communications and ordinary conversation. The Japanese monk Keinen, who followed his campaigning lord around the southern part of the peninsula during the battles of 1597–98 and left a fascinating diary, refers to Chōlla as Akakuni (Red Country), Ch'ungch'ōng as Aokuni (Blue Country), and Kyōngsang as Shirakuni (White Country).¹⁷³ Apart from Chōlla and red, his names do not match the scheme above, yet the suspicion lurks that this usage reflects Japanese warriors' reliance on Korean maps for their campaigns.¹⁷⁴ Such exploitation of intelligence materials would only have been expected.

Other noteworthy features of the Naikaku map are the indication of principal military centers, as well as the names of hundreds of islands and coastal inlets. Principal roads are shown as red lines, and the distance of each district center from Seoul is marked both in *li* and in number of travel days.¹⁷⁵ Although Korea is depicted on this map in generally realistic proportions, there is no indication of scale, a development that had to wait until the Chōng Sanggi era. Yi Ch'an estimates the de facto scale to be approximately 1:800,000.¹⁷⁶

The problematic northern frontier shows a clear improvement over the depiction on the *Kangnido*, but whereas in the west the lower Yalu flows in a moderate southwesterly direction, the upper reaches are about as flat as on the earlier map. On the eastern side the northern frontier rises gently toward the northeast, but not to a realistic degree. The overall impression is still of a flat, compressed north, a feeling that is reinforced by the grossly horizontal aspect given to Manchuria's mountains

and drainage basins. One would think that, given the extensive cartographic exploration and measurement that unfolded during the reigns of Sejong and Sejo, this situation would have been corrected by the 1460s. Perhaps the apparent desire to show the general lay of Manchuria claimed the space at the top of the map, leading to the flattening of Korea itself. But this would not explain the flatness on other and later Chōng Ch'ōk-style maps, which by this criterion show only regression. Note, for instance, the *Chosōn'guk p'alto t'onghapto* (Consolidated map of the Eight Provinces of Chosōn), otherwise an attractive map with an evident Korean folk-art touch, but on which the northern borderline is not merely flat but even slopes to the southeast (plate 18).¹⁷⁷

The fault surely cannot be attributed to a lack of distance data for the northern parts of the country, at least not in connection with the post-fifteenth-century examples of the Chōng Ch'ōk genre. The *Sūngnam* recorded a distance of 1,186 *li* from Seoul to the northwestern frontier town of Ŭiju on the Yalu but 2,101 *li* to the town of Onsōng within the northern bend of the Tumen.¹⁷⁸ Even an approximate recognition of the relative difference in these distances from the capital would have largely solved the border depiction problem.

That the frontier stayed cartographically flat in spite of such data, easily available from the early decades of the sixteenth century on, is not easy to explain, but several factors may have been at work. One might be security considerations. We have already seen Yang Sōnggi so obsessed with military secrecy that he was unwilling to let any maps circulate outside the government. In this context, it is possible that the border outline was left deliberately undeveloped in order to mislead any Chinese or Jurchen military leaders who might come into possession of Korean maps. The fifteenth century was a very active period in the Jurchen area, with the establishment and consolidation of anti-Jurchen commanderies by the Ming authorities throughout southern and eastern Man-

172. Aoyama, "Richō ni okeru nisan no Chōsen zenzu ni tsuite," 157 (note 171).

173. The text of Keinen's diary, *Chōsen nichinichi ki* (Record of days in Korea), is reprinted in *Chōsen Gakuhō* 35 (1965): 55–167. References to provincial color names are on 68, 75–76, and 150 n. 25.

174. The Korean copy of the Naikaku map (note 171) seems to make the Kyōngsang cartouches white, which would correspond with Japanese military usage, but it is possible that an original pink coloring does not show up in the reproduction. On the same copy Ch'ungch'ōng seems to be orange, which would be in reasonable harmony with a yellow Kyōnggi Province to the north and a red Chōlla to the south.

175. Distance and travel days are not marked on the Korean copy.

176. Yi, *Han'guk ko chido*, 206b (note 4).

177. Other Chōng Ch'ōk-style maps with flat or sagging northern borders are illustrated in Yi, *Han'guk ko chido*, 64–65, 70, and 79 (note 4).

178. *Sūngnam*, 50.38a, 53.1a (note 111).

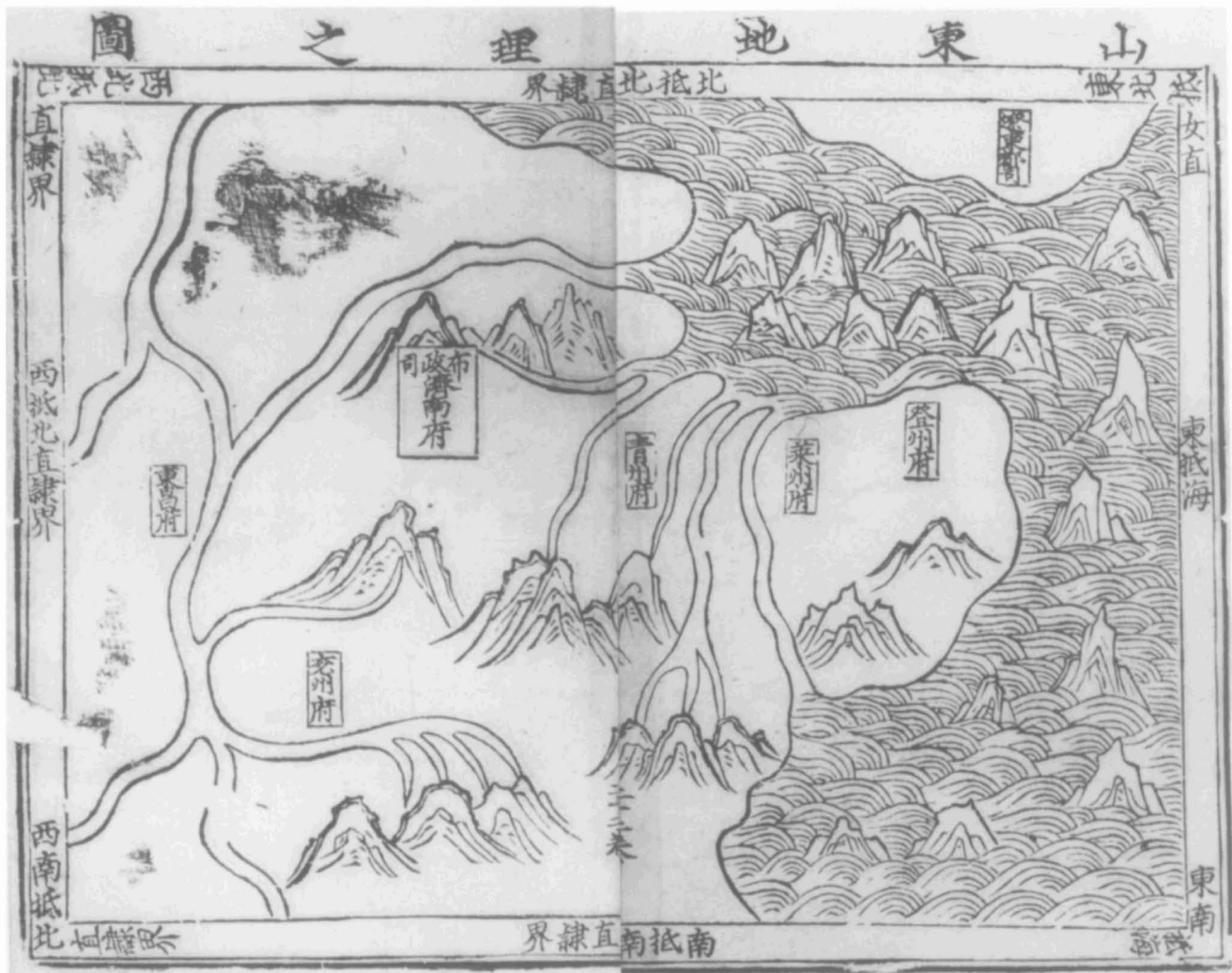


FIG. 10.25. "SHANDONG DILI ZHI TU" (MAP OF SHANDONG'S GEOGRAPHY). From the *Da Ming yitong zhi* (Comprehensive gazetteer of the Great Ming, 1461), frontispiece to *juan* 22. In this Ming Chinese map, only the six prefectures (*fu*) of Shandong Province, and none of its districts, are indicated; mountains and rivers are unnamed. Aside from these features there is only the coastline. This spare, reticent map style had a

noticeable influence on the maps made for the Korean equivalent work, the *Tongguk yoji sungnam* of 1481. Still, as can be seen in figures 10.26 and 10.27, the Korean maps were filled out more and drawn more interestingly. Size of the original: 20 × 27 cm. From a 1505 edition, reproduced courtesy of the Harvard-Yenching Library, Harvard University, Cambridge.

churia and a steady effort by Korea to solidify its own frontier generally along the line of the Yalu and Tumen rivers. Both policies were at the expense of the Jurchens and inevitably also involved a quiet but obvious Sino-Korean competition. Yang Sŏngji stood at the meeting point of cartography and national security. In his later years, his clearly expressed security paranoia had probably overcome his cartographic judgment. But he was not alone in having such concerns.

MAPS IN THE SŪNGNAM STYLE

An approach to this question of the border may possibly

lie in the maps that were compiled in connection with the *Sungnam*, which went through its first compilation stage in Yang's last years. The earlier recensions have not survived, but the maps of an edition probably printed in 1499 are identical with those of the final 1531 edition, showing that their form was already fixed at an early stage in the compilation process. Although the text of the *Sungnam* is justly famous for its thoroughness and reliability, the maps at first glance seem to be a disappointment. It is known that King Sŏngjong's instructions in 1485 to those preparing a printed edition asked for strict adherence to the style and format of the *Da Ming yitong zhi*, the Great Ming dynasty administrative geography of

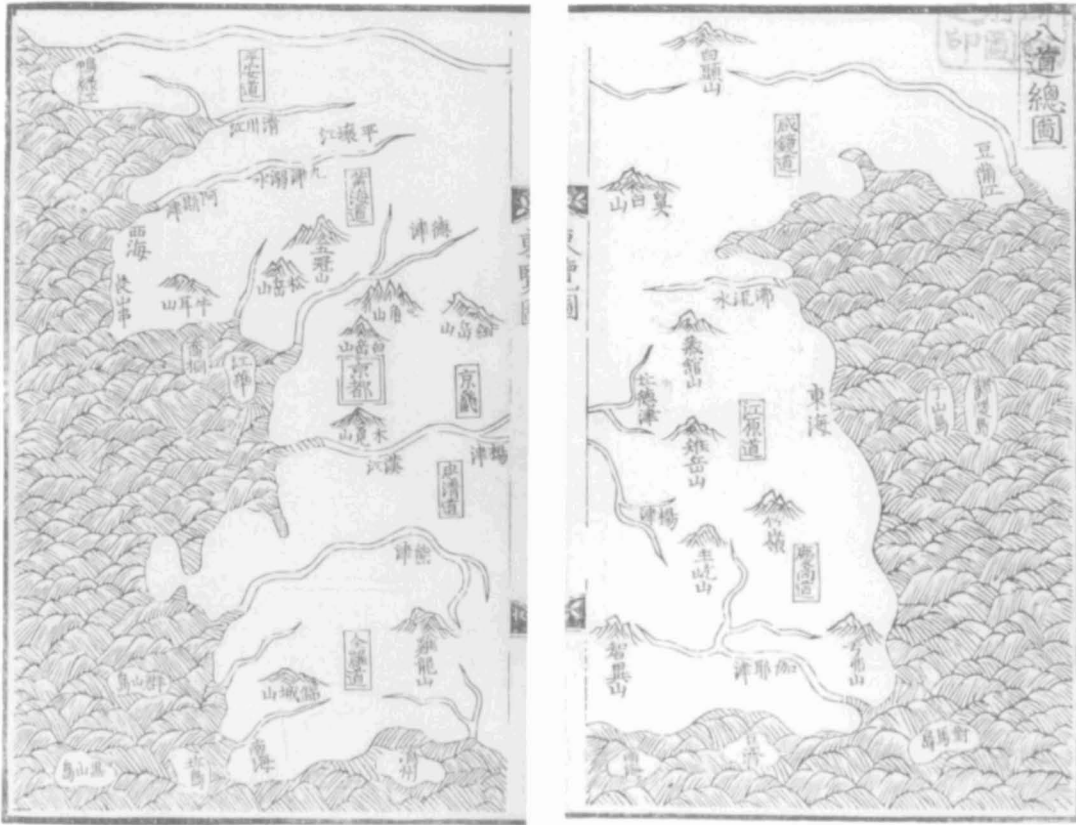


FIG. 10.26. "P'ALTO CH'ONGDO." Frontispiece to *kwôn* 1 of *Sinjūng Tongguk yōji sūngnam* (1531; first edition 1481). The designers of this map, which accompanies an extensive and highly detailed description of Korea some two thousand pages in length, left the details to the text and concentrated on simplicity. The rivers and mountains shown on it were all objects of major religious sacrifices conducted by the state; the capital and the names of the eight provinces (in thin cartouches) and

of some major islands are the only other indications on the map. The courses of the Yalu and Tumen rivers are drastically flattened and the northern borders thereby distorted. This was partly dictated by the rectangular shape of the woodblock used in printing, but national security was also almost certainly a factor.

Size of the original: 27 × 17.1 cm. By permission of Kyujanggak Archives, Seoul National University.

1461.¹⁷⁹ A comparison of that 1461 edition with the available editions of the *Sūngnam* shows that these orders were followed.¹⁸⁰ The cartographic style of the *Da Ming yitong zhi* may be described as one of exaggerated and highly stylized simplicity. Coastlines are generalized into the broadest of curves; rivers are uniformly shown as straightened, broad strips; mountains are merely suggested with a decorative peak here and there, with no concern for ranges or geophysical patterns. On the provincial maps only major administrative divisions (*fu*) are indicated, with the names in dark rectangular cartouches (fig. 10.25). It would be hard to imagine greater cartographic reticence. The *Sūngnam* mapmakers in fact found Sōngjong's mandated model too vacuous, and they not only improved upon it but executed it in a manner more pleasing to the eye. The resulting style then achieved enduring popularity in Korea, especially through the *ch'ōnhado* albums that probably began to be pro-

duced during the sixteenth century.¹⁸¹

The "P'alto ch'ongdo" (General map of the Eight Provinces), which headed the first of the *Sūngnam*'s 155 chapters (*kwôn*), is illustrated in figure 10.26. The abbreviation of the northeastern area, by comparison with earlier cartographic depictions, is striking in its degree. A distortion not only is registered but seems to have been purposely exaggerated. The people who drew these maps surely knew the true state of affairs, because better maps of Korea were in the very library they worked in. But clearly they had certain purposes in mind, and they also

179. Kim Chongjik's 1486 colophon to the *Sūngnam*, printed at the end of the 1531 edition (note 111).

180. I have inspected a rare copy of the 1461 edition of the *Da Ming yitong zhi* in the C. V. Starr East Asian Library, Columbia University, New York.

181. Examples of later album maps in the *Sūngnam* style are illustrated in Yi, *Han'guk ko chido*, 63, 76, and 80 (note 4).

worked under some limitations. Foremost among the latter was the woodblock mode of reproduction. Woodblocks for printing cannot be of unlimited size, and given the inherent properties of grained wood, there is an encouragement to the woodcarver to straighten out the meanderings of rivers or the intricacies of a coastline. Beyond this, it was a cultural habit among woodblock technicians to fill up the block. Given these conventions and the size of the blocks used for the *Sūngnam* (21.3 × 34.1 cm),¹⁸² the Korean peninsula ended up vertically compressed and horizontally broadened.

But this defect has to be seen in relation to what the compilers were trying to achieve in these maps, which were intended as a sketch reference for the detailed and abundant text. The general map, the “P’alto ch’ongdo,” was amply supplemented by eight provincial maps placed in the appropriate sections of the book. Because Sōngjong intended to give the *Sūngnam* a broad distribution,¹⁸³ militarily useful information had to be strictly absent. This is probably the reason for the undeveloped treatment of the northern borders on both the general map and the maps of the relevant provinces.

The items chosen for inclusion on the “P’alto ch’ongdo” were limited but carefully chosen. They included the obvious features, such as the capital, the eight provinces (marked by cartouches), and principal islands (including the important neighboring Japanese island of Tsushima). Every other name on the map represents a mountain or river, and all but one of these were the object of sacrifices conducted by government officials. (The single exception is Mount Paektu, which in spite of its major importance for Korea was at that time beyond the line of Korean administration.) Five major rivers designated as *tok* (drains) and five prominent mountains classed as *ak* (marchmounts) were officially honored with class 2 sacrifices (*chungsa*), while another group of *myōngsan* (famous mountains) and *taech’ōn* (great streams) were celebrated with class 3 sacrifices (*sosa*). The categories and the times for the sacrifices are codified in the *Kyōngguk taejōn*.¹⁸⁴ I have already noted the emphasis Yang Sōngji accorded to geographical features of special religious importance.¹⁸⁵ The reflection of this concern on the *Sūngnam*’s otherwise sparsely filled general map serves to warn us that in evaluating such maps we must always consider the cultural priorities of the map-makers. A sixteenth-century reader opening the *Sūngnam* and looking at this map heading the first volume might well have thought, “This is our country, and these are the mountains and rivers that protect it and make it great.” That the map was not magnificent in every cartographic respect was less important to that reader than it might be to modern Korean critics or the world’s cartographic scholars generally.

It is also useful to consider popular ideas about the

national outline when evaluating the overall shape of the peninsula on this map. Modern Koreans, with modern maps in mind, see the peninsula as shaped like a rabbit. It is imagined sitting up and facing to the left (west), its hind feet and rump on the southern coast, its back along the east coast, its front paws jutting out into the West (Yellow) Sea, its head and nose outlined by the northwestern corner at the Yalu River, and its ears reaching up to the Tumen River bend in the northeast. A Korean woman of education and wit, shown the *Sūngnam*’s general map, expressed to me her astonishment that her ancestors had no better conception of a rabbit. Doubtless the rabbit sat up only in the time of Chōng Sanggi, to whom we shall shortly turn.

But it is worthwhile to ask what was the popular conception of the peninsula’s shape during the first century of the Chosōn dynasty. I have found no literature on this subject, but we do know something of the popular idea of the peninsula during the Koryō period. I have already noted (above, p. 240) that from the twelfth to the fourteenth century the government minted a special unit of money in silver called the *ūnbyōng* (silver vase), whose shape “resembled the territorial outline of this country.” The image of a vase was reflected in the popular name for this specie, which was *hwalgu* (broadmouth).¹⁸⁶ Although none of these coins seem to have survived, one may imagine that the main body of the peninsula was the body of the vase, the narrowest width (at about 39°20’N) was its neck, and the flatly flared northeast and northwest corners (in those days before the northern expansion) were its broad lips. In pondering the problematic northern border on the *Sūngnam*’s general map, with the northeast and northwest corners extending (or drooping) out to the left and right, perhaps we can iden-

182. This is the measurement Yi Ch’an gives (*Han’guk ko chido*, 61 [note 4]) for the woodcut “P’alto ch’ongdo” in the rare edition of the *Sūngnam* in the National Central Library in Seoul (Kwi 228, 60-3).

183. “King Sōngjong . . . ordered his Confucianists to make revisions in accordance with the model of the *Da Ming yitong zhi* and to print it for distribution throughout the country, [so that] from the secret archives above, all the way down to private collections below, there would be none that lacked it.” From Im Sahong’s 1499 colophon to the *Sūngnam*, reprinted at the end of the 1531 edition (note 111).

184. Pang, *Hanguk ūi chido*, 97–100 (note 5). See also *Kyōngguk taejōn*, 3.34a–b (note 142); and Han et al., *Yōkchu Kyōngguk taejōn: Chusōk pyon*, 412–13 and 417 (note 146).

185. Yang Sōngji’s memorial listing mountains and rivers meriting national sacrifices (*Sōngjong sillok*, 3.25b–26a [note 17]) presents quite a different group of names from those represented in the sources in note 170 and on the “P’alto ch’ongdo.” In fact, he cited many mountains and rivers now found on the latter for abolition of sacrifices. If there was a political battle over this, it was one that he lost. Perhaps this is one of the reasons he is not listed as one of the compilers of the *Sūngnam* even though his research and drafts must have been of fundamental importance in its compilation (see note 111).

186. *Koryō sa*, 33.11a (note 9).

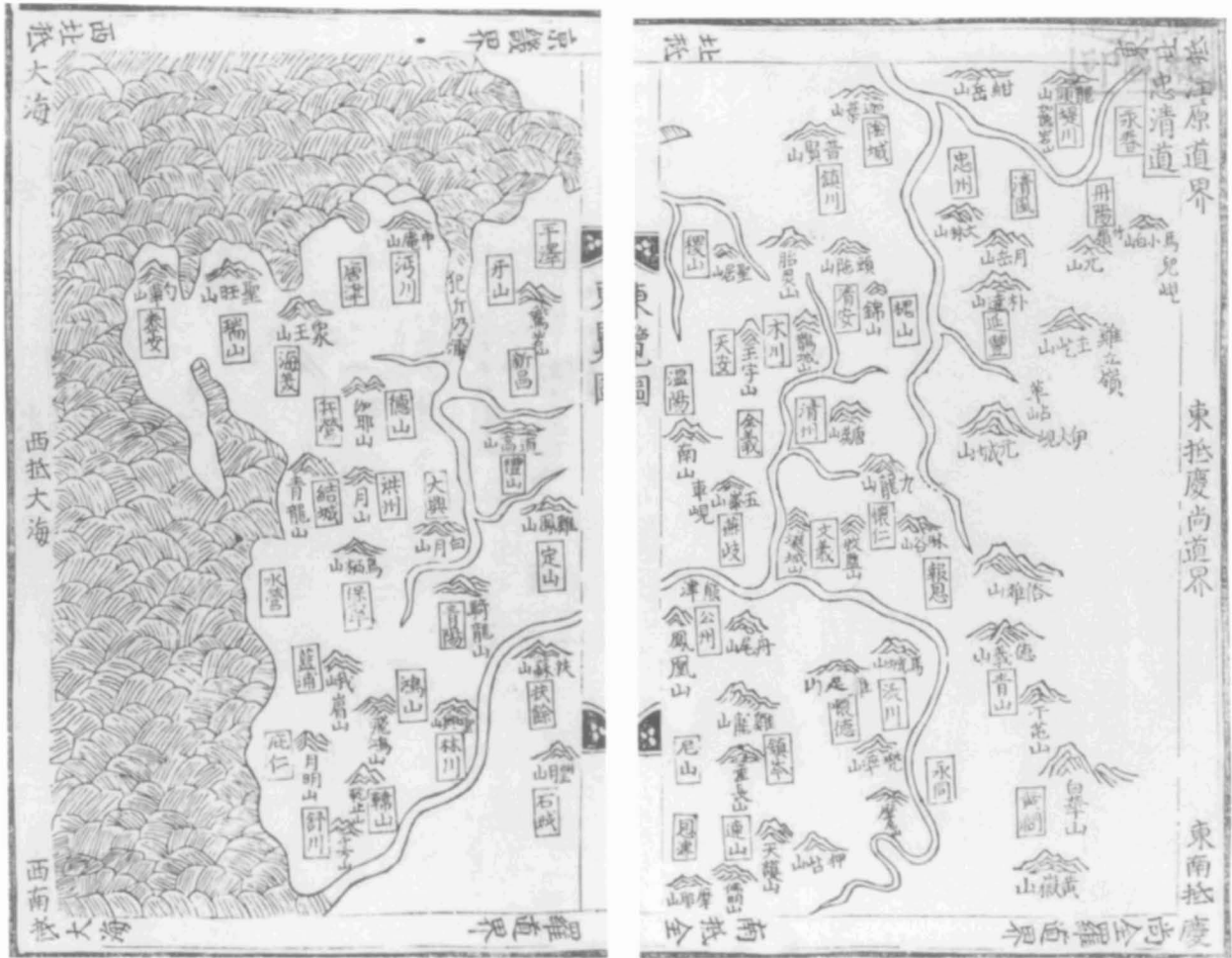


FIG. 10.27. "CH'UNGCH'ÖNG TO" (CH'UNGCH'ÖNG PROVINCE). Frontispiece to *kwön* 14 of *Sinjüng Tongguk yöji süngnam* (see also fig. 10.26). This sketch map accompanies the 215 pages of text devoted to Ch'ungch'öng. Shown by name are the province's fifty-four districts and the protective mountains (*chinsan*) of each. The mountains were the objects of annual sacrifices conducted by the respective magistrates. It is

interesting to compare this map with the map of Shandong Province—on the China coast just across the Yellow Sea from Ch'ungch'öng—in the comparable Ming dynasty geographical reference work, figure 10.25. Size of the original: 27.3 × 17.7 cm. By permission of Kyujanggak Archives, Seoul National University.

tify the lip at the top of the vase. This is admittedly speculative. But I suspect that if the *Süngnam's* map had been significantly out of accord with some popular conception of the peninsula's shape, whatever it was, it would not have remained in vogue for two more centuries.

Although there are many references to separate maps of provinces in the fifteenth-century literature, the eight that are attached to the relevant sections of the *Süngnam* are the earliest that remain available today. The map of Ch'ungch'öng Province (on the southwest coast of the peninsula) is shown in figure 10.27. Although in essence they do not go beyond an application of the cartographic style of the *Da Ming yitong zhi*, they are demonstrably superior to the latter, as a scrutiny of the Shandong map (fig. 10.25 above) will make clear.¹⁸⁷ Instead of just major

districts, the *Süngnam's* maps indicate every local magistracy, together with its *chinsan* (protective mountain). Each district town had such a mountain, to which the local magistrate made regular sacrifices. Again we see religious factors playing an important role.

Although the clustered mountain symbols add a decorative and interesting element to the map, they do not show the geomantic and arterial connections that have been a major element of Korean maps up to this point. Omission of the arterial network is a major departure in the history of Korean cartography, though not a permanent one. Maps in the *Süngnam* style characteristically avoid any demonstration of this tenacious Korean con-

187. Frontispiece to *juan* 22 of *Da Ming yitong zhi* (note 180).

TABLE 10.6 Literary References to Korean Maps between 1484 and 1756

| Category | 1484–1550 | 1551–1600 | 1601–50 | 1651–1700 | 1701–56 | Total |
|------------------------------------|-----------|-----------|---------|-----------|---------|-------|
| China, <i>ch'ŏnha</i> ^a | 3 | 1 | 0 | 0 | 0 | 4 |
| National | 1 | 0 | 0 | 0 | 0 | 1 |
| Provincial | 2 | 0 | 0 | 0 | 0 | 2 |
| District | 5 | 6 | 0 | 1 | 0 | 12 |
| Northern frontier | 4 | 0 | 0 | 0 | 6 | 10 |
| Other defense ^b | 3 | 0 | 0 | 6 | 3 | 12 |
| Islands | 1 | 0 | 0 | 0 | 3 | 4 |
| Shapes-and-forces ^c | 2 | 0 | 0 | 0 | 0 | 2 |
| Cultural ^d | 3 | 0 | 0 | 0 | 1 | 4 |
| Total | 24 | 7 | 0 | 7 | 13 | 51 |

Source: Pang Tong'in, *Han'guk ūi chido* (Seoul: Sejong Taewang Kinyŏm Saŏphoe, 1976), 191–93. The content and chronological breakdown are mine. Pang's list has forty-two entries with references to fifty-one maps. Military censorship, cultural disruption, and loss of records were heavy during the years 1592–1637 because of the Japanese and Manchu invasions, probably accounting in part for low numbers during this period.

^aTwo of the four items are *ch'ŏnha* maps. In the sixteenth century, *ch'ŏnha* often refers to Ming China, but world maps of the *ch'ŏnhado* type are not to be excluded.

^bThis category includes defense maps of several towns on route from north to Seoul, the important royal refuge fortresses at Namhan and on Kanghwa Island, and several maps bearing on provincial military organization. Two maps of the shapes-and-forces type that relate to key military areas are counted here.

^cSee note b.

^dThis category includes maps of a palace layout, a monastery, a royal tomb, and a scenic mountain.

cern, and to a notable extent the aversion is also reflected on the later Chŏng Ch'ŏk-style maps. Shapes-and-forces thought was such a conspicuous feature of Korean cartography for most of the fifteenth century that this sudden turning away toward the end of that period must have been the result of a conscious policy, or perhaps reflected an intellectual trend among the Korean upper class. Neo-Confucianism, temperamentally wary of the political ramifications of such popular beliefs, had undergone an intense development among the ruling elite in the first hundred years of the Chosŏn dynasty. It probably served to inhibit geomantic theorizing, not so much (not at all, really) the personal level of auspicious siting for dwellings and graves as shapes-and-forces analyses on the national level. But such a deeply running current was not likely to be entirely eliminated in Korea. It strongly reemerged in many of the Chŏng Sanggi-style maps, as it did in the geographical thought of Yi Chunghwan's *T'aengni chi*, which was contemporaneous with them. With Kim Chŏnggho in the nineteenth century it was to rise to an epochal, and final, level of cartographic expression. On the other hand, to the very end no maps in the *Sŭngnam* style have any taint of it. It is a curious but evident dichotomy.

The *Sŭngnam*'s maps, intended on the one hand as symbolic, almost iconographic statements of official geo-religious relationships and on the other as sketch references to a rich and detailed geographic text, served the purposes of its editors perfectly well. But their influence on national and provincial maps, especially through the albums that began to be popular in the sixteenth century,

overwhelmed development that might have been expected in the Chŏng Ch'ŏk style. The great promise evident in the Naikaku map went unrealized in the national maps that followed, up until the eighteenth century. Security concerns are almost certainly responsible for this situation. The Japanese invasions of the 1590s and a long-term series of Manchu pressures (including invasions in 1627 and 1636–37) that continued throughout the seventeenth century combined to suffuse the Korean world with an atmosphere of international wariness. In such times the *Sŭngnam*-style maps, which satisfied general needs but withheld or distorted the details, dominated general circulation, while most other maps were probably restricted to limited circulation within the government and the governing class.

It does not, however, follow from such circumstances that cartographic development was interrupted across the board. Military security concerns were probably also a stimulant to cartographic activity. If it was necessary to keep accurate maps out of the hands of potential or actual enemies, it was just as important to provide them for officials who bore the responsibility for national defense. The number of surviving maps solidly connected to the years between the early editions of the *Sŭngnam* and the emergence of the Chŏng Sanggi maps is not large, but Pang Tong'in has compiled an interesting list of maps that are mentioned in written sources (mostly *sillok* [royal annals] of the various reigns).¹⁸⁸ Pang's list is summed up in table 10.6. It should not be taken as representative of

188. Pang, *Han'guk ūi chido*, 191–93 (note 5).

all Korean cartographic activity, but it does mention items that came to the attention of the throne and therefore speaks for many other maps now unknown or unrecognized. The preponderance of defense and local maps, together with the low profile of national and provincial maps, probably is a decent representation of what government cartographers were doing during this long period.

INTERLUDE: KOREA, THE JESUITS,
AND MAP DIPLOMACY

During the seventeenth century three developments helped transform Korean culture and nurture new trends in cartography. The first of these was the Manchus' overthrow of the Ming dynasty (1644) and their eventual conquest of all of China by 1684. The fall of the Ming, plus the earlier and continued rough handling of Korea by the Manchus, led to abrasive changes in the tributary relationship and to bitter anti-Manchu hostility, and it indirectly encouraged the formulation of a more independent Korean self-consciousness. The result was a burst of cultural creativity on a score of fronts, and a new focus on the defense of the northern frontier and the still unincorporated cis-Tumen territory in the vicinity of Mount Paektu. These developments changed the maps.

Second, new trends in scholarship encouraged a fresh interest in science and pragmatic research. In this movement, which later received the name *sirhak* (practical learning), geography among other disciplines came to be newly fashionable among many scholars.¹⁸⁹ This considerably broadened concern for the accuracy of maps.

Finally, as already described, the principal monuments of early Sino-Jesuit cartography continued to find their way into Korea. Apart from the eighteenth-century globe mounted in the armillary clock—an exotic sport within the history of Korean cartography—Western cartographic styles were not imitated in Korea. But indirectly they provided models of precision and realism and suggested the advantages of a firm geodetic foundation. Although Sejong had flirted with polar altitude determination from different parts of the country, we have no indication of any success in this project or of any cartographic application. But during the early eighteenth century, Korean specialists became acquainted with Western observational and mensural instruments and soon acquired their own. Thus the potential was created for a leap ahead in the quality of cartography.

The rise of the Manchus resulted at first in a favorable development for Korea. About the year 1600, the Jurchens (who only in 1636 began calling themselves Manchus) of the Paektu-Tumen region largely abandoned the Korean frontier area to join in the campaigns of their

new paramount leader Nurhaci, leaving their old haunts more open to Korean penetration, which soon began. To meet the growing challenge posed by Russian expansion, the Manchus reorganized the defenses of the Manchurian homeland in the 1650s and 1660s, turning the present Jilin area into an important strategic territory. A Manchu survey team inspected the region of Changbaishan (the Chinese name for Paektusan) in the summer of 1677. By 1679, responding to the Kangxi emperor's expressed curiosity over the hydrography of the southern slope of this great mountain, the Manchus had made or acquired maps of the territory, including virtually the whole of the Korean side of the border from one side of the peninsula to the other. In that year they visited the Korean commander in the north and requested information on "present installations, maps, and 'floating iron' [compass] bearings in the area of Changbaishan and Paektusan." Obliging, they allowed him to copy their own map. Quickly communicated to Seoul, the news and the map aroused predictable consternation.¹⁹⁰

Korean officials were shocked and alarmed when they saw the detail of the Manchu maps and realized the full extent of the Kangxi emperor's interest in the Paektusan area. Doubtless this incident stimulated a stronger Korean presence on the southern bank of the upper Tumen, which a few officials had been advocating for some time.¹⁹¹ The important new district town of Musan was established there in 1684.¹⁹² In 1685 a Manchu survey team, on its own side of the Yalu gathering materials for what would eventually become the standard administrative geography of the Qing dynasty (the *Da Qing yitong zhi* [Comprehensive gazetteer of the Great Qing realm, completed in 1746), was fired upon by Korean hunters. This incident, settled in 1694, led to King Sukchong's being made to pay a hefty indemnity and meet Qing demands for stricter controls on Korean frontier dwellers. In 1699 Korean envoys were ordered by Manchu authorities to execute a map of "Korea's eight provinces,"

189. This should not be taken to mean, as many writers claim, that in devoting themselves to "progressive and modern" studies scholars rejected the supposedly old-fashioned views of "conservative" Confucianism. On the contrary, new insights often led them to a revitalized Confucianism, as in the case of Chŏng Yagyong (1762–1836), whom many consider among the greatest of the *sirhak* scholars.

190. *Sukchong sillok*, 8.56a–b (note 17). For further sources and discussion, see the study by Zhang Cunwu (Chang Ts'un-wu), "Qingdai Zhong-Han bianwu wenti tanyuan" (An inquiry into the Sino-Korean border question during the Qing dynasty), *Zhongyang Yanjiuyuan Jindaishi Yanjiusuo Jikan* 2 (1971): 463–503, esp. 473–75.

191. A memorial advocating such, submitted in 1674 by Hamgyŏng governor Nam Kuman, is quoted in the *Munhŏn pigŏ*, 18.23a–24b (note 51). See also *Hyŏnjong sillok* (Annals of King Hyŏnjong, r. 1659–74), 21.54a–b (note 17).

192. *Munhŏn pigŏ*, 18.20a–b (note 51).

with route and distance data.¹⁹³ The canny diplomats were able to avoid compliance on that occasion. But if Qing suzerainty meant anything, it was the right to have a map of a tributary territory. Given the determination of the Kangxi emperor to have this map, such pressures could only grow.

Kangxi's project to map his empire took on new energy when the Jesuits joined the effort in 1709. Before the year was over they had mapped Manchuria and the borders of Korea, and in the second half of 1710 they returned to map the Amur region. By 1716, after many interruptions caused by illness, death, and reorganization, they and their Chinese and Manchu assistants had completed the mapping of the entire Chinese empire plus Tibet and Korea. Printed in Chinese editions of 1717 and 1719, and in a definitive revised version in 1721, these maps, in sumptuous versions edited by the cartographer Jean Baptiste Bourguignon d'Anville, were published in Paris in 1735 in Du Halde's famous description of China.¹⁹⁴ The Jesuit draft of the map of Korea and d'Anville's version of it are shown in figures 7.7 (above) and 10.28.

The Jesuits themselves had not been permitted into Korea by the Kangxi emperor. Tributary protocol forbade it, and Kangxi, who had an astute understanding of Korean sensitivities, knew they would never have been allowed in anyway. Therefore the map of Korea had to be elaborated from one that Kangxi's agent—the "Tartar lord" of Western accounts—procured in Korea. An explanation of the Jesuit map of Korea by Father Jean-Baptiste Régis (1664–1738), who with Fathers Pierre Jartoux (1669–1720) and Ehrenberg Xavier Fridelli (1673–1743) had done the Manchurian and Korean frontier work in 1709 and 1710, is given by Du Halde and may be summed up as follows.

The "Tartar lord" was accompanied by a Chinese mathematician and a surveying team trained by the Jesuits. A Jesuit (possibly Régis, but he says only "nous") went with them to Fenghuang, the traditional Chinese gateway to Korea, and stayed there until the mission was completed. The "lord" and his team made observations and took rope measurements from Fenghuang to the Korean entry point at Ŭiju on the Yalu River, and from there to Seoul. The mathematician measured the latitude at Seoul at 37°38'20"N. This figure, by comparison with the measured latitude of Fenghuang, "assured us of the length [of Korea] from the north to its center" and provided a basis for generating equivalents for Korean-supplied distance measurements and therefore for deducing the distance from Seoul to the southern coast. While in Korea the team was under constant surveillance, but the "Tartar lord" was given a copy of a map of Korea held in the royal palace. Editing this map in accordance with the collected data and his earlier measurements on the Manchu side of the frontier, Régis produced the map

that came out in the Kangxi atlas and that, in d'Anville's version, was eventually published in Paris.¹⁹⁵

D'Anville himself had a moderately high estimation of the Korean map and considered it no great disadvantage that the Jesuits had been unable to make their own direct survey. "On the contrary," he wrote, "if any map should pass for correct, it ought to be this one, since it was drawn originally by Korean geographers on the very orders of the king, and the original was kept in his palace. It is from this original that the map given here was derived. It is likely that the missionaries, in examining and determining the frontiers of the kingdom in the north, found no notable differences between their own observations and the borders marked on this map, since [if they had] they would not have failed to mention it. This circumstance alone seems to answer for its precision."¹⁹⁶

This is a generous appraisal of Korean cartography, particularly as it comes from one as eminent as d'Anville, and it naturally arouses curiosity about this Korean prototype. Because of the relatively accurate northern frontier on the Jesuit map, and because the Chŏng Sanggi-style maps are the only Korean ones of that era to have this feature, scholars have wanted to make a Chŏng-style map the candidate for this role. But as all have acknowledged, since these maps are not known to have surfaced in Korea until long after the d'Anville map had been published in Paris (and at even a greater interval from the actual Jesuit work in the 1710s), this theory cannot stand.¹⁹⁷ D'Anville himself implied that the frontier must

193. Zhang, "Qingdai Zhong-Han bianwu wenti tanyuan," 474 (note 190).

194. See Theodore N. Foss, "A Western Interpretation of China: Jesuit Cartography," in *East Meets West: The Jesuits in China, 1582–1773*, ed. Charles E. Ronan and Bonnie B. C. Oh (Chicago: Loyola University Press, 1988), 209–51, esp. 224–40.

195. Jean Baptiste Du Halde (1674–1743), *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine et de la Tartarie chinoise*, 4 vols. (Paris: P. G. Lemercier, 1735), 4:424–25. Other brief but interesting notes on the adventures of the "map embassy" in Korea are given by Father Matteo Ripa (1682–1745). He had some misunderstandings about Korea, but his reports of constant surveillance and note taking by Korean officials can easily be corroborated in Korean sources, as we shall see. He identifies the person who took the measurements—an acquaintance of his—as "the ambassador," but the mathematician was assuredly not the ambassador. See Matteo Ripa, *Memoirs of Father Ripa, during Thirteen Years' Residence at the Court of Peking in the Service of the Emperor of China*, selected and translated from Italian by Fortunato Prandi (New York: Wiley and Putnam, 1846), 77.

196. Jean Baptiste Bourguignon d'Anville, *Nouvel atlas de la Chine, de la Tartarie chinoise et du Thibet* (The Hague: H. Scheurleer, 1737), introductory note (my translation).

197. See Shannon McCune, "Some Korean Maps," *Transactions of the Korean Branch of the Royal Asiatic Society* 50 (1975): 70–102, esp.



FIG. 10.28. ROYAUME DE CORÉE. This engraving of the Jesuit map as edited by d'Anville was first published in Du Halde's *Description . . . de la Chine et de la Tartarie chinoise* in 1735, and again in d'Anville's own *Nouvel atlas de la Chine* in 1737. Compare the earlier Jesuit version done in Beijing, figure 7.7 above. D'Anville's editing consisted essentially of changing the Jesuits' double lines for rivers to a single line, designing more

attractive symbols, and adding shading on the coasts. This image of Korea prevailed in Western atlases until the mid-nineteenth century.

Size of the original: 53 × 37 cm. Courtesy of the Ayer Collection, the Newberry Library, Chicago (Ayer 135 A6 1737, map no. 31).

have been more or less the same on both maps or else the Jesuits would have said something. Actually, both views are mistaken: d'Anville was just speculating without real knowledge of Korean cartography and in particular of the frontier question, and the modern scholars failed to take into account that the Jesuits had their own data concerning the northern frontier and would not have had to rely on a Korean map for this feature.

Nevertheless, the problem of a Korean prototype is important, and moreover is one that it is possible to investigate in Korean historical records. Although we will not be able to make an absolute identification of the Korean map by title, we can suggest the type of map involved and a possible candidate. At the same time, we can throw some light on the circumstances in which it was obtained.

The “Tartar lord” was Mukedeng, called the commander of Daxing Ula in Chinese sources and *Hulie zongguan* (commander of the hunt) in Korean sources. More important than his titles was that he was a trusted assistant and personal troubleshooter for the Kangxi emperor. He did not acquire the Korean map until 1713, but he had been involved in Korean affairs for the emperor since 1710. In that year a Korean ginseng smuggler murdered some Chinese merchants on the Manchu side of the Yalu, and Mukedeng convened a court of regional officials in Fenghuang to try the case. Mukedeng demanded that, to make an example of him before the Korean frontier population, the culprit be executed publicly in his Korean hometown, which was Wiwŏn on the middle course of the Yalu. Kangxi, using this affair to pry Korea's tight lid open a bit, instructed Mukedeng himself to oversee the execution, and while in Korea, to follow the Yalu to its headwaters on Mount Paektu, find the source of the Tumen, and then return to report his results. In 1711 the execution was duly carried out. The Korean authorities, arguing that there was no precedent for his proposed oversight of the execution, and protesting that they were quite capable of witnessing it themselves, refused to admit Mukedeng at Ŭiju. But an agent of the Kangxi emperor was not to be deterred by such tactics. Mukedeng went up the river on the Manchu side, crossed over to Wiwŏn on the appointed day, presided over the beheading, and then announced that he was going to Paektusan. Korean officials had no choice but to accompany him—or try to, because this hearty woodsman and warrior proceeded to set an exhausting pace. But the trackless wastes, the heavy rains, and the rampaging Yalu were more than this ill-planned expedition could overcome, and even Mukedeng was forced to give up. He announced that he would return the following year.

In 1712 a better-organized effort with more experienced Korean escorting officials succeeded in reaching the goal. They viewed the magnificent Pond of Heaven in Mount Paektu's ancient crater, identified a source for

the Tumen River on the eastern slope of the mountain, and erected a stele with an inscription to mark the border between Korean and Manchu territory for the first time. Not long afterward, an anonymous Korean mapmaker executed a splendid depiction of the area (fig. 10.29).

But this was not enough for Kangxi. In 1713, Mukedeng was sent to Korea once more. To keep Koreans off balance, it was announced that he was bringing an imperial edict bestowing largess upon Korea for the “ascendant peace in the empire” (*tianxia shengping*). This put the matter in a special diplomatic category that compelled reception of the embassy. But no sooner had the mission entered Korea than surveying teams started running up and down the roads with their measuring lines while mathematicians took polar altitude measurements and “floated the iron” to ascertain compass bearings. Long before the mission reached Seoul, informal word had already come that Mukedeng was demanding geographic and cartographic information. When he actually arrived (19 July 1713), he communicated his needs directly to the king.¹⁹⁸

Mukedeng seems to have made three specific requests. He wanted, first, maps and other information concerning hydrography south of Mount Paektu; second, a complete set of distance data for Korean towns; and third, a general map of the country. The negotiations got off to a bad start. Mukedeng said: “We have never been certain about the river veins and mountain arteries south of Mount Paektu, and we would like to see maps of your honorable country. This is the emperor's command.” The king consulted with his advisers on the spot and then replied: “This region is wild and cut off, and we have never mapped it.”¹⁹⁹ Such an implausible and ill-advised denial of the existence of maps probably flew in the face of Mukedeng's direct knowledge, and in any case it was embarrassing. For as one of his aides later exclaimed, “How is it conceivable to have a country but not have maps?”²⁰⁰

94–102; Pang, *Han'guk ūi chido*, 217–19 (note 5); Kim, *Maesan kukhak san'go*, 276–80 (note 3). McCune, misled by Régis's failure to distinguish between activities of 1710 and 1713, erroneously puts the appearance of the “Tartar lord” in Korea in 1710.

198. All this activity is summed up, with abundant citation of Korean source materials, in Zhang, “Qingdai Zhong-Han bianwu wenti tan-yuan,” 475–484 (note 190). For the Korean version of Mukedeng's title, see *Sukchong sillok*, 53.39a (note 17).

199. *Sukchong sillok*, 54.4b (note 17).

200. *Sŭngjŏngwŏn ilgi* (Daily record of the royal secretariat) (transcription and reprint, Seoul: National History Compilation Committee, 1961–), 25:963bb–64aa (39/6/1 = 22 July 1713). Since the original archives were not paginated, page numbers here follow the modern edition. The codes aa and ab identify the top two quarters of the page; likewise ba and bb for the bottom two. Date (Korean reign year/month/lunar day) speeds reference; Western equivalents for lunar dates are given. In the classical rhetoric of Chinese statecraft, to “have the country” (*you guo*) means to rule it.

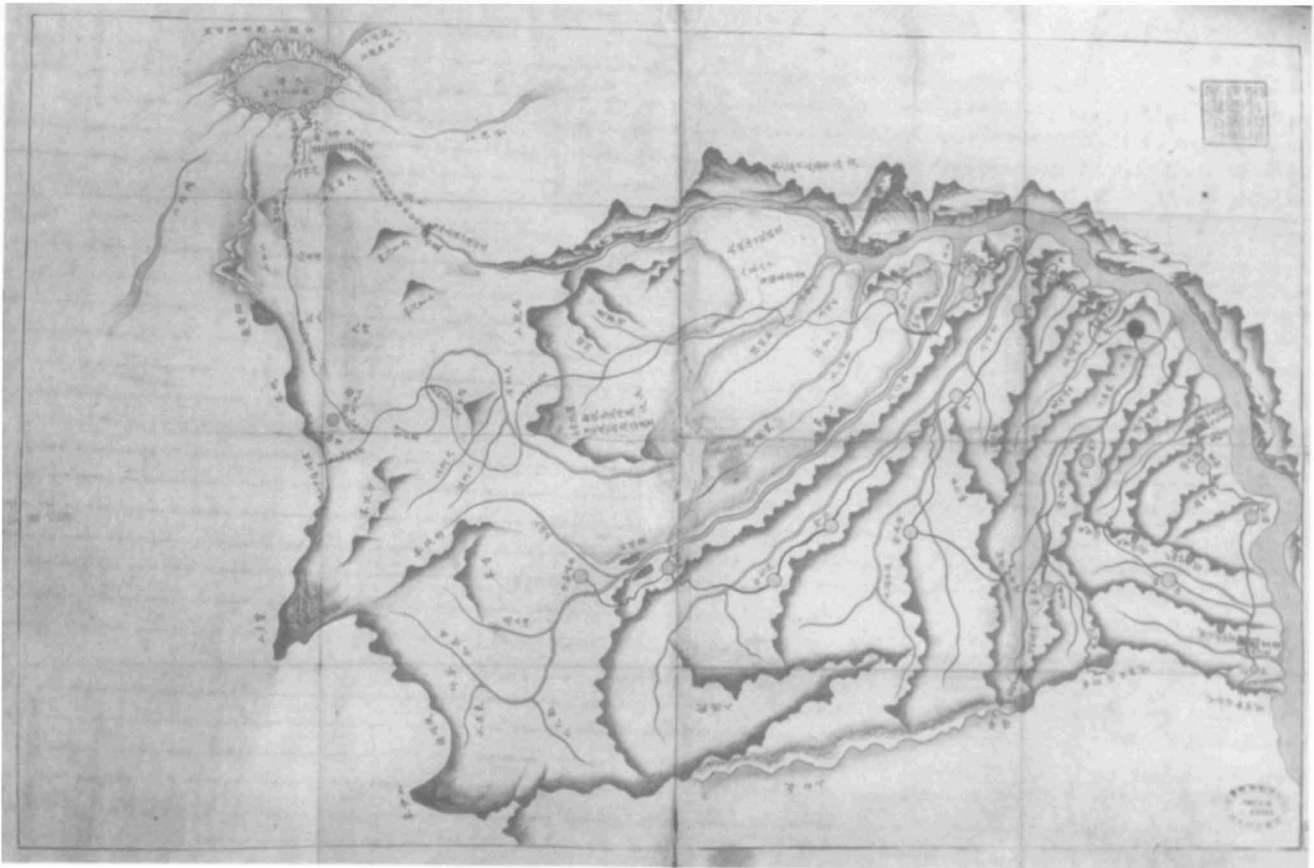


FIG. 10.29. PUKKWAN CHANGP'A CHIDO (MAP OF THE CHANGP'A, THE NORTHERN FRONTIER). This map, probably dating from the mid-eighteenth century, shows the region of Mount Paektu and the boundary settled in the border agreement of 1712. Mount Changp'a (Long Slope), left center, which dominated the sources of the Tumen, was the center of a defensive signal-tower network under the command of military officials in Musan (dark circle, right). At the upper left are

the Pond of Heaven (Ch'önji) and the stele erected in 1712 on the crest of the watershed between east and west. A wooden fence leads fifteen *li* to a line of cairns, which extends for thirty-five *li* to the place where "the Tumen River starts to flow." The present border, negotiated in 1887 and again in 1909, is to the north of this line.

Size of the original: 71.5 × 109.7 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 61-59).

In the days that followed a response was debated while aides worked to explain away the king's gaffe, assuring the visitors that he had meant to say only there were no *copies* of maps. In the meantime, Mukedeng produced his own maps to emphasize that he knew what he was talking about and could not be deceived. Korean officials now anxiously began looking for a map that would satisfy Mukedeng without giving away too much. A resourceful minister informed the king that "although the nation's defense maps are too detailed, we have just acquired a map that is neither too precise nor too general, with many mistakes on the Paektu rivers. Let us show him this." He proposed comparing it with Mukedeng's own map to show him *his* errors.²⁰¹ As far as can be judged from the available sources, this is the way the Paektu river issue was handled. Mukedeng had this map copied; his cartographers redrafted their own map based on it; and a copy

was then made and given to the Koreans. "We are taking one copy with us, and leaving one with you, so that our name and fame can spread to this place."²⁰² Whatever else it achieved, this must at least have put to an end Kangxi's false puzzle of Paektu's southern drainage. Essentially there was none. All waters move or quickly turn to the east or west. It is the mountain "artery" that moves south, not the water "veins."

The question of distance data was no less sensitive, though the Koreans might have given a sigh of relief that the Manchus apparently had not gained possession of a copy of the *Sungnam*, with its exhaustive data for every district in the country. On this question too they pleaded that they did not have detailed records, and this time they

201. *Sukchong sillok*, 54.5a (note 17).

202. *Sungjōngwōn ilgi*, 25:967bb (39/6/6 = 27 July 1713) (note 200).

appear to have convinced Mukedeng. They did give him distances from Seoul to the various extremities of the country.²⁰³

As for the general map of Korea that went north with Mukedeng, we know only that he requested a *badao ditu* (a map [or the map?] of the Eight Provinces, Korean *p'alto chido*). It is impossible to know whether this involved a precise title or a generic term, and in any case it is not certain whether the words are his or belong to Chief Minister Yi Yu (1645–1721), who reported the request.²⁰⁴ But that Yi Yu used the term *p'alto* suggests the map he gave to Mukedeng had that term in its title.

Of course, the phrase “Eight Provinces” is extremely common in map titles. But if it is to have any precise reference, the most likely would be to the general map from the *Sūngnam*—the “P'alto ch'ongdo”—or an elaboration of it that combined the sketch maps of each of the eight provinces into a single map. Such a *Sūngnam*-style map, with this title, dating to the first half of the seventeenth century, is owned by the Korean collector Che Honggyu (fig. 10.30).²⁰⁵ This map could have provided the range and also the imprecise information found on the Jesuit map, which has the names of many individual features but often gives them erroneous placement. As already emphasized, it would be no problem at all if the Korean prototype had had flat northern frontiers, because the Jesuits already had their own excellent data for this feature. But interestingly enough, this copy is unique among *Sūngnam*-style maps in having a modest degree of northeastward lift to its frontier.

The details on the Jesuit map of 1717 and on d'Anville's edition of it are particularly poor for the south, which is understandable since Chinese and Manchu diplomats and officials were never permitted to observe this large region, where by far the greater part of Korea's population and wealth was to be found. Given the general Korean inclination to deceive the Chinese and other foreigners about their country (and the map episode only represents a pervasive habit, nourished by foreign invasions over the centuries), it is not beyond possibility that the map given to Mukedeng could even have been doctored in spots. Particularly interesting is the lay of the capital, the Han River, and the strategic offshore islands of Kanghwa and Kyodong. The original Jesuit map (fig. 7.7) shows Seoul (“Chaoxian,” or Chosŏn) too far south and in the center rather than on the west side of the peninsula. The Han River flows from Seoul to the Yellow Sea in a west-southwest direction rather than following its true northwesterly course, and Kanghwa and Kyodong are egregiously misplaced, the latter even misnamed. This must have caught someone's eye in Beijing, because the d'Anville map shows some correction for the islands (including the names), although the errors affecting Seoul and the Han remain. This distortion, if such it is, is sig-

nificant, since Kanghwa was the site of a highly fortified royal refuge for use in emergencies. Its location, direction, and distance from the capital would have been considered critical information in the hands of an invader, and a motive to distort can be reasonably suspected.

The general shape of the Jesuit map's southern coast is not all that different from that of the map owned by Che Honggyu. The big difference is that the Jesuit map shows the southeastern corner of the peninsula curiously stretched to the right, although this feature is less exaggerated on the d'Anville version. Yet the longitude it indicates for this part of the coastline, approximately 13°50' east of Beijing (about 129°30'E Greenwich), is about the same as the longitude of the farthest north bend of the Tumen River, for which the Jesuits would have had their own measurements. This alignment is virtually the same as that on modern maps. The Jesuits, who used Dutch data for their map of Japan, probably had longitude data on the southeastern Korean coast from the same sources. Understanding that the southeastern corner had to line up longitudinally with the north bend of the Tumen, they may have “pulled” it to the right. Apart from this freakish pull, the outline of the southern coast and the positions of Cheju and Tsushima islands (indeed, even the shape of Tsushima) are similar to those of the map owned by Che.²⁰⁶

In suggesting this provisional hypothesis on the Korean prototype, I must concede some problems. The Bay of Wŏnsan on the upper east coast, although exaggerated on the Che map, is in the direction of accuracy, but there is only a faint hint of it on the Jesuit map. This might suggest a *Sūngnam*-style map of slightly different proportions as a better candidate. From the Korean point of view, a *Sūngnam*-style map of some variety would probably have been the ideal answer to what to give Mukedeng. From the beginning, the likely intent of its design had been to conceal, not reveal, specific details of the country's topography, and that was their purpose too.

Although the Koreans' instinct was to resist requests for maps and map data, they had their own requests to make of Mukedeng's survey team, and they tried hard

203. *Sūngjŏngwŏn ilgi*, 25:965aa (39/6/2 = 23 July 1713) (note 200); *Sukchong sillok*, 54.5a–b (note 17).

204. *Sukchong sillok*, 54.8a (note 17).

205. Yi, *Han'guk ko chido*, 62 (note 4). Based on place-names and paper quality, Yi dates it to the reigns of Kwanghae (1608–23) and Injong (1623–49).

206. An alternative but less likely way to explain the eastward pull might be to suggest influence from the map of Korea in Luo's *Guang yutu* (see fig. 10.2 and note 16), which has a similar distortion (among many others). This map is also like the Jesuit draft in calling Korea's capital “Chosŏn” and placing it in the center rather than on the west side of the peninsula. The Jesuits are known to have referred to Luo Hongxian's work. In the case of the China maps this was justified, but if they relied on his map of Chosŏn, they were ill advised.

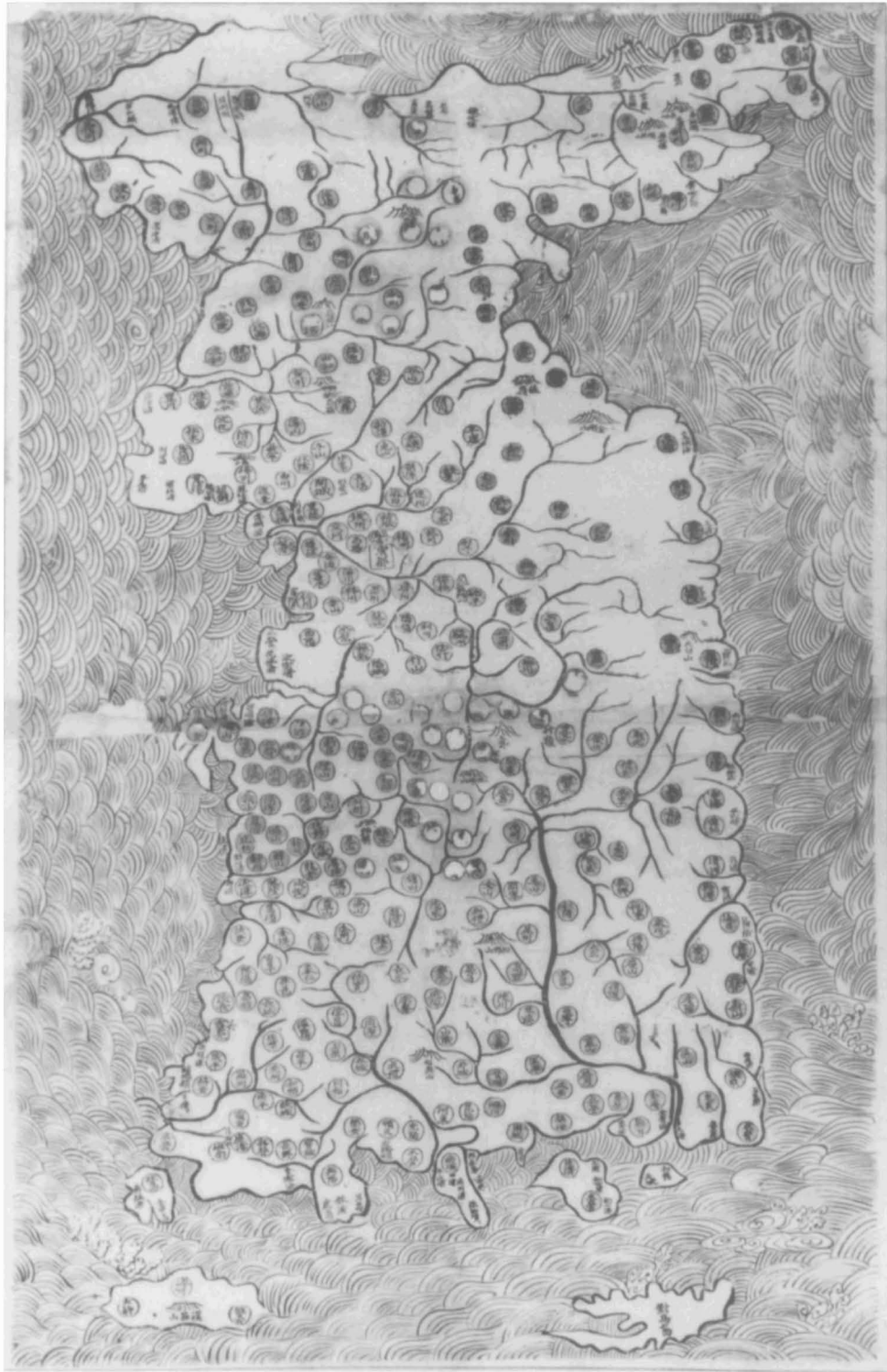


FIG. 10.30. P'ALTO CH'ONGDO (GENERAL MAP OF THE EIGHT PROVINCES), FIRST HALF OF THE SEVENTEENTH CENTURY. This woodblock printed map of Korea, dated from place-name indications and paper analysis to the first half of the seventeenth century, is essentially a version of the general map of the same title in the *Tongguk yōji sūngnam* with the place-name details added from the *Sūngnam's* provincial maps. But it is significantly different in drawing style and

in the treatment of the northern frontier, which is more in the Ch'ong Ch'ok style. A map of such a type, although probably with a less pronounced Bay of Wōnsan, was detailed enough, and at the same time imprecise enough, to have served as a model for the Jesuit map, which may also have made reference to non-Korean sources.

Size of the original: 106 × 68 cm. By permission of Yi Ch'an, Seoul.

to learn as much as they could about its doings. The king's advisers missed no opportunity to acquire technical information concerning the mission's survey instruments and methods. It was decided to have some young technicians from the *kwansangdae* (royal observatory)—posing as ordinary citizens—strike up an acquaintance with the Chinese technicians and get as much instruction as possible. Interpreters too were mobilized to socialize with the technicians and learn as much as they could.²⁰⁷

There was great curiosity about the chief of the surveying team, a Chinese named He Guozhu, who was identified as a mathematician in the Qing government's *qintianjian* (bureau of mathematics). One of Sukchong's ministers, while in Beijing on diplomatic business, had once visited the bureau ("No one there but Westerners," he said) and met a man he thought might be one of He's relatives.²⁰⁸ This would probably have been He Guozong, Guozhu's older brother. Both were Jesuit trainees and rich in experience on Kangxi's mapping projects.²⁰⁹ It was He Guozhu who took the much-reported measurement of Seoul's latitude. Notices on the 1713 visit make no mention of it, but it is found in the *Munhŏn pigo* and other sources.²¹⁰

An officer of the observatory, Hŏ Wŏn, in the course of an earlier mission to Beijing, had purchased "mathematics materials, supplementary textbooks and calculating devices," but he needed instruction in order to use them properly. This was mentioned in one of the conferences on the Mukedeng problem, and Hŏ may have used this opportunity to make contact with the surveyors. In any case, he returned to Beijing two years later (1715), visited the bureau of mathematics, and made some further purchases, including "books on eclipses" and "six different kinds of observational and calculating devices."²¹¹

When Mukedeng finally departed from Seoul (29 July 1713), Korean authorities were doubtless relieved to be finally free of his demands. But there had almost certainly been some compensation for their pains in the information harvested from observations of the survey team and likely contacts with it. The six devices that were acquired in 1715 probably included up-to-date instruments for taking polar altitude and determining latitude. Precise information on eclipses would have been essential for planning observations to determine longitude. And the chance to observe the working methods of probably the most advanced mapmaking operation in the world at that time—Kangxi's project led by the Jesuits in China—should have brought great benefits to Korean mapmakers. Still, as we shall see, it is hard to find proof that these benefits were seized.

MAPS IN THE CHŎNG SANGGI STYLE

We are now in a position to consider the Chŏng Sanggi maps. Unlike his mapmaking predecessors Yi Hoe, Chŏng Ch'ŏk, and Yang Sŏngji, the eighteenth-century master Chŏng Sanggi (1678–1752) did not compete in the civil examinations or serve in the bureaucracy. By all accounts—which are not that extensive—he lived in retirement and devoted himself to the pursuits of a *sirhak* scholar. His writings included studies in political economy, defense, military tactics, medicine, agronomy, and machinery, but today he is famous mainly for his maps, which were the first in Korea to feature the use of scale and the first to reveal, at long last, something close to the actual shape of the country. His descendants, down to at least a great-grandson, seem to have continued his cartographic interests, but aside from his son Chŏng Hangnyŏng, who had a successful official career under King Yŏngjo (r. 1724–76), little is known of them.²¹²

It was apparently not until after Chŏng Sanggi's death that his maps came to the attention of the government. During the late 1750s the government was considering whether it ought to recompile the *Sŏngnam*, and the

207. General discussions among the Korean officials on how to approach the Chinese technicians are found in *Sŏngjŏngwŏn ilgi*, 25:948aa–50aa (39/5i/15 = 7 July 1713) and 961ab–ba (39/5i/26 = 18 July 1713) (note 200). In this and later references, "5i" indicates the intercalary fifth month.

208. *Sŏngjŏngwŏn ilgi*, 25:950aa (39/5i/15 = 7 July 1713) (note 200).

209. He Guozhu was probably a younger brother or cousin of the brothers He Guozong (d. 1766) and He Guodong; all were mathematicians and close associates of the Jesuits in the Qing government's bureau of mathematics (*qintianjian*). See Arthur W. Hummel, ed., *Eminent Chinese of the Ch'ing Period, 1644–1912*, 2 vols. (Washington, D.C.: United States Government Printing Office, 1943–44), 1:285–86 and 330. He Guozhu was listed as a mathematical specialist on the compilation team of the *Lixiang kaocheng*, the great compendium of Western mathematics and calendrical science completed in 1723: See He Guozong and Mei Gucheng, comps., *Lixiang kaocheng* (Summation of measurements and observations, 1723); modern reprint in *Siku quanshu zhenben* (Rare editions from the Siku Manuscript Library), 2,400 vols. (Taipei: Taiwan Shangwu Yinshuguan, 1971), 4th series, vols. 151–54, prolegomena roster of compilers, 2b. Korean sources give He Guozhu's title as *wuguan sili*, literally "five officials chief mathematician." The structure of this phrase is puzzling. Kim, in *Taedong chiji*, 28.561bb (note 114), garbled it into "five hundred mathematicians"; Pang, *Han'guk ūi chido*, 172 (note 5), renders it "five mathematics officials." Although the exact significance of *wuguan* eludes me, it is certain that it can appear in the title of a single individual, including some officials in the bureau of mathematics itself; see *Da Qing huidian* (Qing administrative code) (edition of 1732), 86.5a.

210. *Munhŏn pigo*, 2.10a (note 51); Kim, *Taedong chiji*, 28.561bb (note 114).

211. *Sŏngjŏngwŏn ilgi*, 25:959ba–b (note 200). The nature of his earlier purchases is revealed in the notice of the second visit, in 1715; *Sukchong sillok*, 56.3a–b (note 17).

212. Yi, *Han'guk ko chido*, 207–8, 226–27 (note 4); Yi Hongjik, comp., *Kuksa taesajŏn* (Encyclopedia of Korean history), 4th ed. (Seoul: Samyŏng Ch'ulp'ansa, 1984), 1353.



FIG. 10.31. *TONG'YŎ CH'ONGDO* (GENERAL MAP OF THE EASTERN TERRITORY). A single-sheet woodblock print; judging from the nonindication of the town of Changjin as a district, it dates from before 1787. Although provincial borders are not shown, the provinces are distinguished by distinctive colors around the names of their respective districts, as on the earlier Ch'ong Ch'ok-style maps. Ch'ong Sanggi was the first to use a strict scale (although none is indicated on this

copy) and the first to draw the nation's outline and borders in a relatively accurate manner. His principal problem was the Yalu River, which bends too far to the north, considerably inflating the area of P'yŏng'an Province. First reported in written sources in 1757, after his death, maps in this style dominated the period 1750–1860.

Size of the original: 98 × 57 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 61-16).

discussion apparently stimulated some presentations of maps to the throne. On such an occasion in 1757, King Yōngjo came to hear of some maps in the household of Chōng Hangnyōng, who then held a minor post in the bureaucracy. They were duly brought in for royal inspection and found to be very detailed in their depiction of mountains, rivers, and roads. They also featured the *paengni ch'ōk* (hundred-*li* “foot”), a scale that is said by the perhaps overenthusiastic chronicler to have virtually eliminated error in map measurements. “In all my seventy years I’ve never heard of such a thing as a hundred-*li* foot,” Yōngjo exclaimed in approval, and he sent the map, titled *Tongguk tae chido* (Great map of the Eastern Country), off to the royal library for copying. Provincial maps, received through the same intermediary a few days later, were also reproduced, with copies going to the royal library and to the state defense council (*pibyōnsa*).²¹³

It is possible that Chōng Sanggi’s map was already known among *sirhak* scholars and other map fanciers by the time it came to the king’s notice, but this would probably be difficult to prove. No copies of Chōng’s maps bear his name; few are dated, and those that are are late. His provincial maps—the core of his work—were never printed, and all known examples are hand-drawn copies. Maps in his style are known under many different titles, no single one having prevailed as a standard. Given these facts, no one has been able to pinpoint with any certainty the date when Chōng’s maps would have become known. Shannon McCune has suggested 1730 as an approximate date for their first appearance.²¹⁴ This accords with the general development of cartographic method and Chōng’s own maturity as a mapmaker. He would have been fifty-two at that time. It is a reasonable guess.

Maps in the Chōng Sanggi style come both as single maps of all of Korea (fig. 10.31) and as separate maps of the eight provinces (fig. 10.32). There is complete, and intended, convertibility between the two. Chōng designed his work so that all the provincial maps were of identical scale. Individual parts could be joined together to make a national map or, if desired, any regional combination of provinces. Hand copyists have preferred to duplicate the provincial maps, which afford versatility of purpose and are conveniently bound together in albums, while woodblock publishers probably found the national map a better seller. Modern scholars tend to refer to the single map of the nation as the *Tongguk chido* (Map of the Eastern Country) and to albums of the provincial parts as *P’alto chido* (Maps of the Eight Provinces). Unfortunately, the great variety of known titles on both types still remains.

No copy of the *Tongguk chido* certain to have come from Chōng Sanggi’s hand has been identified. Yi Ch’an has suggested that the most likely candidate is an album titled *P’alto chido*, held by the National Central

Library.²¹⁵ That copy bears an unsigned and undated preface by a man who says he made the maps, and it may be taken to be the words of Chōng Sanggi. This preface often appears in album copies on the first page, invariably devoted to a map of one of the halves of Hamgyōng Province.²¹⁶

On many copies, among them that shown in figure 10.32, the preface is followed by a drawing of what I will call the scale-foot, a small ruler line that, applied to the map, represents 100 *li* (or in tortuous terrain, 120 or 130 *li*; see below). Writers using English often render *ch’ōk* as “foot”—as I did in the King Yōngjo anecdote above—but such a translation should be avoided as a general rule lest a reader think that one Korean foot (about 19.9 cm; see table 10.4) is equivalent on the map to 100 *li*. Maps in the Chōng Sanggi style are nowhere near that large. As measured on the provincial maps owned by the late Yi Pyōngdo, Chōng’s scale-foot is 8.2 centimeters in actual length and yields a scale of about 1:420,000.²¹⁷ A translation of the preface follows:

213. Pang, *Han’guk ūi chido*, 161 (note 5). See also *Yōngjo sillok* (Annals of King Yōngjo, r. 1724–76), 90.8b–9a (note 17). Circumstances, including the same intermediary on both occasions of the map inspections, make it almost certain that these were all Chōng Sanggi maps. Further government copying took place in 1770. In that year, according to the family genealogy, a team of official copiers came to the Chōng house, which would then have been headed by his son Hangnyōng or his grandson Wōllim (1731–1800), and set up a temporary office (*togam*) for copying a general map of Korea entitled *Taedong yōjido* (Territorial map of the Great East)—the first time anything like that had ever occurred in Korea, according to the claim of the genealogist. See *Hadong Chōngssi taedongbo* (Comprehensive genealogy of the Hadong Chōng lineage) (Seoul: Hadong Chōngssi Family Association, 1960), 2.57b.

214. McCune, “Some Korean Maps,” 101 (note 197).

215. Completely illustrated in Yi, *Han’guk ko chido*, 96–103 (note 4).

216. See illustrations of the first page of the *Chwahae yōdo* (Terrestrial map of [the country in] the Left [Eastern] Sea) and of the *Tongguk chido* in Yi, *Han’guk ko chido*, 112 and 114 (note 4). An important copy held by the library of the University of California, Los Angeles, also has this preface, although with a number of variants. The UCLA map has been illustrated and described in the article by Thrower and Kim, “Dong-Kook-Yu-Ji-Do” (note 84). This copy is reported to bear a cyclical date, *kich’uk*. On the ground that the name Inch’ōn is found on the map, and in the belief that that name dates only from 1882, they pick the next available possibility and equate *kich’uk* with 1889. This assumption is baseless; the district has borne the name Inch’ōn since King T’aejong decreed it in 1413. Barring some other factor that would rule it out, *kich’uk* could just as well be equated with 1829 or 1769, although based on style and appearance 1829 seems the better choice. Apart from the nonstandard romanization, the repeated erroneous rendering of the cartographer’s name as Chung Sang-ik, and the statement that he completed his map in 1786 (he died in 1752), there are many other errors and misperceptions in this article, which should be used with caution.

217. Yi, *Han’guk ko chido*, 207b (note 4). Three maps from Yi Pyōngdo’s copy are illustrated in Thrower and Kim, “Dong-Kook-Yu-Ji-Do,” 44–46 (note 84), who, however, give the de facto scale as 1:400,000.

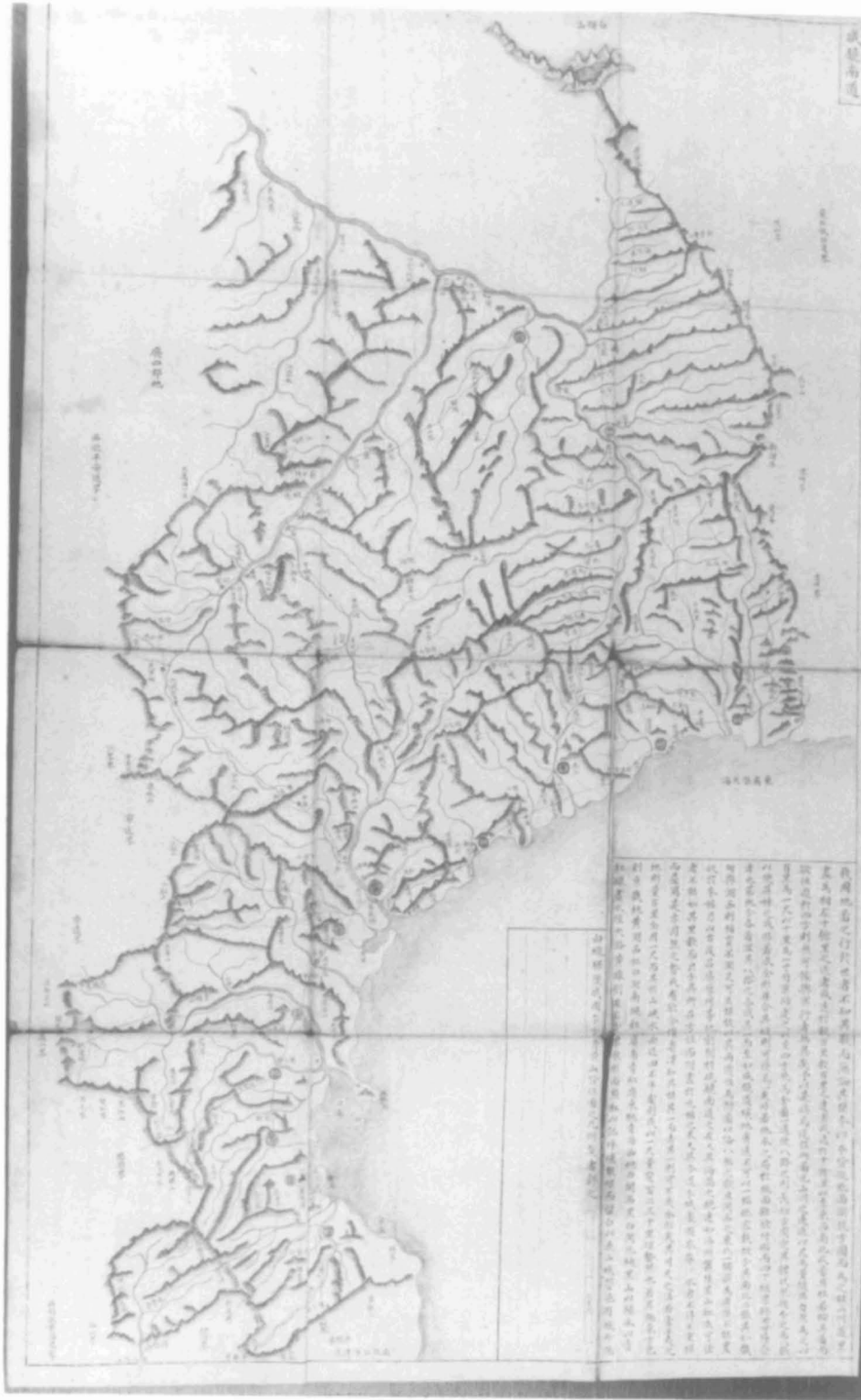


FIG. 10.32. "HAMGYŎNG NAMDO" (SOUTHERN HAMGYŎNG PROVINCE). This sheet, from an album titled *Tongguk chido* (Map of the Eastern Country), is a carefully executed copy of a Chŏng Sanggi-style provincial map. The shapes-and-forces (*hyŏngse*) character of Chŏng's cartography is here strongly emphasized, providing an excellent rendering of the watersheds and drainage of the southern part of Hamgyŏng. District towns and roads, and some post stations and military

outposts, are also shown. In the margin at lower right is Chŏng's preface (translated, p. 309), which ends with a drawing of the "hundred-*li* scale-foot" explained in his text. This copy does not show Changjin (just below the upper middle fold at the far left) as a district town, and therefore it was probably executed before 1787.

Size of the original: unknown. By permission of the National Central Library, Seoul (cat. no. Rare 122 Kojo 61-12).

I do not know how many maps of our country are circulating in the world, but whether they are hand copied or printed they are all made to conform to the different dimensions or shapes of paper. For this reason mountains, rivers, and route distances are all in error with respect to each other. A place as close as ten *li* or so might be several hundred *li* away, while one several hundred *li* away might be as close as ten *li*, resulting sometimes in shifts of alignment in north, south, east, and west. If one should wish to take a trip anywhere with such a map, he would not be able to depend on it at all; it would be no different from traveling in the dark.

Mindful of such defects, I have made [my own] maps. Regardless of whether mountains and streams are high or low or distances near or far, I have measured with the scale-foot and made the map in accordance with things as they really are. I make one scale-foot equal one hundred *li*, and one scale-inch equal ten *li*. Spanning from Seoul outward in all directions, I first made a complete map as a unity, so as to fix the relationship of all the land features in the eight provinces regardless of size or curvature. Then I divided [this map] into eight pages convenient for separate and discrete placing in an album. If one seeks the complete picture, he can rematch the borders [of the eight separate maps] and make them into one again. It is not like other maps, which suffer from limitations of paper shape. With those, even if one wanted to paste sheets together at their four borders, he would never be able to match them up.

Since the map is divided into eight sheets, it would be ideal if each of the eight provinces made up a single sheet. However, Hamgyōng Province is so vast and spread out that it cannot be made to fit on a single piece of paper, so I have divided it into two sheets, north and south. But in a case like Kijōn and Hosō [Kyōnggi and Ch'ungch'ōng] provinces,^[218] the areas are not large and it suffices to place them together, so I took both provinces and made a combined map, thereby keeping to an eight-page album. In addition, the northeast corner of Kwansō [P'yōng'an] Province extends to such a distance that it cannot all be gathered onto its own sheet, so I took the areas of Former Much'ang and Discontinued Huju, etc.,^[219] and added them on to the left side of Hamgyōng Province. Then too, islands in the sea, such as Cheju, Ullūng, Hūksan, Hong'ui, and Kaga, are so far out that one cannot go by the number of *li*. I have just assigned them to their direction and drawn them in at the edge of the relevant sheet. When it comes to mountain ranges and rivers at the point where two provincial territories meet, one has no alternative but to copy them twice, making a duplication. This is unavoidable, but if one should wish to make a combined copy, he should understand that if he copies [such features] from the one sheet but not from the other he will not err in the overall picture.

As for the method of applying the scale-foot, in level and regular areas it is appropriate to have 100 *li* correspond to one scale-foot. But in irregular areas such as mountainous terrain and meandering rivers, 120 or 130 *li* may correspond to one scale-foot.

On the assignment of distinctive coloring, Kyōnggi is solid yellow, Hosō white with red, Honam [Chōlla] solid red, Yōngnam [Kyōngsang] blue with red, Yōngdong [Kangwōn] solid blue, Haesō [Hwanghae] solid white, Kwansō white with black, and Hamgyōng solid black.^[220] Green is used for mountains, blue for rivers. Red lines indicate major routes on land or sea; yellow lines show borders between the left and right divisions [of provinces].^[221] A platform-shaped symbol with dotted red marks a fire signal; a crenellation with solid white indicates a mountain fortress [*sansōng*]. If garrisons or district towns are walled, a white line is drawn outside; if post stations or command posts are within enclosures, they are distinguished by blue and yellow, respectively.

These are the conventions and rules used in making this map. Readers should take careful note of them.^[222]

With the Chōng Sanggi-style maps, the shapes-and-forces emphasis of earlier days returned strongly to Korean cartography. Every river flows between two mountain ranges; every mountain range gives birth to rivers on either side. This is only common sense, yet the consistent and clear representation of the aggregate of such facts dramatically reveals the overall character of the landscape in images that common sense cannot easily generate. The dramatic differences in terrain between the mountainous northern areas and the broader river plains of the south, with all that they convey for a sense of the varying economic, demographic, and scenic character of the different regions of the country, are made instantly clear to the eye. It would be easy to give too much emphasis to such conventions, thus bringing on information overload and shattering clarity. It would be even easier to underuse or ignore them and abdicate the responsi-

218. Here and in the lines following the writer uses the popular nicknames for the provinces.

219. Areas abandoned by Sejo in 1455; see above, p. 290.

220. This is slightly different from the color-code mentioned above, though it comes from the same basic Five Phases scheme. Bear in mind that what is being colored is not the map itself, but the cartouches surrounding the names of the various districts—with different colors depending on what provinces they are in. Chōng is not implying, where two colors are used, that they are blended but means they are used in combination to outline and/or tint the cartouche.

221. Except for Hamgyōng, the provinces were each divided into two sectors to reflect military commands. These were referred to as the “left province” (east) and the “right province” (west).

222. The translation follows the texts illustrated in the plates in Yi, *Han'guk ko chido*, 96 and 114 (note 4). The first is attached to an album called *P'alto chido*, the second to an album titled *Tongguk chido*. There are only minor variations between the two.

bility to inform. But Chŏng Sanggi and after him Kim Chŏngho managed a clear and pragmatic deployment of this cartographic technique, in balance with the provision of other important information—names, roads, boundaries, and so forth—that truly made physical features intelligible and revealed the shapes-and-forces that governed the life of their community. Indeed, through their maps, many users probably saw shapes-and-forces thought less in terms of the mystic conduits to Mount Paektu than as an aid to physiographic and political-economic understanding.

The elaborate working out of such principles was probably the main stimulus to the discovery of Korea's true shape. With the strict emphasis of shapes-and-forces thought on the direction of the river "veins" and mountain "arteries," and with Chŏng Sanggi's rigorous application of scale, the road was finally open to the successful understanding of the complicated Yalu and Tumen river systems. And when that was done, the actual lines of the northern frontier were necessarily revealed. Koreans of earlier days, surrounded by their "three thousand *li* of mountains and rivers" had instinctively understood shapes-and-forces principles but lacked the methods to relate accurate measurements to precise positions. In the eighteenth century, reliable distance data that had long been available were linked to the cartographic application of true scale. In spite of a few problems that remained to the end on the comprehension of the Yalu's upper-middle course, the Chŏng Sanggi understanding of the northern border was a net improvement over that of Régis and his companions.²²³

That much said, the Chŏng Sanggi-style maps still left room for improvement. His Korea was a bit too long in relation to its width, and the Yalu River strayed too far north to its major bend and then flowed on too southerly a course to its mouth, resulting in an inflated size for the northern part of P'yŏng'an Province. It would be easier to address such problems if we had some understanding of how Chŏng Sanggi actually worked. The technology to make accurate geodetic measurements probably existed in the Korea of his day. Could it have filtered down to him? Even though such a development was wholly plausible in terms of the sociology of knowledge—there was a high degree of social overlap between the scholarly and the bureaucratic worlds—in fact we have no indication that it did. More important, we cannot even be certain that the government itself effectively used the instruments and knowledge its officials continually brought back from Beijing.

The earliest evidence of programmatic government concern with geodetic coordinates comes in 1791. King Chŏngjo had ordered the director of the government's observatory (the *kwansanggam*) to make new calculations on time differentials in the eight provinces so that

more precise information on sunrise and sunset and on the beginning points of the twenty-four *chŏlgi* (solar seasons, Chinese *jieqi*)²²⁴ could be incorporated into the calendars supplied to provincial and district officials. He considered it backward that the calendars gave only one set of times for these events for the whole country when he knew that they varied with locality. The director of the observatory, Sŏ Hosu, submitted a report with the requested information, together with interesting remarks and data on geodetic coordinates, and the king urged incorporation of the relevant details in the calendar for the following year. Although objections of an unknown character and origin were raised against this plan and the whole idea was dropped, fortunately the report itself has survived in King Chŏngjo's annals.²²⁵

Sŏ Hosu began with a general exposition of latitude and longitude. He observed that one degree of longitude represented a time difference of four minutes, and he reported that Seoul was forty-two minutes ahead of Beijing. In terms of distance, he said, each degree of latitude or longitude was roughly equal to two hundred *li*. "Going by straight lines on maps," he continued, "we have used the hundred-*li* scale-foot [*paengni ch'ŏk*] to determine [the following coordinates]."²²⁶ He then gave latitudes

223. The difference in dates prompts the question whether Chŏng might have been influenced by the Jesuit maps. I have found in Korean records no indication that Korean officials on business in Beijing ever bought or saw copies of the very rare 1721 edition of the Jesuit maps. But if they had heard of them, they would have made every effort to buy them. Export of such material at that time was forbidden by law, but Koreans often found ways to get such things home anyway. The Jesuit maps of China were published in pieces in Chen Menglei, Jiang Tingxi, et al., *Gujin tushu jicheng* (Complete collection of books and illustrations, past and present, completed in 1726), which was quickly available in Korea, but this encyclopedia's section on Korea, though voluminous, lacks any map. In any case, Chŏng's treatment of the frontier was more accurate than that of Régis, and it unquestionably came from his own application of scale.

224. These twenty-four periods, which were structured around the equinoxes and solstices, provided farmers and nature watchers with those solar constants that do not jibe with the lunar calendar. A number of popular holidays and festive occasions were also tied to this system. For a complete list of the solar periods, see Jeon, *Science and Technology in Korea*, 90 (note 49).

225. *Chŏngjo sillok* (Annals of King Chŏngjo, r. 1776–1800), 33.36b–37a (note 17). The longitudes, but not the latitudes, are also found in *Munhŏn pigo*, 1.10a–b (note 51). The project ordered by Chŏngjo seems to have been closely modeled on a Chinese discussion of analogous time differences in the onset of the solar seasons in the various Chinese provinces; see *Lixiang kaocheng*, pt. 2, 1.14b–15b (note 209), where Seoul's longitude of 10°30'E and its time differential of +42 minutes, both relative to Beijing, are also documented. This is the earliest record of Seoul's longitude and probably derives from the observations of He Guozhu.

226. *Chŏngjo sillok*, 33.36b–37a (note 17). The Korean use of maps to plot geodetic coordinates also seems to have been suggested by the *Lixiang kaocheng*. A footnote to the Chinese work says: "For the

TABLE 10.7 Korean Geodetic Coordinates Reported in 1791

| Site ^a | Latitude ^b | | | Longitude ^c | | | |
|-------------------|-----------------------|---------|-------|------------------------|------------|----------|-------|
| | Reported | Modern | Error | Reported | = Adjusted | Modern | Error |
| Onsŏng | 44°44'N | 42°55'N | +109' | 2°58'E | = 129°57'E | 130°00'E | -3' |
| Hamhŭng | 40°57'N | 39°55'N | +62' | 1°00'E | = 127°59'E | 127°32'E | +27' |
| P'yŏngyang | 39°33'N | 39°01'N | +32' | 1°15'W | = 125°44'E | 125°45'E | -1' |
| Haeju | 38°18'N | 38°03'N | +15' | 1°24'W | = 125°35'E | 125°42'E | -7' |
| Seoul | 37°39'N | 37°33'N | +6' | 0°00' | = 126°59'E | 126°59'E | 0 |
| Wŏnju | 37°06'N | 37°21'N | -15' | 1°03'E | = 128°02'E | 127°57'E | +5' |
| Kongju | 36°06'N | 36°27'N | -21' | 0°09'W | = 126°50'E | 127°07'E | -17' |
| Taegu | 35°21'N | 35°52'N | -31' | 1°39'E | = 128°38'E | 128°36'E | +2' |
| Chŏnju | 35°15'N | 35°49'N | -34' | 0°09'W | = 126°50'E | 127°09'E | -19' |
| Haenam | 34°15'N | 34°34'N | -19' | 0°28'W | = 126°31'E | 126°36'E | -5' |

^aThe eight entries Hamhŭng through Chŏnju are the capitals of the eight provinces; coordinates for all but Kyŏnggi Province are given in *Chŏngjo sillok* (Annals of King Chŏngjo, r. 1776–1800), 33.37a, item dated Chŏngjo 15/10/11 [6 November 1791]. The longitude figures are also given in *Chŭngbo Munhŏn pigo* (Documentary reference encyclopedia, expanded and supplemented) (Seoul: Empire of Korea, 1908), 1.10a–b. Kim Chŏnggho, *Taedong chiji* (Administrative geography of the Great East, 1864) (Seoul: Hanyang Taehakkyo Kukhak Yŏn'guwon, 1974), 28.561bb–562aa, gives the full coordinates of the provincial capitals, including those for Kyŏnggi, and adds those of Onsŏng and Haenam, respectively the farthest northeast and southwest district seats on the mainland. The modern coordinates were taken from Kwŏn

Sangno, *Han'guk chimyŏng yŏnhyŏk ko* (A study of historical changes in Korean place-names) (Seoul: Tongguk Munhwa Sa, 1961). Both traditional and modern data take as their reference point the courtyard in front of the given provincial or district capital building.

^bThe error is the difference in minutes between the reported 1791 latitude in the “reported” column and the modern official latitude in the “modern” column.

^cThe 1791 figures represent longitude east or west of the Seoul meridian. The figures in the “adjusted” column are derived from Seoul's official modern longitude, 126°59'E (Greenwich). The error is the difference in minutes between the longitude in the 1791 “adjusted” column and the official longitude in the “modern” column.

and longitudes for seven of the eight provinces, as measured at their governors' compounds.

Referring to the same report, Kim Chŏnggho made a similar statement, saying that the observatory staff, “using the maps held by the state defense council [*pibyŏnsa*], determined the north polar elevation and the degrees east or west of Seoul for the compounds of the provincial governors.” He went on to provide a set of equivalents: 200 *li* = 1°, 10 *li* = 3' (or 180"), 1 *li* (or 2,160 *po*) = 18", and 120 *po* = 1".²²⁷ Evidently these were Kim's basic formulas for relating long, medium, and short distance measurements to geodetic space. The conclusion seems unavoidable: the geodetic coordinates of 1791 were determined by distances plotted “in straight lines” (*chikto*) on maps. We know that the state defense council had Chŏng Sanggi-style maps, and the use of Chŏng's term “hundred-*li* scale-foot” is another clue making it likely that these were the maps used in plotting the 1791 coordinates.

In spite of this association of the Chŏng Sanggi maps with geodetic coordinates, we have no evidence that he had used them in making his maps, and the maps themselves do not have graticules. Some examples, such as the undated woodblock edition shown in figure 10.31, have grids drawn in on an already printed copy. In this case, although a vertical line going through Seoul is labeled *chungŏn* (center line), these lines have nothing to do

with meridians or latitudes, and the intersections show no relation to the coordinates of 1791 or those seen in Kim Chŏnggho's work.

The figures of Sŏ Hosu's report are given in table 10.7, supplemented by data from Kim Chŏnggho. Kim cites the 1791 report and gives identical figures, but he adds coordinates for the missing province, Kyŏnggi, with its governor's compound in Seoul. He also provides coordinates for Onsŏng, in the extreme northeast, and Haenam, in the extreme southwest, which permits the determination of the total length of the Korean mainland. In another part of his vast compendium, Kim gives additional coordinates for nineteen district seats in northern P'yŏng'an Province (see below). It is unclear whether the original 1791 source had a full list of coordinates for the whole country or whether Kim had obtained the supplemental figures elsewhere, possibly even from his own calculations.

longitudes of each province, we in all cases relied on the degrees established on the maps. We have now taken observations of the gnomon shadow to find the times for the solar seasons, and have verified these by time differentials [in the observation] of lunar eclipses. All agree with the data of the maps"; *Lixiang kaocheng*, pt. 2, 1.15b (note 209). I have found no record that in the Korean case these important confirmatory steps were taken.

227. Kim, *Taedong chiji*, 28.561bb–563bb (note 114). A copyist's error yielding “20 *po*” has been emended to “120 *po*” to meet the obvious requirements of arithmetic.

Kim Chŏngho says that Seoul's latitude, $37^{\circ}39'$, was measured by He Guozhu on Chongga (Bell Street, the modern Chongno, which runs east and west), in 1713.²²⁸ The modern official latitude, measured a few blocks south in front of the city hall, is $37^{\circ}33'29''$. If Kim's information is correct then He Guozhu's measurement was off by nearly six minutes, but wherever the fault lies, Kim began with that error. That would have been entirely bearable. The problem, which can be seen clearly in table 10.7, is that the error keeps growing the farther north the data reach, until at Onsŏng it is nearly two degrees. Going south, it is more than half a degree at Chŏnju. (Haenam, much farther south, has a much smaller error, but its reported latitude is suspect since it goes against the clear pattern of the data, which is for the error to grow incrementally in proportion to the distance from Seoul.) This pattern in itself confirms that official distance data centered on Seoul are the foundation of the coordinates of 1791 and those of Kim Chŏngho.

Given Kim's latitudes for Seoul and the district town of Onsŏng, the geodetic distance between these two latitudes would have been $7^{\circ}05'$, which at the ratio of 200 *li* per degree would be equivalent to 1,417 *li*, or 609.3 kilometers (see table 10.5). The actual modern geodetic distance between the same points is $5^{\circ}24'$, which at the metric standard of 111 kilometers per degree of latitude comes to 600 kilometers. In kilometers Kim's difference is only 1.6 percent greater than the modern figure, which shows that his distance figures for Onsŏng were more or less on the mark. But in geodetic distance, Kim's $7^{\circ}05'$ is 31 percent greater than the modern figure of $5^{\circ}24'$.

The cause of this disparity lies in the Zhou foot, which at 19.91 centimeters is short in relation to the other Chinese and Korean linear standards. The formula $200 \text{ li} = 1^{\circ}$ came into use in China during the Sino-Jesuit era in the seventeenth and eighteenth centuries, and it was put on record in Chinese textbooks on astronomy.²²⁹ Going by Qing dynasty official definitions of the *li* and of the *chi* (foot) and the standard metric ratio, the 200-*li* formula yields the length of 115.2 kilometers per degree of latitude.²³⁰ This is 4.1 kilometers too long, but the error is considerably less than that resulting from the Korean figure of 86 kilometers, which is short by 25.1 kilometers. Korea, with shorter *li*, used more of them, so that when the 200-*li* formula was applied to determine geodetic coordinates from distances plotted on a scale map, there was an inflation in degrees of latitude. It was not that the distances were wildly wrong in their own terms, but that relative to the Chinese *li* they reached higher numbers and, when divided by 200, created more degrees of latitude. This then, is the cause of all but 1.6 percent of the error indicated in table 10.7.

The longitudes in table 10.7 were stated in degrees east or west of the Seoul meridian, and Seoul was itself fixed,

presumably by He Guozhu, at $10^{\circ}30'$ east of Beijing. There is no discernible pattern in the deviations from the modern longitudes, and the swings are extreme—for example, only a $-3'$ error for Onsŏng, at $2^{\circ}58'$ east of Seoul, but a $+27'$ error for Hamhŭng, reported at 1° east but actually much closer to the Seoul meridian. This reflects the positions of Hamhŭng and its nearby coastal areas on the Chŏng Sanggi maps, which are noticeably farther east than they should be (Hamhŭng is at a north-east bearing of 19° from Seoul compared with an 11° bearing on modern maps). Evidently the rugged road to Hamhŭng made east-west measurement especially difficult.

Kim Chŏngho gives nineteen sets of coordinates for towns in the general area of northern P'yŏng'an Province. These are presented in table 10.8. In this case his longitudes are based on the P'yŏngyang meridian. It will be seen that they all show a negative error with respect to modern figures. Although the data are quite variable, if the table had been arranged from west to east rather than from north to south, one would notice overall a heavier error for the towns farther west and a somewhat lighter one for those farther east. It might be possible to explain this by a westward exaggeration in the northwest area of the Chŏng Sanggi-style maps used to determine the coordinates. This is actually the case on two of the four Chŏng Sanggi maps illustrated in Yi Ch'an's album.²³¹ Although this is speculative, the explanation at least has to be sought on a map, since we know that the coordinates were determined with reference to one.

228. Kim, *Taedong chiji*, 28.561bb (note 114). This figure was rounded off from $37^{\circ}39'15''$, which Kim cited from the *Lixiang kaocheng*, pt. 2, 1.16b (note 209). We have seen that Régis himself gave the latitude as $37^{\circ}38'20''$.

229. Wu, *Zhongguo duliangheng shi*, 271–72 (note 149).

230. Wu, *Zhongguo duliangheng shi*, 271–72 (note 149). In stating the equivalence $200 \text{ li} = 1^{\circ}$, the *Da Qing huidian* specifies a *li* of 1,800 *chi* (360 *bu* at 5 *chi* each), using the Qing standard *yingzao chi* (construction foot). At the metric equivalent of 32 centimeters for this measure, the *li* has a length of 576 meters. Kim also referred to the *Huidian*, using the term *zongshu chi* (vertical millet foot), which in the Qing official definition was equal to the *yingzao chi* (Kim, *Taedong chiji*, 28.562ba [note 114]). Kim's text erroneously specifies six *chi* per *bu* instead of five. Since he made no calculations of Chinese *li*, this does not affect the present discussion, but it is of interest as an example of the endless obstacles to conversions between the measurement standards of one East Asian country and another.

231. On modern maps using a Lambert conformal conic projection, the bearing from Seoul to the northwest border town of Ūiju is about $N36^{\circ}W$. This is coincidentally very close to the bearing that could be deduced on two Chŏng Sanggi-style maps, the *Tongyŏ ch'ongdo* and the *Haedong yŏjido* (Yi, *Han'guk ko chido*, 68 and 77 [note 4]). But two others, the *Taedong chido* and the *Chwahae yŏdo* (75 and 78), indicate bearings from Seoul of about $39\frac{1}{2}^{\circ}$ and 40° , respectively. Such a westward shift would contribute substantially to the kind of longitudinal error evident in table 10.8.

TABLE 10.8 Northern P'yŏng'an Province Geodetic Coordinates from Kim Chŏngho

| Site | Latitude | | | Longitude ^a | | | |
|----------------------|----------|---------|-------|------------------------|------------|----------|-------|
| | Reported | Modern | Error | Reported | = Adjusted | Modern | Error |
| Kanggye | 42°36'N | 40°58'N | +98' | 48'E | = 126°32'E | 126°36'E | -4' |
| Wiwŏn | 42°41'N | 40°53'N | +108' | 05'E | = 125°49'E | 126°04'E | -15' |
| Ch'osan | 42°25'N | 40°50'N | +95' | 15'W | = 125°29'E | 125°48'E | -19' |
| Pyŏktrŏng | 42°02'N | 40°37'N | +85' | 39'W | = 125°05'E | 125°26'E | -21' |
| Ch'angsŏng | 41°31'N | 40°30'N | +61' | 1°08'W | = 124°36'E | 125°03'E | -27' |
| Sakchu | 41°19'N | 40°23'N | +56' | 1°12'W | = 124°32'E | 125°03'E | -31' |
| Ŭiju | 41°04'N | 40°12'N | +52' | 1°42'W | = 124°02'E | 124°32'E | -30' |
| Hŭich'ŏn | 41°19'N | 40°10'N | +69' | 24'E | = 126°08'E | 126°17'E | -9' |
| Kusŏng | 40°57'N | 39°59'N | +58' | 48'W | = 124°56'E | 125°15'E | -19' |
| Unsan ^b | 41°01'N | 39°58'N | +63' | 06'W | = 125°38'E | 125°48'E | -10' |
| Yongch'ŏn | 40°52'N | 39°56'N | +56' | 1°29'W | = 124°15'E | 124°22'E | -7' |
| T'aech'ŏn | 40°39'N | 39°55'N | +44' | 29'W | = 125°15'E | 125°24'E | -9' |
| Yongbyŏn | 40°42'N | 39°49'N | +53' | 01'? | = 125°44'E | 125°49'E | -5' |
| Sŏnch'ŏn | 40°35'N | 39°48'N | +47' | 1°05'W | = 124°39'E | 124°55'E | -16' |
| Ch'ŏlsan | 40°45'N | 39°46'N | +59' | 1°19'W | = 124°25'E | 124°40'E | -15' |
| Pakch'ŏn | 40°39'N | 39°44'N | +55' | 17'W | = 125°27'E | 125°35'E | -8' |
| Kasan ^c | 40°33'N | 39°43'N | +50' | 24'W | = 125°20'E | 125°34'E | -14' |
| Chŏngju | 40°33'N | 39°42'N | +51' | 41'W | = 125°03'E | 125°13'E | -10' |
| Kwaksan ^d | 40°35'N | 39°41'N | +54' | 50'W | = 124°54'E | 125°05'E | -11' |
| P'yŏngyang | 39°33'N | 39°01'N | +32' | 0°00' | = 125°44'E | 125°45'E | -1' |

Source: Kim Chŏngho, *Taedong chiji* (Administrative geography of the Great East, 1864) (Seoul: Hanyang Taehakkyo Kukhak Yŏn'guwŏn, 1974), *kwŏn* 23, under respective headings. Modern coordinates, same source as in table 10.7. Error is calculated in same fashion as in table 10.7.

^aThe figures in the "reported" column represent longitudes east or west of the P'yŏngyang meridian, as given by Kim Chŏngho. The figures in the "adjusted" column are based on the Greenwich-adjusted longi-

tude of P'yŏngyang, taken from table 10.7 as 1°15' west of Seoul, itself said by Kim to be 10°30' east of Beijing (which is 116°23' east of Greenwich). This derived figure and the modern longitude of P'yŏngyang are virtually identical.

^bThe source is in error for the modern longitude; this figure is taken from a map.

^c and ^dThese are no longer district towns; coordinates are taken from a map.

The same set of coordinates throws light on another problem with the Chŏng Sanggi maps: the oversized P'yŏng'an Province and the northward exaggeration of the major bend of the Yalu River. Translating the geodetic distances, via the Korean *li* of that time, into kilometers in the same manner as was done earlier for the Seoul-Onsŏng calculation, we can determine the distance between Kim's latitudes for P'yŏngyang and Kanggye, the most northerly town, at 262.3 kilometers. On the other hand, the calculation of the same distance based on modern coordinates and the value of 111 kilometers per degree yields a figure of 217 kilometers, for an eighteenth/nineteenth-century Korean error of +21 percent, while the error in degrees is +56 percent. Thus, in this case, a considerable part of the overall error was apparently due to overlong Korean distance measurements. In using such exaggerated distance figures, Chŏng Sanggi's strict scale method resulted in a considerable distortion of the Yalu border and of the northern and northwestern parts of P'yŏng'an Province in general.

It would be wrong to conclude the discussion of the Chŏng Sanggi maps with too much emphasis on these

errors. Overall, Chŏng's application of a consistent scale produced more benefits than problems for a correct grasp of the shape of Korea. His maps were the basis for numerous copies made by both the government and the general public, and they dominated the century between the 1750s and the 1860s.

To sum up, although the potential for scientific determination of geodetic coordinates was present in Korea, such data do not appear to have been a foundation for Chŏng's scale maps. Rather, long after his death, it was his maps that were used to plot the coordinates that made their appearance in 1791 and in the work of Kim Chŏngho. Considering the method used, it is amazing that the coordinates are as good as they are. Such success as they can claim must be credited to Chŏng Sanggi.

THE MAPS OF KIM CHŒNGHO

Kim Chŏngho lived in a very different world than had Chŏng Sanggi. Whereas in the eighteenth century Korea enjoyed relative stability and remained insulated from most international pressures, beginning about 1800 it suf-

fered every imaginable affliction from both within and without. By 1860 even much of the ruling class was impoverished, the government was depleted both materially and morally, the countryside was seething and would soon rebel, and everyone, whether powerful or weak, saw the country as exposed and vulnerable before the Western powers that had humbled China and Japan. In 1864 Kojong, an eleven-year-old boy, came to the throne, and in 1866 his domineering but charismatic father, known as the Taewön'gun, launched a bloody persecution of Korea's small but fervent Catholic community, killing many thousands of believers and most of the surviving French missionaries who, replenished from time to time, had been working underground in the country for thirty years. The French punitive assault on Kanghwa Island that soon followed was only one of a number of Western-related incidents in that year. That Korea more than held its own in these encounters helped for a time to mobilize the country behind the Taewön'gun but had little long-run effect on the course of events that resulted, in 1910, in Korea's colonization by Japan.

Although we know much about Kim Chõngho as a geographer and cartographer, we are almost wholly ignorant of the details and circumstances of his personal life. We do not know when or where he was born, or to whom; nor do we have any knowledge of when, where, or how he died. Because of his posthumous fame, many legends were invented or grew around him, and some have gained official sanction through memorialization in government-compiled school textbooks. Thus millions of Koreans today picture the driven mapmaker, oblivious of home and hearth, walking the length and breadth of the land on surveying expeditions, climbing Mount Paektu several times, living in poverty outside Seoul's city walls, and enlisting his daughter's help with the woodblock carving. In the end, according to the legend, he patriotically presented his maps to the government only to be arrested for disseminating national security information. His woodblocks were confiscated and destroyed, and he was left to die miserably in jail.²³²

Like most legends, this one may have some factual core, but it has so far eluded those who have sought it out. As Yi Pyõngdo has remarked, it is not likely that the government ever took action against Kim's maps. Such an initiative would have left some trace in public and private writings, and too many copies of his maps, and even some of his woodblocks, survive (fig. 10.43, below). "He may have been arrested and jailed for a connection with Catholicism," Yi says, "but it is scarcely conceivable that such things happened because of a connection with maps."²³³ Sources on Korean Catholic history make no mention of Kim Chõngho, but in an age of anti-Western and anti-Catholic paranoia such as the

1860s, it would have been possible for someone with knowledge of things Western to be singled out by some ambitious policeman or zealot for persecution, especially since the ambiguous term *sõhak* (Western studies) applied alike to Catholicism and Western science, and Kim certainly had some acquaintance with the latter. On the other hand, it is equally possible that because of the poverty and humble status of his family, Kim Chõngho's death simply went unnoticed in what were hard times for everybody. Whatever the circumstances, he disappeared without a trace.

An important documented fact in Kim's life is that he was a woodblock publisher by trade. We do not know whether he was led to cartography in pursuit of his printing business or to a woodblock printing career in order to market his maps, but there is a clear relation between the two, and it is doubtful whether someone who was not a block carver could have developed his mature cartographic style. When Kim emerges from the mists of his unknown background in 1834, it is as a printer. In a collaboration, which I have already noted, at the request of the *sirhak* scholar Ch'oe Han'gi, he carved the blocks for a Korean edition of a hemispheric map in a Western style that had been published in China sometime after 1793.²³⁴ Although Ch'oe's map, the *Chigu chõnhudo* (Map of the front and back [hemispheres] of the globe), had some interest for its up-to-date, graticuled hemispheres and an English rather than a Sino-Jesuit background, it was basically a piece of exotica that had nothing to do with Kim's own cartography.

But in the same year 1834, he also completed a general atlas of Korea titled, to evoke one of Korea's age-old poetic sobriquets, *Ch'õnggudo* (Map of the Blue Hills [Korea]).²³⁵ In this instance Ch'oe Han'gi returned a favor and contributed a preface. In the total pattern of Kim's career the *Ch'õnggudo* can be regarded as a preparatory stage for the culminating work of the early 1860s. But it

232. Yi Pyõngdo sums up what can be known of Kim's life in "Ch'õnggudo haeje" (Biographical note to the *Ch'õnggudo*), in Kim Chõngho, *Ch'õnggudo* (Map of the Blue Hills, 1834), 2 vols., ed. Yi Pyõngdo (Seoul: Minjok Munwa Ch'ujinhoe, 1971), 1:6-9; and in "Taedong chiji haeje" (Bibliographical note to the *Taedong chiji*), in Kim, *Taedong chiji*, 641-48 (note 114). He attributes most of the details I have cited here to oral tradition. See also Pang, *Han'guk ìi chido*, 189-90 (note 5). For a typical reflection of this tradition, see *Kugõ 5-2* (Fifth-grade Korean reader) (Seoul: Ministry of Education, 1987), 76-83.

233. Yi Pyõngdo, "Ch'õnggudo haeje," 1:8 (note 232). Compare Yi, "Taedong chiji haeje," 643-44 (note 232).

234. Yi Kyugyõng, *Oju yõnmun changjõn san'go*, 38.180ab-ba (note 60). Yi, a nineteenth-century *sirhak* scholar and a contemporary, identifies Kim Chõngho as the woodblock publisher for Ch'oe's map.

235. The country of the "Blue Hills" (Chinese Qingqiu) is mentioned several times in the *Shanghai jing* in areas later identified by Korean tradition as in Korea. *Shanghai jing jiaozhu*, 1.6, 9.256, and 14.347 (note 77).

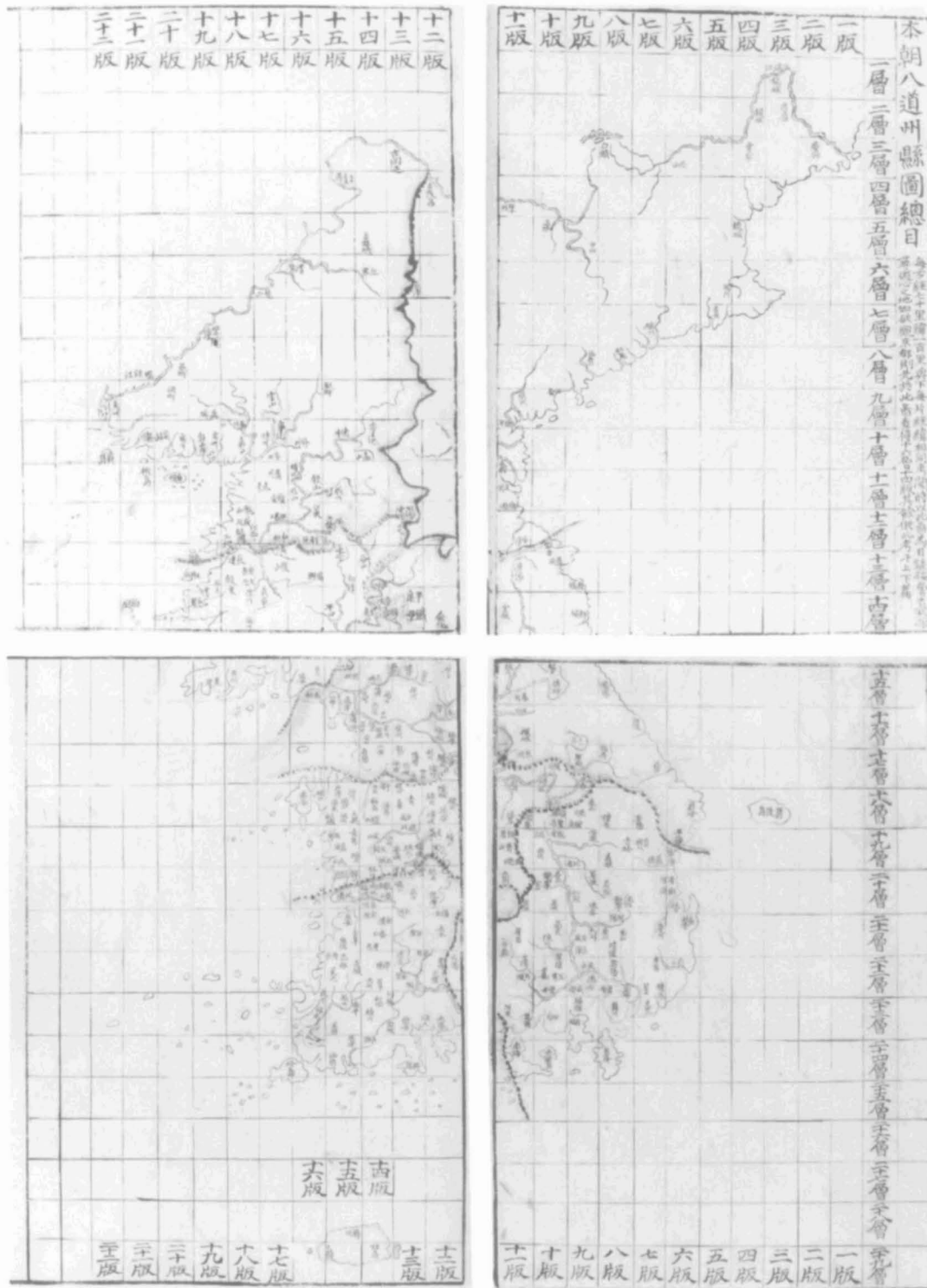
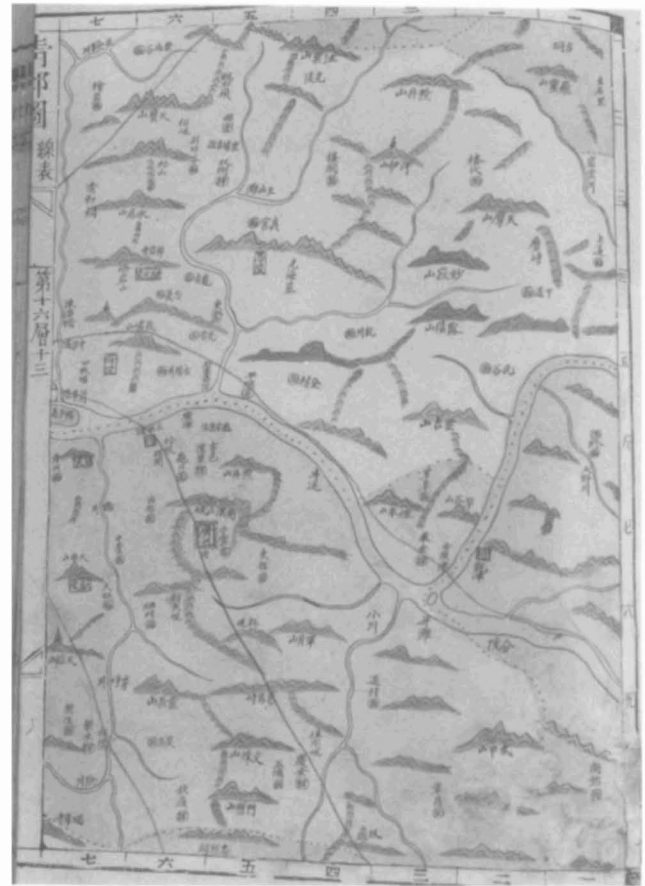


FIG. 10.33. "PONJO P'ALTO CHUHYŎNDO CH'ONG-MOK" (GENERAL INDEX TO DISTRICT MAPS IN THE EIGHT PROVINCES OF THE NATION). This is the index grid by Kim Chŏngho for the *Ch'onggudo*, 1834. The top half is in the first volume, the bottom half in the second volume, so that they can be laid out together. Along the right are indicated the twenty-nine horizontal ranks from top to bottom; at the top and bottom are indicated the twenty-two vertical files.

Even-numbered ranks are arrayed in one volume, odd-numbered ones in the other, permitting the use of both volumes together to double the contiguous area. Each rectangle of the grid represents an area 70 by 100 *li* (30 × 43 km). The note under the title includes directions for use: "Refer to the rank and seek out the file to find the place you have in mind." Size of each page: 27.5 × 20 cm. By permission of Kyujanggak Archives, Seoul National University.



FIG. 10.34. AREA OF SEOUL FROM THE CH'ŎNGGUDO. All known copies of this map by Kim Chōngho are hand drawn; this copy is of unknown date but probably from the mid-nineteenth century. It was made on a printed form ("line guide," or *sōnp'yo*) with scale units of ten *li* impressed on the margins. In the center woodblock identifying strip are the title of the map and the printed numbers of the rank and files. This section, from rank 16, files 13 and 14 (see reference grid in fig. 10.33),



shows the Seoul area. Dotted lines are district boundaries; district names are in square cartouches; names for subdistricts (*myōn*) and post stations (*yōk*) are followed by the appropriate characters in circles. Principal mountains are linked with a "saw-tooth" pattern to show, in a relatively understated manner, the shapes-and-forces dispositions (compare fig. 10.35). Size of each page: 35.2 × 23.2 cm. By permission of the National Central Library, Seoul (cat. no. Kwi 239 Ko 61-80).

may also be seen on its own terms as the successful completion of what can only have been a long and arduous labor in assembling, relating, and refining cartographic source materials of many kinds.

The *Ch'ōnggudo* covers the total territory of Korea, not in a national map or a set of provincial maps, but rather in grid rectangles, assembled in two large albums supplied with a general grid reference map that serves as an index to the pages (fig. 10.33).²³⁶ Each page contains one rectangle of the grid, covering an area seventy *li* east and west and one hundred *li* north and south. Korea is organized into twenty-nine numbered ranks (*ch'ūng*) covering the country horizontally from top to bottom, and twenty-two numbered files (*p'an*) arrayed vertically from east to west. To find a desired area—for example, Kwangju—one consults the index map and locates Kwangju in rank 22 at file 14. The most unusual feature—indeed, it

may be unique—is that the ranks are assigned to alternate albums, the odd numbers to album A, the even numbers to album B, so that it is possible to extend the eye north or south of the focal spot by opening the other album to the corresponding rank and file and placing it above or below the first album. Thus, having found Kwangju at 22-14 in album B, one may place album A above it and open to 21-14, or below it and open to 23-14, to inspect the adjacent areas to the north or south. For

236. On the *Ch'ōnggudo* in general, see Yi, *Han'guk ko chido*, 86-95 (illustrations) and 208-10 (note 4), and Pang, *Han'guk üi chido*, 167-80 (note 5). A manuscript copy of the *Ch'ōnggudo* has been photolithographically reproduced in its entirety in Kim, *Ch'ōnggudo* (note 232). The northern half of the grid map is in volume 1, 2-3 (main pagination), and the southern half in volume 2, 2-3, so that both parts may be consulted together.

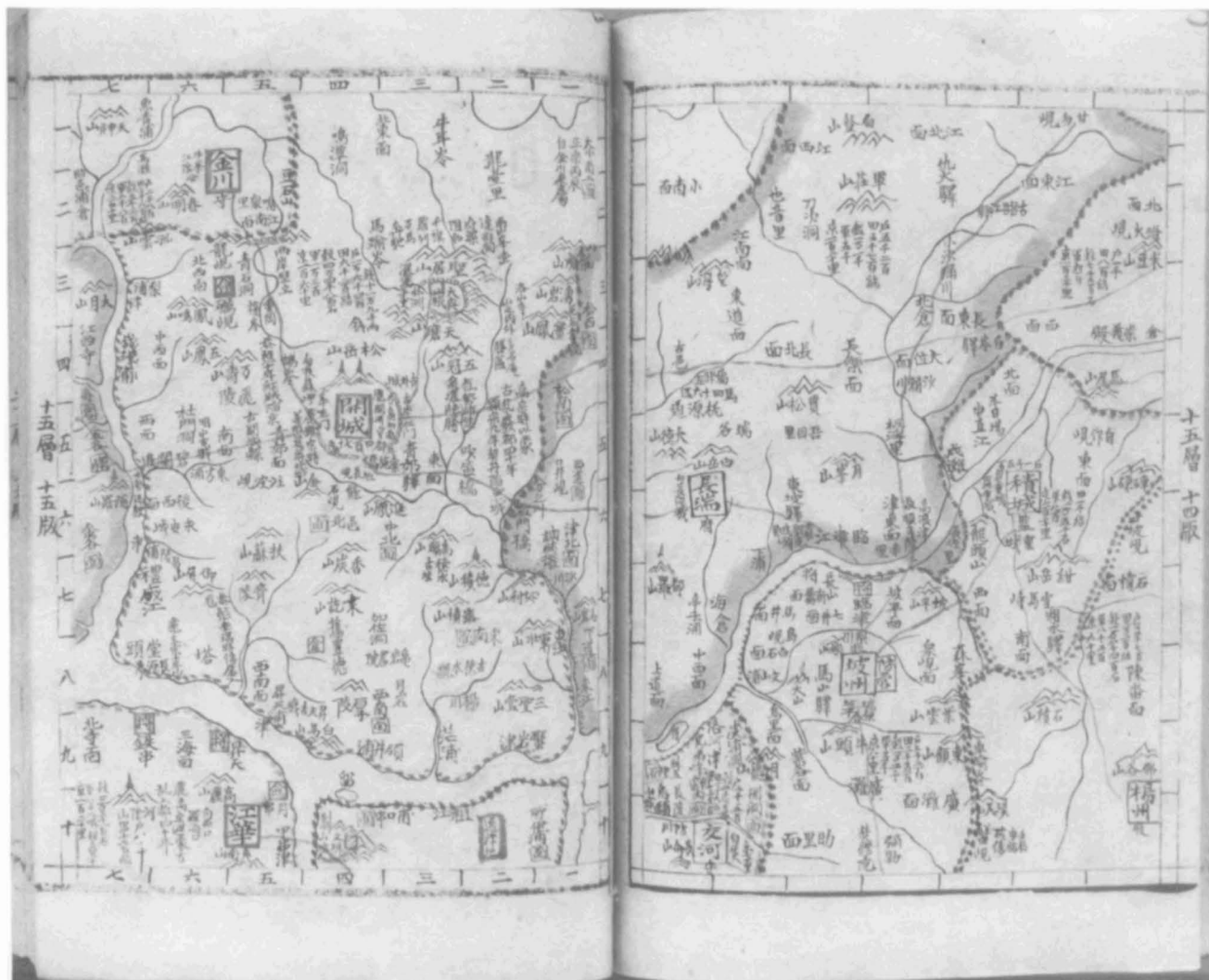


FIG. 10.35. ANOTHER VERSION OF THE *CH'ONGGUDO*, SHOWING THE AREA NORTHWEST OF SEOUL. From another hand copy of unknown date, also done on a preprinted form with margin scales. The rank and file numbers are indicated on the right and left margins. In this version, done with less care and skill than the one shown in figure 10.34 and hurt further by undue emphasis on the district borders, there is a richer presence of notes on features and places, and also demographic and economic data that are completely missing on the

other copy. Kim Ch'ongho argued strongly for such information: "Data on population, arable land, grain production, and military manpower might seem to have nothing to do with maps, but for gauging a district's relative fertility and strength nothing is better. In truth, it is the major factor in political geography." This version also differs in its treatment of mountains, showing only principal peaks and omitting ranges, avoiding the shapes-and-forces treatment in figure 10.34. Size of each page: 27.5 × 20 cm. By permission of Kyujanggak Archives, Seoul National University (cat. no. Ko 4709-21A).

eastward and westward extensions, one need only turn the pages left or right.

While the grid has a theoretical total of 638 rectangles of 7,000 square *li* each, about half correspond to open sea and are not found in the albums. A total of 313 rectangles contain at least some land, if only part of an island, and each of these has a page. Each page is bordered top and bottom with the 70-*li* scale, and at the sides with the 100-*li* scale, so that distances can be gauged quickly, with a mere glance at the edge of the page. One

does not have to make oneself little rulers. The scale has been calculated at 1:160,000.²³⁷

It goes without saying that at such a large scale many features are found on the *Ch'onggudo* that are not generally seen on earlier Korean maps. For the first time, districts are presented with their full boundaries, and *myōn* (subdistricts) make their appearance. Sites of

237. Yi, *Han'guk ko chido*, 208 (note 4). Pang, *Han'guk ūi chido*, 169 (note 5), giving dimensions different from those given by Yi Ch'an, calculates a scale of 1:133,333.

former or defunct district seats are shown, as are post-station networks with indication of the number of stations and horses. We see Buddhist temples, Confucian shrines and schools, military bases and fortifications, and granaries. There are historical notes (“In Sin U’s time [1380s] Sim Tökpu fought here with the Japanese and was defeated,” but in another place, “Sin Nak smashed the Japanese here in 1592”) and occasional comments on the weather (“extremely cold area”) or physical features (“the true source of the Han River,” “twin peaks thousands of fathoms high”). For every district, four items of econodemographic data are written in, followed by the distance from Seoul. Thus, for Changsu in Ch’olla province: “Households, 3,700; arable, 2,700 *kyōl*; grain production, 12,600 *sōk*; military reserves, 3,200; 650 *li* from Seoul.” The figures are for the year 1828, with tens and digits lopped off.

The *Ch’ōnggudo* was not printed, although the surviving manuscript versions are copied on woodblock-printed form sheets, with the 70- and 100-*li* scales impressed on the borders and the rank number indicated in the center strip (fig. 10.34). Kim—or someone else—evidently produced these printed and numbered sets of *sōnp’yo* (line guides) for sale to professional copyists or do-it-yourself enthusiasts. His introductory notes on general procedures (*pōmnye*) even include instructions on how to copy a map. With such a vast map, with so much detailed information, it is inevitable that the known copies should often be very different from each other. Some are punctiliously executed, others less carefully done (fig. 10.35).

In spite of its obvious achievement, the technical foundations of the *Ch’ōnggudo* seem not yet to have been investigated. But there is plenty of material in the introductory matter to the maps and in external cartographic evidence to provide an understanding of its background and structure.

The preface by Ch’oe Han’gi sums up the basics of longitude and latitude, recapitulating in balanced parallel clichés what by 1834 had become general knowledge among Chinese and Korean geographers. His notes make the usual statements about polar altitude, observations of eclipses, 200 *li* per degree of latitude, and so forth. He then says that in 1791 King Ch’ōngjo ordered each of his major and minor districts (then totaling 334) to make surveys with reference to a *sōnp’yo* of “154 longitudes [*kyōngdo*] and over 280 latitudes [*wisōn*].” The details of this project, apparently unknown to the official annals, are unfortunately sacrificed to Ch’oe’s greater concern for his mannered and very obscure parallel prose.

Kim Ch’ōngho, in his general procedures introduction, says that Ch’ōngjo ordered the districts to map their lands, and that “from this time, there were line guides with vertical and horizontal lines.” Kim’s wording could be

rendered as “longitude and latitude,” but in contrast to the impression left by Ch’oe, Kim is clearly referring to a grid and not to geodetic graticules. In fact, he uses the word *sōnp’yo*, “line guide,” as the name for his printed form sheets.

As we have seen, Kim covered all of Korea with twenty-nine horizontal ranks, each with a height representing 100 *li* north and south. Korea’s southernmost piece of earth, the tiny islet of Mara, about 30 *li* south of Cheju Island, falls at about the ninetieth *li* of his twenty-ninth rank. At 100 *li* per vertical rectangle, this in effect was undrawn line 289. Thus Ch’oe Han’gi’s “over 280 latitudes” neatly fits Kim Ch’ōngho’s grid.²³⁸ The “longitudes” match even more exactly: Ch’oe’s 154, divided by Kim’s 22 files, produces 7, precisely agreeing with Kim’s 70 *li* of east-west distance per horizontal rectangle. Evidently, as part of the 1791 researches I have already discussed, a basic map of Korea was prepared, overlaid with a grid of 154 vertical and 280 horizontal lines, and sent in parts to each district magistrate as *sōnp’yo* for local maps. In this way the resulting maps, all drawn locally and by many different hands, would share the same format and scale. The necessary conclusion is that the *Ch’ōnggudo*’s 70-by-100-*li* grid rectangle was designed to accommodate the data and maps from King Ch’ōngjo’s 1791 project.

Some scholars, seeing the 1791 maps in the context of the general geodetic theory outlined by Ch’oe Han’gi’s preface, have concluded that geodetic coordinates were determined by astronomical observation as a preliminary foundation for this project.²³⁹ I am unaware of any evidence or record of actual geodetic observations. The coordinates that are on record were plotted from distances on scale maps. If a set of coordinates existed for Korea’s district seats, one would expect to find them in Kim Ch’ōngho’s own geographical reference, the *Tae-dong chiji*, which in many other respects has a close relation to the *Ch’ōnggudo*. But apart from the coordinates already discussed, none are found in that work.

Several sets of district maps exist that appear to have a connection with the 1791 mapping project mentioned by both Ch’oe and Kim. They feature a standard form with numbered grid lines that fits the description of the

238. The conventions of literary parallelism discourage blatant pairings, and since in the matching word of the previous line Ch’oe had used a numeral, it would have been bad style to use one here. So instead of saying, for instance, “289,” he wrote “280-plus.”

239. Yi Pyōngdo, “*Ch’ōnggudo* haeje,” 1:9 (note 232), and Pang, *Han’guk ūi chido*, 169–72 (note 5). Pang concludes that in 1791 “we can say that features, directions, and locations could be corrected through the composition of maps according to astronomical observations.” Yi Ch’an, *Han’guk ko chido*, 209–10 (note 4), is properly cautious, simply referring to coordinates’ being measured in 1791, without saying anything about astronomical observations.

sŏnp'yo. Such district maps are found in two separate collections, but their grid systems are identical, and even the line numbers are consistent with each other. Obviously these district maps have a common source, and it can only have been the 1791 project (figs. 10.36

to 10.38).²⁴⁰ In laying the numbered coordinates found on these maps—some of which have been published by Yi Ch'an—over Kim Chŏngho's *Ch'ŏnggudo* reference map, one quickly sees that if they were proportionately extended all of Korea would have about 77 vertical lines and about 143 horizontal lines. These figures come out to exactly half of Ch'oe Han'gi's 154 longitudes and 280-plus latitudes. This, plus a check of distance relations on the maps themselves, shows that each square on this district map grid had sides of 20 *li*. If its line numbers are doubled, they will be congruent with the coordinates of the *Ch'ŏnggudo*. Evidently mapmakers and copyists



FIG. 10.36. "HAPCH'ŎN" (MAP OF HAPCH'ŎN). This map and the one in figure 10.37 are from the album *Tongguk chido* (dated by Yi Ch'an in Chŏng Sanggi's lifetime, 1678–1752, but the maps pictured here must be of the late eighteenth or early nineteenth century). These maps appear to be related to a 1791 project ordered by King Chŏngjo to map districts according to an overall national grid. Note the line numbers at right and bottom on both maps. The district seat of Hapch'ŏn is near the intersection of "East 103" and "South 35"; that of Kyŏngsan (fig. 10.37) is near "East 101" and "South 28." The grid squares have twenty-*li* sides, while the *Ch'ŏnggudo*'s margin scales have ten-*li* intervals. Using Kyŏngsan as an example, doubling its numbers produces near congruity with the *Ch'ŏnggudo* coordinates 20.2 (twenty *li* from the top of rank 21) and 56 (near left edge of file 8).

Size of the original: 53 × 35.5 cm. By permission of the National Central Library, Seoul (cat. no. Kwi 677 Sunggye ko 2702-22).

240. The albums in question are the *Tongguk chido* (Maps of the Eastern Country) and *Haedong yŏjido* (Terrestrial maps of [the country] east of the sea [Korea]), illustrated in Yi, *Han'guk ko chido*, 141 and 150–51, respectively (note 4). I find I must disagree with Yi Ch'an, and apparently with the bibliographers of the National Central Library, who regard both of these albums as autograph copies of local and provincial maps by Chŏng Sanggi. Apart from their conformity with the written references to the 1791 map project by Ch'oe Han'gi and Kim Chŏngho, and especially the relation of their line numbers to the grid of the *Ch'ŏnggudo*, there is no evidence of the Korean use of grids during Chŏng Sanggi's lifetime (1687–1752). There may be some confusion here between a bar scale, which Chŏng definitely used, and a grid. A grid implies a bar scale, but a bar scale does not necessarily imply a grid.



FIG. 10.37. "KYŌNGSAN" (MAP OF KYŌNGSAN). See figure 10.36.

Size of the original: 53 × 35.5 cm. By permission of the National Central Library, Seoul (cat. no. Kwi 677 Sunggye ko 2702-22).

found a grid of 154 by 280+ needlessly fine, to the point that it actually impeded visual comprehension of the map. In fact, Ch'oe Han'gi made exactly that complaint about the 1791 project in his preface to the *Ch'onggudo*.

In his general procedures introduction, Kim has special praise for the district maps of Ch'ong Ch'olcho, Hwang Y'op, and Yun Y'ong,²⁴¹ but he criticizes those of nameless others for imprecision and for using nonstandard grids. "Therefore," he says, "I have here used the overall national grid map [*taebok ch'ondo*] to fix [my] ranks and files, and arranged them in a booklet, so that both faults can be avoided while information from written descrip-

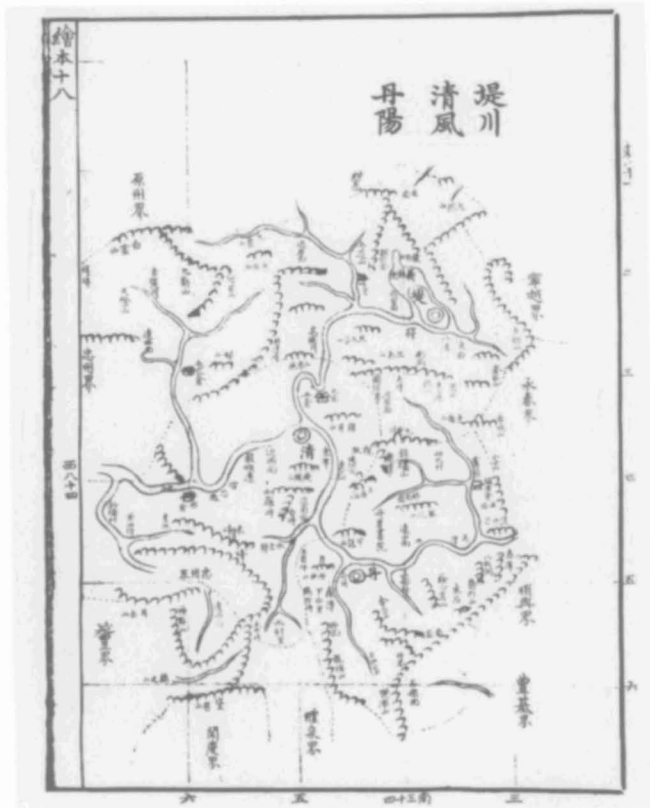


FIG. 10.38. "CHECH'ŌN, CH'ŌNGP'UNG, TANYANG" (MAP OF CHECH'ŌN, CH'ŌNGP'UNG, AND TANYANG). From the album *Haedong yōjido*, with dating and dating revision the same as for figures 10.36 and 10.37. This map, although from a different collection and copyist, reflects the same coordinate system as that of the *Tongguk chido*, illustrated in figures 10.36 and 10.37. The vertical line marked "South 35" in that illustration is the same as "South 35" in this one; transferred to the *Ch'onggudo*, this line falls near undrawn line 68 on the left side of Kim Ch'ongho's file 10. Exact congruence would have been at line 70 (2×35), but since Kim has refined the distance figures, especially in the eastern half of the country, his grid lines often differ slightly from those of the district maps. The *Haedong yōjido* has 146 maps of districts or district clusters like this one.

Size of the original: 34 × 22.3 cm. By permission of the National Central Library, Seoul (cat. no. Ko 2107-36).

241. Of these three mapmakers, I have found only Ch'ong Ch'olcho mentioned in contemporary sources. Evidently he was known for careful brushwork: in 1781, as a lower-ranking censorate official, he was asked to make a copy of the royal portrait; see *Ch'ongjo sillok*, 12.28a-b (note 17).

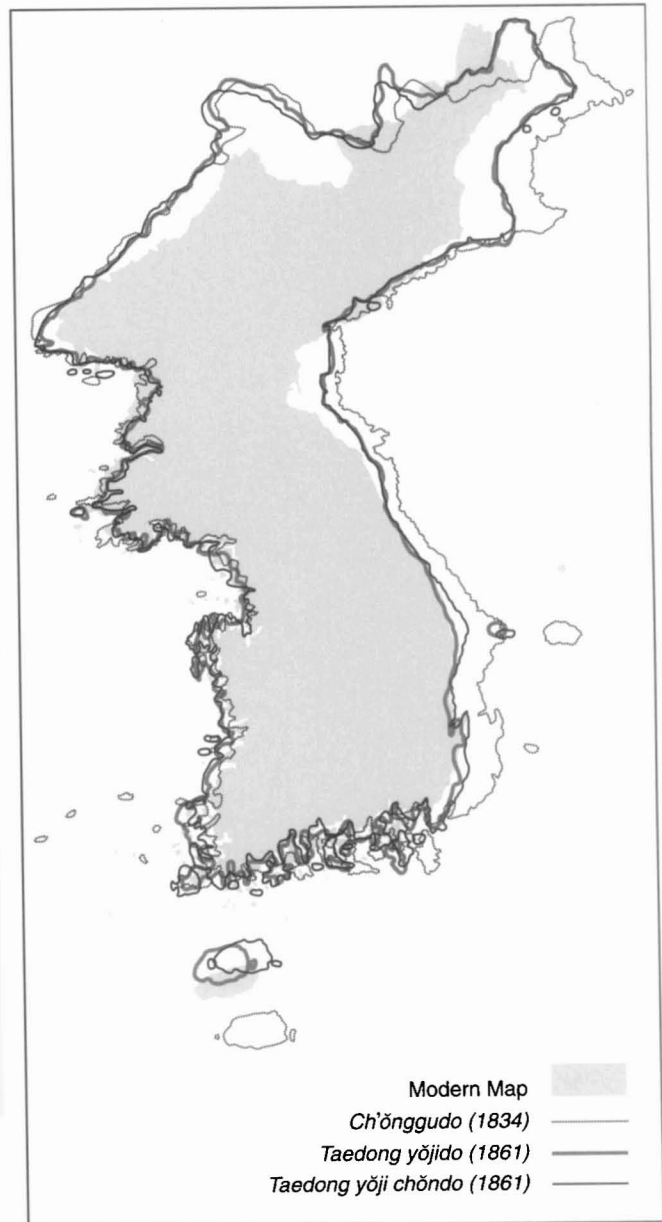


FIG. 10.39. COMPARISON OF PENINSULAR OUTLINES OF KIM CH'ONGHO'S *CH'ONGGUDO*, *TAEDONG YŌJIDO*, AND *TAEDONG YŌJI CH'ŌNDO* WITH THOSE OF A MODERN MAP. In his *Taedong yōjido* and *Taedong yōji ch'ondo*, Kim Ch'ongho considerably corrected the over-extension eastward of the east coast of the *Ch'onggudo*, but lacking accurate, astronomically derived longitude data, he was never able to achieve complete success by modern standards. Note the relative undercorrection in the north and the slight overcorrection in the south.

Based on Yi Ch'an, *Han'guk ko chido* (Seoul: Han'guk Tosŏ-gwanhak Yŏn'guhoe, 1977), 211, but recompiled with the *Taedong yōji ch'ondo* for further comparison.

TABLE 10.9 Relative Length of Korea on Maps by Chōng Sanggi and Kim Chōngho

| Latitudinal Difference | <i>Tong'yō ch'ongdo</i> | <i>Ch'ōnggudo</i> | <i>Taedong yōjido</i> | <i>Taedong yōji chōndo</i> | ONC F-9, G-10 |
|------------------------|-------------------------|-------------------|-----------------------|----------------------------|---------------|
| Onsōng–Seoul | 15.0 cm | 1,495 <i>li</i> | 1,479 <i>li</i> | 24.0 cm | 607 km |
| Seoul–Haenam | 9.5 cm | 853 <i>li</i> | 863 <i>li</i> | 14.5 cm | 363 km |
| Total units | 24.5 cm | 2,348 <i>li</i> | 2,342 <i>li</i> | 38.5 cm | 969 km |
| North–south ratio | 1.578 | 1.752 | 1.713 | 1.655 | 1.672 |

Source: My calculations. The figures show the distance between the latitude of Seoul and the extreme northern and southern latitudes (not including islands) of Onsōng and Haenam districts, respectively, and comprise the total length of the Korean mainland. The *Tong'yō ch'ongdo* (fig. 10.31) and the *Taedong yōji chōndo* (fig. 10.47) were measured from large photographs in Yi Ch'an, *Han'guk ko chido* (Old Korean maps) (Seoul: Han'guk Tosōgwanhak Yōn'guhoe, 1977). The

li figures for the *Ch'ōnggudo* and the *Taedong yōjido* were counted out using the respective grids of those maps. Modern distance figures were measured on Operational Navigational Charts sheets F-9 and G-10 (St. Louis, Mo.: Aeronautical Chart and Information Center, U.S. Air Force, 1966). The ratios show that Kim Chōngho must have constantly worked to refine his distance figures, in the end coming remarkably close to modern proportions.

tions and previously compiled maps can be researched with reference to them.”²⁴²

Thus Kim used existing maps related to the 1791 project, and probably others that he must have collected or received elsewhere in the course of his work. His “general procedures” in places reads like a list of instructions to collaborators, and perhaps in another form it filled such a role.

In determining the general shape of the peninsula, Kim started with a preexisting national grid map (*taebok chōndo*), which must have been compiled from maps of the Chōng Sanggi style as edited by the 1791 project. The relative disposition of the *Ch'ōnggudo*'s district seats is more refined and accurate than on the Chōng Sanggi maps, and the line of flow of the Yalu River is closer to the facts, giving P'yōng'an Province overall better proportions. But either Kim or the 1791 project team left the major upper bend of the Yalu too far north, and in correcting its general direction had to introduce another bend that made the original distortion even worse. And on the southern part of the east coast there is a peculiar protuberance that is not on the Chōng Sanggi maps and is hard to explain as anything other than an uncharacteristic error. Finally, as on Chōng's maps, the east coast is too far from the west coast. Although this problem was considerably rectified on the *Taedong yōjido* (Territorial map of the Great East [Korea]) in 1861, even there the coastal error in the bend of the Bay of Wōnsan persisted (fig. 10.39 and table 10.9). Apart from these problems, Kim's outline is generally more accurate than Chōng's.

Once the districts were generally positioned, the cartographic work focused on them. Kim gives a step-by-step account of how he proceeded at this level, along with a generalized *chido sik* (demonstration map) of an average district with its various typical features by way of illustration (fig. 10.40). For each district he would sketch out a draft map on a separate sheet, first placing the seat with respect to the four margins and laying out the mountains and rivers in general. Then, with the district seat as center

point, he would mark twelve directional positions on the margins for reference, using the same characters used to name the hours of the day. Next he would draw concentric circles at ten-*li* intervals, radiating from the seat. Following his tables of distance figures from the seat to the borders, he would draw in the district boundaries with reference to the concentric circles. The next step was to refine the relationship of the rivers and mountains. With data on river length from point to point—say from source to confluence with another river—he would use the concentric circles to fix its course. When the rivers and streams were in, and the general watershed areas therefore known, he would sketch in the principal mountains of the shapes-and-forces network, connecting them with a sawtooth pattern, leaving wide spaces for the plains and open areas. Although he does not mention roads in this section, it was probably at this point that they were drawn in. (In published illustrations of the *Ch'ōnggudo*, they often show poorly because of color problems.) Finally he would fill in the names of the sub-districts, post stations, garrisons, granaries, reservoirs, shrines, schools, and such, and enter outside the district boundaries the names of the various neighboring districts. In the next stage of the work, when the district maps were all drafted, he would reconcile them with each other and enter them on the general map, removing all the concentric circles and reference directions.

The basic data base for this work was eventually included in Kim's *Taedong chiji* (1864), which had extensive tables of distance figures and demographic data (fig. 10.41) for each district and long lists of administrative, military, and cultural buildings or sites, with distances from the district seat. Kim mined the obvious sources, such as the *Sūngnam* and the *Munhōn pigo*, but he also used more up-to-date government data, for instance, the statistics of the state defense council for 1828. He prob-

242. Kim, *Ch'ōnggudo*, 1:3–4 (second introductory pagination) (note 232).

map, writing: “It is not necessary to connect the peaks and join the ridges; it makes a mess of the sheet and can cause errors. Where there is a famous mountain, just draw three or four peaks.”²⁴³ This suggests the treatment seen in figure 10.35, where individual mountains appear more or less in the *Sūngnam* style. However, we have also seen him counseling the connection of the major mountains with a sawtooth pattern, which seems to have been the advice followed by the copyist in figure 10.34. It is possible that this second approach—that is, the classical shapes-and-forces emphasis—was more popular with map buyers, because in the end Kim went in this direction, producing in his 1861 map the grand culmination of shapes-and-forces cartography.

If the period before 1834 is a blank concerning our knowledge of Kim Chōngho, so are the twenty-seven years after 1834. The diligent research of scholars has not uncovered a single syllable by him or about him from that time until 1861, when the first edition of his *Taedong yōjido* appeared under his own imprint (figs. 10.43 to 10.46). Since we resume our scrutiny of his career with a printed map of the same general type as the *Ch’ōnggudo*, we might approach this twenty-seven-year gap by asking why Kim Chōngho, a printer, apparently never printed his 1834 opus.

Woodblock printing, like any other product, responds to market conditions, and the strongest factor in Kim’s not printing his *Ch’ōnggudo* was likely the economic one. Not all woods are ideal for block carving; the wood must be hard enough to provide a durable, even surface through repeated inkings, yet soft enough for reasonably efficient carving. Nor are acceptable woods always available in sizes sufficient to accommodate an average double page. The block-printed form used to copy the two hand-produced *Ch’ōnggudo* rectangles illustrated in figure 10.34 measured a bit over thirty-five by twenty-three centimeters; the actual block, including edges and margins, would have been larger, requiring a board no less than twenty-five or twenty-six centimeters wide. Extra cutting, transport, and finishing costs would have added to an already high price for the wood itself. Next came the cost of carving, an uncommon skill requiring special training and long experience. All together, in the case of the *Ch’ōnggudo*, one would have to calculate materials, tools, labor, damage and wastage, and overhead and storage costs for 162 blocks, the number necessary to provide for the *Ch’ōnggudo*’s 324 grid rectangles (because some ranks have an odd number of files, eleven of the blocks were only half used, for a total of 313 rectangles). When it was all done, such a printing operation had two strong advantages: with adequate storage and reasonable maintenance, the blocks would have a relatively long income-generating life, and once a correct text or image was achieved, error was permanently eliminated. The disad-

vantages were high production costs and long-term storage and maintenance costs.

For such an investment to make sense, there would have had to be a heavy initial demand and a steady market for the middle and long term. But Kim’s map was very large and specialized and would have been very expensive. Add to that the bad economy and hard times in his day, and it is not likely that buyers were lined up outside his door. Even in relatively prosperous times, printed editions of books were expensive enough in Korea to justify hand copying by individual readers or suppliers. The number of such manuscript copies surviving today is very large relative to printed copies. Many books of great merit were never printed; very few of the classics of the *sihak* school of scholarship, for example, were printed, and even today some major works are available only in photolithographic reprints of an original manuscript or hand copy. Even if Kim Chōngho had seen a heavy demand, he would have realized that a printed edition could only end up as the source of an even greater number of hand copies, on which he would realize no profit at all.

One might also ask if Kim was satisfied with the map he had produced. We have already detected in him some ambivalence over whether to add a shapes-and-forces emphasis to the *Ch’ōnggudo*. Other differences from one copy to another show a variety of tastes in style and coverage among users or copyists (whether to include demographic data, for instance), and some of this hesitation may have been original with Kim himself. Inevitably there were errors, and it would have been expected that Kim would discover them himself or have them pointed out to him. Finally, a cartographer of Kim Chōngho’s intelligence and imagination could hardly go twenty-seven years without having some new ideas about maps. Whatever the factors that led to his decision, the *Ch’ōnggudo* was never printed, and in 1861 he put out an entirely new map.

In 1861, times were very different than in 1834. As of 1834, no Westerners had penetrated Korea, and the Catholics seemed under control. But by 1861 Korea was in a state of alarm over the West. The previous year, British and French troops had occupied Beijing, burned down the imperial summer palace, and compelled the Chinese to accede to Western demands on trade and diplomatic practice as well as to accept open missionary activity. Many Koreans thought Korea was next, and they considered the French missionaries operating underground in Korea since 1836 a fifth column. Amid their alarm and uncertainties, they began to urgently address military and defense concerns.

Kim Chōngho’s preface to the *Taedong yōjido* reflects

243. Kim, *Ch’ōnggudo*, 1:7 (second introductory pagination) (note 232).



FIG. 10.42. INCH'ŌN AND SOUTHERN KANGHWA ISLAND FROM THE *CH'ŌNGGUDO*, BY KIM CH'ONGHO, 1834. This is rectangle 16–15. Compare the *Taedong yōjido* treatment of the same area in figure 10.43. At lower right is the district seat of Inch'ōn (name in rectangle); the modern city centers on “Old Chemul Crossing” (commonly Chemulp'o) on the coast about twenty *li* to the west (each numbered unit on the borders equals ten *li*). The southern part of Kanghwa Island is at upper left; it was the site of several fortified royal refuges for times of emergency: note the fortifications along the channel, designed to protect the island from forces on the mainland. Squares indicate military bases; the enclosed character shows the rank of the commander. Flame-shaped black triangles mark signal stations. The district at the far upper right is Kimp'o, site of the modern international airport. Size of the original: 27.5 × 20 cm. By permission of Kyujanggak Archives, Seoul National University.

this concern. About a third of it is devoted to a long quotation from the classical Chinese military strategist Sunzi emphasizing deep familiarity with the terrain before the battle takes place. In times of crisis, such preparation

is necessary to deal with violent events; in times of peace, the same knowledge is applied in the administration of the state and the people. During the eighteenth and nineteenth centuries, many *sirhak* scholars—Ch'ong Sanggi among them—had specialized in military and defense studies, but with no sense of urgency. Between the lines of Kim's preface, one senses that in 1861 the time for study was over and the moment for actual preparation was at hand. Whether such an atmosphere also created a demand for a map like Kim's, we can only speculate. But beyond economic factors, one should not discount patriotism or national need, and perhaps even special financial help from men of means who might have wanted the map published. If there is anything to the legend that Kim was thrown in jail for compromising national security, at least he himself had suggested his own concern with that issue in putting his map before the public.

The *Taedong yōjido* was not just a corrected and improved edition of the *Ch'ōnggudo* but a new map.²⁴⁴ Evidently Kim had continued his research and travels, refined his distance measurements, and redrawn the entire country both generally and in detail. He devised a new method for indicating scale and introduced a new system of symbols. He drastically changed his drafting style and his treatment of mountains and of islands. He abandoned textual notes and econodemographic data, eliminated subdistricts, and considerably developed his coverage of roads. Finally, he completely redesigned his format, abandoning the alternating albums in favor of long folded strips that were more compact and permitted even greater flexibility of display. Let us examine some of these changes.

The shape of the country was improved, through a substantial realignment of the east coast. For us it is easy to recognize this, simply by comparing the new east coast with that on a modern map (fig. 10.39). But there were no modern maps for him to see. He must have achieved this by a general refinement and shortening of east-west measurements across the mountainous eastern spine of the country. Failing that, the only thing that could explain his more accurate placement of the coastline would be an astronomically based set of longitude data. Although such progress may have occurred and is not to be ruled out, the fact is that we have no concrete knowledge of such observations or measurements, either by Kim or by others in Korea. Kim's new alignment of the coast fell short of what was needed, especially in the north, but it was a decided improvement over that of the *Ch'ōnggudo* and was the most accurate ever determined before modern times.

244. See general treatments of the *Taedong yōjido* in Yi, *Han'guk ko chido*, 210–11 (note 4), and Pang, *Han'guk ūi chido*, 180–89 (note 5).

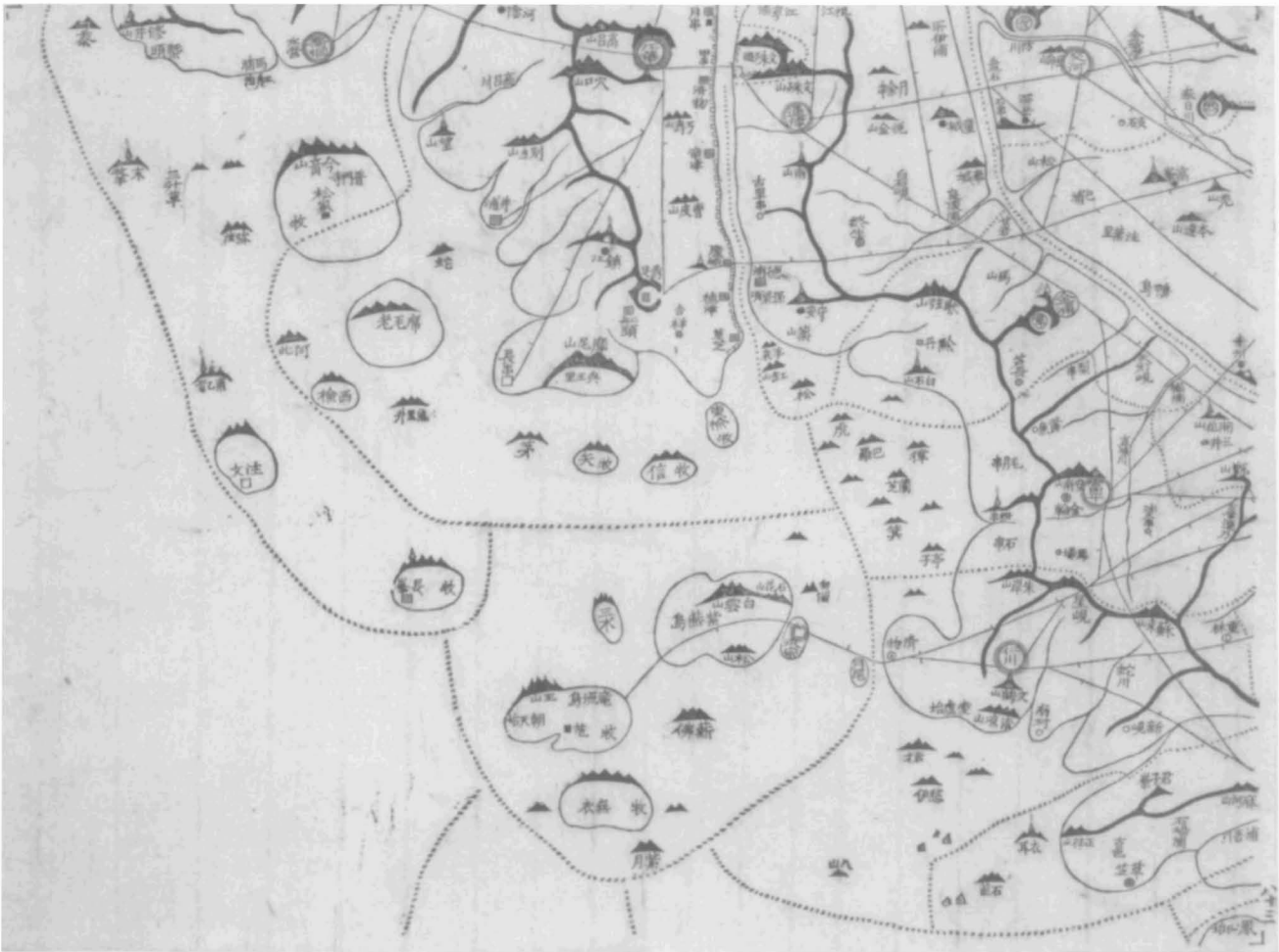


FIG. 10.43. INCH'ÖN AND SOUTHERN KANGHWA ISLAND FROM THE *TAEDONG YÖJIDO*, BY KIM CHÖNGHO, 1861. This section shows the eastern coastal section of rank 13. Compare the *Ch'önggudo's* coverage of the same area, figure 10.42. Kim has made topographical corrections on the western and southern shores of Kanghwa and in the area northwest of Inch'ön (circled district, lower right). Note the more abstract treatment of islands over the earlier map and the more extensive road network, extended as ferry routes to important offshore islands. Administrative jurisdiction of islands is indicated by inclusion within a district's dotted border lines

As for scale, some might think that the *Taedong yōjido* represents a regression from the *Ch'önggudo*, since the latter's margin scales on every page are abandoned. But actually the clever Kim had found a way to improve things. First he laid out a sample rectangle in his new grid, which was expanded in the new map to 80 by 120 *li*. The map itself does not show any grid lines, but this grid page could be cut out and used as a scale. But Kim's second idea probably obviated that course for most users. In his new scheme, every road became a scale bar, since every road on the map is provided with 10-*li* ticks from its beginning to its end. Road distances are in effect automatically indicated simply by counting ticks. If the user

(the line separating Inch'ön from twelve of its islands including Chayön and Yongnyu is, however, an error by Kim). Circled names are district seats; double circles indicate walled towns. Squares indicate military bases, flame-shaped triangles are fire signals. In this map Kim eliminated textual notes and reduced the number of place-names but achieved much greater clarity, resulting in a net increase of information.

Size of the original: 21.5 × 28 cm. From a 1936 reprint of the *Taedong yōjido*. Courtesy, the East Asian Library, University of California at Berkeley (Asami Library, cat. no. 20.43).

wants to gauge distances in roadless areas, he can visually borrow the closest road as a scale. In very mountainous areas the ticks are closer together, although still representing 10 *li* on the road. Thus the traveler was warned that though the road looked short, the way was circuitous and hilly.

The topographic and toponymic content of the *Ch'önggudo* seems to have been completely reviewed for the *Taedong yōjido*, which shows revisions of place-names, addition or deletion of cultural features, refinements of the coastline, and many other changes (compare figs. 10.42 and 10.43). Military sites were the object of the cartographer's special concern: close scrutiny of cor-

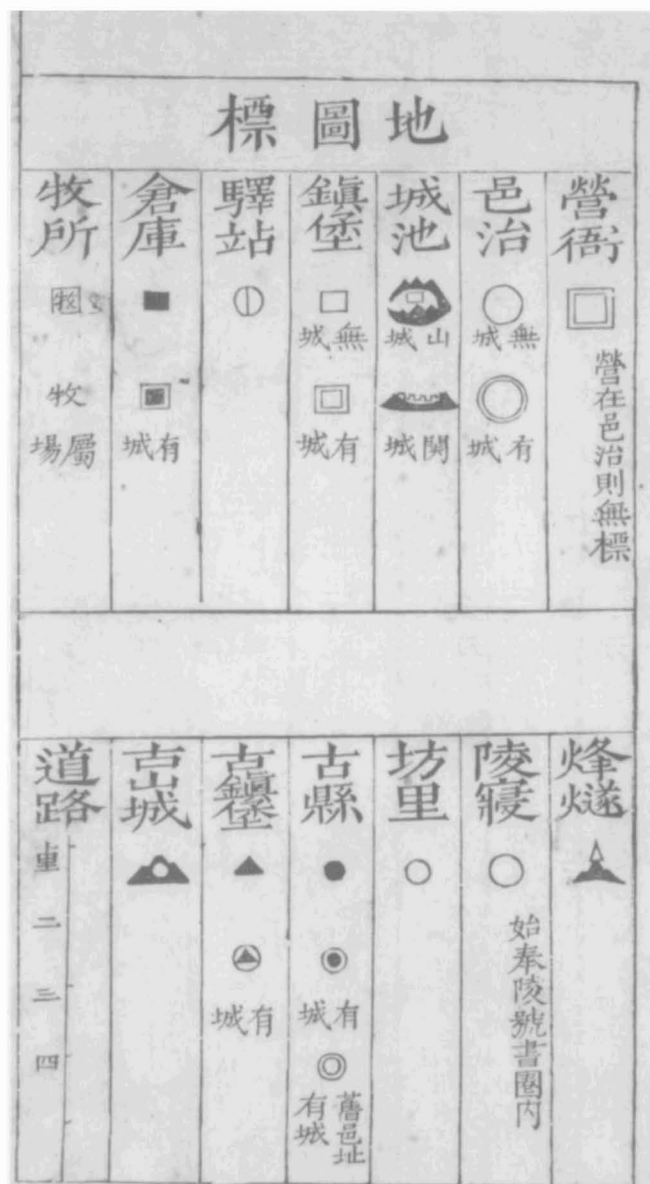


FIG. 10.44. CHIDO P'YO (MAP SYMBOLS). From the *Taedong yōjido*, by Kim Chōngho. From right to left, top: military command, district seat (name in circle), wall/moat, military station, post station, granary, pasturage. Single enclosures mark unwalled sites, double ones walled sites. Bottom: fire signal, royal tomb, small settlement, former district seat, former military station, former mountain fortress, roads (with ticks to indicate ten-*li* intervals).

Size of the original: unknown. From a 1936 reprint of the *Taedong yōjido*. Courtesy, the East Asian Library, University of California at Berkeley (Asami Library, cat. no. 20.43).

responding areas on both maps often shows changes or additions in installations, fire signals, and so forth.

Islands are given a more abstract treatment. The basic symbol for a small island is a short line of mountain peaks, often rounded like a tiara. In the case of larger islands, this basic symbol is extended into a fine-lined

circle, varying in size according to the size of the island. In general there is no effort to show the precise contours of islands, except for very large ones like Kanghwa and Cheju. Since such information was in fact not usually available, this treatment avoided implying more information than Kim actually had.

The most radical departure from the *Ch'ōnggudo* was in the matter of mountains. With the *Taedong yōjido*, the Korean shapes-and-forces style of depicting mountain ranges achieved its most pronounced and most complete realization. On the one hand, Kim's treatment was quite abstract: the montane arteries became solid black lines; the gentler the mountains the thinner the line, the higher the thicker, with ruggedness registered with angular teeth on one side of the line. Particularly grand heights loomed upward from the line as snowcapped peaks. On the other hand, this style well represented shapes-and-forces theory. If there is water, there must be a watershed; as stand the shapes, so move the forces. On the *Taedong yōjido*, it is possible to start anywhere in Korea and find the single line of mountain spine, the single artery (*maek*) that will take you from your district directly to Paektusan without, in theory at least, ever crossing a stream or stepping in a puddle. In traditional times, whether or not Paektusan was within the administrative purview of the Korean court—and before 1712 it mostly was not—it was generally believed to be the source of vitality in the Korean land, and therefore the most distinctively Korean natural feature there was. On the *Taedong yōjido*, Kim Chōngho elaborated it with such flourish that he seriously distorted the northeastern frontier. This decorative flourish is also evident on his single-sheet version, figure 10.47 below. Today the maps have changed, but the feeling is still strong. In the Democratic People's Republic of Korea in the north, national revolutionary ideology focuses on the mountain, and pictures of it are everywhere. In the Republic of Korea in the south, Paektusan appears in the first line of the national anthem that also lauds "three thousand *li* of mountains and rivers fair." If there is a single symbol of national unity to which all Koreans respond, it is Mount Paektu. Looking at the *Taedong yōjido*, one can see exactly where and how one stands in relation to it.

A more visible and perhaps more significant change than even the mountains in Kim's 1861 map is the general enhancement of cartographic clarity. No grid lines, horizontal or vertical, are shown. Textual indications and notes have been completely removed, banished to the realm of descriptive geography. Much more information is communicated by symbols (fig. 10.44). Subdistricts (*myōn*) are eliminated as a category. Although some may reappear on the *Taedong yōjido* marked with the symbol for a smaller settlement, they were very selectively chosen. The visual impact of this change can be appreciated

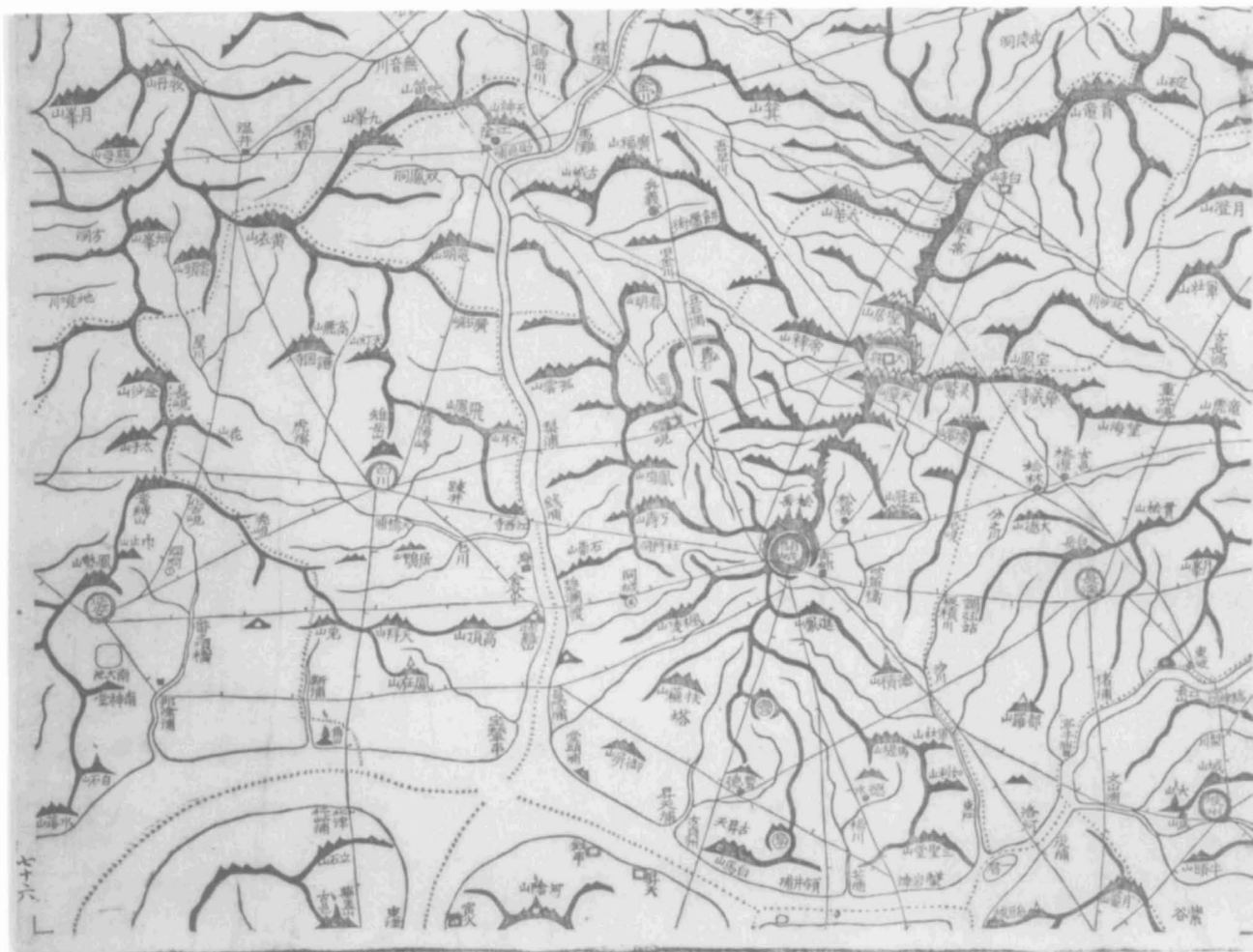


FIG. 10.45. AREA OF KAESŎNG FROM THE TAEDONG YŎJIDO, BY KIM CHŎNGHO. Shown is a section from rank 12. Files 13 and 14 adjoin the same files on rank 13, shown in figure 10.43. Dominant in the center is the famous chain of mountains leading to Kaesŏng, site of the Koryŏ capital (northwest of Seoul), providing its potent "artery" to Mount Paektu. Note how Kim enhances its importance with extra thickness of line and dramatic, snowy peaks. Compare the very different

treatment of the same area from the *Ch'ŏnggudo* (fig. 10.35). The greater attention to mountain and road patterns, and the sacrifice of textual notes and many minor place-names, cartographically ties the region together much more clearly. Size of the original: 21.5 × 28 cm. From a 1936 reprint of the *Taedong yŏjido*. Courtesy, the East Asian Library, University of California at Berkeley (Asami Library, cat. no. 20.43).

by comparing figures 10.35 and 10.45 or 10.42 and 10.43, which cover the same areas. Such a development constituted a radical break with tradition. While it is true that, apart from a few mapmakers like Kim Suhong (fig. 10.14) and Kim Chŏngho himself on the *Ch'ŏnggudo*, textual notes are generally not overdone on Korean maps, Kim's new treatment seems to renounce textual material in principle. Probably some users accustomed to the traditional approach missed such notes, but there is no question that their absence brings a significant new leanness and clarity to the map. "Less is more" can apply as fruitfully to cartography as to Ludwig Mies van der Rohe's architecture.

Kim Chŏngho's new format for presenting his grid sec-

tions was another radical break with the *Ch'ŏnggudo* and with the album tradition in general. As innovative and flexible as his album system had been, Kim apparently sought even more freedom of display, and with the *Taedong yŏjido* he achieved it. In the earlier arrangement it was possible to juxtapose four contiguous rectangles, or 28,000 square *li*. In the new format one could focus on as small or as large a unit as one wished, up to the entire map, which when all spread out is about seven meters high and three meters wide. The scale has been calculated at 1:160,000.²⁴⁵ Because of the larger grid of 80 by 120

245. Pang, *Han'guk ūi chido*, 181 (note 5). This is the scale accepted in Korea, where scholars make the *li* equal to 0.4 kilometer. At 0.43

li, Kim was able to achieve total coverage in twenty-two instead of twenty-nine ranks, and in nineteen rather than twenty-two files. And rather than present them on pages of an album, he sold packets of twenty-two strips folded accordion style.

The grid system is completely hidden: there are no grid lines anywhere on the map. In the ranks they are implicit, since each of the twenty-two ranks constitutes a horizontal strip of paper. But neither line nor sign nor number marks the files. The map reader must use some prominent feature, such as the coast at either end, or a major river or mountain range, to line up one rank with another. Worse, Kim provides no reference map with the ranks overlaid to help users find their place. Given his own remarks on the convenience of his grid and reference map for the *Ch'onggudo* (fig. 10.33), this radical reversal on the *Taedong yōjido* must have been purposely and carefully considered. In light of the tendency of Kim's other revisions and changes, this must have arisen from a desire to keep the map clean and clear, with nothing on it but the actual geographical and cultural features of the land, either named or symbolized. Travelers would not encounter any grid lines as they made their way on the road, nor would they find any on the map. But on such a large map, in twenty-two separate strips, users surely needed some guidance and reference. This need was admirably filled by the Japanese reprint of 1936, which numbered the files on each rank strip and appended an abbreviated but adequate reference grid map.²⁴⁶

If Kim wanted no lines, it is no surprise that he also did away with the traditional woodblock identification line that cut the page in two with the *p'ansim* (block heart), as it was called, to provide the title of the work, the chapter, and the page number. Book readers were not unduly bothered by the *p'ansim*, because it did not impede the vertical lines of text. The sheet was folded at that point into recto and verso page surfaces, and the accumulated double pages were sewn together at the matching sides to make a booklet. But in the case of maps or illustrations, this practice cut the map or picture in half and made it impossible to look at both halves together. Resourceful publishers often compensated by carving the right half of the map on the verso side of the first block, and the left half on the recto side of the second, so that the whole map could be viewed at once. This is the usual practice in the *ch'ōnhado* albums. But that was of no help for a grid map, with its relatively long strips. The plain fact was that the *p'ansim* never did make sense in map publishing, and Kim's eliminating it was a service to cartography. His average block accommodated a carved surface of about 30 by 40 centimeters, which comprised two grid rectangles (fig. 10.46). The printed sheets were then pasted into strips for unimpeded

horizontal scanning. Each strip was folded accordion style for ease of reference and portability.

After the 1861 edition, there was another in 1864. Whether this was simply a new printing or involved some revisions to the blocks themselves is unclear. Among the surviving copies of the *Taedong yōjido* are many made by hand. Even the printed copies are often individually colored, so that there is considerable variation from copy to copy.²⁴⁷

It remains only to mention the condensed edition of the *Taedong yōjido*, called the *Taedong yōji chōndo* (Complete territorial map of the Great East). This is a single-sheet version that was also published by woodblock, a distillation of the complete map set onto a single sheet of about 77 by 115 centimeters. Copies are frequently seen and were evidently popular from the moment they appeared. A short introduction printed at the side discusses the salient features of Korea's shapes-and-forces structure, gives the dimensions of the nation on all sides and as a total (10,920 *li*), and concludes with a ringing patriotic wish for the longevity of Korea (fig. 10.47).

The *Taedong yōji chōndo* represents the final shape of Korea according to traditional Korean cartography. In spite of its obvious filial link to the *Taedong yōjido*, it is slightly different from the latter in its overall proportions. Table 10.9 shows the relative latitudinal distance between Seoul and the northern and southern limits of the Korean mainland on Kim Chōngho's three major

kilometer, the value used throughout this chapter, it would be 1:172,000. An impressive permanent exhibit of the completely assembled *Taedong yōjido* is displayed on the wall of a spacious escalator way in the Consolidated Government Office Building (Chonghap Ch'ōngsa) in Seoul.

246. *Daitō yochizu* (*Taedong yōjido*), together with Suematsu Yasukazu, ed., *Daitō yochizu sakuin* (Index to the *Taedong yōjido*) (Seoul: Keijō Imperial University, College of Law, 1936). This edition is a photolithographic reprint of an 1861 printed set held by the History Compilation Society of the Japanese Government-General of Chōsen, which was reorganized as the National History Compilation Committee under the Republic of Korea. The invaluable index lists over 11,600 place-names on the map. There is a Korean reprint of the Japanese reprint: Kim Chōngho, *Taedong yōjido* (Seoul: Han'guk Sahakhoe, 1965), without the index. A Korean index was published separately: Pak Sōngbong, Pang Tong'in, and Chōng Wōn'ok, comps., *Taedong yōjido saegin* (Index to the *Taedong yōjido*) (Seoul: Kyōnghūi University, Han'guk Chōnt'ong Munhwa Yōn'guso, 1976).

247. In Yi Ch'an's lists of the map holdings of nine important libraries and museums in Korea (*Han'guk ko chido*, 231–49 [note 4]), I counted eight complete and two incomplete sets of the *Taedong yōjido*. Of the ten, five were the 1861 edition—three printed copies and two hand copies. There was only one printed copy of the 1864 edition (in Seoul National University Library). Of the remaining four undated sets (including the two incomplete ones) one was printed and three were hand copied. An undetermined number of other copies are distributed among smaller institutional collections or individual collectors in Korea and Japan.

maps, with a Chŏng Sanggi map and a modern map included for comparison. Kim's large grid maps show a slight exaggeration of the north with respect to the south, probably owing to exaggerated distance figures in the north. But the ratios show that the single-sheet *Taedong yŏji chŏndo* was no mere proportional reduction of the larger map, as has been thought. Since the ratios show constant improvement (by the standard of modern maps), they seem to demonstrate a continuing effort by Kim Chŏngho to improve his distance data. Although such north-south ratios are not uniform throughout the map because of variances in relative position between any given pair of towns in the north and the south, they are consistent in showing improvement from one map to another. In the end, although Kim had many problems still to solve—indeed to discover—with respect to east-west relationships, he came close to the north-south proportions of a very precise modern map.

LOCAL, REGIONAL, AND DEFENSE MAPS

DISTRICT MAPS

Compared with the scholarly interest in world, East Asian, and national maps, relatively little attention has been paid to Korean cartographic works of smaller scope. Even provincial maps have been slighted by researchers, in spite of their prominence in *ch'ŏnhado* albums and their important structural connection with national maps in the Chŏng Sanggi style. Judging from the lists of maps at the end of Yi Ch'an's *Han'guk ko chido*, a fair number of *ŭpto* (district maps) are scattered throughout the major collections, and many fascinating examples are illustrated in the main body of his great album. Yet one cannot find in the same writer's bibliography a single monographic study of local or district maps as a general class.

At least as early as Yang Sŏngji's time, systematic attention was given to the compilation of district maps. His 1482 list (appendix 10.1) names several, in addition to the general collection implied by the title *Chiri chi nae p'alto chugundo* (Maps of the districts of the Eight Provinces from [his comprehensive geographical monograph] *Chiri chi*). The wording is ambiguous, and we cannot know whether this collection was complete, but at least we know that King Sejo's original order asked that all districts be mapped. However, neither maps nor texts from this project now exist. King Yŏngjo apparently launched a similar project in 1757; in this case many of the materials have survived but are as yet unpublished. Pang Tong'in reports that this collection of maps and written descriptions of 295 districts (out of about 335 at that time), titled *Yŏji tosŏ* (Geographical maps and texts), by Sŏ Myŏng'ŭng (d. 1787), contains district maps and maps of such installations as *kam'yŏng* (governors' com-

pounds), military garrisons, and coastal bases. Pang includes four illustrations from this collection, but they are too tiny for study.²⁴⁸ I have already discussed references to King Chŏngjo's district mapping project of 1791, in connection with which several excellent collections of maps exist. Many local maps from the royal collection (Kyujanggak) are included in Yi Ch'an's lists, but they are very late, mostly from the 1890s or 1900s, and do not seem to have yet been the object of a special study.

Judging from available illustrations, there seem to be three general types of district map. The first is what might best be called the "map-painting"; the second is a shapes-and-forces map with the district or group of districts as the unit; and the third is the grid map. I have already given illustrations of local shapes-and-forces maps (figs. 10.21 and 10.22) and grid maps of districts (figs. 10.36 to 10.38), and I now introduce some specimens of map-paintings.

As the term implies, a map-painting is not always easy to classify. But given the very broad definition of map that is operative in these volumes, there can be no hesitation in calling the *Tongnae Pusan ko chido* (Old map of Tongnae and Pusan) a map, even if it is also indubitably a painting (plate 19). As a map it contains a wide variety of cartographic information: places are indicated and named; roads and routes on land and sea are marked, with distances between various points written in; and mountains and rivers are represented with due attention to their position, orientation, and interrelationships. A person who consulted this map carefully and took notice of the surroundings could use it as a local travel guide. But the features are also painted, from a bird's-eye perspective, as a landscape: trees here and there on the mountains, a boat moving into the harbor; the walls and buildings of the district seat of Tongnae; and Pusan Harbor and the Japanese trading compound as the focal area. Faced with a choice of being a cartographer or a painter, the creator of this work chose painting: a peninsula that in fact bent away from the center was made to bend toward it, distorting the map but giving the painting cohesion and focus.

Unlike the Tongnae map-painting, which covers the entire territory of the district, the *Sin'an chido* (Map of Sin'an, or Chŏngju) focuses on the *ŭp*, or district seat, and leaves much of its other territory out of the picture (fig. 10.48).²⁴⁹ Although various cartographic features are

248. Pang, *Han'guk ūi chido*, 125–26 and pls. 5–6, 8–9 (note 5).

249. Sin'an is an alternative name for Chŏngju; it was originally the name of a post station that occupied the site before the district seat for Chŏngju was moved there. In 1812 Chŏngju was downgraded for what the national government saw as its complicity in the Hong Kyŏng-nae rebellion, which was quelled in that year. The use of the name Sin'an, as well as the avoidance of the official new name (Chŏngwŏn),



FIG. 10.46. WOODBLOCK FOR A SECTION OF THE TAE-DONG YŌJIDO, WITH CORRESPONDING PRINTED SHEET. The block shows a section near the end of rank 6.

The district seat of Pyŏktong and a bit of the Yalu River are in the upper right corner of the block (upper left on the print).

present, this work might seem to many to be more a painting than a map. The *Andong ūpto* (Map of the district seat of Andong) is in the same tradition (fig. 10.49). Both of these map-paintings are intended to display the order and community of the district, as represented by the tight clusters of grass-roofed houses, official buildings, schools, and memorials to filial sons and faithful wives. Another feature, shared with most such works, is the prominence given to the protecting mountains and distant ranges, as if to show the district's nodal connections with the national shapes-and-forces arterial system. These evocative elements send messages that say "this is what this district is all about" in a way that a conventional map cannot. Given this purpose, basic cartographic concerns such as scale and orientation are of relatively less importance. The position and size of various features are more indicative of their psychic importance to the community than of mere spatial relationships. Although north is at the top of the picture in the three examples illus-

trated, orientation is quite variable and often utilizes the inside-out perspective, in which features are painted and labeled as if they were to be seen and read from inside the picture (for example, plate 21). In such cases one must sometimes guess which direction is on "top."

In the normal case, map-paintings will not fail to show mountain and river relationships, and in that sense there is an obvious overlap between them and the shapes-and-forces maps of districts. But even when the latter are more or less "painterly" in their execution, they will still be more map than painting (for example, fig. 10.21). The "north at the top" convention is invariably followed so that directional relationships, important for shapes-and-forces analysis, are clear. The genre lends itself to wide variety and a richness of individual whim. The *Kapsanbu hyōngp'yōndo* (Situational map of Kapsan Prefecture),

suggests that this map was done by a local person in the period following 1812.



It would have taken about 120 such blocks to print the *Taedong yōjido* and its associated texts, maps of Seoul, and diagrams.

Size of the original: 30 × 40 cm. By permission of Soongsil University Museum, Seoul.

possibly of the late eighteenth or early nineteenth century, was done in a rather abstract and highly unusual style (fig. 10.22). The intent of this work is not clear, but a biological view of shapes-and-forces seems within the realm of possibility: the mountains resemble cellular tissue, the rivers are like blood-filled veins, and the Pond of Heaven at the top of Paektusan is shaped like a liver. Yet whatever the imaginative intent and however stylized the execution, the district of Kapsan is presented as a *map*. Features and places are marked and named; directional and spatial relationships are basically cartographic.

The advent of a more scientific cartography in the eighteenth century brought grids and scales to the district as well as the national map, as we saw in the district maps illustrated in figures 10.36 to 10.38. But these new and much more accurate maps did not displace the traditional map-paintings and shapes-and-forces maps, and it is not hard to see why. Compared with the latter, the district grid maps lack life and are emotionally sterile. They were

not conceived in the district itself, and their purpose was not to provide an independent map of a locality, but to assemble uniform units for the construction of a national map. That map represented a noble and modern purpose, and we have seen Kim Chōngho presenting it with patriotic flourish. His large grid maps undoubtedly impressed Koreans, especially in that important dimension of their identity that esteemed the collective national self, which was certainly experiencing an awakening at that time. But when those same Koreans thought of where they had come from, most must have preferred the traditional map-paintings, with their evocative confirmation of all the traditional verities. As for the consumer, so too for the producer: the district map remained principally the domain of the traditional landscape painter; it was probably not a medium in which a cartographer like Kim Chōngho could have made much of a living.



FIG. 10.47. *TAEDONG YŎJI CHŎNDO* (COMPLETE TERRITORIAL MAP OF THE GREAT EAST), BY KIM CHŎNGHO, 1861. Woodblock print. Although the northern border rivers are not as well done as on the Chŏng Sanggi maps, the overall proportions are better. This map was published at a time when Koreans saw themselves under imminent threat from the West, and it has some of the qualities of a morale poster. The text at the right begins with a discussion of the nation's shapes-and-forces and of Paektusan as "the grandfather

of Korea's mountain arteries," followed by the dimensions of its seacoasts and border rivers (total perimeter, 10,920 *li*). After an evocation of the distinctive civilization bequeathed to the nation by the legendary founders Tan'gun and Kija, the essay surges to its climax: " 'Tis a storehouse of Heaven, a golden city! Truly, may it enjoy endless bliss for a hundred million myriad generations! Oh, how great it is!" Size of the original: 115.2 × 76.4 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 6-15).

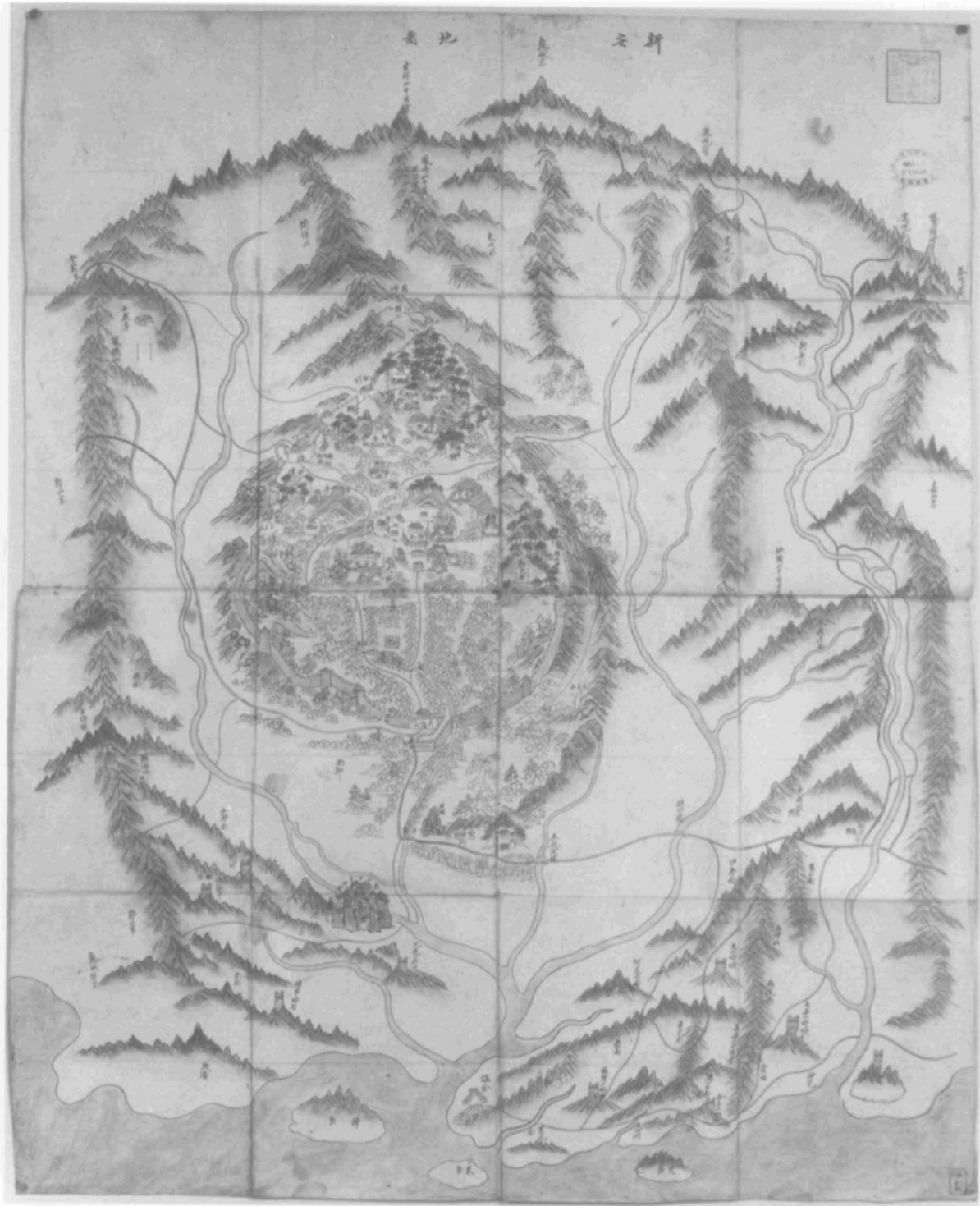


FIG. 10.48. *SIN'AN CHIDO*. Sin'an, the name of a post station that occupied the site before it became the seat of Ch'ongju (northern P'yŏng'an Province) served as an alternative name for the town, especially in the years following 1812, when the district was downgraded because of what the government took to be its complicity in the Hong Kyŏngnae rebellion, which was quelled in that year. The post station and guesthouse are at center left; the magistrate's compound is just above them to the right. The local school and a restful stand of pines fill the

northern end of the town. This map-painting concentrates on the district center, making no attempt to include the Ch'ongju lands to the east, west, and south (front). Roads are indicated in red, and the names of some subdistricts, mountains, and bridges are entered, but in general the concerns of the painter have prevailed over those of the cartographer. Size of the original: 115.7 × 94.8 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 61-68).

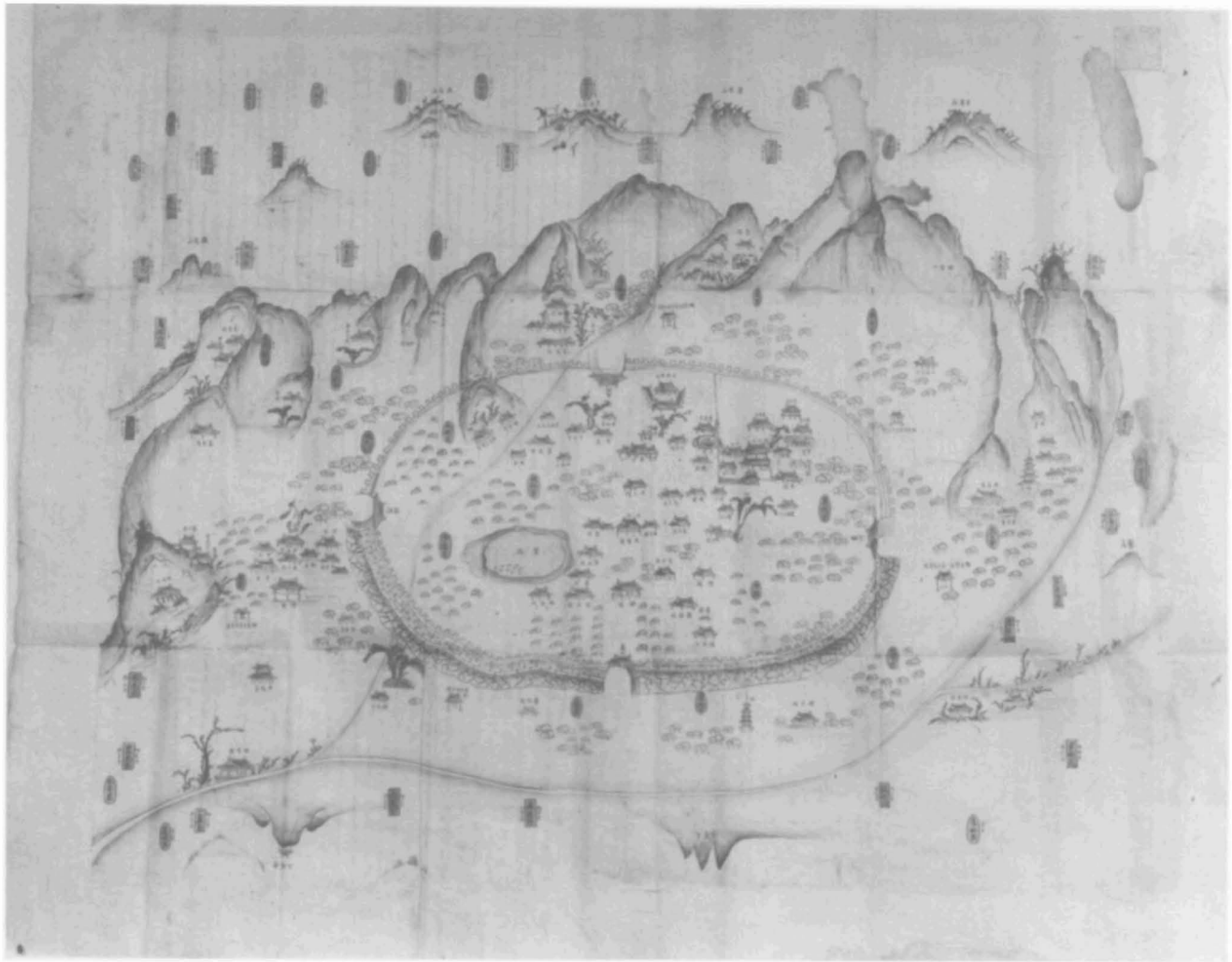


FIG. 10.49. *ANDONG ŬPTO*. Andong is a key regional center in northern Kyongsang Province, well known in Korea today for its conservation of much of the traditional culture. The map-painting exudes a sense of communal order, with its imposing but still restrained official buildings and pavilions looking over the orderly groupings of grass-roofed houses. The town's favorite trees have not been forgotten. Subdistricts and mountains

are labeled in the background, with their distances from the town indicated. "This is indeed a town where one would want to live," Yi Chunghwan exclaimed in his eighteenth-century classic *T'aengni chi* (On selecting a village).

Size of the original: 120 × 148 cm. By permission of the National Central Library, Seoul (cat. no. Ko 0233-1).

MAPS OF SEOUL AND P'YŎNGYANG

Maps of Seoul were probably popular from the first surveys of 1393, or from Prince Suyang's mapping hikes of 1454. To a degree unrealized in China, with its vast lands and distances and strong local elites, or in Japan, with its bipolar political structure anchored both in the shogun's capitals (Kamakura, Kyōto, Edo) and in the local power bases of sixty-six daimyos, the capital of Korea monopolized and concentrated the political ambitions of the elite class. Families that came to Seoul to pursue bureaucratic careers seldom left, even if the political whirlwinds blew their and their children's ambitions aside. To be sure, it was necessary to maintain one's

landowning base in the country, but the more powerful one was, the closer to Seoul that base was likely to be. Seoul not only was the center of Korean power, it was virtually its totality. There were other towns of importance—the frontier ports of Ŭiju and Tongnae (Pusan), the regional economic centers of P'yŏngyang, Chŏnju, and Taegu—and they were places where the locals concentrated on making money. But although Korea's elite disdained money less than they liked to let on, money in itself was not the basis of power. The fortunes that counted were those founded in the currency of social status, and only in Seoul, in service to the national government, could it be maintained and accumulated. A map of Seoul on a striking screen or in a well-painted album

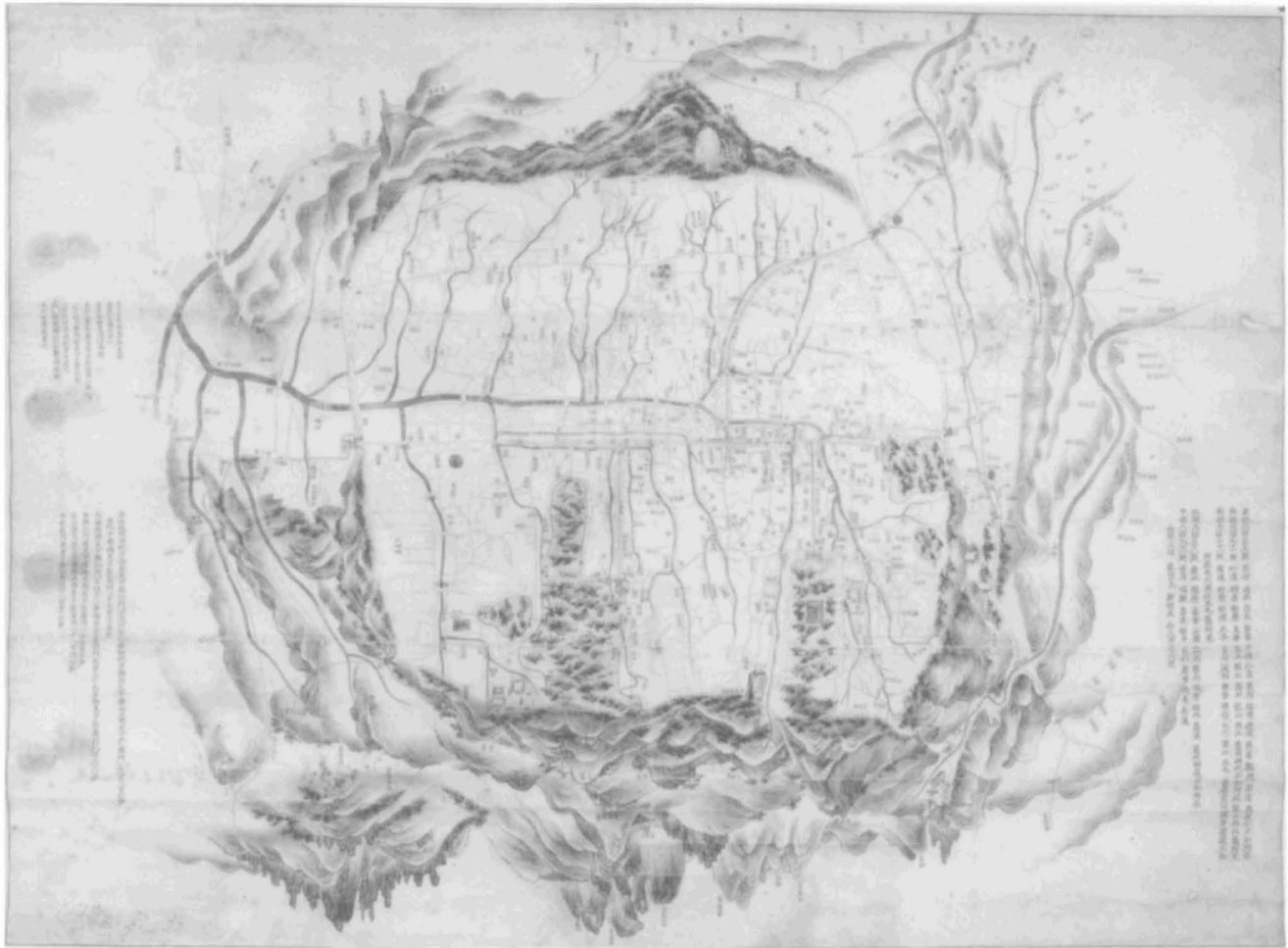


FIG. 10.50. *TOSŎNGDO* (MAP OF THE CAPITAL). The king in his formal actions faces south, and so does this map-painting, perhaps intended for royal use. The northern mountains protecting the city and, symbolically, the nation, loom at the bottom. At the time this map was executed, in the last quarter of the eighteenth century, King Chŏngjo ruled from Ch'angdŏk palace, the large wooded area just left of center. There is a clear shapes-and-forces emphasis to this map, with mountains

and streams carefully shown. The drainage system was completely reconstructed by King Yŏngjo in 1759; today it is all underground. The street plan has undergone many changes, but the general pattern of what is now only the city's inner core can already be seen in this early map. Compare figure 10.51. Size of the original scroll: 67 × 92 cm. By permission of Kyujanggak Archives, Seoul National University (cat. no. Koch'uk 4709-3).

was an emblem of success for those who lived there. It is doubtful that many of these maps were bought so that their owners could find their way around.

Maps of Seoul were as concerned with mountains and rivers, walls, and important official buildings as those of any district seat. But since these features and sites were nationally rather than merely civically important, they required from the mapmaker more dignity and weight. And unlike the average district town, which had few passageways that could properly be called streets, Seoul had a large number of relatively wide thoroughfares. The display of street networks was a particularly impressive aspect of a map of Seoul that maps of most other towns simply could not claim. Silla's capital at Kyŏngju, and to

a lesser extent Later Paekche's early tenth-century capital at Chŏnju, both imitated the Tang urban grid; but though still sensible to a strolling tourist today, in general the ethos of small towns has long since compromised the original blocks and quarters. Later Korean sensibility eschewed Chinese-style urban grids, and Kaesŏng and Seoul are distinctive among classical East Asian capitals for their oddly aligned palaces and curvy, asymmetrical urban reticulations. Of the two illustrations, the *Tosŏngdo* (Map of the capital) (fig. 10.50) is of the map-painting type, but pains were taken by its artist, and its street plan accurately reflects its time (late eighteenth century). The *Susŏn chŏndo* (Complete map of the "Source of Good" [the capital]) (fig. 10.51), its title reflecting a

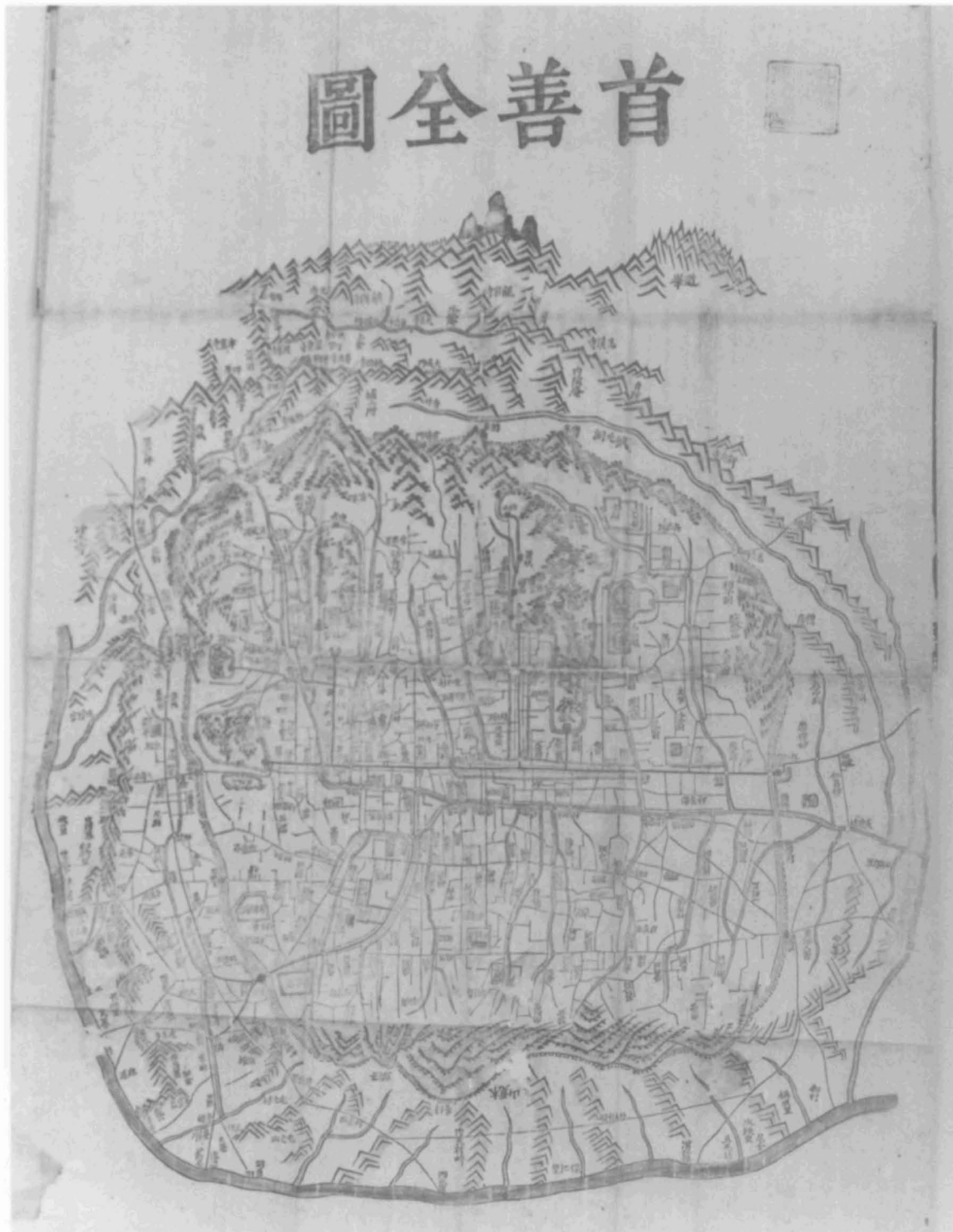


FIG. 10.51. *SUSŌN CHŌNDO*. The title uses a classical Chinese phrase alluding to a national capital. This woodblock-printed map of Seoul probably dates from about the middle of the nineteenth century. Pukhan Mountain, with its well-known fortress, looms above the city to the north, which on this map is at the top. Chongno, then as now the straightest avenue in the city, divides the map into its northern and southern halves. The mountain Mongmyōksan, now known as Namsan, dom-

inates the city on the south. The Han River flows by what were then the southern exurbs before bending northward toward the West Sea (Yellow Sea). Some scholars attribute this map to Kim Chōngho and date it about 1825, but evidence for such an ascription is uncertain. Size of the original: 25.4 × 22.2 cm. By permission of the National Central Library, Seoul (cat. no. Kojo 61-47).

Han-period Chinese conception of a national capital, represents a city that has filled out somewhat and shows considerably more development outside the walls than does the *Tosōngdo*. This woodblock production, known in many copies, is a very carefully done, “pure” map of perhaps the 1840s or 1850s. Its street plan is a bit more extended and precisely drafted than that of the *Tosōngdo*, but it is structurally identical to the earlier map-painting and testifies to the latter’s accuracy of detail.

P’yōngyang was the capital of Koguryō from the fifth to the seventh century, but its roots go back at least to the late centuries B.C. It is by far Korea’s oldest city. During the Koryō period it was the choice of many for the capital, and schemes to move the government there occasionally disrupted Koryō’s peace. Under the Chosōn dynasty it retained its old prestige. Dominating the northwest, it participated in the China-Korea trade economy and was the locus of one of the more powerful provincial governorships, and perhaps one of the more important day-to-day military commands in the country. It was famous for its ancient cultural attractions, its distinctive foods, and its kisaeng entertainers, who provided a more indulgent and pleasurable atmosphere than could be found in Seoul. Traditional maps of P’yōngyang seem to be all of the map-painting type, showing the city in bird’s-eye view from across the Taedong River, often with the famous Nūngna Island in the foreground.²⁵⁰ The painting shown in plate 20 is of this type, but it is also much more, a map with a great party. The busy parade of boats on the river, with officials and soldiers participating and kisaeng and others looking on from the shore, may have been painted to commemorate an official’s tenure as governor of P’yōng’an Province, a scene in which the map of P’yōngyang itself, including the governor’s own extensive compound, had a prominent and appropriate place. As a *pièce d’occasion* more than a map, this painting is not typical of P’yōngyang maps. But the many that are known, often large screens, invariably show P’yōngyang in the same bird’s-eye view, if without the festive doings. As maps they are pictures, and as pictures they do not represent scientific cartography. But unless what has survived in the way of P’yōngyang maps is totally misleading, these map-paintings overwhelmingly suited Korean taste.

DEFENSE MAPS

I have already mentioned Korea’s fragile relations with the Manchu state following its invasions of Korea in 1627 and 1636 and its overthrow of Ming China in 1644. This situation led King Hyojong (r. 1649–59) to rebuild Korea’s military and harden its economic and logistic base, in hopes that some reverse in China would provide an opening for a Korean attack on the Manchu rear,

enabling Korea to help Ming back to power and wipe away the humiliation of 1637. In that year Hyojong and his two brothers, as young princes, had been marched off to a difficult seven years of confinement in Shenyang as hostages. Of course, no opportunity for Hyojong’s vaunted *pukpōl* (northern strike) ever came. But he and his successors Hyōnjong and Sukchong, and a bureaucracy suffused with deep-seated hostility to the Manchus, kept the military strong and began a program of repairing and expanding fortifications on the frontiers and throughout the country. Policies were developed to build up manpower reserves and logistics potential. Revenue measures were pursued so that all of this could be paid for.

Defense maps (*kwanbangdo*) were already being compiled in the 1430s, by Chōng Ch’ōk and others, and we have seen that they constituted a significant proportion of the maps mentioned in the royal annals during the middle period of the Chosōn dynasty (table 10.6). But with the general mobilization started by King Hyojong, they came into their heyday. Since they were usually secret and closely guarded, they did not often come to open notice; we have seen that in the face of Manchu inquiries even general maps of little military significance were guarded with wary determination. Still, a fair number of *kwanbangdo* have survived, and they constitute an interesting and important subgroup of maps within the larger compass of Korean cartography.

The *Yogyē kwanbang chido* (Map of the defensive system of the Liaodong and Jizhou sector) was presented to the throne early in 1706 by Yi Imyōng (1658–1722), then right assistant state councillor under King Sukchong (fig. 10.52).²⁵¹ According to his preface, while in Beijing on a diplomatic mission the previous year, he had purchased a book called *Chousheng bilan* (Essential reading in preparation for victory), by a late Ming scholar named Xian Kejin, which described, with maps, the Great Wall and related defense systems.²⁵² Upon his return to Seoul

250. An exception is the *Kisōng chōndo* (Complete map of Kisōng [poetic name for P’yōngyang]), which is painted from a very high perspective directly above and gives the feeling of an aerial photograph. See the illustration in Yi, *Han’guk ko chido*, pl. 14 (p. 26) (note 4).

251. The presentation notice and the full text of the preface are in *Sukchong sillok*, 43.3a–b (note 17); the date of the notice corresponds to 24 February 1706. The preface also appears on the painting and in Yi Imyōng’s collected works: see Yu Yōngbak, “Yogyē kwanbang chido,” *Tosōgwān* 27, no. 11 (November 1972): 32–34.

252. I have been unable to find more than a brief biographical notice of Xian Kejin, a native of the Jiangnan area who during the Wanli years served (among other positions) as an imperial censor in Shanxi Province. This would certainly have brought him into close contact with Great Wall and frontier affairs. So far I have found no listing of the *Chousheng bilan* in Chinese bibliographies. Yi Imyōng says of this book, “Having received the order to copy it for presentation, I also took the *Ula difang tu* [Map of the Ula region], which is included in the *Shengjing tongzhi* [General history of Shengjing] compiled by a Qing man, as well as

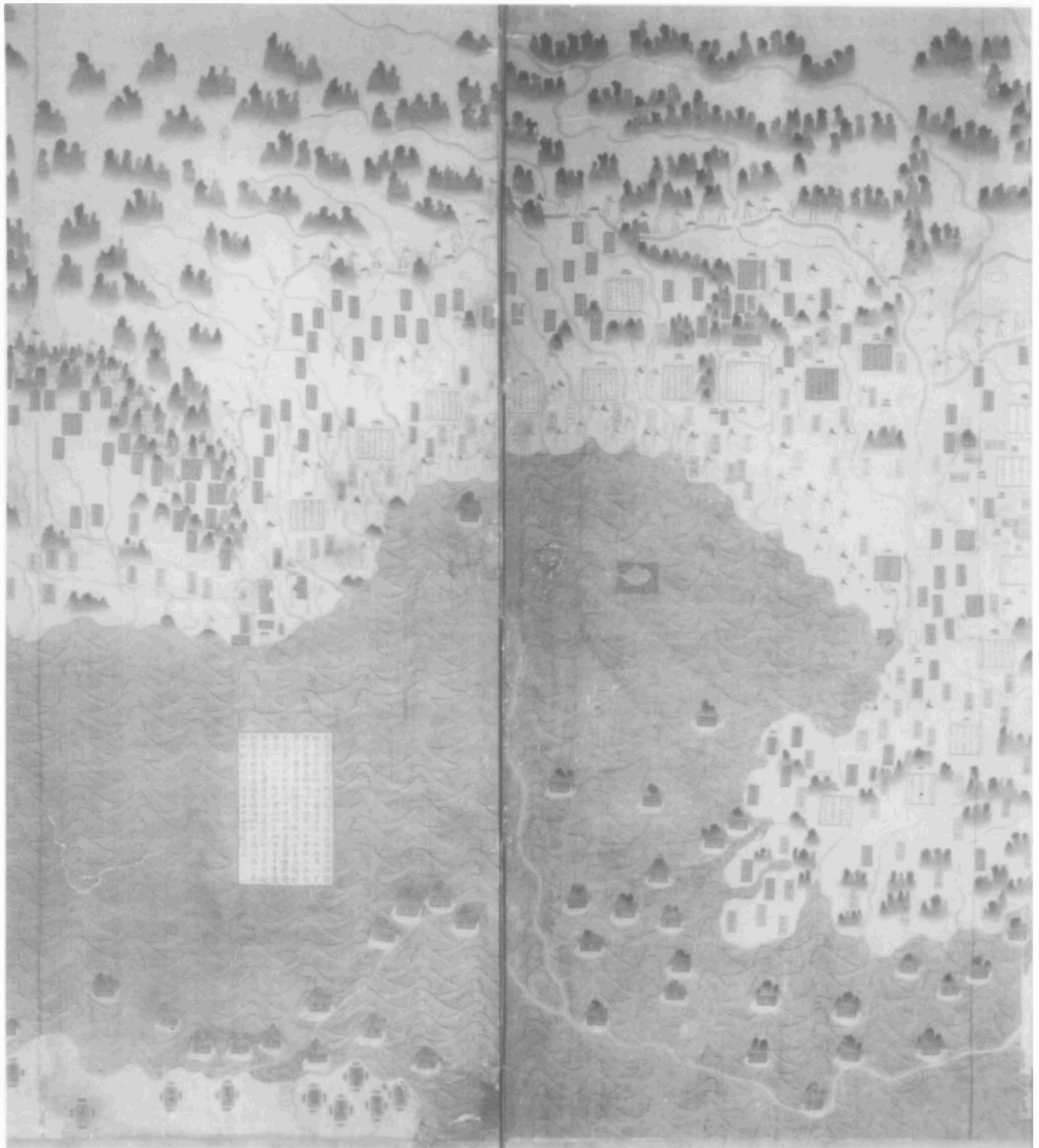
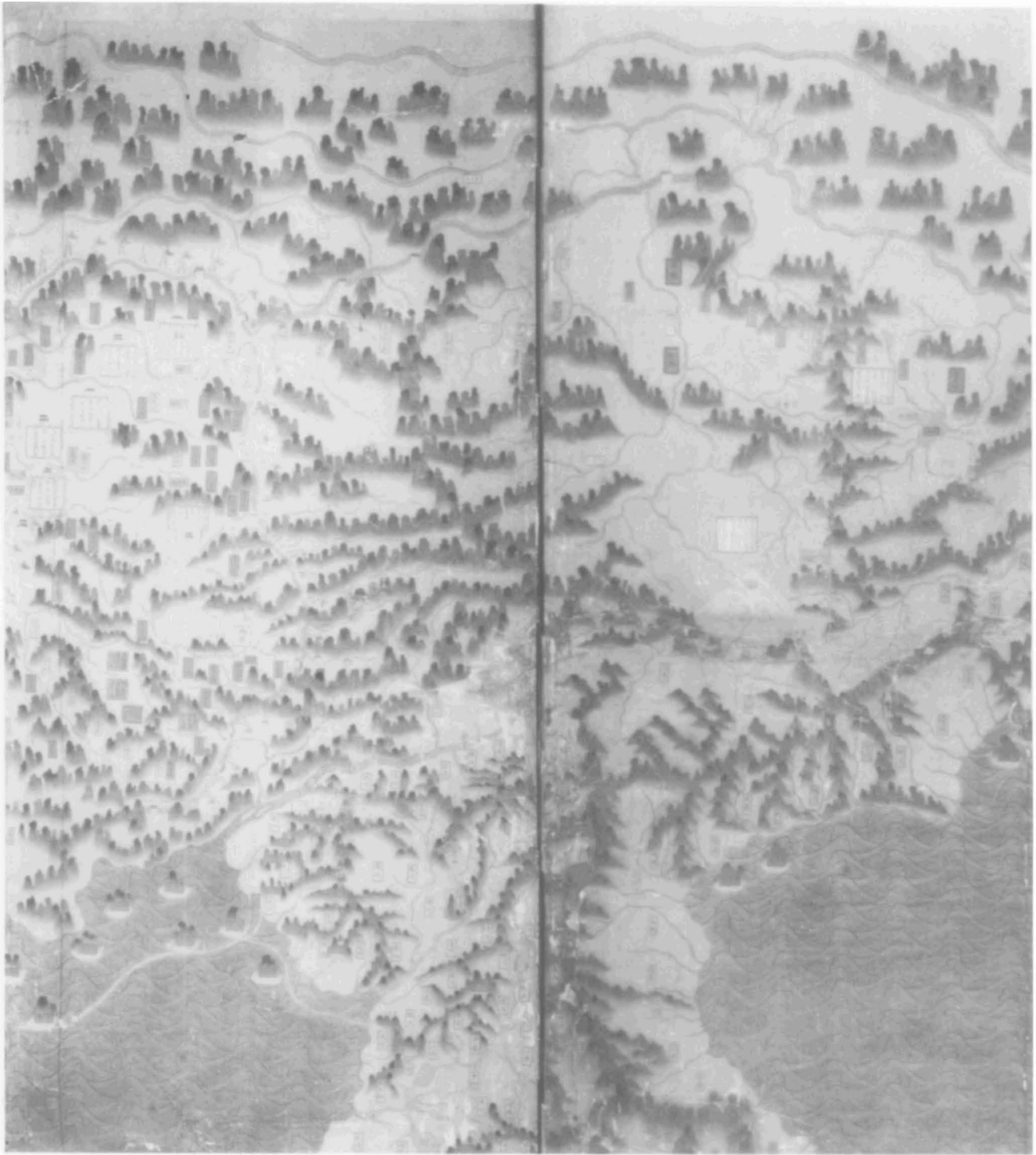


FIG. 10.52. *YOGYE KWANBANG CHIDO*, BY YI IMYŎNG, 1706. This map, known as the *Yogyedo*, in nine screen panels, covers in a single panorama the Chinese-Manchu frontier from the Pacific to the hills west of Beijing, although the section shown here does not go beyond the eastern terminus of the

Great Wall. Compiled from a variety of Chinese, Manchu, and Korean sources, this map has an unusual international dimension with a distinctively Korean stamp. The Willow Palisade, branching off from the Great Wall in the west, arching up and around and then back to the Yellow Sea on the east, is clearly



shown, although it is not as evident as on the map in figure 10.53. Koreans traveling to Shenyang and Beijing were met by Manchu officials at Fenghuang (or Bianmen), which was about fifty kilometers north of the Yalu River frontier. The major mountain ranges and rivers of Manchuria are completely shown,

as is the branch of the Willow Palisade that extends north-eastward to the Ula and Ninguta defense areas. Size of the entire original: 139 × 635 cm; each panel shown here: 139 × 64 cm. By permission of Kyujanggak Archives, Seoul National University (cat. no. Kodae 4709-91).

he conceived the idea of combining the maps in Xian's book with a map of the northern Manchurian area of Ula (from an administrative history of Shenyang), plus Korean maps of Korea's two defense sectors and other materials, to compile a general map of the eastern end of the Great Wall, from Beijing to the Pacific. With the obvious aid of an unacknowledged and nameless adjutant, probably a professional painter, the project was launched and soon completed. The whole project recalls the compilation process for the *Kangnido* over three centuries earlier: a Korean diplomat obtains cartographic materials in Beijing and combines them with maps available in Seoul to create a transcending, international map beyond the scope of anything known earlier.

The *Yogyedo*, as it is known for short, is mounted on a ten-panel folding screen with total dimensions of approximately 135 by 635 centimeters. Because of its great size, published reproductions (which all feature the Korean end) emphasize the general expanse and do not permit much legibility of the many textual notes and even more numerous place-names. But the Ula-Ninguta defense line in north-central and northeastern Manchuria, and its relation to Liaodong and to the northeastern Korean areas, is clearly grasped.

The coverage of Yi Imyōng's map was perhaps more important for its ambition and its historical reference value than for the practical requirements of Korean military men, who were not likely to get involved with the Beijing area and northeastern China proper. Still, as Yi remarked in his preface, "What we have to be concerned with is not just the Liaodong-Jizhou sector but the territories that it connects with; we must put all these [maps] together into one. Otherwise we will have no understanding of the bigger situation on the frontier, nor will we know where the cold winds are blowing from."²⁵³ Also, the Beijing area of the frontier was a frequent topic in Chinese histories, and an accurate map that not only showed it but connected it with the Korean end was undoubtedly of great interest to Korean scholars. Two copies, essentially identical, are known; one may be the original. Further study of this important map is needed.

The more relevant eastern sector, in which Korea figured directly, understandably attracted the frequent attention of Korean defense mapmakers. A particularly striking example is the *Sōbuk p'ia yanggye malli illam chi to* (Synoptic myriad-li map of the double frontier between them and us in the west and north) (fig. 10.53). Korean defenses were organized in two commands, one in the P'yōng'an Province in the northwest, the other in Hamgyōng in the northeast, whence the term "double frontier." Although not drawn with the large-scale éclat of the *Yogyedo*, it is cartographically superior for the area it covers. Executed sometime in the first half of the eighteenth century (but after Kangxi's "last years"—gen-

erally 1721–22—mentioned in the marginal texts), this map presented a much clearer picture of Manchuria's shapes-and-forces and the military arrangements on both the Korean and Manchu sides. Another interesting feature is the interpretation of the 1712 frontier agreement, which is somewhat different from that already shown on the *Pukkwan Changp'a chido* (fig. 10.29). This interpretation, linked to a putatively more northern source for the Tumen, figured in Chinese-Korean frontier negotiations in the 1880s and 1900s and still provides grist for perennial Korean claims concerning the Jiandao (Korean Kando) area north of the Tumen.

The early eighteenth-century frontier maps appeared too early to benefit from the more accurate delineation of the Yalu-Tumen river line on the Chōng Sanggi maps. The treatment on these frontier maps, itself a considerable improvement over the modified Chōng Ch'ōk treatment common in the seventeenth century, presented the frontier in virtually a single shallow arc bearing northeast from the mouth of the Yalu, without the distinctive bends that ever since Chōng Sanggi have instantly signaled the border.

The Manchus were the principal but not the only defense concern of Korean military strategists. There was also Japan to worry about. Our retrospective view of Japanese history gives such weight to the era of peace during the Tokugawa shogunate (1600–1868) that it requires an effort to grasp the seventeenth-century Korean view of Japan, which was realistically based in Korea's own recent and bitter experience. Japan had evacuated its troops from the peninsula in 1598, when Hideyoshi's death provided the political opportunity for what had already been mandated by logistic and strategic stalemate. But some Ming forces had remained in Korea until 1600, and for several years after that there was a high state of defensive readiness all along the southern and eastern coasts. The trade agreements of 1609, which permitted the daimyo of Tsushima to maintain a permanent trading installation in Pusan, and which reestablished a structure for Korean-Japanese relations through his intermediation, considerably stabilized the situation. But Korea never let down its guard throughout the seventeenth and eighteenth centuries. The southern coastal towns bristled with military and naval presence well into the nineteenth century.

The *YōngHo nam yōnhae hyōngp'yōndo* (Map of the natural defenses of the southern coasts of Kyōngsang and

maritime tributary itineraries from a former [i.e., Ming] time and [maps] of the western and northern defense sectors and of the coastal and river frontiers, all our own materials, and combined them into a single map" (*Sukchong sillok*, 43.3a [note 17]). This context implies that the *Chousheng bilan* had maps, and I have assumed so.

253. *Sukchong sillok*, 43.3a (note 17).

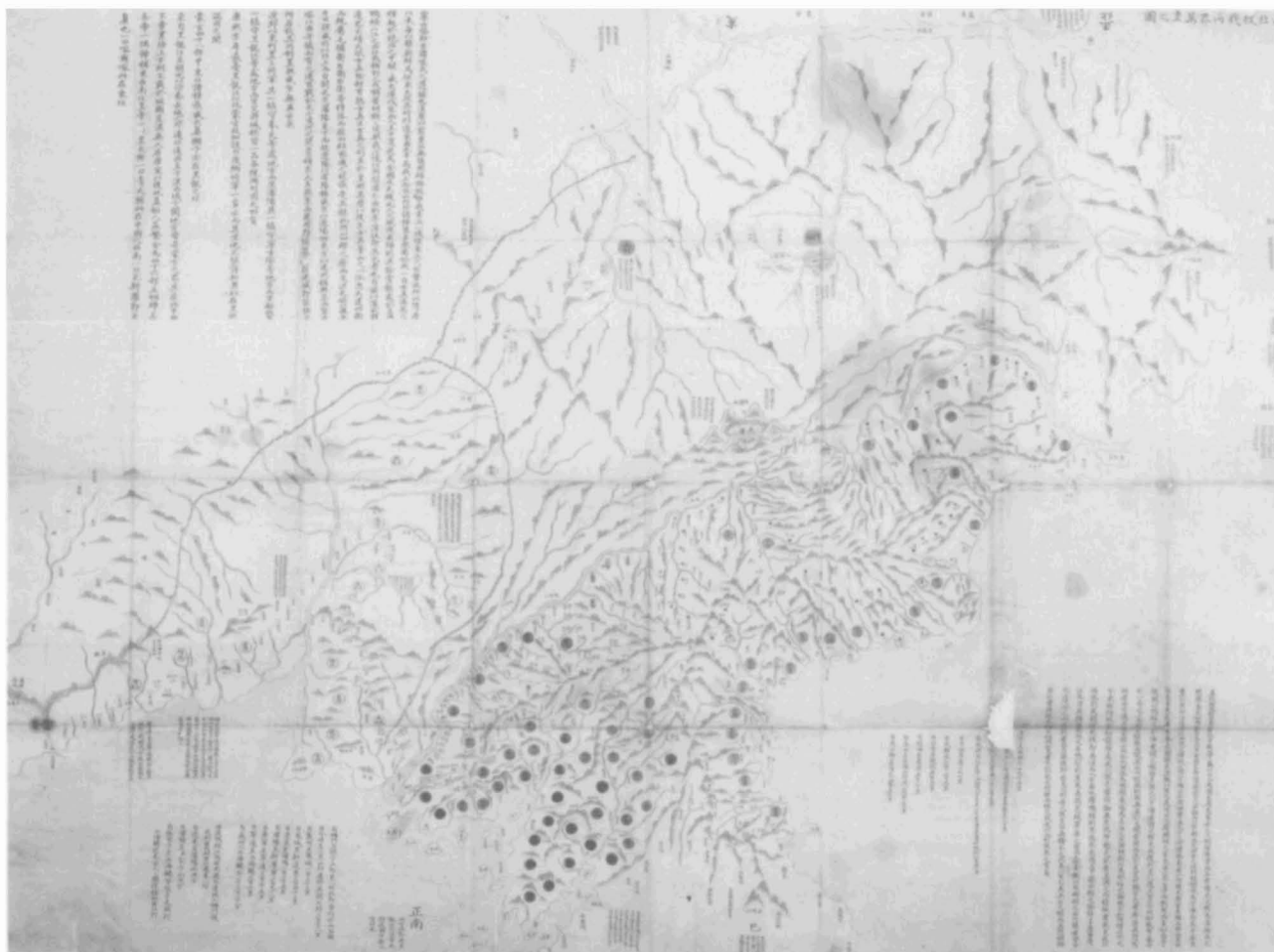


FIG. 10.53. *SÖBUK P'IA YANGGYE MALLI ILLAM CHI TO*. Of unknown authorship, this map probably dates from the mid-eighteenth century, but based on mention of Kangxi's "last years" and on the nonindication of Changjin as a district, it can be no earlier than about 1722 and no later than 1787. Its subject matter is similar to that of the parts of the *Yogyedo* shown in

figure 10.52, but it is actually superior to the latter in the clarity with which it shows the topography and defense structure of Korea and Manchuria.

Size of the original: unknown. By permission of Kyujanggak Archives, Seoul National University (cat. no. Ko 4709-22).

Chōlla provinces) is one of the relatively few surviving defense maps emphasizing this region (fig. 10.54). It is drawn on a broad strip of paper running over eight meters from right to left. Judging from style and appearance, it was probably done during the first part of the nineteenth century.²⁵⁴ In spite of the impression left by the title, it covers the east coast of Kyōngsang and the west coast of Chōlla as well as the southern coasts of both provinces. The long, horseshoe-shaped coastline is mapped as if in a straight east-west panorama, including every town and harbor, every islet and inlet, and many other features of interest to coastal navigation and defense. A direct air flight over this length of coast would cover about 750 kilometers, but the actual length of the extremely uneven coastline, not including the thousands of islands large and small, would be several times that.

Another traditional feature of Korean defenses was the *sansōng* (mountain fortress). Mentioned in the oldest stratum of historical records and archaeologically known for prehistoric periods, the *sansōng* was a perennial Korean response to the problem of how to protect the population in time of war. In a situation where Korea was usually outmanned and overmatched by more powerful neighbors, it represented a realistic strategy of survival and attrition. In such places, chosen with attention to natural defenses, fortifiability, and water supply and

254. This map seems to have left no clue to its date of compilation. It does use the name Kohūng instead of Hūngyang for an important Chōlla district, but attempts to use this fact for dating can prove only that the map was drawn before 1913 (not 1895 as claimed by some), which seems self-evident in any case. I put the map in the first half of the nineteenth century based on style.

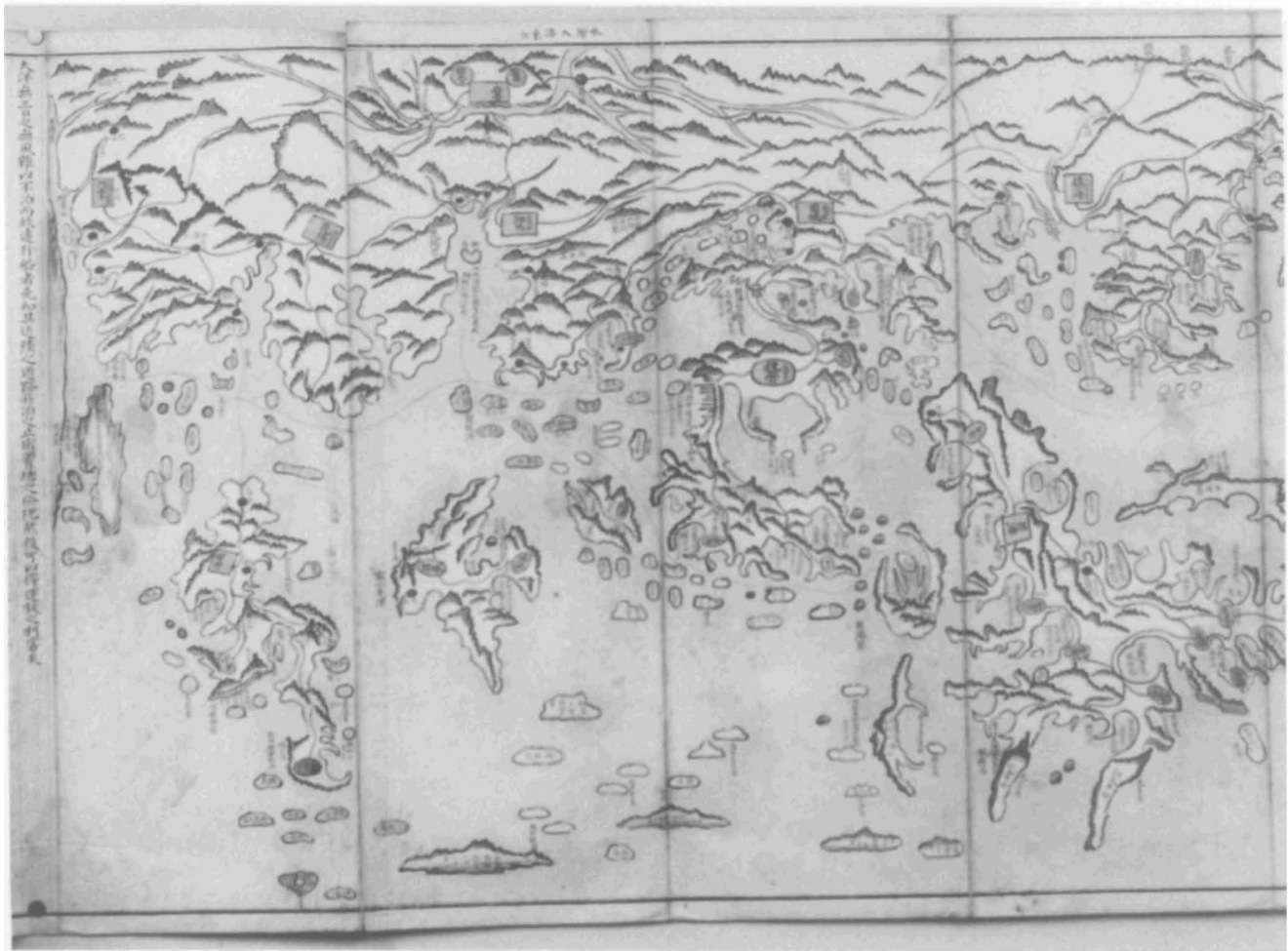


FIG. 10.54. DETAIL FROM THE *YŏNGHO NAM YŏNHAE HYŏNGP'YŏNDO*. This map, probably done in the first half of the nineteenth century, shows a continuous panorama of the southeastern, southern, and southwestern coasts of Korea. The map, on paper in forty folds with an aggregate lateral length of over eight meters, shows all towns, military bases, harbors or anchorages, and such, along that coast, with distances and other notes written in. A written list of harbors and anchorages gives the docking or anchorage capacity and wind information for each site. The section illustrated here shows the area centering

maintained in a perpetual state of readiness and provisions, the enemy could be harried as well as avoided, and one's future might be negotiated from a position of safety. Such a strategy could cost a high price in property loss and destruction in the open areas that were evacuated, but it saved large numbers of lives and thus provided the essential conditions for rebuilding and recovery after the danger had passed. Korea's mountains were good for more than just their arteries to Paektusan.

As an example of the size and extent of some of the larger *sansŏng*, we may cite the famous Ch'orong (Iron Jar fortress), already noted in a shapes-and-forces map of Yŏngbyŏn (fig. 10.21). It goes back to Koguryŏ times and probably saw frequent use during Koryŏ's various

on T'ongyŏng (oval cartouche; now called Ch'ungmu), the general headquarters of the naval defense command. The modern headquarters of the Republic of Korea's navy is just to the northeast, at Chinhae. The large island southeast of T'ongyŏng is Kŏje. A fortified barrier/bridge links the T'ongyŏng mainland with supporting offshore bases.

Size of the entire original: 56.7 × 816.0 cm; this detail, 56.7 × 81.6 cm. By permission of the National Central Library, Seoul (cat. no. Kwi 116 Kojo 61-29).

troubles. King T'aejong carried out a major refortification project in 1416, giving the Iron Jar and a large adjacent area a wall 26,815 *ch'ŏk* in circumference. Given the evidently longer *ch'ŏk* of the pre-Sejong era, this would have been considerably longer than the 5.34 kilometers indicated by the equivalence used in this chapter. When Sejong established new borders and created the district of Yŏngbyŏn in 1429, this compound became the district seat. Amid the general military strengthening of the seventeenth century, the Iron Jar proper was refortified in 1633, with its own inner perimeter wall of 550 meters. Sukchong added a northern branch fortress in 1675, then in 1685 refurbished and extended the general town fortifications, creating a walled perimeter of 13.24 kilome-

ters, with the walls about 4 meters high. It had four main gates and enclosed three small rivers and fifty wells and springs. King Yǒngjo did some more rebuilding in 1750, and the whole complex was captured in a splendid map-painting, probably done sometime during the eighteenth century (plate 21).²⁵⁵

In general, cartography related to local and specialty maps proceeded on a separate track from national and provincial mapmaking. People of traditional mind saw no contradiction in this. Had it been conceivable to map a whole province in the style of a map-painting, or even the whole country, doubtless such maps would have found both artist-executors and buyer-appreciators. In subject areas where the map-painting style was practical and suitable, such as regional or district maps and many types of defense maps, that style seems to have been preferred.

THE HISTORICAL AND SOCIAL SETTING OF KOREAN CARTOGRAPHY

History was not kind to the record that would reveal to us the earlier stages of Korean cartography. The oldest surviving Korean map, apart from a drawing on the wall of a Koguryō tomb, dates only from about 1470. What came before, if not lost to the outrages of foreign invasions or internal turbulence, has yielded to the ravages of time. Even the three known copies of the 1402 *Kangnido* are today all in Japan as a result of war and pillage. And the year 1402 does not really signal a historical change in this pattern; just one other map from the fifteenth century survives, in a copy that can only be conjectured to descend from the national map of 1463, and that copy itself is also in Japan. Indeed, very few surviving maps can be said with certainty to predate the Japanese invasions of 1592, and if one subtracts from those the *Sūngnam* maps, remaining specimens will be very few indeed. During the seventeenth century a small corpus begins to accumulate; only in the eighteenth and nineteenth centuries does that corpus acquire the variety and redundancy that promote serious study. And of these later maps, relatively few can be accurately dated or attributed to known individuals.

In spite of such obstacles, it has not been hard to identify some maps unique in the world, as well as others of outstanding originality and merit. Korea can claim the oldest record concerning Buddhist maps of the Five Indias type; the first genuine world map to have been made in East Asia; the development of an original shapes-and-forces cartography from a consciousness of its own mountainous terrain; a rare terrestrial globe of Western inspiration, uniquely set into an armillary sphere of purely Chinese mold; the cosmographical *ch'ōnhado*, with its curious processing of ancient Chinese geographical lore;

and Kim Chōngho's giant national grid maps, innovatively designed and packaged for ease of use.

Korea's constant concern with the designs of its enemies is seen to have had a major impact on its cartographic development. The element of state security in mapmaking surfaces early and lasts until the end. It almost certainly had a negative effect on the *Sūngnam* maps; on the other hand, it stimulated the genre of the defense map, which was both highly functional and very appealing to the eye. Security concerns were the major background factor in the Mukedeng affair, and they even entered folklore in the various legends that have grown up around Kim Chōngho.

As a polity strongly committed to bureaucratic centralism and domination by a hereditary class of oligarchs, mapmaking understandably was centered in the government. Kwōn Kūn, Yang Sōngji, and Yi Imyōng were representatives of this dominant group. But Yi Hoe, the principal cartographer of the *Kangnido* of 1402 and of a map of Korea that was probably the standard for the first half of the fifteenth century, was by all appearances of relatively humble status. Chōng Ch'ōk came from a minor family of local administrators and owed such bureaucratic success as he had more to the patronage and friendship of his king than to the encouragement of the high bureaucracy. Chōng Sanggi, though from a distinguished family, never took the civil examinations and never held government office. The social background of Kim Chōngho is unclear, but at best he could have been only of low-ranking military background; he probably was an ordinary commoner. He lived at a time when the line between poor gentry and talented commoner could be hazy and crossable; in any case he somehow acquired a good education, and that was always the first requirement for upward mobility.

In the early periods of Chosōn mapmaking, most of the activity is at state initiative; in the later periods, new trends in maps start outside the government and achieve either its recognition, as with the Chōng Sanggi maps, or only its passive acquiescence (my belief) or even possible hostility (if we credit the legend), as with Kim Chōngho. The periods when the government dominated mapmaking are also the periods for which the smallest number of maps survive: when the fires and invaders came, maps were all in a few places and were too easily lost. But when cartography acquired a broader social base from the seventeenth century on, the avenues of survival mul-

255. *Munhōn pigo*, 30.8a (note 51). In view of the government's heavy investment in the Yōngbyōn-Ch'ōrong-Puksansōng complex during the seventeenth century and the conformity of this map-painting to the construction listed in the *Munhōn pigo*, there seems to be no basis for attributing this painting, as some do, to the sixteenth century or earlier. The painting style seems typical of the late eighteenth century.

tiplied, and so did the maps. Involved in this were not only the mapmakers and the consumers, but painters, woodblock printers, and copyists of all kinds, all but a few of them utterly anonymous. The heyday of Korean mapmaking came when the government lost—or abandoned—its monopoly. Even the royal project of 1791, to create a national grid and organize local mapping, apparently failed to win bureaucratic support or even official historical notice, and it was redeemed only years later by the efforts of private scholars or self-chosen men of mission, such as Ch'oe Han'gi and Kim Chōngho.

It is perhaps the lack of such broader involvement in learning and development that explains how genuinely brilliant projects, such as the *Kangnido* and the terrestrial globe, could be completed and then go nowhere. Why is it that after the first appearance of Sejong's odometer, the "li-counting drummobile," in 1441 or Sejo's triangulation instrument, the *kyuhyōng*, in 1467 we never see any development of them or indeed any sign that they were ever used again? Is it that they were later constantly used and became commonplace? Or that they were tried out and found not to work so well after all? If Sejong could send observers to the extremities of the country to take measurements of polar altitude, why could no one else repeat the effort later (and this time preserve the data)? Were the scientific observational instruments that the government purchased in Beijing in 1715, or any others, ever used to determine geodetic coordinates? If there are clear sources on these problems, I, at least, have been unable to find them. They represent some questions for the future.

During the traditional period of Korean history, Korean culture borrowed heavily from Chinese civilization, and this relationship is evident in cartography. In the concrete case of Kim Chōngho's great grid maps, there was a direct methodological connection, in that both Ch'oe Han'gi's preface to the *Ch'ōnggudo* and Kim's own introduction to the *Taedong yōjido* cited Pei Xiu's six principles of mapmaking with high approval. Kim clearly considered his cartographic method an application of Pei's principles. But it is interesting to observe that in spite of this cultural congruity and direct influence, Koreans did different things with maps than Chinese did, and the maps they made usually had a rather different appearance than Chinese maps. Having the same materials available from the Islamic and Western worlds, the two countries reacted differently. China produced a map of "Great Ming," while Korea added itself and Japan and

produced a world map. Korea was indeed a different country, with its own sense of itself. For all the culture borrowed from China, Korea's own independent cultural tradition never lacked vitality, and in any given context Chinese culture, no matter how much it might have dominated appearances, was only part of the story. Cartography is a particularly useful medium for showing the great variety within the broader East Asian civilization, which though dominated by Chinese culture cannot be defined only in its terms.

Korea had a lively curiosity about Western observational and cartographic sciences. It imported, copied, and printed Western maps, and it made the globe for the armillary clock. But none of this seems to have had any effect on Korean maps, which continued to develop on their own as if nothing had happened. Kim Chōngho printed a hemispherical Western map, copying everything from the graticules to the ecliptic, yet in his own maps he continued on his own path, wholly within Korean tradition. He understood the function of geodetic coordinates and made reference to them in his work. But to the extent that he used them at all, he seems to have been content with the map-derived coordinates determined by King Chōngjo's mathematicians in 1791.

Before the nineteenth century was over, the influence of Western maps had begun to come into Korea strongly, and indeed it overwhelmed traditional cartography. But cartography was only a drop of water in a mighty wave of modern change. Two processes were involved. One was a turning away from Chinese civilization in general. The other was the introduction of Western civilization, at first through Protestant missionaries (mainly American) but more decisively through an aggressive Japanese intrusion and colonization. If a single event is to be connected with this phenomenon, it would be Japan's defeat of China in 1895. Ten years earlier, China had made Korea a civilizational cause by insisting on the continuation of the tributary system, but then it violated its cardinal tenet by blatantly interfering in Korea's internal politics during the decade of Yuan Shikai's residency. Japan's victory not only weakened China's standing as a nation, it also, for a critical balance of influential Koreans, destroyed China's credibility as a civilization. (Not that Japan did not bring plenty of pain and suffering to Korea in the process.) From that time on, the accommodation to Western ways proceeded without significant impediment. Then and only then can modern Western cartography be said to have prevailed in Korea.

APPENDIX 10.1 KOREAN MAPS LISTED BY YANG SŎNGJI IN 1482

| Title | Date | Cartographer | Title | Date | Cartographer |
|--|-------------------------|--------------|---|----------------------|--------------------|
| 1 <i>Odo yanggyedo</i> (Map of the five provinces and two frontier zones) ^a | Mid-Koryŏ (ca. 1150) | | 12 <i>P'yŏng'ando yŏnbyŏndo</i> (Map of the frontier border of P'yŏng'an Province) | Sejo reign (1455–68) | Yi Sunsuk |
| 2 <i>P'altodo</i> (Map of the Eight Provinces) | Early Chosŏn (ca. 1400) | Yi Hoe | 13 “The maps in each of the governors' headquarters in the three southern provinces” | Sejo reign (1455–68) | ? |
| 3 <i>P'altodo</i> (Map of the Eight Provinces) | Sejong reign (1418–50) | Chŏng Ch'ŏk | 14 <i>Ilbon Yugu kukto</i> (Map of Japan and the Ryūkyūs) | Sejo reign (1455–68) | Japanese monk Tōan |
| 4 <i>Yanggye taedo sodo</i> (Large and small maps of the two frontier zones) | Sejong reign (1418–50) | Chŏng Ch'ŏk | 15 <i>TaeMyŏng ch'ŏnhado</i> (Map of the Great Ming world [in both silk and paper scrolls]) | Sejo reign (1455–68) | ? |
| 5 <i>P'altodo</i> (Map of the Eight Provinces) | Sejo reign (1455–68) | Yang Sŏngji | 16 <i>Chiri chi nae p'alto chugundo</i> (Maps of the districts of the Eight Provinces from <i>Chiri chi</i>) | Sejo reign (1455–68) | Yang Sŏngji |
| 6 <i>Yŏyŏn Much'ang Unul samŭpto</i> (Map of the three districts Yŏyŏn, Much'ang, and Unul) ^b | Sejo reign (1455–68) | Yang Sŏngji | 17 <i>P'alto sanch'ŏndo</i> (Map of mountains and rivers of the Eight Provinces) | Sejo reign (1455–68) | Yang Sŏngji |
| 7 <i>Yŏnbyŏn sŏngjado</i> (Map of border fortifications) | Sejo reign (1455–68) | Yang Sŏngji | 18 <i>P'alto kagil yanggyedo</i> (Separate maps of the Eight Provinces, with the two frontier zones) ^c | Sejo reign (1455–68) | Yang Sŏngji |
| 8 <i>Yanggye yŏnbyŏn pangsudo</i> (Map of border defenses in the two frontier zones) | Sejo reign (1455–68) | Yang Sŏngji | 19 <i>Yodongdo</i> (Map of Liaodong) | Sejo reign (1455–68) | ? ^d |
| 9 <i>Cheju Samŭpto</i> (Map of the three districts of Cheju Island) | Sejo reign (1455–68) | Yang Sŏngji | 20 <i>Ilbon TaeMyŏngdo</i> (Map of Japan and the Great Ming) | Sejo reign (1455–68) | ? |
| 10 <i>Yŏnhae Choundo</i> (Map of coastal shipping and transport) | Sejo reign (1455–68) | An Ch'olson | | | |
| 11 <i>Yŏng'ando yŏnbyŏndo</i> (Map of the frontier border of Yŏng'an [Hamgyŏng] Province) | Sejo reign (1455–68) | Ŏ Yuso | | | |

Source: *Sŏngjong sillok* (Annals of King Sŏngjong, r. 1470–94), 138.10b, Yang Sŏngji Memorial dated Sŏngjong 13/2/13 (2 March 1482).

^aPhrases on the order of “eight provinces,” etc., may be taken as a collective name and could be rendered “Korea.” During Koryŏ times and for most of the fifteenth century the “two frontier zones” were under separate military administration.

^bThree Yalu frontier districts (in the area of modern Kanggye), established in 1416, 1443, and 1442, respectively, but abandoned as logistically impractical in 1455.

^cIn this case, separate maps of each of the eight provinces are to be understood.

^dIt is unclear whether Yang Sŏngji's authorship extends to items 19 and 20.