Zheng He Hanghai Tu (*Nautical Chart of Zheng He*): A reappraisal

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Abstract

This article attempts to analysis the manuscript of *Zheng He Hanghai Tu* (*Nautical Chart of Zheng He*). The sailing chart, comprising a set of navigational notes written by Admiral Zheng He, was published in the military pamphlet of the Ming dynasty, *Wubei Zhi*. The study is divided into three parts. The first part examines the history of the development of *Zheng He Hanghai Tu*, the second part explores the essence of the contents of this work and the third part discusses its important role during the Ming dynasty, which attempted to understand the geography of the world. This study used qualitative methods and referred to the map related to East African locations, revealing that most of the entries in the country map and the old-generation population register have not been analysed. Using *Zheng He Hanghai Tu*, this article also divided the zones of the South China Sea archipelago into *Shitang* (Paracel Island), *Wansheng Shitangyu* (Macclesfield Bank) and *Shixing Shitang* (Spratly Islands) to explain that the Ming dynasty progressively understood the geography of Southeast Asia, Persia, Arab and Africa. This article reveals insights into how, through his long voyages, Zheng He gained a new understanding of these places in particular and of world geography in general.

Keywords: Ming dynasty, sailing chart, South China Sea, *Southeast* Asia, *Zheng He Hanghai Tu*, Zheng He

Introduction

Zheng He Hanghai Tu (*Nautical Chart of Zheng He,* hereafter referred to as '*Hanghai Tu*') is a map drawn according to the reports of several voyages made by Admiral Zheng He (1371–1433) from 1425–1433 during the Ming Dynasty (1368–1644). This work features ancient maritime maps that are still preserved in China to this date. *Hanghai Tu* contains cruise maps, coastal defence maps and coastal maps. The sailing chart's original name was *Zibao Chuanchang Kaichuan cong Longjiangguan Chushui Zhidi Waiguo Zhufan Tu* (*Map of Voyages from the Big Ship Factory in Longjiangguan to Foreign Countries*), which was shortened to *Hanghai Tu*. As

described by Hsu (1991, p. 27), the chart included information accumulated during Zheng He's earlier voyages and data obtained from the voyages of other sailors in and prior to the 15th century. The original work was a strip map rolled up into a scroll, but it was later divided to fit into 40 pages printed in book form. According to many scholars, such as Zhu (1984, 1985, 1986, 1988, 2010), Hsu (1988), Park (2012), and Miksic (2013), the map was drawn after Zheng He returned from his sixth travel when all officials participating in the journey stayed in the southern capital of Nanjing, Jiangsu Province, and when Emperor Xuande, the fifth emperor of the Ming Dynasty who reigned from 1425–1435, envisaged a seventh journey.

This sailing chart contains 20 navigation maps on the direction of navigation, distance in the ocean and various ports. This work was first compiled by Mao Yuanyi (1594–1640) in 1621 and published in 1628 as *Wu Bei Zhi* (*A Record of Military Affairs*). This sailing chart is an important document in studying Zheng He's expedition to the West Ocean apart from such works as Gong Zhen's *Xiyang Fanguo Shi* (*Record of Foreign Countries of the Western Ocean*, 1434), Ma Huan's *Yingya Shenglan* (*Overall Survey of the Ocean Shores*, 1435), and Fei Xin's *Xing Cha Shenglan* (*The Overall Survey on the Star Raft*, 1436). *Hanghai Tu* is widely considered the earliest sailing chart of China and also includes the 12,000 km voyage made by Zheng He between China and numerous ports along the Arabian and African coasts (Hsu, 1988). This voyage reached the western extremities at Khorramshahr and Jedah in Asia and Kilwa Kisiwani Island (a community on an Indian Ocean Island off the southern coast of present-day Tanzania) in Eastern Africa. In addition, the chart provides numerous details of the voyages made along the coasts of China and Southeast Asia (Hsu, 1991).

According to Duyvendak (1933), this sailing chart was kept by Mao Kun, a collector of military and maritime materials, in the bookstore he had built. He had access to this because he was the governor of Fujian at that time. As mentioned earlier, this chart was originally in the form of a scrollable 20.5 cm × 560 cm strip map but was later divided into 40 pages and compiled in 1621 by Mao Kun's grandson, Mao Yuanyi (1594–ca. 1641). Hence, the map is also referred to as the *Wubei Zhi Chart*. To distinguish it from other maps in *Wubei Zhi*, this particular map was known as 'Mao Kun' by Western scholars through the study of Mills (1970).

In the book's preface, Mao Yuanyi clearly indicated that all the geographical and navigation maps sketched in it were based on the expeditions of Admiral Zheng He. Therefore, he noted that the purpose of map binding was to 'include all information for future generations' reference and [to serve] as a memento of the glorious achievements of Admiral Zheng He's expedition' (Mao Kun, 1961, p. 3). This chart, which was compiled nearly 200 years after the death of Zheng He, was sketched in a traditional drawing style using landscape methods that detailed complex geographical images, such as clusters of mountains, lakes, terrains, and rivers (Alter, 1959). In modern Chinese sources, this map is better known as the *Hanghai Tu*.

Origin of Zheng He Hanghai Tu

According to Mills (1970), the chart was probably not the sole work of one of its authors (referring to Mao Kun) but was rather produced by a group of authors, with additional notes updated and corrected after obtaining new information after each voyage by Zheng He's fleet. Mills (1970, 1974) also argues that this map may have already been completed since Zheng He's sixth expedition in 1421, with some new information added after the expedition. Therefore, the map was estimated to be dated around 1422 and completed between 1423 and 1430. Zheng He completed a

total of seven voyages that lasted from 1405–1433. In addition, Duyvendak (1933) and Pelliot (2003) argued that the map may have been partly based on Arab cartography or geographical influences due to the appearance of some Arabic names and terms in the map book, such as *Jazirah* ('island') and *Swahili* ('South Asia').

After presenting a sketch of Nanjing and the Yangtze River, this chart shows many coastal areas and islands along the sea route, and these places are depicted in their positions close to the coastal contour. Meanwhile, the coast of the main land mass is shown as an indefinite line, with a deep V-shaped indentation to describe it as a river estuary. As a result, the map properties focused more on coastal areas only. Hence, the Malay Peninsula was indistinguishable from other islands, whilst the sketch of the map of India became elongated as its interior was removed. The layout of the map pages followed the traditional Chinese book format, starting from right to left and with sketches starting from the port of Nanjing and ending in the province of Hormuz. This chart details not only the distance and altitude of the astronomy. However, in some places visited by Zheng He, it also shows the depth of water and the quality of its beaches. Furthermore, Nanjing is depicted as the centre of the map and spreads across routes throughout Southeast Asia, Persia, Arabia and the east coast of Africa. Hence, according to Zhou (2017), the information indicated in the map provides a basic navigation guide for sailors.

Meanwhile, dotted lines in the map indicate the route of the voyage, with directions given along the route. Navigation indicators are provided in terms of compass points and distances. The compass points use a 24-point compass system with Chinese characters indicating each point (which is further divided into three). Meanwhile, distance is expressed in Chinese time units (each unit is estimated to take 2.4 hours). Point calculations and distances are subject to the speed of the current and wind of the area.

The route to Southeast Asia is recorded in the chart as a route to the West Sea, pictured around Java or Sumatra, to the Indian Ocean and beyond. Meanwhile, the West Sea route starts from the South China Sea through the Strait of Malacca, detailing areas in Indochina, the Malay Peninsula and Sumatra. However, the eastern outskirts of the South China Sea have not been determined and are only shown in Borneo and the Sulu Archipelago. Furthermore, navigational information has been provided regarding routes to the islands on the east. The areas recorded in the chart include Chenla, Champa, Siam, Langkasuka, Singapore, Malacca, Sumatra and Kalimantan. As mentioned by Zhu Jianqiu (1984, 1985, 1986, 1988), the charts particularly register the embarkation times, anchorages, shallows, reefs and over 500 place names, of which more than 300 are foreign.

The illustrations of the Southeast Asian countries visited by Zheng He provide significant meaning to the researcher in terms of proving the value of location and strategic significance in navigating between Southeast Asia and the West Sea. Indeed, *Hanghai Tu* does not just show topographic information and features on the earth's surface; it also presents a process of coming up with the appropriate shapes for symbols that will describe the type, nature and location of certain elements in a map. At the same time, the chart describes the overall perspective and shows the chart as a balanced entity, thus creating optimal visibility for the map's user. This also indicates that both the knowledge about the oceans and the navigation techniques employed during Zheng He's time had already reached an advanced scientific level. The chart is a remarkable reference regarding the studies of Zheng He's voyages and East–West traffic history. Likewise, it holds an important position in the studies of world cartology and the histories of geography and navigation. The chart also features navigation techniques that determine the latitude by observing the stars and are also used for sailing (*Guohai xianqing tu* or 'cross-ocean astronomy'). The four *Guohai*

xianqing tu are given at the end with instructions to place the ship in relation to the stars and constellations to ensure proper navigation along two routes: between Sumatra and Sri Lanka and between Hormuz and Calicut. Thus, the chart can be considered an important document for studying the history of cartography and communication between China and foreign countries, especially during the Ming Dynasty.

Literature review

The compass is one of the four major inventions produced in China. The Chinese geomantic compa**ss** direction guide used in world navigation, known as the *luopan*, is also one of the earliest inventions in China. Before this invention, navigators used signs related to the ocean and mainly relied on astronomical directions. According to Zhuyu, in the book *Pinzhou Ketan* (Song Dynasty Written Records on Rules and Laws, Customs, Maritime Traffic and Trade), it was during the Song Dynasty that the *luopan* was first created and used during nautical voyages, allowing sailors to see the compass even when it was dark. In his book entitled *Xuanhe Fengshi Gaoli Tujing* (*Diagram on the Acceptance of the Order to Carry Out Diplomacy from Emperor Xuanhe's Reign to Choson During the Reign of Emperor Korai*) Xuke mentioned that the compass can be used to assess the south and north directions even when it was dark. Yet, even with the *luopan* directional guide, there were still some compass-related problems during a voyage. For example, during the Yuan Dynasty, Zhou Daguan, in the work entitled *Zhenla Fengtu Ji* (*The Customs of Cambodia*), said that 'since the opening of Wenzhou, *Xingding Weizhen*, the same goes since the opening of Zhenpu, *Xingkun Shenzhen*'. Both *Xingding Weizhen* and *Xingkun Shenzhen* refer to compass directions. This is related to the earliest record of the position of the compass direction. During the voyage, Zheng He had previously followed this voyage route and then wrote a book, *Zhenwei Bian*, in which he recorded in detail the direction shown by a *luopan* whilst he was sailing. In the introduction of the book *Xiyang Chaogong Dianlu* (*Record of Tribute Performance from the State of the Western Ocean*), Huang Shengzeng compared *Xingcha Shenglan* (*Fei-xin Sailing Works*) and *Yingya Shenglan* (*Record of Ma-huan Voyage*). Unfortunately, the book was misplaced. During the Ming Dynasty, Zhangxin wrote in *Dongxiyang Kao* (*Zheng-xie Notes*) that the old sailors had *Zhenjing* (*A Guidebook on Sailing Directions*). Meanwhile, during the Qing Dynasty, Huang Shujing wrote in *Taihai Shicha Lu* (Huang Shujing's Records as a Patrol Officer in Taiwan) that 'sailors in every ocean have their own secret book named *Yanggeng*'.

A clearer and more comprehensive record of guidance in the East–West Ocean is the book entitled *Dongxiyang Kao*. In addition, *Zhoushi Kao* (*Zheng-Xie Record, Sailor Volume*), *Shunfeng Xiangsong* (*Handwritten Manuscript on Nautical Science*) and *Zhinan Zhenfa* (*Navigation Handbook*) recorded the voyage route from Taicang to Japan, whilst the record of the voyage route from Fujian to Vietnam can be found in *Annam Tuzhi* (*Annam Map Book*). In 1974, Su Deliu, an old fisherman from the Qionghai District, presented *Shuilu Bu* (*A Book on Sea Route*). This particular book also belongs to this system. Thus, it can be said that numerous books related to directions were published during the Ming Dynasty. At that time, sea maps were drawn based on the use of compasses. Hence, the old maps in China gradually formed a compass-based map system. Although heavily influenced by mountain and river landscape drawing patterns, *Hanghai Tu*'s drawing techniques were based on actual navigational experience and directional signs along the sailing route, comprising a compass-based map system.

In the spring of 1956, a scholar named Zhang-xun stumbled upon an old cruise map, the *Xinanyang Gefan Zhenlu Fangxiang Tu* (*Guide Overseas Around the Southwest Ocean*), in an old bookstore at the Laiqing Ge Bookstore in Shanghai, which was owned by Jueluo Manbao (Gioroi Mamboo) during the Qing dynasty. Both works belonged to the compass-based map system, but the map was produced at the beginning of the Qing Dynasty, unlike *Hanghai Tu*. Given all the information related to the old map, *Hanghai Tu* could be considered the earliest directional map that is still preserved to this day. Indeed, according to Mill (1970, p. 252), 'this is the earliest Chinese map to give an adequate representation of Southern Asia, and the representation extends as far as Persia, Arabia and East Africa'.

Meanwhile, Ptak (2019) claimed that the map contained a guide the use of a compass and notches to mark the positions of stars. All these reflect how advanced China's voyages during the Ming Dynasty. Jun (2019) also claimed that Nanjing, first as the primary capital (1368–1420) and later as the secondary capital (1420–1644) of Ming China, was not only the starting point of the Zheng He voyages, but also an indispensable bridge in Ming China's connection with the Indian Ocean world.

Method and study area

This research is an explorative content analysis that aims to discover and explore in detail a topic that has been least explored by other researchers. The outcome could help provide a new understanding of the importance and uniqueness of *Hanghai Tu*. For this purpose, content analysis was conducted to study the contents of the map in a more objective, systematic, and quantitative manner. Content analysis is the main research method used to analyse and interpret relevant historical texts. Data were collected from relevant texts using this method.

Furthermore, secondary analysis was used in this research by studying the data obtained by the researchers and other parties, despite the differences in research goals between their works and the current study. Referring to previous sources is a suitable way of obtaining a descriptive view and determining cause and effect, as well as chronological development in the process of creating the map. Hence, the content analysis of this map is centred on Zheng He's notes of his travels to Southeast Asian countries. We focus our observation in this area due to the vast amount of information about the Southeast Asia depicted in the topographical map.

Subject matter of the Zheng He Hanghai Tu

Many past studies, including those of Hsu (1988), Hongping (2014), Po (2016), and Jiang et al. (2017), have investigated Chinese maps. However, most of these focused on names of places, navigation routes and *Guoyang Qianxing* (i.e. astronomical observation and navigation technology used in ancient Chinese navigation). In comparison, studies on maps in terms of the original system, the basic properties, the core contents, and reflections on geographical locations are lacking. Thus, the current article aims to examine these topics, hoping that the results can provide fresh ideas regarding *Hanghai Tu* and contribute to our understanding of this work and its neglected aspects.

To study a piece of an old map, the first step is to study the origin of the system. Therefore, the study of *Hanghai Tu* should follow the same approach. Sea voyages in China have a long

history, and ancient sailors have carried out sailing activities for a long time. Therefore, they accumulated massive amounts of geographical knowledge, enabling them to sketch the sea map using their basic knowledge. The famous ancient work of *Shan Hai Jing* (*The Classic of Mountains and Seas*), a Chinese classic text and a compilation of mythic geography (Lewis, 2009), originally had a picture that was broken and eventually disappeared, leaving only writings. Hence, the original sea map properties can only be assumed between the broken and missing pictures. Nevertheless, this demonstrates that sea maps have already existed in China since as early as the 4th century B.C.

Many years later, during the Song Dynasty (960–1279), a clearer sea map emerged. In 1142, the sixth year of Emperor Xuan-he's reign, Xu-jing was sent by the emperor through a sea voyage to Choseon (Korea) to carry out diplomatic duties. When Xu-jing (1091–1153) returned to China, he wrote *Xuanhe Fengshi Gaoli Tujing* (*llustrated Account of the Embassy to Koryo in the Xuanhe Era*). The account mainly covered two parts, map and writing. Today, the book has only the writings, as the pictures have been destroyed. The larger island, continents and smaller islands where ships sailed can be mapped based on Volume 34 of the book. It is said that the destroyed diagram may have contained a map of sea routes. Meanwhile, according to Wang Yinglin (1267), Volume 15 of *Chaoxing Haidao Tu* (*Sea Route Map of the Chaoxing Period*) states that during the reign of Emperor Chaoxing from the Song Dynasty, the *Shumiyuan* (Bureau of Military Affairs) reported news from spies that the enemy had gathered Huaiyang soldiers in Haizhou on May, 1132. The enemy secretly planned to use a small boat to cross the sea from the south. This news shocked Jiangxi officers. The enemies followed the South Suyang course because the sea route was smooth and easily led to Jiangxi. Therefore, Emperor Chaoxing urged two Jiangxi army commanders to send officers immediately so that they could control the situation. Based on the above records, the contents of *Haidao Tu* are certainly relevant to scholars of marine defence.

Furthermore, in *Zhu Fan Zhi* (*A Description of Barbarian Nations*), Zhao Rushi (1170–1231) stated in the introduction that he remembered all the pictures he had seen:

I, Rukuo [Rushi], was appointed to this post [as Maritime Trade Supervisor at Quanzhou, in 1224] and happened to look at a map of foreign countries on a free day. On it were marked such treacherous marine features as the Stone Beds [Shitang] and Long Sands [Changsa], as well as barriers like the Jiaozhi Ocean and the Bamboo Islands (Pulau Aur and Pulau Dayang) (Yang, 2020).

Shichuang (Shitang) denotes the Xisha Islands, whereas Changsha refers to the Nansha Islands. Shichuang and Changsha, in the general sense, comprise the South China Sea, so it can be said that the picture is related to the South China Sea and is likely to be used for navigation (Shen, 1997).

At the end of the Southern Song Dynasty, the Yuan Army headed south to China. Jin Luxiang proposed to the Song Emperor to restrain and attack the opponents. He planned to ask the troops to lead to Yanji (the southwestern part of Beijing City) by sea. Thus, the city of Xiangfan (now called Xiangyang) was likely to collapse on its own. In addition, he narrated the route of merchant ships from abroad. Usually, in state provinces or islands, some difficulties would arise; hence, it was necessary to implement the strategy with full force. General Bayan from Baarin arrived in Lin-an Province and obtained books and maps. At the same time, the Song Dynasty emperor ordered the transport of the national map instrument and the registered population to Yanji by sea. Subsequently, Zhuqing and Zhangxuan proposed a transport strategy that, surprisingly, was a sea route similar to that found in Jin Luxiang's diagram book.

Thus, by this account, it can be considered that the sea route map drawn by Jin Luxiang is already very complete and detailed. After the Song Dynasty, navigators from the Yuan Dynasty also drew sea maps, which became increasingly common during the Ming Dynasty. In the Ming and Qing Dynasties, drawing techniques may have been influenced by the traditional pictorial landscape method and topographic maps or influenced by the *Guang-yu-tu* map (enlarged terrestrial atlas). Most maps usually do not have their own style, unless it is the compass navigation map, which has its own style. Therefore, the *Nautical Chart of Zheng He* has its own uniqueness and special quality.

Understanding geography and reflection on Zheng He Hanghai Tu

Initially, *Hanghai Tu* was a scroll of drawings similar to many old Chinese map patterns, such as *Changjiang Wanli Tu* (*Changjiang River Map or Yangzejiang*). There were also many old Chinese sea maps with similar patterns, such as *Qianlong Wushiwu Nian* (1790) *Qisheng Yanhai Tu* and *Xianchao Qisheng Yanhai Tu*. Later, *Hanghai Tu* (*Map of Zheng He's Maritime Voyages*) was kept in *Wubei Zhi's* 240th volume, compiled by Mao Yuanyi and turned into a book during the eve of the collapse of the Ming Dynasty. In *Hanghai Tu*, Fan Wentao (1943, p. 10) claimed that *Hanghai Tu* has two editions: an appendix in *Wubei Zhi* and another in *Wubei Mishu*. The drawing in the first edition is clearer than in the second edition. *Hanghai Tu*, updated by Xiangda, is an attachment in *Wubei Zhi*. The *Hanghai Tu*, which was studied by Joseph Needham (2004, p. 285) in the book *Zhongguo Kexue Jishu Shi*, only consisted of about 20–22 pages of the original map. Around 43–89 names of places on the map have Arabic numerals. Therefore, Mills (1974) claimed that the drafting of this map may have involved outsiders who modified the original map and then combined the place names with Arabic numerals.

Hanghai Tu features a painting technique influenced by mountain and river landscape painting patterns. Many place names, especially geographic and landmark locations, such as temples, bridges, factories, and city gates, varied and have the characteristics of mountain and river landscape patterns. Paintings of mountains and river views are not only traditional chart designs of the past; they can also be considered symbolic paintings. Furthermore, shipping courses that record the orientation and distance of each location are included in the charts, along with some astronomical navigation data. However, the distance and position of a place are usually inaccurate. On the one hand, for a better understanding of geographical position, a larger and clearer map will be drawn. On the other hand, a geographical position that is less understood is usually summarised and narrowed. Therefore, the ratio is likely to be inaccurate. In *Hanghai Tu*, maps from the Nanjing large shipyard to Chiem Thanh (Champa) on pages 2–12 formed part of the entire map (pp. 12–22). Thus, based on the district area, the ratio is inaccurate. For example, a large map of the shipyard to Longxian Island (in the northwest corner of Sumatra, now in the waters of Aceh, namely, Pulau Beras) and Xilan Shan (now Sri Lanka) to Hulu Mushi (now Hormuz in Iran) indicates a clearer second part. In another example, from a large shipyard to the headwaters of Changjiang, the map is more detailed, whilst parts of Longxian Island to Sri Lanka are drawn with a much simpler design. Such features reveal that the chart designs are largely influenced by painting patterns depicting mountain and river landscapes.

Hanghai Tu belongs to the compass-based chart system used for navigation because it features navigation map features. The main point of the chart with regard to its core content is its function of facilitating navigation.

The essential feature of a compass-based chart is having a compass indicator. Thus, in this sense, we can say that the compass is the core content of the map. A typical compass usually contains information, such as direction and distance travelled, whilst others may include driving signs, sea depth measurements and star position observations. The compass is the direction of *luopan*. The Chinese *luopan* is divided into 24 directions. Compared to the current *luopan*, which has 360 degrees, each direction here is equal to 15 degrees. Travelling distance can be calculated using a *gang* (each *gang* is about 60 km or about 12.5–18 sea miles). At the same time, the depth was expressed in *tuo* (i.e. a measure of depth) equal to 1.7 meters.

Based on *Hanghai Tu*, the compass-based map from Taicang to Hormuz has 56 tracks, whereas that from Hormuz to Taicang has 53 runways. Most compass-based maps contain compass directions and travel distances. Thus, according to the compass and distance travelled, one can determine the direction and distance of the navigation journey. Therefore, according to Zhu (1988, p. 109), the description of the chart is perfect when compared to the description of the routes shown on the modem Map of World Communications.

Apart from the distance travelled, the map also depicts mountain peaks on the coast, bays, populated areas and shallow pots on reef islands. Some places also include painted city walls, government offices, temples, pagodas and bridges, although much of the core content is related to navigation. Mountain peaks, reef islands and pagodas were used as landmarks. For example, the bay allowed ships to anchor, whereas shallow reefs and troughs should be avoided whilst sailing around the coast, marked with the presence of many *Weisuo*. This refers to the organisation of the military system during the Ming Dynasty. Thus, when the map signifies *Weisuo*, this illustrates the connection with naval defence relations.

Next, we look at the topic regarding the direction on the map. The directions in ancient Chinese maps are usually north above and south below, although the opposite may also be used. For example, the geographical position for the third part of the Han tomb, *Ma Wangdui* in Changsha and the base team map are south above and north below. Moreover, parts from the large shipyard to the Changjiang Estuary are south above and north below. After passing the Changjiang Estuary, the north is now above, and the south is below whilst passing through the Bay of Bengal, whose direction basic is east above and west below. The positions of the ever-changing directions are rarely seen in the old maps of China. The change is due to the ease of use whilst sailing, which describes the features of a navigation map.

The core contents of the map were influenced by the patterns of mountain and river landscape paintings. As a result, some essential contents also used mountain and river landscape drawing techniques. However, as the map was used for sailing purposes, substantial objects were also prioritised apart from painting the sceneries. For instance, when painting sand shoals, it would be necessary to divide the area. When painting the reef island, some were drawn more flatly, whilst others were drawn more steeply, which could be attributed to differences in geographical position. Furthermore, it indicates the idea that when drawing a map, the painter prioritises the nature of science over the nature of art. This shows the basic difference between a simple mountain and river landscape drawing and a map.

Following *Xintang Shu's* record, *Dili Zhi* (*Historical Notes of the Tang Dynasty*. *Geographical History*), Jiadan, a geographer during the Tang Dynasty noted in *Guangzhou Tonghai Yidao* (*Guangzhou Sea Route to Foreign Countries*) that cruises during the Tang Dynasty reached the Persian Gulf and the East African Coast. In a nutshell, this illustrates that the development of maritime relations enabled a geographical understanding of the South China Sea and the Indian Ocean. During the Song Dynasty, the understanding of geography also developed

along with the growth of maritime relations. This is especially illustrated in several geographical works, such as Zhou Qufei in *Lingwai Daida*, Zhao Rushi in *Zhufan Zhi* and Wang Dayuan in *Daoyi Zhilue*.

Based on *Hanghai Tu*, over 500 names of places were collected, of which five-thirds were those of foreign countries. The total number of foreign countries in the map exceeded the records of *Lingwai Daida, Zhufan Zhi* and *Daoyi Zhilue.* Understanding geography not only reflects the development of the scope, but also describes the development in depth. The diagram on page 11 was painted *Shitang*, *Wansheng Shitang Yu* and *Shixing Shitang* together (refer to picture 3). *Shitang* in the picture is Paracel Island, whilst *Wansheng Shitang Yu*, also known as *Wanli Shitang Yu,* is Spratly Island. *Shixing Shitang* uses small circles and relatively large alternating circles to describe the island in the sea, which has been shaped by sand. Beginning from the work of Zhou Qufei, *Lingwai Daida* has become the general term of the South China Sea as *Changsha, Shitang Shu Wanli*, and this has expanded to the work of Yi Taichu entitled *Qiong-guan Zhi*, which referred to the South China Sea as *Qianli Changsha, Wanli Shitang*. This continued to grow to *Hanghai Tu,* which divided the South China Sea into *Shitang, Wanli Shitang Yu* and *Shixing Shitang*. The chart clearly marks the location of each country that the fleet went through, the distance of the sea route, the water depth of the ports, the direction sailed and the height of the stars. Among the more than 500 place names, about 300 related to the Asian and African countries and areas. This demonstrates an increased understanding of geography related to the regional countries and areas.

Conclusion

Hanghai Tu belongs to the category of compass-based sea maps, although it is heavily influenced by the painting patterns of mountain and river landscapes. Both systems were interchangeable and even created two-sided features. This map features the essential contents, whose drawing techniques are influenced by its basic features. It also featured over 500 names of places. *Hanghai Tu* is essentially a map of China and the population of Asia and Africa before the 15th century. Indeed, it is the most detailed of its kind, containing the names of places described after Zheng He sailed far. The information contained therein helped advance the Chinese geographical understanding of South China Sea and the Indian Ocean.

In conclusion, *Hanghai Tu* is a prominent map that can be used to better understand the long history of China's marine cartography and its relationship with the wider world. It not only has an important position in the development of ancient maps but also plays a significant role in understanding the history of map development around the world. This is due to the fact that *Hanghai Tu* is not only the most detailed world map of Asia-Africa in China during the 15th century; it is also the earliest known map in existence in China. *Hanghai Tu* had achieved a unique accomplishment in the history of sea voyages, and those voyages have demonstrated China's voyaging techniques which surpassed any preceding voyages before its time.

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