

 PRINCETON UNIVERSITY

東亞圖書館  
*East Asian Library*  
and the *Gest Collection*

---

**This title is provided ONLY for personal scholarly use. Any publication, reprint, or reproduction of this material is strictly forbidden, and the researcher assumes all responsibility for conforming with the laws of libel and copyright. Titles should be referred to with the following credit line:**

**© The East Asian Library and the Gest Collection, Princeton University**

**To request permission to use some material for scholarly publication, and to apply for higher-quality images, please contact [gestcirc@princeton.edu](mailto:gestcirc@princeton.edu), or**

**The East Asian Library and the Gest Collection  
33 Frist Campus Center, Room 317  
Princeton University  
Princeton, NJ 08544  
United States**

**A fee may be involved (usually according to the general rules listed on <http://www.princeton.edu/~rbsc/research/rights.html>).**

*Bangbo Hu, "Maps in the Gazetteer of Yung-an County (Yung-an Hsien Chih)", The Gest Library Journal 6, no. 1 (1993): 85-100, accessed January 14, 2017, [https://library.princeton.edu/eastasian/EALJ/hu\\_bangbo.EALJ.v06.n01.p085.pdf](https://library.princeton.edu/eastasian/EALJ/hu_bangbo.EALJ.v06.n01.p085.pdf)*

# Maps in the *Gazetteer of Yung-an* *County (Yung-an Hsien Chih)*

BANGBO HU

## INTRODUCTION

Maps began to be used in China on a large scale — for warfare, administration, city planning, and as objects to bury in tombs with the deceased — at least two thousand years ago.<sup>1</sup> The earliest extant maps from China, dating to the fourth or third century B.C.,<sup>2</sup> are those on boards found in the tombs at Fang-ma-t'an, T'ien-shui City, Kansu Province, in the northwestern part of China, in 1986. Early maps, however, are much less likely to survive than books: because techniques for making maps are much more complicated than those for writing and printing books, fewer were produced in the first place. Maps included in books as illustrations, for example, might appear only in an early edition and not be reproduced in later editions. In addition, maps were often produced on sheets of many different sizes, making them harder to protect. Finally, governments frequently had a policy of restricting map distribution. Early maps have thus become rare and highly valued objects both for collecting and for research.

Some early Chinese maps are well known throughout the world. A good example is the "Map of the Tracks of Yü" ("Yü chi t'u"), a map carved in stone in 1136.<sup>3</sup> Although the title includes the name Yü, the legendary Chinese emperor of about 2000 B.C. who is the supposed founder of the ancient Hsia dynasty (ca. 2100–1600 B.C.), the map purports to show China at the time of the Sung dynasty (960–1279). As Joseph Needham, a world-renowned scholar of the history of Chinese science, comments, "Anyone who compares this map with the contemporary productions of European religious cosmography cannot but be amazed at the extent to which Chinese geography was at that time ahead of the West."<sup>4</sup>

The most numerous maps in premodern China were those incorporated in local gazetteers (*fang-chih*), which began to be produced in significant numbers during the Sung dynasty. Chinese gazetteers, in Needham's description, "are really local geographies and histories."<sup>5</sup> Needham also pointed out that "the series of local topographical writings . . . are probably unrivalled by any nation for extent and systematic comprehensiveness,"<sup>6</sup> for it seems that no gazetteers appeared in the same form and in such large numbers in any other culture. Yet, despite the fact that the maps in the gazetteers are a distinctive Chinese form of cartographic expression, they have rarely been studied.

The *Yung-an hsien chih* is a local gazetteer of Yung-an County (*hsien*), Hui-chou Prefecture (*fu*), Kuang-tung Province (*pu-cheng-ssu*), in the southern part of China. It covers the area of present-day Tzu-chin County, Kwangtung Province. From its preface we know that the *Yung-an hsien chih* was compiled by Yeh Ch'un-chi and Kuo Chih-fan in the autumn of the fourteenth year of the Wan-li period (1573–1619) of the Ming dynasty, that is, in 1586. The maps in this gazetteer were probably drawn the same year. The National Library of China in Peking holds an original printing from the Wan-li period, which according to Chu Shih-chia's *A Bibliography of Chinese Gazetteers* (*Chung-kuo ti-fang-chih tsung-lu*), is the only known copy of this gazetteer.<sup>7</sup>

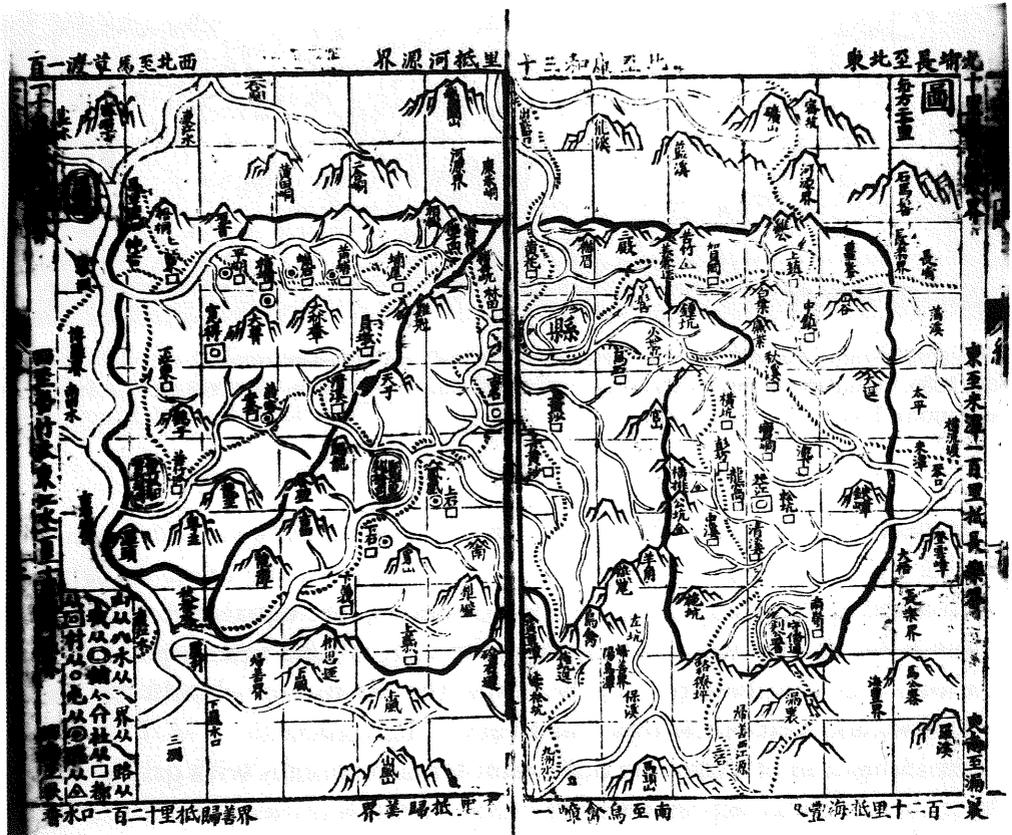
There are four maps in this copy. The titles are indicated in the "List of the Maps of Yung-an County," which follows the preface. The four are the "Map of Yung-an County" ("Yung-an hsien t'u"; see illustration 1), the "Map of Ku-ming Township" ("Ku-ming tu t'u"; see illustration 2), the "Map of K'uan-te Township" ("K'uan-te tu t'u"; see illustration 3), and the "Map of Ch'in-chiang Township" ("Ch'in-chiang tu t'u"; see illustration 4). The first map shows the entire territory of Yung-an County. The other maps cover the three townships, which at that time belonged to Yung-an County.

#### CHARACTERISTICS OF THE MAPS

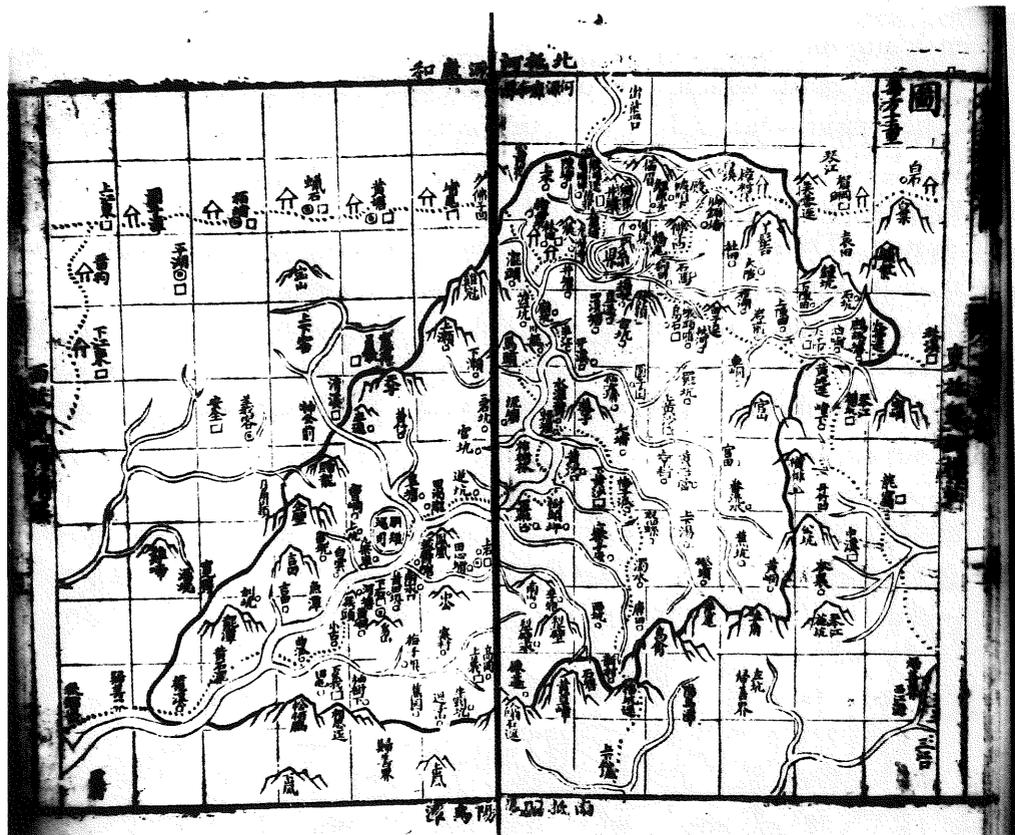
The maps in the Wan-li *Yung-an hsien chih* are distinguished by several characteristics, the most attractive one being that all of them were drawn by means of "*chi-li hua-fang*" (or *hua-fang chi-li*),<sup>8</sup> a grid system used in traditional Chinese cartography. The first gazetteer map to use the grid system

is the "map of Chien-k'ang Prefecture of the empire" ("Huang-ch'ao Chien-k'ang fu-ching chih t'u") in the *Gazetteer of the Chien-k'ang Prefecture* (*Chien-k'ang chih*), which was compiled by Ma Kuang-tsu and Chou Ying-ho in the second year of the Ching-ting period (1261) of the Southern Sung dynasty.<sup>9</sup> This gazetteer contains nineteen maps, but only the main map showing the entire Chien-k'ang Prefecture at that time was drawn with the grid system. Thus the *Yung-an hsien chih* of 1586 becomes the earliest extant gazetteer in which all of the maps were made by using a grid.

On each of the four maps in the *Yung-an hsien chih*, the grid system is arranged as twelve squares from left to right and ten squares from top to bottom. In the upper right-hand corner of the "Yung-an hsien t'u," there is



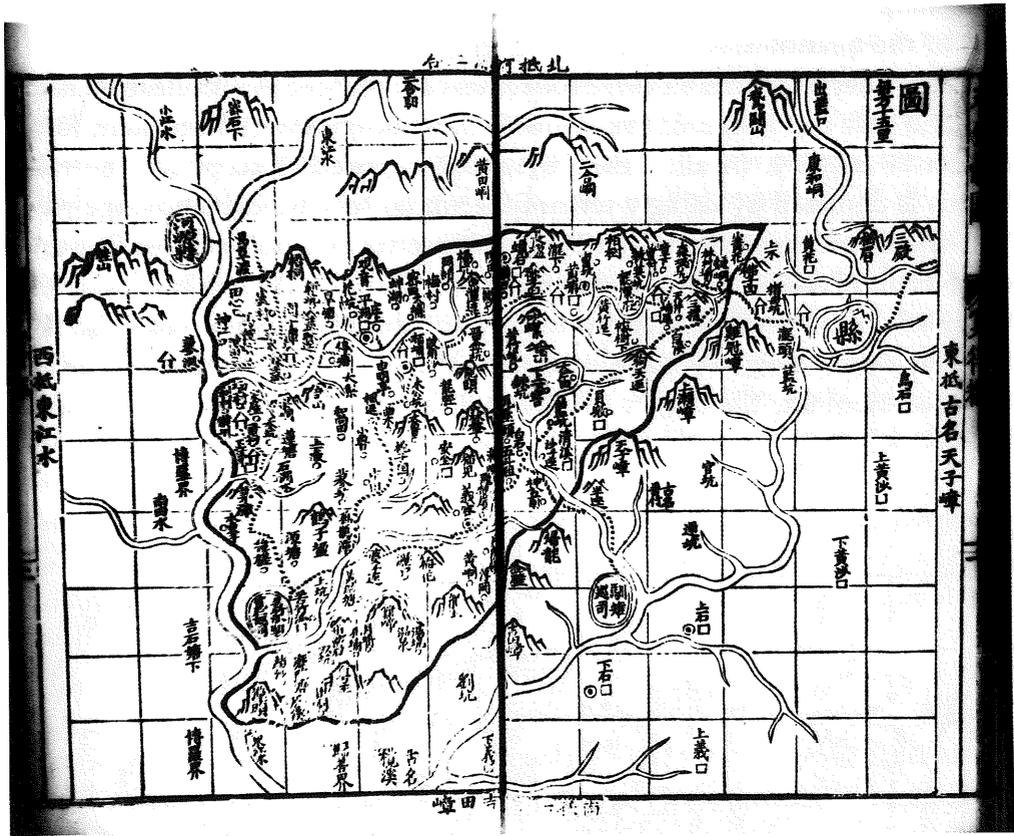
1. Map of Yung-an County. From Yeh Ch'un-chi and Kuo Chih-fan, comps., *Yung-an hsien chih*, 3 ch., 1586. Text 2 ch., 9 cols. of 20 chars. Maps 1 ch., block of the map 20 x 26.8 cm. Collection of the National Library of China, Peking.



2. Map of Ku-ming Township. From Yeh Ch'un-chi and Kuo Chih-fan, comps., *Yung-an hsien chih*, 3 ch., 1586. Text 2 ch., 9 cols. of 20 chars. Maps 1 ch., block of the map 20 x 26.8 cm. Collection of the National Library of China, Peking.

a notation “the length of the edge of one square equals twenty *li*” (*mei-fang erh-shih li*), indicating the map’s scale. The scales of the other three maps are marked as “the length of the edge of one square equals fifteen *li*” (*mei-fang shih-wu li*). Because the length of the edge of one square on each map is about 2.2 centimeters, the scale of the first map should be about 1:450,000, and that of the other three about 1:340,000.

The indication of scale is an important feature of maps with grid systems. The indication was expressed by the ratio between the length of the edge of each square and actual distance, in phrases such as “the length of the edge of one square equals one hundred *li*,” (*mei-fang pai li*) or “the edge of one square equals ten *li*” (*fang k’uo shih li*). The grid system enabled Chinese



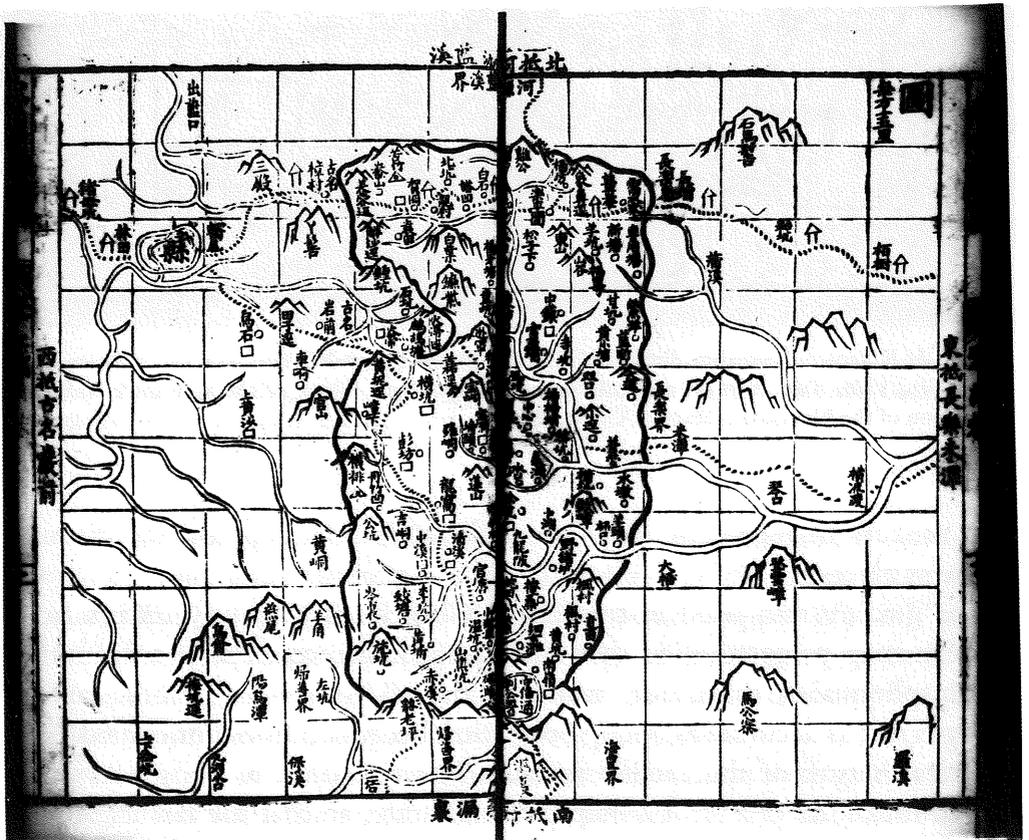
3. Map of K'uan-te Township. From Yeh Ch'un-chi and Kuo Chih-fan, comps., *Yung-an hsien chih*, 3 ch., 1586. Text 2 ch., 9 cols. of 20 chars. Maps 1 ch., block of the map 20 x 26.8 cm. Collection of the National Library of China, Peking.

map makers to represent more precisely both direction and the distance between places.

The grid system used in traditional Chinese cartography differs from modern map projections in that it is based on the concept of a flat rather than a spherical earth surface. In theory, the grid system in Chinese cartography is not as accurate as a map projection because it does not consider the spherical nature of the earth's surface. The deviation in the grid system should make the center of a map most accurate, so that the farther an element is from the center, the greater the deviation. Nevertheless, because for some practical purposes the degree of the curve in a small area is negligible, the grid system can indeed be precise enough to make a very large

scale map. Historians of cartography regard the grid system as representative of the quantitative tradition in Chinese cartography.

Other characteristics of these four maps are that the symbolization is unified and that the design of the symbols must be considered excellent for the sixteenth century. In all, eleven symbols are used. Except for the relief, which is depicted by using a technique similar to Chinese landscape painting, the elements are represented by geometric symbols. Classification of these symbols is quite logical. For example, six different symbols were used to show the six levels of settlements. The sizes and patterns of these symbols vary according to the importance of the settlement: the higher the level of the settlement, the bigger the symbol. Some of the symbols are similar



4. Map of Ch'in-chiang Township. From Yeh Ch'un-chi and Kuo Chih-fan, comps., *Yung-an hsien chih*, 3 ch., 1586. Text 2 ch., 9 cols. of 20 chars. Maps 1 ch., block of the map 20 x 26.8 cm. Collection of the National Library of China, Peking.

to those used in many modern maps. For example, villages and townships are represented by a small circle and a small circle with a dot in it respectively. In addition, except for city names, the names of the settlements were placed outside the symbols, an advance on the old pattern, which placed the names of the settlements within their symbols. By putting the names outside the symbols, it was possible to use smaller symbols. In this way, the location of the settlements could be indicated more precisely and the map itself could be more detailed. Furthermore, the design of these symbols corresponds to the subject of the maps. The main purpose of these four maps was to show the administrative subdivisions of Yung-an County, and to emphasize this purpose the administrative boundaries were designed as thick lines, making the administrative division the most obvious element on the maps.

To help readers understand the maps, a legend was inserted in the lower left-hand corner of the first one, the "Yung-an hsien t'u," to explain the meaning of the eleven symbols. The use of a legend indicates significant progress in the development of cartography. The earliest legends in extant Chinese maps appeared in the Ming dynasty. In "A General Map of the Ming Dynasty with Postscript Written by Yang Tzu-ch'i" ("Yang Tzu-ch'i pa Yü-ti t'u," 1512-1513), the legend is in the lower left-hand corner of the map. It appears as a written explanation without any symbols. The legend in the *Enlarged Terrestrial Atlas* (*Kuang-yü t'u*, 1555) compiled by Lo Hung-hsien (courtesy name Lo Nien-an, 1504-1564), an outstanding map maker of the Ming dynasty, is generally regarded as a landmark in the application of the legend. This legend includes twenty-four well-designed symbols and their explanations. The entire legend, however, is placed in the preface rather than on the maps themselves. It seems that the legend on the "Yung-an hsien t'u" in the *Yung-an hsien chih* is the earliest extant example of an entire legend that included both symbols and written explanations appearing on the map itself. This indicates progress because it is easier for readers to use a legend that is placed on a map than one that appears in a preface.

Orientation is another basic element in map making. All four maps in the *Yung-an hsien chih* placed north at the top. On the margins of the main map of Yung-an County, both distances and directions to neighboring counties have been indicated. An example is "thirty *li* to the north is K'ang-ho at the boundary of Ho-yüan County." On the margins of the other three maps, only the direction toward the neighboring sites is indicated.

It is remarkable that one of the modern cartographic principles of selection was also used in the maps in the *Yung-an hsien chih*, especially in the three township maps. This principle is that the contents of the central area should be more detailed than those of peripheral areas; in other words, more map elements should be included in the main area than in the outlying areas. For example, the "K'uan-te tu t'u" on average includes roughly 4 place names in one square of the grid in the main area, but only about 0.5 place names in one square in the peripheral areas, or about eight times as many place names in the main area as in the outlying areas.

The maps in the *Yung-an hsien chih* are also detailed. For example, in the main area of the "K'uan-te tu t'u," 135 place names, each accompanied by its symbol, are shown. Of these, 112 refer to settlements and the rest to mountains. Since the size of the main area on this map is about 165 square centimeters, there are on average about 0.82 place names per square centimeter in the main area. This number is close to that of a 1:200,000 modern topographic map of the same area. In addition to the settlements and mountains, this map also shows rivers, roads, and boundaries in detail.

The drafting and printing skills exhibited in these maps are excellent, considering that they date from the sixteenth century. The diameter of the circle that represents villages and townships on the maps is only about 2 millimeters, and the size of each Chinese character is about 3.5 by 3.5 millimeters. As a result, despite the fact that so many detailed elements have been included, the maps are still clear and easy to read.

In brief, the maps in the *Yung-an hsien chih* are detailed, carefully designed, and beautifully drafted and printed. They are outstanding among the gazetteer maps of the Ming dynasty or earlier.

#### MAPPING PROCESS

There are few records describing the process of mapping in ancient Chinese literature. Fortunately, in his preface to the *Yung-an hsien chih*, Yeh Ch'un-chi, the compiler of the maps, gave a brief description of how they were constructed:

When Yung-an County was established, . . . Yü [an official in charge of field work] and surveyors were ordered to make maps. They wore shoe spikes (*lei*) to make the survey maps. A total of four surveying maps was finished. Three of them were maps of

townships (*tu*), and the other one was a general map of the county (*hsien*). The contents of the maps were complicated. In order to improve the surveying results, the old residents in the county were visited. These maps had been redrawn three or four times before the final products were completed.

Shoe spikes (*lei*) were used in mountain climbing. In classical Chinese “*lei*” is also called “*chü*,” of which an annotation to the *Dynastic History of the Han (Han shu)* offers a further explanation: “A ‘*chü*’ [spike] is made of iron. It is in the shape of a cone and is about half a *ts’un* long.<sup>10</sup> People fix them to their shoes to prevent sliding down when climbing mountains.”<sup>11</sup>

On the basis of Yeh Ch’un-chi’s explanation, it can be inferred that the maps in the *Yung-an hsien chih* were made in three steps: First came the map survey, that is, the original survey maps were made in the field using surveying tools. Second was field completion, that is, investigating and improving the survey results in the field. Cartographic design and drafting, that is, designing and drawing the drafting sheets on the basis of the improved survey maps, constituted the third step. Because the maps in the *Yung-an hsien chih* are printed maps, there must have also been a fourth step — engraving the blocks and printing the maps — although there is no direct record of this step in the *Yung-an hsien chih*.

Yeh Ch’un-chi’s explanation of the mapping process in the *Yung-an hsien chih* is significant for research on the history of Chinese cartography because it is difficult to find original records that deal with the mapping process in Chinese historical sources, especially records concerning the survey maps and the process of field completion. For example, the Han maps on silk found in Ma-wang-tui (second century B.C.) generally have been regarded as having been made by surveying. Yet the only basis for this hypothesis is the accuracy of the maps themselves and the possible technical background of that time — there is no direct evidence that any surveying was done in the construction of these maps.

#### LO HUNG-HSIEN AND THE INFLUENCE OF HIS *KUANG-YÜ T’U*

The study of maps cannot be divorced from their cartographic background. One reason the maps in the *Yung-an hsien chih* are so outstanding is that they were influenced by Lo Hung-hsien and his *Kuang-yü t’u*.

As discussed above, Chinese map makers developed their own carto-

graphic tradition, one based on the concept of a flat earth surface. During the Western Chin dynasty (265–316), P'ei Hsiu (223–271), the father of Chinese cartography, proposed six principles for making maps and established the theoretical basis for this tradition.<sup>12</sup> These six principles are *fen-lü*, *chun-wang*, *tao-li*, *kao-hsia*, *fang-hsieh*, and *yü-chih*. These terms are suggestive. One might presume that they signify something like the following: proportion, direction, distance, height, angle (right or acute), and line (curved or straight). Nonetheless, such speculation does not indicate how they may have been specifically applied in the technique of map making. Although scholars have different explanations for the details of these six principles, basically the principles emphasize the quantitative elements needed to make accurate maps, such as map scale, directions, and distances between places.

After P'ei Hsiu, the quantitative tradition was continued through the efforts of many Chinese map makers, among them Chia Tan (729–805) of the T'ang dynasty. According to his biography in the *Old Dynastic History of the T'ang* (*Chiu T'ang shu*), he drew a large map about 3 by 3.3 *chang*,<sup>13</sup> which is entitled “Map of China and the Barbarians in the World” (“Hainei hua i t'u”). This map shows both historical place names before the T'ang period and contemporary place names of the T'ang dynasty. The map used two colors, red and black, to distinguish the two kinds of place names, the first time this method was used for Chinese maps.<sup>14</sup>

In the Northern Sung period, Shen Kua (1031–1095) made his “Map of the Counties and the Prefectures” (“Shou-ling t'u”). This map was more accurate than older ones. On the older maps, the directions between places were only noted up to eight degrees: north, northeast, northwest, south, southeast, southwest, east, and west. In contrast, Shen Kua used twenty-four degrees to make his map. In another publication he explained that the twenty-four degrees were named according to the twelve “earthly branches” (*ti-chih*), eight of the ten “heavenly stems” (*t'ien-kan*), and four of the eight “divinatory symbols” (*kua*) used in ancient China.<sup>15</sup> This progress may be related to advances in the technology for making compasses at that time.

During the Yüan dynasty, Chu Ssu-pen (1273–1333)<sup>16</sup> spent about ten years (1311–1320) compiling his “Terrestrial Map” (“Yü-ti t'u”), basing it on older maps, literary sources, and his travels, which took him to about ten provinces. The “Yü-ti t'u,” about seven by seven *ch'ih*,<sup>17</sup> was a large

map of the Yüan dynasty's territory. According to later records, this map definitely used the grid system.

Unfortunately, none of the maps made by P'ei Hsiu, Chia Tan, Shen Kua, and Chu Ssu-pen mentioned above has survived. The evidence for these maps can only be found in texts of Chinese literature. Lo Hung-hsien's *Kuang-yü t'u* is thus the most important and influential cartographic work that has survived from the quantitative tradition of Chinese cartography. Based on Chu Ssu-pen's "Yü-ti t'u," the *Kuang-yü t'u* was Lo's most important contribution to the development of Chinese cartography. An atlas of China, the *Kuang-yü t'u* contains forty-five maps: one general one, sixteen of the provinces, sixteen of the border regions, three of the Yellow River, three of the Grand Canal, two of sea routes, and four that covered Korea, Annam (the northern part of modern Vietnam), Mongolia, and Central Asia. This atlas accurately reflected large amounts of new geographical information, and all the maps were drawn by using the grid system. After the first printed edition appeared in 1555, the atlas was reprinted five times, the last edition appearing in 1799. It was also copied by hand. The influence of the *Kuang-yü t'u* continued for about two hundred years, and it was an important reference for many map makers in China during this period.

Specifically, Lo Hung-hsien's contribution to the development of cartography included three aspects. First, he continued the quantitative tradition in Chinese cartography and left us an actual example of his cartographic work. Although Chu Ssu-pen's "Yü-ti t'u" is one of the most important maps in Chinese history, it has not survived because the original map was drawn on a large sheet, which made it difficult to store and preserve. Only through Lo Hung-hsien's atlas could Chu Ssu-pen's achievement be passed on. Second, Lo Hung-hsien also created several new maps besides those he copied from "Yü-ti t'u." Third, as already mentioned, Lo Hung-hsien's *Kuang-yü t'u* contains the earliest extant maps to apply a legend including both symbols and written explanations.

The influence of Lo Hung-hsien and his *Kuang-yü t'u* is clearly reflected in the *Yung-an hsien chih* maps. In his "Forward to the Maps of Yung-an" in the *Yung-an hsien chih*, Kuo Chih-fan, co-author of the gazetteer, mentioned that "Mr. Yeh Shih-tung<sup>18</sup> and Mr. Lo Nien-an are very good at making maps by using the grid system, or 'hua-fang chi-li.' This method was also used to make the maps of Yung-an." In the preface, Yeh Ch'un-chi,

the major author of the maps and the gazetteer, explained that “*hua-fang chih-li* is a mapping method used by Lo Wen-kung.<sup>19</sup> It was used to show territory, administrative divisions, population, and land tax on maps. I also used this method to make the maps in the gazetteers of Hui-an and Shun-te counties.”

Yeh Ch'un-chi then went on to explain the mapping process used (see the paragraph quoted in “Mapping Process,” above). From Kuo Chih-fan and Yeh Ch'un-chi's explanations, it can be seen that Lo Hung-hsien had a great influence in Yung-an County, and that the maps in the *Yung-an hsien chih* were made by adopting Lo's methods. Also important in Yeh Ch'un-chi's explanation is the fact that he had compiled the maps in the gazetteers of Hui-an and Shun-te counties by using the grid system called *hua-fang chih-li* before he made the maps in the *Yung-an hsien chih*. Unfortunately, no copies of these two gazetteers have yet been found. Sadly, it is likely that they have been lost or destroyed.

Evidence for the influence of Lo Hung-hsien and his *Kuang-yü t'u* on the maps in the *Yung-an hsien chih* can also be found in an explanation written by Ch'en I-lien in the *Gazetteer of the Hui-chou Prefecture (Hui-chou fu chih)* in 1595. In his explanation, Ch'en I-lien pointed out:

No mapping methods are better than those used in Lo Wen-kung's *Kuang-yü t'u* of the Ming dynasty. Mr. Ku Yen, the governor of Hui-chou Prefecture, made the “Map of the Hui-chou Prefecture” (“Hui-chou yü t'u”) by imitating the *Kuang-yü t'u*. . . . After that, Mr. Yeh Ch'un-chi, a resident of Hui-chou, also made the maps by imitating Lo Wen-kung's *Kuang-yü t'u* when he compiled the *Yung-an hsien chih*. The maps in the *Yung-an hsien chih* show mountains and rivers in detail.

Ch'en I-lien's explanation shows clearly that the maps in Lo Hung-hsien's *Kuang-yü t'u* were regarded as the best maps of the time and, again, that Yeh Chun-chi imitated the *Kuang-yü t'u* when he made the maps in the *Yung-an hsien chih*.

By analyzing the similarity of these two groups of maps, additional evidence for the influence of Lo Hung-hsien's *Kuang-yü t'u* can be seen. First, both groups of maps were made by using the grid system. This similarity is significant because few gazetteers during this period included maps based on a grid system. Second, the orientation of both sets of maps places north

at the top. To put this striking similarity in context, it should be remembered that throughout Chinese history, various orientations were used in map design. For example, in the *Gazetteer of the Chien-k'ang Prefecture*, four different orientations were used — that is, north, south, east, or west could appear at the top of the map. Third, the design of the legend for the maps in the *Yung-an hsien chih* is similar to that in the *Kuang-yü t'u*. Although the *Yung-an hsien chih* has eleven symbols and the *Kuang-yü t'u* twenty-four, six of them are the same in the two legends. In addition, the style of the explanations and the design principles of the legends are similar. For example, the explanations in both legends are in the form of “mountain shown by . . .” or “river shown by . . .”

In brief, it is apparent from the above records in the gazetteers and from the similarities between the two groups of maps that the maps in the *Yung-an hsien chih* were deeply influenced by Lo Hung-hsien; when Yeh Ch'un-chi was compiling his maps, he obviously consulted the *Kuang-yü t'u*. This is another important reason the maps in the *Yung-an hsien chih* are so outstanding among gazetteer maps.

#### CONCLUSION

From the above discussion, it can be seen that the *Yung-an hsien chih*, which probably exists as only a single exemplar, is significant for the study of the history of Chinese cartography in several ways. First, it is the earliest Chinese gazetteer in which all the maps were made by using the grid system known as *chi-li hua-fang*. This fact, from one aspect, reflects when and how the quantitative tradition of Chinese cartography specifically exerted influence on the production of gazetteer maps. Second, the text of the *Yung-an hsien chih* provides a description of the map-survey and field-completion stages in the production of maps. The work in question also leaves modern scholars with the final result of the mapping processes, the full maps themselves. Although these data are simple, they are still valuable for examining mapping processes in Chinese history because few materials are available for this exploration. Third, among extant Chinese maps, the maps in the *Yung-an hsien chih* are the first to include an entire legend with both symbols and explanations on the map itself instead of within the text. This is evidence of progress in the use of legends. Finally, the *Yung-an hsien chih* also provides useful materials for studying the influence of Lo Hung-hsien and

his *Kuang-yü t'u*, an important figure and an important work in the history of Chinese cartography.

## NOTES

1. For important books on the history of Chinese cartography, see Ogawa Takuji, *Shina rekishi chiri kenkyū* (Tokyo: Kōbundō shobō, 1928–1929), 2 vols.; Wang Yung, *Chung-kuo ti-t'u shih-kang* (Peking: San-lien shu-tien, 1958); Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1959), vol. 3, chap. 22; Ch'en Cheng-hsiang, *Chung-kuo ti-t'u-hsüeh shih* (Hong Kong: Shang-wu yin-shu-kuan, 1979); Lu Liang-chih, *Chung-kuo ti-t'u-hsüeh shih* (Peking: Ts'e-hui ch'u-pan-she, 1984); Chung-kuo k'o-hsüeh-yüan tzu-jan k'o-hsüeh-shih yen-chiu-so, ed., *Chung-kuo ku-tai ti-li-hsüeh shih* (Peking: K'o-hsüeh ch'u-pan-she, 1984), chap. 8; Ts'ao Wan-ju et al., eds., *Chung-kuo ku-tai ti-t'u-chi* (Peking: Wen-wu ch'u-pan-she, 1990), vol. 1; "Cartography in the Traditional East and Southeast Asian Societies," in "The History of Cartography," ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, forthcoming), vol. 2, bk. 2.
2. Ho Shuang-ch'üan dated these maps to ca. 239 B.C. See his "T'ien-shui Fang-ma-t'an Ch'in mu ch'u-t'u ti-t'u ch'u-t'an," *Wen-wu*, no. 2 (1989), pp. 12–22. In contrast, Chang Hsiu-kuei argued that these maps were drawn ca. 320–305 B.C.; see his "T'ien-shui Fang-ma-t'an ti-t'u te hui-chih nien-tai," *Fu-tan hsüeh-pao (she-hui k'o-hsüeh pan)*, no. 1 (1991), pp. 44–48. For other discussions of these maps, see Kansu Province Archaeological Institute and Cultural Center of the Pei-tao District of T'ien-shui City, "Kansu T'ien-shui Fang-ma-t'an Chan-kuo Ch'in-Han mu-ch'un te fa-chüeh," *Wen-wu*, no. 2 (1989), pp. 1–11, 31; Ts'ao Wan-ju, "Kuan-yü T'ien-shui Fang-ma-t'an Ch'in mu ch'u-t'u ti-t'u te chi-ko wen-t'i," *Wen-wu*, no. 12 (1989), pp. 78–85.
3. For discussions of the "Yü chi t'u," see W. E. Soothill, "The Two Oldest Maps of China Extant," *Geographical Journal* 69.6 (1927), pp. 532–555; Ts'ao Wan-ju, "Hua i t'u ho Yü chi t'u te chi-ko wen-t'i," *K'o-hsüeh shih chi-k'an*, no. 6 (1963), pp. 34–38; see also her "Lun Shen Kua tsai ti-t'u-hsüeh fang-mien te kung-hsien," *K'o-hsüeh shih wen-chi*, no. 3 (1988), pp. 81–84 and "Tsai-lun Yü chi t'u te tso-che," *Wen-wu*, no. 3 (1987), pp. 76–78, 59; Liu Chien-kuo, "Chen-chiang Sung-tai Yü chi t'u shih-k'o," *Wen-wu*, no. 7 (1983), pp. 59–63.
4. Needham, *Science and Civilisation in China*, vol. 3, p. 547.
5. *Ibid.*, p. 517.
6. *Ibid.*; here Needham was borrowing from A. Wiley. Needham translates *fang-chih* as "local topographical writings."
7. Chu Shih-chia, *Chung-kuo ti-fang-*

- chih tsung-lu*, enlarged edn. (Peking: Shang-wu yin-shu-kuan, 1958), p. 244.
8. One *li* equals about 0.5 kilometers.
  9. See Bangbo Hu, "Ching-ting Chien-k'ang chih ho Chih-cheng Chin-ling hsin chih chung te ti-t'u ch'u-t'an," *Tzu-jan k'o-hsüeh shih yen-chiu* 7.1 (1988), pp. 24-37.
  10. One *ts'un* equals about 3.3 centimeters.
  11. *Han shu* (Peking: Chung-hua shu-chü, 1962), 29, p. 1676.
  12. Scholars often quote P'ei Hsiu's six principles from "the biography of P'ei Hsiu" in the *Chin shu* (Peking: Chung-hua shu-chü, 1974), 35, pp. 1037-1041. However, the text on the six principles in the *Chin shu* is incomplete. The complete text appears in Ou-yang Hsün's *I-wen lei-chü* (Shanghai: Shanghai ku-chi ch'u-pan-she, 1965), 6, pp. 100-101 and Hsü Chien's *Ch'u-hsüeh chi* (Peking: Chung-hua shu-chü, 1962), 5, p. 90. See Ch'en Lien-k'ai, "Chung-kuo ku-tai ti-i-pu li-shih ti-t'u-chi," *Chung-yang min-tsu hsüeh-yüan hsüeh-pao*, no. 3 (1978), pp. 76-84.
  13. One *chang* equals about 3.33 meters.
  14. *Chiu T'ang shu* (Peking: Chung-hua shu-chü, 1975), 138, p. 3786.
  15. That is, *tsu, ch'ou, yin, mao, ch'en, ssu, wu, wei, shen, yu, hsü, hai, chia, i, ping, ting, keng, hsin, jen, kuei, ch'ien, k'un, ken*, and *hsün*. See Hu Tao-ching, ed., *Meng-hsi pi-t'an chiao-cheng* (Shanghai: Shang-hai ku-chi ch'u-pan-she, 1987), pp. 991-992.
  16. The year of Chu's death is variously recorded. This is quoted from Wang Yung, *Chung-kuo ti-t'u shih-kang* (Peking: San-lien shu-tien, 1958), p. 63.
  17. One *ch'ih* equals about 0.33 meters.
  18. From the preface, it is obvious that Yeh Shih-tung is a courtesy name of Yeh Ch'un-chi.
  19. The context of this paragraph and other information in the gazetteer indicate that Lo Wen-kung is Lo Hung-hsien.

GLOSSARY

Annam 安南	Ching-ting 景定
chang 丈	<i>Chiu T'ang shu</i> 舊唐書
Ch'ang-sha 長沙	Chou Ying-ho 周應合
Ch'en I-lien 陳一濂	chü 楸
Chia Tan 賈耽	Chu Shih-chia 朱士嘉
<i>Chien-k'ang chih</i> 建康誌	Chu Ssu-pen 朱思本
ch'ih 尺	<i>Chung-kuo ti-fang-chih tsung-lu</i>
chi-li hua-fang 計里畫方	中國地方誌綜錄
(Western) Chin 西晉	chun-wang 準望
Ch'in-chiang tu t'u 琴江都圖	fang k'uo shih li 方括十里

- fang-chih 方誌  
 fang-hsieh 方斜  
 Fang-ma-t'an 放馬灘  
 fen-lü 分率  
 fu 府  
 Hai-nei hua i t'u 海內華夷圖  
 Han 漢  
 Han shu 漢書  
 Ho-yüan 河源  
 Hsia 夏  
 hsien 縣  
 hua-fang chi-li 畫方計里  
 Huang-ch'ao Chien-k'ang fu-ching chih t'u  
   皇朝建康府境之圖  
 Hui-an 惠安  
 Hui-chou fu chih 惠州府誌  
 Hui-chou yü t'u 惠州輿圖  
 K'ang-ho 康和  
 Kansu 甘肅  
 kao-hsia 高下  
 Ku Yen 顧言  
 kua 卦  
 Kuang-tung pu-cheng-ssu 廣東布政司  
 Kuang-yü t'u 廣輿圖  
 K'uan-te tu t'u 寬得都圖  
 Ku-ming tu t'u 古名都圖  
 Kuo Chih-fan 郭之藩  
 Kwangtung 廣東  
 lei 標  
 li 里  
 Lo Hung-hsien 羅洪先  
 Lo Nien-an 羅念庵  
 Lo Wen-kung 羅文恭  
 Ma Kuang-tsu 馬光祖  
 Ma-wang-tui 馬王堆  
 mei-fang erh-shih li 每方二十里  
 mei-fang pai li 每方百里  
 mei-fang shih-wu li 每方十五里  
 Ming 明  
 P'ei Hsiu 裴秀  
 pu-cheng-ssu 布政司  
 Shen Kua 沈括  
 Shou-ling t'u 守令圖  
 Shun-te 順德  
 Sung 宋  
 T'ang 唐  
 tao-li 道里  
 ti-chih 地支  
 t'ien-kan 天干  
 T'ien-shui 天水  
 ts'un 寸  
 tu 都  
 Tzu-chin 紫金  
 Wang Yung 王庸  
 Wan-li 萬曆  
 Yang Tzu-ch'i pa Yü-ti t'u  
   楊子器跋輿地圖  
 Yeh Ch'un-chi 葉春及  
 Yeh Shih-tung 葉石洞  
 Yü 禹  
 Yü 虞  
 Yü chi t'u 禹迹圖  
 Yüan 元  
 yü-chih 迂直  
 Yung-an 永安  
 Yung-an hsien chih 永安縣誌  
 Yung-an hsien t'u 永安縣圖  
 Yü-ti t'u 輿地圖