

TITLE: 1418 Map

DATE: 1418/1763 copy

AUTHOR: Mo Yi Tong

DESCRIPTION: A map showing that Chinese fleets circumnavigated and charted the entire globe as early as 1418, well before the Europeans, was unveiled in January 2006. Since then this map, like the *Vinland Map* (#243), has been met with skepticism from many cartographic and Chinese historians. Several professors even alleged "[This] map was faked by someone in the 20th century".

The map was purchased by Mr. Liu Gang, a distinguished Chinese lawyer and art collector, in 2001. He acquired it from an old map/book dealer in Shanghai. After the purchase of the map, Liu Gang started to search for the source of the map, as well as the depictions and descriptions shown on the map. This research led to exploring the common knowledge about Zheng He's seven voyages during the 14th century. After reading the Gavin Menzies book, *"1421 – the year China discovered America"* he became fully confident on the genuineness of the map and realized that he was not the only person to question the common understanding about the discovery of the world.

The map is finely illustrated on bamboo paper with ink and soft colors. It immediately impresses the viewer with its simplicity, elegance and clarity. It measures 59.6 x 41.7 cm but is not a precise rectangle (i.e., it is not A2 size). In the top right hand corner are six Chinese characters that mean *"general chart of the integrated world"*. The mapmaker has written *"(this chart is) drawn by Mo Yi Tong, a subject (of Qing dynasty) in the year of 1763 by imitating a world chart made in 1418 showing the Barbarians paying tribute"* (to the Ming dynasty).

Essentially the map shows every continent in the world in its correct position with recognizable shape and relative size. It appears astonishingly similar to a map published today save that the projection appears to be a type of "Mollweide" rather than "Mercator" and the two hemispheres overlap in the middle by 20 percent. The Chinese characters are, in Liu Gang's opinion, those of a reasonably well-educated official (a local government officer?) rather than of a top Mandarin. The map is painted in beautiful, soft colors. The bamboo paper has been seriously attacked by worms, flies or beetles and it is punctuated by holes. The back of the map may have been partially stiffened by paste (in the same way that antique English canvas portraits sometimes are,) to compensate for the holes.

Gavin Menzies, author of the book *1421* considers that there is evidence that for every continent, ocean, island and river shown on the 1418 map, and that there is corroborative evidence that Zheng He's fleets visited all of these places.

Is this the most important map in the world? If genuine, it is certainly the most exciting document that has ever made a serious challenge to the traditional Western version of history. According to most Western scholars, the Chinese gave up the quest for world discovery just when they were getting started in the 15th century. Is this true? Wasn't the famous Chinese Admiral Zheng He restricted to sailing only in the Indian Ocean? That seems to be the strange assumption of Western scholars. Or is Gavin Menzies right in saying that Zheng He led the Ming Navy in voyages round the world?

At first glance, the antique map that Liu Gang purchased appears to be a remarkably accurate portrayal of the entire globe and appears authentic. However, a second, more discerning look gives completely the opposite impression. According to the controversial historian Gunnar Thompson the map contains numerous anomalies or

errors that can be used to assess the age and authenticity of the document. These features can be referred to as “Diagnostic Geographical Markers”. They have the same kind of usefulness that DNA markers or fingerprints have in a judicial investigation. They can reveal the time at which a geographical feature began or ended; and they can reveal the sources of geographical features on maps that were copied by later mapmakers.

The following is an examination of the “geographical markers” found on this map in the Western Hemisphere:

- North Polar Isles – where there really are none;
- a mysterious Arctic Gulf in NW Canada – where there is none;
- Hudson Strait along the Eastern Canadian shore – but no Hudson Bay;
- a Perpendicular East Coast – which actually slants to the northeast – also no Florida, and no Gulf of Mexico;
- an Island California – which doesn’t exist;
- a southern bulge along the West Coast of South America – where there is no such bulge; and
- a “South Seas Australia” just west of South America in a location where no such island actually exists.
- In the Eastern Hemisphere, we see:
 - a South Polar Australia – which is likely to be mistaken for Antarctica, but it is not Antarctica;
 - a “Long Neck” version of Africa where the land area connecting Africa to the Middle East is more than ten times the actual distance of land in the region of the Isthmus of Suez;
 - the coast of Europe lacking England, Ireland, and Norway; and finally
 - a big northwestern island that represents a detached Labrador and Newfoundland. Actually, Labrador and Newfoundland should be part of the Canadian mainland shown in the Western Hemisphere.

The map claims to be an 18th century copy of a map produced in 1418 and it has all the morphological characteristics one would expect from an early 15th century map. It has the appearance of an antique map from the standpoint of having the sorts of fading, stains, frayed edges, and holes that we would expect from normal wear and deterioration on an authentic map. One is immediately struck by the accuracy of the map with respect to the coastal shapes of Africa and Asia. Beginning with the Sung Dynasty in the 12th century, Chinese cartographers produced a map of the Asian coast that has greater accuracy than any map that Europeans produced prior to the 19th century, the *Hua I T’u* [Map of China and the Barbarian Countries] (#218). Furthermore, we know from extant Chinese and Japanese maps that Yuan Dynasty mariners were engaged in the mapping of Asia and Africa in the 13th century; and subsequently, their maps were improved by new information gained from merchant voyagers sailing on the Indian Ocean. The culmination of these mapping efforts resulted in the highly accurate shape of Africa on *The Countries of the Southwestern Sea* by Chu Ssu-Pen/Lo Hung-hsien from a 1320 copy (#227), the *Yoktae chewang honil kangnido* by Ch’üan Chin and Li Hui in 1402 (#236) and the de Virga map of ca.1414 (#240).



Another marker of authenticity is the archaic portrayal of California as an island along the West Coast of North America. Early Venetian maps by Sylvanus in 1511 (#318) and Bordone in 1528 (#343) show the mistaken concept of California as an island. Gunnar Thompson has credited this geographical misconception to the early and preliminary surveys of the Yuan Chinese and Marco Polo in the 13th century. Thompson predicted that this island concept would be seen on early Ming maps of the same region; and this is precisely what we see on the 1418 map. Likewise, a caption beside the Island California on the 1418 map describes the natives of this region as “cannibals.” This is most likely a reflection of an ancient Japanese legend concerning the inhabitants of the eastern island of *Rasetsukoku* (that is, California). Current explanations traditionally attribute this geographic error to one Fr. Kino.

The 1418 map contains several other geographical mistakes that help to establish both its antiquity and authenticity. The map wrongly shows the “neck” of Africa at Suez and Cairo as being over a thousand miles wide when, in fact, the actual distance is less than a hundred miles. This is the kind of error that a royal cartographer might have introduced due to his rather limited knowledge of the real navigational charts of Chinese admirals. We see this same mistake reflected in the Portuguese “King’s Map” (or *Padrao*) that Albert Cantino copied for an Italian duke in 1502 (#306). An argument could be made that this is an indication that the Portuguese map was partially a copy of a Chinese prototype that was very similar to the 1418 map. Historic accounts confirm that Portuguese agents including Niccolo da Conti and Pero de Covilha traveled to the Indies in order to obtain Chinese secrets. So we can see from the cartographic record these Portuguese spies not only could have copied the accurate portions of Ming maps; they could also have copied the errors.

The East Coast of North America on the 1418 map is particularly misshapen. It lacks any clear indication of Hudson Bay, Labrador, Newfoundland, or Florida. In South America, only one main river on the West Coast is indicated; the Amazon and Plate Rivers are totally missing. The map includes a bottle-shaped gulf in the region of the Canadian Arctic. Mercator referred to this geographic feature on his 1569 map (#407) as the “*Mare Dulce*” (or *sweet-water sea*). This could be a legacy of the purported Marco Polo Arctic travels and a visit to Great Bear Lake in this region of Canada. Notwithstanding these anomalies, the 1418 Map is still an incredibly advanced cartographic achievement for the early 15th century and the format of the map is consistent with the level of knowledge that we should expect of royal Chinese geographers following the voyages of Zheng He.

The map also includes four minor geographical features that might indicate a limited effort on the part of the royal cartographer to “update” the map. The map projection—consisting of two overlapped circles representing the Eastern and Western Hemispheres—is a technique that seems to have entered European cartography in the 16th century. Another apparent modification is the inclusion of four “Polar Isles” that seem to have been introduced into Renaissance cartography on the 1569 Mercator map (*Book IV*, #407). Mercator mentioned that his source was a 14th century Dutch travel writer who mentioned that the concept was based on Roman legend. It is conceivable that Mo Yi Tong got the idea from equally ancient sources. The two bulges along the coast of South America on the Chinese map and the location of a large Pacific Isle that Mercator identified as “New Guinea” are further similarities between the 1763 copy of the Ming map and 16th century European maps. But this similarity might have resulted from Europeans borrowing from the Chinese. In any case, the Chinese map shows no significant diagnostic similarities to 18th century European charts that would indicate any significant borrowing from Europeans.

If genuine, Liu Gang’s discovery is a vital piece to the puzzle of ancient history. He has found a map that fits neatly into the unfolding record of cartographic documents. Taken as a whole, these documents support the thesis of Gavin Menzies that the navies of Admiral Zheng He charted and navigated the whole world.

As the oldest identified Ming world map, the 1418 Map is vital to our understanding of the important contributions that Admiral Zheng He made to the progress of world discovery and the science of geography. By comparing the 1418 map to the earlier Yuan Dynasty maps of Africa, Asia, and the coasts of the New World, we can document the unfolding knowledge of the world through the eyes of Chinese explorers. It is apparent from this map that Zheng He’s explorations and those of his subordinates were worldwide. We see this effort continued in the later Ming map called *Shanghai Yudi Quantu* ca. 1425-1430 (#440.2). Clearly, according to Menzies, Zheng He’s mariners circumnavigated the globe.

It could be argued that European geographers borrowed from copies of the Chinese maps because portions of the 1418 map are possibly reflected in the 1502 Cantino (#306) and the 1507 Waldseemüller maps (#310) that are assumed to be derived from Portuguese sources. And the historic accounts of Prince Pedro, Niccolo da Conti, and Pero de Covilha identify Chinese sources for their intelligence. This early access to accurate knowledge of world geography enabled the Portuguese to reach the Indies in 1498 ahead of all other European competition. Unfortunately for the rest of Europe, the Portuguese were very secretive about their foreign sources. They used a deceptive map by the agent Martin Behaim (#258) to mislead rivals into thinking that *Cathay* (or China)

was situated directly west of Europe.

Africa serves as the best temporal marker for the age and accuracy of the 1418 Map. This continent was the focus of surveys by Yuan Dynasty mariners. A subsequent Ming Dynasty map of Africa was given to the Japanese circa 1402; and the resulting composite map is known in Japan as the *Kangnido* (#236).

English Translation of Annotations Depicted on 1418 Map: “Notes” with red circles are stated to be copied from the original notes on 1418 map; “notes” without red circles were added by Mo Yi Tong in 1763.

China: *“This Dynasty is the most primary country under the heaven, most of people in this country are Buddhists, and Buddhism is the principal religion, the Taoism is the second and there are also people who are Islam”* (on China)

“The Great Land of Imperial Dynasty” (on China)

“Most of the people here believe in Esoteric Buddhism” (on Tibet)

NvZhen (on north east of China), *Huns and Mongols* (in the north of the Great Wall)

“Great Qing Sea” (on the region of East China Sea, South China Sea)

“Qinghai, Gansu, Ningxia, Xuanfu, Beizhili, Shanxi, Songshan, Shanxi, Henan, Hubei, Shandong, Hubei, Nanzhili, Guizhou, Guangxi, Zhejiang, Fujian, Guangdong, Sichuan, Yunnan, Wusizang” (on China, province names)

“Songshan” and “Taishan” (on China, names of mountains) *“An hui”, “Great Wall”, “Kunlun”, “Tianshan”*.

Asia (except China): *“All people of the cities in west of Jiayu Pass believe in Islam and Muhammad. Their temples are built with clay and stones, and walls of the temples are decorated with gemstone. People who want to go into the temple must bathe and change their clothes, our middle kingdom also have this kind of people.”* (on Western Asia)

“Gaoli (Korea) is ancient Ji Zi’s feod, most of the people here believe in Buddhism, other believe in Taoism” (near Korea)

“Wo (Japan) is the ancient Fusang, it have been called ‘Japan’ by the Tang Wu-Zetian’s reign. The people here believe in Buddhism.” (near Japan)

“The shape of people eyes is round and within deeper eyeholes. Their heads are wrapped with scarf, their clothes loose, and their trousers long. Women here must wear veils when going out, or else be punished.” (on the region between Asia and Europe)

“Gaoli (on Korea), Liuqiu (on Ryukyu), Annan (on Vietnam), Zhancheng (on Kampuchea), Tianzhu (on India), Wonu (on Japan), Tatars (near Ural), Kamuha (on the east of Siberian)”

“Great Qing Sea” (three respectively noted on the sea in east of Japan, China East Sea and China South Sea)

“Hui Hui” (on Western Asia)

“There are more than thirty small countries here and the people of all the countries believe in Mohammedanism” (on Central Asia and Western Asia)

“There are more than thirty small countries here and the people of all the countries believe in Nestorianism” (on the north of Asia)

“po luozhou” (on Indonesia)

“Zhenla” (on Burma)

“Huihui”, “Persia” (on Central Asia)

Europe: *“People here mostly believe in God and their religion is called ‘Jing’”* (on Eastern Europe)

“Jili (on Eastern Europe), Luomu (on Central Europe), Funan (on Spain), Xipan

(on Portugal), Di zhong hai" (on Mediterranean Sea)

"(this continent) named 'ou lu ba' today."

Africa: "There is a huge city here built with stones, the dimension of stones can be compared to those used by tomb of Qin Dynasty" (on North Africa)

"The skin of people here is like black lacquer. Their teeth are white, their lips are red, and their hairs are curled." (on South Africa)

"Anthropophagi" (on the west and the south of Africa)

"(this continent) named 'li wei ya' today."

Australia: "The skin of the aborigine is black too. All of them are naked and wear articles around their waists. Those people also have anthropophagous habits"

North America: "The people living in this area are similar to Qidan and Mongols, who feed on fish." (on the region of Alaska)

"The skin of the race in this area is black-red, and feathers are wrapped around their heads and waists. They are anthropophagous people." (on the west of North America)

"This area is frozen land." (on the north-east of North America)

"There are more than one thousand tribes and kings here." (on the middle of North America)

"Most of the people here have learnt equitation and toxophily." (on the middle of North America)

"Anthropophagi" (on the middle of North America)

"The land of this area is rich in gold and silver, and the people here use gold as currency" (on the middle of North America)

"The land is covered with trees and the big tree here is big enough for one hundred persons to hold in the arm." (on the south of North America)

"(this continent) named 'bei ya mo li jia' today."

South America: "The cities here were built with huge stones, therefore called stone cities" (on the north of South America)

"The people here believe in the religion named 'Balaka', in which human beings are used as sacrificial victims, and people pay obeisance to fire" (on the middle of South America)

"There are more than twenty stone cities here, most of which are prosper." (on the south of South America)

"(this continent) named 'nan ya mo li jia' today."

Oceans: "In the thirty-three year of Yongle Emperor (1415), following the emissary, Eunuch Zhen He (in the note on chart it is 'Eunuch Ma Sanbao') and other persons (I) went to those barbarian countries, the imperial edicts were preached and rewards were granted. In the thirty-six year of Yongle Emperor (1418) (I) came back to Beijing." (on the Pacific Ocean)

"Small West Sea" (on Indian Ocean)

"West Ocean" (on Atlantic Ocean)

"North Ocean" (on Arctic Ocean)

Greenland: "Wo Long Di"

Antarctica: "South Pole"

North Pole: "North pole"

For more than five hundred years, the historians and scholars have always deemed that during the period from 1405 to 1432, the emperors of China Ming Dynasty sent Zheng He, who was also called as "Sanbao Eunuch" or "Ma Sanbao" to lead his fleet to voyage in the South Asia seas, Indian Ocean and Persian Gulf seven different

times, and visited more than thirty countries and regions in Asia and Africa. The farthest point previously known to be reached by Zheng He's fleet is on the east coast of Africa, near the equator.

It is commonly believed that Zheng He's voyages were indeed the outstanding navigation in his era, and his exploits are well known and documented. Even though considered as one of the ocean voyage pioneers in human history, Zheng He's reputation is much lower than the following European voyage explorers, such as Bartholomew Dias who sailed by Cape of Good Hope in 1487 and is called as the first man in the world who sailed round the south point of African continent; or Christopher Columbus who arrived at Bahamas of America in 1492 and has been extolled as the forerunner to discover the American continent. Another is Ferdinand Magellan who led his fleet in September of 1519 to begin the marine expedition that circumnavigated the globe. After a three year voyage, his crew came back to their starting point in Europe completing an around world voyage. Ferdinand Magellan thus won the crown as the world discoverer since he was considered as the first one who discovered the channel between Atlantic Ocean and Pacific Ocean, and his name has been associated with this area for more than 500 years.

Recently, these "world records" by the three European explorers have been called into question. In March of 2003, Mr. Gavin Menzies, who is a retired British naval officer, proclaimed these astonishing viewpoints: the persons who mapped the first chart of the whole known world were Chinese, Zheng He's fleet arrived at America before Christopher Columbus and is the first one to circumnavigate the globe in human history. Menzies further claims that the Chinese discovered the entire world as early as 1421. Lui Gang asserts an even earlier period of 1415-1418 based upon his analysis of the 1418 map and other cartographic evidence. These viewpoints have spurred significant discussion among historians and the scholars. Some show their support, some shake their heads, some feel uncertain, and some actually call Menzies a crank. Even the Chinese academic circle is at a loss. Many Chinese historians and scholars believe that Menzies' assertion is only based on his conjecture without substance. Someone even say that Menzies is not qualified to make the statement about Zheng He's voyages, since he can not read Chinese and has no adequate knowledge about the Chinese history.

The statement written by the mapmaker on the lower-left corner of the 1418 map says that *"(this chart is) drawn by Mo Yi Tong, a subject (of Qing Dynasty) in mid-autumn of the year of Qianlong Gui Wei [1763] by imitating a world chart made in the sixteenth year of Ming Yongle [1418] showing the barbarians paying tribute (to Ming Dynasty)"*. A Chinese compass is also drawn in the upper middle of the map. In addition to these Chinese characters and illustration, there is an important note written on the upper left-hand corner saying, *"The descriptions without red circle are not the notes of the original chart (i.e. 1418 general chart of the integrated world)"*. Such notes mean that the descriptions with a red circle are the original notes on the world chart drawn in 1418 showing the barbarians paying tribute.

Is it a fake map? The trace of vermin on bamboo paper and de-pigmentation of ink and colors indicate that the map was made at more than one hundred years ago. Did Mo Yi Tong, the mapmaker want to deceive someone when he imitated the 1418 world chart showing the barbarians paying tribute?

According to Lui Gang this was certainly not the case. One Chinese character before the map maker's autograph means, *"Subject"*. For a long time in China, including Qing Dynasty, people could call themselves as *"Subject"* only in front of the Emperor or

his house, otherwise will be considered as being revolting. Therefore, such Chinese characters indicate that the map was supposed to be presented to Qianlong, the Emperor of China at that time. As he wrote the note on the upper-left corner saying that *"The descriptions without red circle are not the notes of the original chart"*, Mo Yi Tong should know that if he was caught attempting some deceit on the map he could be sentenced to death by the Emperor. Furthermore, several depictions and descriptions on the map should have been beyond Chinese knowledge at that time, such as the outline of Antarctica, which was not "discovered" by others until 1820.

After careful study on the map Lui Gang has become confident of its authenticity. But what was the source of 1418 world chart showing the barbarians paying tribute? A note recorded on the Pacific Ocean of the map about Zheng He's voyages provides a possible clue to the source. The Chinese characters and wording of the note are the same as the description about one of Zheng He's seven voyages recorded in an ancient book, except the name of Zheng He being *Ma Sanbao*. The author of the ancient book was Fei Xin, one of the officials who accompanied Admiral Zheng He during his voyages in the early medieval period.

Born in a family of humble scholars in the Kunshan district of Suzhou prefecture of China, Fei Xin joined military service and was chosen to accompany Zheng He during four voyages to the "Western Oceans" (the Chinese historians believe that they referred to the Pacific and Indian Oceans), which, respectively, were made during the period of 1409-1411, 1412-1414, 1416-1418 and 1431-1433. After his return from the fourth voyage Fei Xin started to write a book describing the various peoples and local customs he saw in the barbarian countries or learned from others. His writing was completed in 1436 and title of the work was *"The Marvelous Visions of the Star Raft"* (*"Xingcha Shenglan"* in Chinese). The description in the book about the court of *Bangla* (Bengal) has been an important source to reconstruct the history of medieval Bengal.

The book originally was divided into two volumes and did not refer to any map or chart. Research by Chinese historians reveal that soon after the book was printed someone else wrote another version based on the original one. The second version consists of four volumes, and its introduction section says that *"... collecting charts and incorporating those into this book"*. Since both versions had been reprinted lots of times following one by another, no chart or map is contained in the extant copies.

The description recorded in the book about Fei Xin's third voyage with Zheng He states that *"In the thirty-third year of Yongle Emperor (1415), following the emissary, Eunuch Zheng He (in the note on map it is "Eunuch Ma Sanbao") and other persons went to those barbarian countries including Bangla and arrived at Hormuz as well as other barbarian countries, the imperial edicts were preached and rewards were granted. In the thirty-sixth year of Yongle Emperor (1418) came back to Beijing."* It is very clear that this description substantially matches the note on the map. This indicates that the 1418 world chart showing the barbarians paying tribute could be one of those charts incorporated into the second version of *"The Marvelous Visions of the Star Raft"*, or someone may have copied one of the charts recorded in the second version of *"The Marvelous Visions of the Star Raft"* before such version was lost.

It is useful to explain the Chinese concept of "Western Oceans", which term was used by Zheng He and the relevant ancient books. The historical records show that the term of "Western Oceans" originated in Song Dynasty (960-1279) of China, together with the term of "Eastern Oceans". Since the birth of the twins, both of them had had no clear extents for long time. In Ming Dynasty (1368-1644), lines were gradually drawn up for

the two terms. *"The Marvelous Visions of the Star Raft"* and another ancient book named as *"Notes on the Barbarians in Western Oceans"* (printed in February of 1434) narrated that *Sumataansche* (an ancient country located on west-north corner of Sumatra) was the means of reaching "Western Oceans". An ancient book printed in 1617 and named as *"Research in Western and Eastern Oceans"* narrated that Brunei was the far end of "Eastern Oceans" and also the starting point of the "Western Oceans"; therefore it was the finishing line for both of "Western Oceans" and "Eastern Oceans". These records reveal the extents of "Western Oceans" and "Eastern Oceans" during Ming Dynasty. At that time, the Chinese concept of "Western Oceans" refers to the maritime space starting from the west-north corner of Sumatra Island and ending at Brunei. This extent includes the Indian Ocean, Arabic Sea, Atlantic Ocean and Pacific Ocean. Correspondingly, the term of Eastern Oceans refers to the sea area including China Southern Sea, East China Sea and Japanese Sea.

The extent of "Western Oceans" described in 1418 general chart shows the barbarians paying tribute tallies with the concept of "Western Oceans" in the Ming Dynasty. In this chart, the Indian Ocean and North Atlantic Ocean are respectively named as *"Small Western Sea"* and *"Western Sea"*. The Chinese characters of "Western Oceans" are slightly bigger than the characters of *"Small Western Sea"* and *"Western Sea"*. This indicates that *"Small Western Sea"* and *"Western Sea"* were part of "Western Oceans". Furthermore, the note about Zheng He's voyages recorded on the Pacific Ocean of the chart means that the Pacific Ocean is also within the extent of "Western Oceans".

After the term "Western Oceans" has been explained, the question should be asked about a Chinese phrase of *"Zheng He to Western Oceans"* (in the Chinese *"Zheng He Xia Xi Yang"*), which was originated in the Ming Dynasty and since then had been repeated in the Chinese ancient books. Does the extent of "Western Oceans" means that Zheng He and his feet circumnavigated the globe? The following original notes circled in red on the 1418 chart may provide the answer.

The note on the region of Alaska says, *"The people living in this area are similar to Qidan and Mongols, who feed on fish."* It is clear that the note talks about Eskimos.

The note on western America states, *"The skin of the__ race in this area is black-red, and the feathers are wrapped around their heads and waists. They are anthropophagous people."* This note relates to Indians in North America.

There are two notes on South America, which respectively are *"There are cities there built with huge stones, and called as the stone cities"*, and *"The people there believes in the religion called as 'Balaka', human being is used as sacrificial victim, and people pay obeisance to fire"*. The first note here can be related to the Inca Empire, since the cities of the Inca Empire were usually built on a mountain or plateau with huge stones. The second note relates to ancient Peru. One of the native cultures in ancient Peru was named as *"Paracas"*.

The note recorded on Australia states, *"The skin of the aborigine is also black. All of them are naked and wearing bone articles around their waists. Those people also have anthropophagous habitude."*

The note on North Africa states, *"There is a huge city here built with stones, the dimension of stones can be compared to those used by tomb of Qin Dynasty Emperor."*

The note on South Africa states, *"The skin of people here is like black lacquer. Their teeth are white, their lips are red and their hairs are curled."*

The note on Western Asia states: *"All people of the cities in west of Jiayu Pass believe in Islam and Muhammad. Their temples are built with clay and stones, and walls of the temples*

are decorated with gemstone. People who want to go into the temple should take bath and change their clothes, such custom also exist in our middle kingdom, and it is so funny. "

The note on the region between Asia and Europe states, *"The shape of people eyes are round and within deeper eyeholes. Their heads are wrapped with scarf, their clothes are loose and their trousers are long. Women here must wear veils when going out, otherwise will be punished."*

The note on Eastern Europe states, *"People here mostly believe in God and their religion is named as 'Jing'".*

The above notes, as well as the general delineation of the Antarctica, North Pole and Greenland depicted on the chart, reveal a civilization had been lost for about six hundred years. *"Zheng He and his fleet discovered the America Continent before Columbus was even born. They also circumnavigated and charted the globe, a century before the Europeans staked claim to having done so."*

One may ask: If it was true that Zheng He's fleet circumnavigated and charted the globe, why doesn't an ancient book, epigraphy, chart and/or map contain the relevant information? The answer may be that the information was recorded in several ancient books, epigraphy, charts and maps, but they have hidden themselves from the historians, or were destroyed (accidentally or on purpose).

Before the seventh voyage (1431-1433), Zheng He erected two carved stone tablets respectively at the Temple of the Celestial Spouse at Liu Jia Port near the mouth of the Yangtze River, Jiang Su Province and at the Temple of Changle Nanshan in Changle County, Fujian Province. The first two sentences of second carved stone tablet, named by the historians in a shortened form as the *Changle Epigraphy*, have been traditionally interpreted and translated as follows:

"The Imperial Ming Dynasty unifying seas and continents, surpassing the three dynasties even goes beyond the Han and Tang dynasties. The countries beyond the horizon and from the ends of the earth have all become subjects and to the most western of the western or the most northern of the northern countries, however far they may be, the distance and the routes may be calculated."

There is, however, another possible interpretation/translation. These two sentences could read as:

"The Imperial Ming (Dynasty) has unified seas and universe, surpassing the first three generations (of Ming Emperors) as well as the Han and Tang dynasties. None of all countries has not become subjects, even those at the remotest corners. (The place) in the west of the Western Region of the Imperial Ming and in the north of the northward extension from the Imperial Ming are so far away, however the distance to them can be calculated by mileage."

The term *"Western Region"* originated in Han Dynasty, and at that time this term referred to the region between Chongling (now in northwest area of Xinjiang Autonomous Region) and Dunhuang (in Gansu Province). During the Tang Dynasty, the extent of the *"Western Region"* became much larger and was extended to the Mediterranean Region and North Africa. Most Chinese historians believe that the term *"Western Region"* in those sentences should refer to the smaller *"Western Region"*. Unfortunately, this is a misinterpretation. The ancient books written in the Ming Dynasty about oversea travels adopted the concept of *"Western Region"* in a much broader context. For example, the many western areas mentioned in *"Records of Journey*

to Western Region" and "Notes on the Barbarians in Western Oceans" (both of the ancient books printed in Zheng He's era) were far westwards away from the smaller "Western Region". Most importantly, the following text of the *Changle Epigraphy* states, "...we arrived at Hormuz, Adan (Aden), Mugudushu (Mogadishu) in the Western Region, ...". It is very clear that "in the west of the Western Region of the Imperial Ming" means a place westwards away from the Mediterranean Region and North Africa.

The phrase of "in the north of the northward extension from the Imperial Ming" means a place northwards away from Siberia, which is part of Asia and northwards from China. It is noted that there is a passage to the North Pole depicted on the 1418 world chart, which indicates to us that Zheng He's fleet might go through such passage. In Zheng He's era the Chinese did not have any concept about the North Pole, accordingly when they took a journey from China to the North America Continent through the North Pole, they believed that the journey was always northwards. The modern geography theory about the North Pole was established after the "Europeans discovery" of the North Pole. In the modern geography theory, the journey from China to the North Pole is northwards, but journey from the North Pole to the North America Continent is southwards.

Zheng He also recorded, in the texts of the carved stone tablets, the number of countries visited by and the distance of sea spaces of his voyages. The records have been misunderstood and mistranslated as "... altogether more than thirty countries large and small. We have traversed more than one hundred thousand Li of immense water spaces, ...". Accordingly, many historians believe that the distance recorded in the texts should be referred to Zheng He's cumulative total for his career of six voyages. Liu Gang believes that the wording should read as "... altogether more than thirty countries large and small. We waded across the immensity of sea spaces of more than one hundred thousand Li, ...". That immensity of sea spaces was the maritime space touched by Zheng He's fleet during the six voyages, "more than one hundred thousand Li" should refer to the size of such spaces.

What was the length for the term of "Li" in the medieval times of China? The conservative historians believe that it was more than 0.4 kilometer. Some take an aggressive approach saying that it was about 0.6 kilometer. Taking the conservative figure, "more than one hundred thousand Li" would mean more than fourteen thousand kilometers, which is just short of the circumference of the Earth.

The original name of Zheng He's nautical chart was "The chart showing the treasure ships sailing into sea from Longjian Water Gate to various barbarian countries". For easy reference, the Chinese simply refer to it as Zheng He's Nautical Chart. No record indicates when Zheng He's Nautical Chart was made. However, it is well believed that the original chart was mapped in the early 15th century and based on some voyages of Zheng He's navigation. The chart consisted of twenty drawings respectively recorded on twenty pages of an ancient book named as *Wu Beizhi*. Inasmuch as the Zheng He's Nautical Chart was recorded on twenty pages, the chart was mapped without consistent directions, distances, proportions and positions. More than 530 places were named, of which over 300 were outside of China. The cities, towns, islands, navigation symbols, beaches, reefs and mountains were plotted on the chart along shipping lines. It continuously shows, on the 17th and 18th pages, a wide stretch of unnamed land with a long coastline below the southwest coastline of Sumatra, beside which there is a small island with a mark of "Stone City Mountain" and "people living there". Another six islands also show up by the end of this land, among which a larger one is marked with "Tiger's tail reef" and another smaller one is marked with "people living there". Several Chinese

scholars claim that this land should be the Australia Continent, however no evidence has been provided.

Zheng He's *Nautical Chart* focuses on the voyages without much attention on geography and topography. Even if it lacks consistent directions, distances, proportions and positions, the historians strongly believe that all lands and islands shown on the chart do exist in the real world and their positions along the voyages were correctly plotted. On the second drawing, the voyage going between the southwest coastline of Sumatra and a wide stretch of unnamed land is depicted. Obviously, the Australian continent is not in the southwest direction of Sumatra. Glancing at a modern terrestrial globe, we cannot find another land of that size that exists southwest of Sumatra except the east coast of Africa and Antarctica. However, when we turn over the terrestrial globe a little bit, one realizes that a wide stretch of land with a long coastline lies in the far southwest direction of Sumatra - this wide stretch of land is South America.

Like the stone engravings mentioned above, on Zheng He's *Nautical Chart* the description of "*Stone City Mountain*" marked on a small island beside the long coastline of the unnamed land could be associated with the Inca Empire, since many ruins of the cities in the Inca Empire's era are located on a mountain or plateau, and they were built with huge stones. This description can also be found in one of two notes described on South America in the 1418 world chart: "*There are cities there built with huge stones, and called as the stone cities*".

The inverted shape of South America depicted on the 1418 world chart concealed its identification from many eminent historians of China for a long time. The long coastline of this continent shown on the 1418 world chart is the Peru-Chile coastline, rather than the Patagonia coastline, which lies in the far southwest direction of Sumatra on modern world maps. The small island marked with "*Stone City Mountain*" could be one of islands along the Peru-Chile coastline. The six islands depicted by the end of this unnamed land could also be the islands off the southern end of South America. Among those islands, the biggest one marked with "*Tiger's tail reef*" could be Tierra del Fuego. In the Chinese tradition, people give a name to a site as the tail of an animal or totem usually because the topographical shape looks like the tail of such animal or totem. It does not make sense why *tiger's tail* was given as the name to the reef. A description made by a Portuguese historian in the medieval times tells us that in 1428 a Portuguese brought from overseas a world map, which depicted all the parts of the earth, on the world map the Straits of Magellan were called the "*Dragon's Tail*". The dragon has been the most favorable totem and symbol for the Chinese people. Meanwhile, there have been no totem in Islamism and the dragon also is not a favorable symbol for Christians. Therefore, it is strongly possible that the Chinese gave the name of "*Dragon's Tail*". But why this name? Does the Straits of Magellan look like dragon's tail? No, it looks more like a dragon's body, rather than its tail. It is possible that the Portuguese misunderstood the name, which was given to an island in the Straits, rather than the Straits of Magellan (it is even possible that the island was Tierra del Fuego). In Zheng He's era, the Chinese sailors referred to whales as dragons. If we look at the 1418 world chart, we can see that the shape of South America on the map is like a whale with its head up to the north. The islands off the south end of South America on most contemporary maps look like a whale's tail. The name of "*Dragon's Tail*" was also connected with "*Tiger's tail reef*" marked on the one of six islands depicted at the end of the unnamed land on the Zheng He's *Nautical Chart*. The tiger is another favorite symbol for the Chinese, particularly for Chinese men. There are many idioms about dragons and tigers, such as "*fierce battle*"

between dragon and tiger" (means fierce battle between giants), *"prancing dragon and jumping tiger"* (means a scene of bustling activity), *"dragon's pond and tiger's cave"* (means an extremely dangerous place) and *"moving like dragon and walking like tiger"* (means dignified manner of a strong man). It is possible that the original name for the reef on the Zheng He's *Nautical Chart* was *"Dragon's Tail"*, but when the chart was copied during several hundred years following one by another, someone mistaken the name as *"tiger's tail"*.

Ma Huan wrote his ancient book three years earlier than the *Overall Survey of the Star Raft*. This author was also a great traveler who accompanied Admiral Zheng He during his voyages in the early medieval period. This ancient book contains the poems describing the experience and the feelings of the author during his travels with Zheng He. Two lines in the poems saying, *"The ship mastered by the brave steersman mixed up the West and East; Only by reference to the stars the South and North could be identified."*

We all know that it is not too difficult to find out where is the West and where is the East. One sentence in *"Notes on the Barbarians in Western Oceans"* saying that *"Recognizing the West and East only by reference to sunrise/sunset and moonrise/moonset. Measuring the distances by reference to the levels of the stars"*. But why did Ma Huan's crew identify the directions only by watching the stars? The answer is quite simple: they had not seen sunrise/sunset and moonrise/moonset for a period of days. There are only two zones on the earth in which we cannot see sunrise and sunset for a period of days. One is the Arctic Circle, and another is the Antarctic Circle.

In Zheng He's era, there were three travelers who accompanied Admiral Zheng He during his voyages and wrote books about the voyages: Fei Xin, Ma Huan and Gong Zhen. Gong Zhen completed the writing of his book in February of 1434, and the title of book was *"Notes on the Barbarians in Western Oceans"*. One sentence in the autobiographic note saying *"In the beginning of Yongle Emperor's period (1402-1424), (the Emperor) sent the important Chinese and foreign subjects to circulate those countries around Western Sea for showing the kindness and power (of the Emperor)."* The sign of the *"Western Sea"* marked on the 1418 world chart tells us that the countries around the *"Western Sea"* referred to in Gong Zhen's book could be the countries around the North Atlantic Ocean. Most historians believe that the Chinese did not visit Europe during Zheng He's era. However, the notes of the countries' names marked on the 1418 world chart would confirm that their conclusion is incorrect.

On the 1418 map, the country name of *"Xi Pan"* is marked in the Iberian Peninsula; two Chinese characters of *"Fu Yang"* are found in Central Europe; *"Luo Mu Er"* is a country's name recorded in Eastern Europe; and the two Chinese characters of *"Ji Li"* are noted also as a country name for part of Russia. Also marked on Eastern Europe are characters describing the local indigenous religion call *"Jing"*. In accordance with the relevant historical records, the Chinese in the Tang Dynasty gave the name of *"Jing"* to Christianity. This annotation may indicate that the Chinese not only visited Europe in the early medieval period, but also made inquiries about the religions in Europe. It is quite possible that in the early medieval period the Chinese had paid a visit to the churches and talked with the clergymen.

The schedules of Zheng He's seven voyages were well documented in the ancient books and epigraphy, which include the *Changle Epigraphy*, the *Epigraphy at the Temple of the Celestial Spouse*, the epitaphs of Captain Zhou Wen and Lady Zhang in the Ming Dynasty, *"The Marvelous Visions of the Star Raft"* and *"The History of Ming"* written during the Qing Dynasty.

There are several discrepancies/inconsistencies among the notes recorded in these ancient books and epigraphy about the schedules of Zheng He's seven voyages. Most of the discrepancies are quite understandable, since some took the date on which the Emperor issued the order to Zheng He as the departure time and some took the date of weighing anchor as the time to set out on a voyage. However, the two notes recorded in *"The Marvelous Visions of the Star Raft"* are quite unusual and unseasonable.

The first one is the record about the return time of Zheng He's fourth voyage. This record tells us that Zheng He returned from his fourth voyage in 1414, but all other records show that Zheng He returned from his fourth voyage in 1415. Did Fei Xin's ship really return to China one year earlier than Admiral Zheng He? It was not permitted under the Ming Dynasty's military rules, which required the General to lead his troop back to the Emperor. Was Fei Xi's ship ordered by Admiral Zheng He to take an urgent report back to the Emperor? There is not any record about such an order and/or urgent report.

The second discrepancy is much stranger than the first one. The departure time of Zheng He's fifth voyage recorded in Fei Xin's book is in 1415, one or two years earlier than the other books (some record the time of departure as late 1416, and some record it as early 1417). Did Fei Xi's ship weigh anchor without receiving the order from the Emperor, and also without the Commander Zheng He? That was certainly not the case.

What was wrong with these two records? Did Fei Xin create "wrong records"? Possibly not. The content of *"The Marvelous Visions of the Star Raft"* indicates that Fei Xin was a serious person. He divided his book into two volumes, one describing the various peoples and local customs he saw personally in the "barbarian countries", and another recording what he learned from others about the "barbarians". Did those persons who copied this book following one by another take those "wrong records"? There was very little chance here, since the two versions of the ancient book contain the same mistakes, and the two mistakes are closely connected with each other.

One explanation could be the time differences caused by the rotation of the Earth. As we all know that if we take journey from east to west, the times of sunrise and sunset will be later than the times of starting point. During the fourth voyage of Zheng He, Fei Xin's ship circumnavigated the globe from the East to the West, and each time he saw sunrise and sunset they were always later than the time of sunrise and sunset seen by people in China or those who did not take same journey. Each day Fei Xi cumulated the longer time and after the three years this resulted in approximately one year shorter than others. That could be why his two records were about one year earlier than others.

Why Fei Xin did not follow others and correct his time difference? The answer can be found out in his book. The content of the book indicated that Fei Xi consulted the diary that he kept during the journey, and he was a very self-confident person who also had a stubborn personality. He truly believed in his diary and did not listen to others. We should be thankful that strong personality, otherwise we may have lost this clue.

The Chinese Inventor of Bi-Hemispherical World Map

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Summary

Ancient Chinese cartographers made a great contribution to the cartography development. Unfortunately, their contribution has been buried in oblivion for centuries. There is no lack of ancient records about ancient Chinese cartography. The cause of such tragedy is the misinterpretation by the Chinese historians about the descriptions of ancient maps. Many of ancient Chinese cartographers were philosophers, mathematicians, or religionists, and were accustomed to use the jargons to describe maps. Accordingly, one of preconditions for correctly understanding those descriptions is familiarity with the relevant ancient Chinese terms. This paper will provide a typical example in this regard, and present evidence suggesting that bi-hemispherical world map was created by a Chinese cartographer in 14th century.

Introduction

Orthodox opinion suggests that the bi-hemispherical world map first emerged in Europe during the early 16th century, with the 1527 map of Franciscus Monachus (#337) being seen as an early example¹. Furthermore conventional wisdom is that Chinese cartographers and astronomers did not realize that the earth was round until Matteo Ricci (1552-1610) came to China with maps depicting a spherical earth².

In the early of 2006, a 1763 copy of *the General Chart of the Integrated World* [Tian Xia Zhu Fan Shi Gong Tu] made in 1418 was unveiled to the public; the depiction and description shown on the map indicate that the ancient Chinese had already mapped the world, long before the Europeans. As this map depicts the world as two hemispheres, several Chinese historians suggest that it is a fake because the bi-hemispherical world map did not appear until the 16th century in Europe, so the Chinese in the 15th century would not have the Eastern and the Western hemispheres charted in a map like this.

In fact there is compelling evidence that the bi-hemispherical world map originated not in Europe, but in China; and was created by Chinese cartographers of the early 14th century – including the famous Yuan Dynasty scholar named Zhu Siben.

Zhu Siben was born in 1273. He practiced Taoism from the age of 14 and at 26 he left the Taoist temple under his master's order to preach amongst the people. During the next 20 years he collected and interpreted all kinds of Chinese and foreign geographic data. In 1320 he made a *Terrestrial Map* [Yu Di Tu] with a size of “seven chi long and wide” (about 2.5m square). The historical accounts record that this map was carved on a stone located at the “San Hua Temple on the Long Hu Mount”³. Unfortunately the original map has been lost.

Many Chinese researchers argue that Zhu's Terrestrial Map only covers the Yuan imperial territories – China and its bordering regions - and has not included places outside Yuan control or the remote areas where China's minorities lived⁴.

This article presents historical evidence suggesting that the Zhu Siben's *Terrestrial Map* is in fact a world map, and that Zhu used double rings for the Eastern and the Western hemispheres, making it the world's oldest bi-hemispherical world map.

Did Zhu Yiben Map Chinese and Foreign Territories?

Zhu Siben wrote a *Preface to the Terrestrial Map* [Yu Di Tu Zixu] in his book *Zhenyi Study Miscellaneous* [Zhenyi Zhai Zazhu]⁵, which tells us that in order to chart the *Terrestrial*

Map, he studied and interpreted all available maps and data. He also asked “officials of the court” on foreign missions to make enquiries on the local geography to “the local administrations” and to collect extensively the geographical information and maps of these countries. Zhu Siben integrated this Chinese and foreign information into his Terrestrial Map.

Two foreign territories – to the “southeast of seas” and the “northwest of deserts” are given special notice in Zhu Siben’s *Preface*, in which Zhu says that although envoys on the tribute-offering missions were dispatched from the two regions to China, the long distance has made the geographical details of the two regions unclear, while some detailed information is not trustworthy, therefore Zhu Siben had no other choice but to omit some of the data (“gu yong que ru”).

Some Chinese historians believe that “gu yong que ru” in Zhu Siben’s article originally means Zhu had completely rejected territories based on the unreliable information in his *Terrestrial Map*⁶. Several Chinese historians even praise Zhu Siben for his scientific attitude that rather goes without than have something incomplete⁷. But did Zhu Siben remove these ‘unreliable’ territories from the map completely? Or did he outline two foreign territories whilst omitting detailed geographic descriptions on the map?

Note that “gu yong” here means to “to use those”, and “que” here means to “removing doubts”. The famous linguist Yang Bojun in his *Interpretation to Analects: the Dictionary* [Lunyu Yizhu: Lunyun Cidian] defines “que” as: “verb, to reserve without explanation”. Therefore the four characters “gu yong que ru” in Zhu Siben’s *Preface* do not mean to remove completely the two regions – to the “southeast of seas” and the “northwest of deserts” from his map but to keep the outline of this type of land masses without retaining the descriptions in doubt.

The original *Terrestrial Map* was lost long ago and we can’t see its original form, but historical records during the Ming Dynasty have left some clues.

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1. John P. Snyder, “Map Projections in the Renaissance”, in *The History of Cartography*, Vol. 3.
2. Cordell D.K. Yee, “Taking the World’s Measure: Chinese Maps between Observation and Text”, in *The History of Cartography*, Vol.2, Book 2, ed. J.B. Harley and David Woodward.
3. Qu Yong, *Tieqin Tongjian Lou Bibliography* [Tieqin Tongjian Lou Shumu], Vol 22, and Wang Yong, *History of Chinese Geography* (Zhongguo Dili Xueshi).
4. Ge Jianxiong, *Chinese Ancient Mapping and Survey* [Zhongguo Gudai De Ditu Cehui], Commercial Press in 1998 and Bai Shouyi, *Outline of the History of China* [Zhongguo Tongshi].
5. See the letter No. 17 in *Shiyuan Series* (Shiyuan Congshu).
6. As, for example, Cordell D. K. Yee has concluded in “Taking the World’s Measure: Chinese Maps between Observation and Text”, in *The History of Cartography*, Vol.2, book 2, ed. J.B. Harley and David Woodward.
7. Bai Shouyi, *Outline of the History of China* [Zhongguo Tongshi] and Wang Yong, *History of Chinese Geography* [Zhongguo Dili Xueshi].

Evidence For The First Bi-Hemispherical World Map

During the Jiajing period of the Ming Dynasty (1522-1566), the Chinese cartographer Luo Hongxian (see #227) new-made a terrestrial map. He “searched for three years and luckily found a map made by Zhu Siben”. In the *Preface* of his “*Unfolded Terrestrial Atlas*” [Guang Yu Tu], he gave high praise to Zhu Siben and his work in making the *Terrestrial*

Map: "his methods of drawing maps is beyond the reach of even the smartest minds". Luo Hongxian's praise for the *Terrestrial Map* raises a series of questions for us:

Why was Luo Hongxian so impressed by Zhu Siben's method used in making the *Terrestrial Map*?

Why did Luo say "even the smartest minds" couldn't have imagined such a way of map making?

What kind of map format might appear novel to the people of the Ming Dynasty?

To answer these questions we have to study carefully Luo Hongxian's other comments on the *Terrestrial Map* of Zhu Siben word by word.

Apart from praising Zhu Siben for his advanced method in map making, Luo Hongxian also gave a description of the original look of the *Terrestrial Map* in his *Unfolded Terrestrial Atlas*, as it is highly significant both in Chinese and the world's history of cartography the description of Luo Hongxian have been cited and quoted in many Chinese history textbooks.

As we all know the classical Chinese writings are not punctuated, to understand the classical Chinese articles correctly the modern readers have to add punctuations to them, which is called "segmenting". The segments made by these Chinese historians in Luo Hongxian's description of the *Terrestrial Map* have failed to help people understand its true meaning, while authors of some other textbooks only cited Luo Hongxian's descriptive texts but did not attempt to explain it at all, as if they were intentionally avoiding the analysis of its implications. Then why is that? Is the obscurity in meaning caused by Luo Hongxian's improper use of words? Or is it because the historians' wrong segmenting has made the correct interpretation impossible?

The correct definition of words is the prerequisite for a proper segmenting and understanding of the classical texts. Therefore before interpreting Luo Hongxian's description we must first try to understand the meaning of the main words in the sentence. In Luo Hongxian's description of the *Terrestrial Map*, there is one word "shizi", whose origin can be found in Buddhist classics. Buddhism has a term "Three Natures" and one of which is *yuan cheng shizi xing* [round in complete reality]. It has been mentioned in the classics such as *Yujia Shidi Lun* [Yogacaryabhumi], a Buddhist scripture translated from *Yogācāra-bhūmi-śāstra* [Exposition on the Stages of the Practice of Discipline] by Xuan Zang at the 22nd year of Zhen Guan in the Tang Dynasty (648 AD) and *She Dacheng Lun Shi Sishiba Juan* [Annotations on the Collection of Mahāyāna śāstras in Forty-eight Volumes]. In these classical works, the word *yuan* [round] is used to describe the three-dimensional spheres rather than the two-dimensional circles. The reason why Buddhist classics describe spheres to have the nature of *shizi* [complete real round] is because they want to differentiate Buddhist spheres from the circles in the secular world.

These other words in Luo Hongxian's description can be correctly defined as the follows: "shi" in the classical Chinese is used as a determinative meaning "this" or "this way"; "ke" means "the middle" or "just"; "cong" here is pronounced as "zong" meaning "north-southern direction", "he" means "harmony" or "equal"; "mou" means "being equal" and "chuan" meaning "cross", "overlap", "contradicting" or "fallacy".

After having understood the texts in the right way, we may find that to correctly segment it will become easy, and the sentence should be punctuated as: [here the transcript in

Latin lettering from Chinese writing] *Qi tu you jili huafang zhi fa, er xing shizi, shi ke ju zong er fen, he dongxi xiang mou, bu zhi bei chuan.*

Thus the true meaning of this sentence should be:

"Zhu Siben used the method of graticule to chart his map, which was in the format of a globe, and then from the globe centre and along a north-southern direction, he divided the globe map equally into the eastern and western spheres and made them look alike and harmonious, by doing so the errors or confusion that might be caused by the two overlapping sides of the globe can be avoided."

This description clearly suggests that the *Terrestrial Map* made by Zhu Siben in 1320 is a bi-hemispherical world map.

What is Luo Hongxian's Unfolded Terrestrial Atlas?

The Chinese history researchers all agree that the making of Luo Hongxian's *Unfolded Terrestrial Atlas* is based on Zhu Siben's *Terrestrial Map* and supplemented with the data collected from the Yuan and the Ming dynasties. But the *Unfolded Terrestrial Atlas* we see today is in a rectangle but not in hemispheres. What happened?

We learn from Luo Hongxian's *Preface to the Unfolded Terrestrial Atlas* that his atlas is based on Zhu Siben's *Terrestrial Map*. In the *Preface* Luo Hongxian says he "guang" (i.e. unfolded) Zhu's map and for that reason, he did not continue to use the title "*Terrestrial Map*" but named his own map "*Unfolded Terrestrial Atlas*". Does "unfolded the map"⁸ mean Luo had enlarged the *Terrestrial Map* of Zhu Siben? Or had he broadened the coverage of the map?

The answer seems to be no. In the *Preface to Unfolded Terrestrial Atlas* Luo Hongxian says: "*Zhu's map is seven chi long and wide, which is difficult to handle, so I simplified it when Unfolded Terrestrial Atlas was made*". This explains neither had Luo increased the size of Zhu's map nor broadened its coverage, but rather made *Unfolded Terrestrial Atlas* smaller and simpler than the *Terrestrial Map*. The question is why in the *Preface* Luo Hongxian says he "unfolded" the map, and named it the *Unfolded Terrestrial Atlas*? In 1799, an official called Zhang Xuelian wrote in an article when republishing Luo Hongxian's *Unfolded Terrestrial Atlas*, which says that "*according to the History of Ming: Literary Chronicle (Ming Shi: Yiwenzhi), Luo Hongxian had unfolded the map of Zhu Siben... and used kaifang to make the map extremely accurate*".

"Kaifang" described in the *Preface* refers to the extraction of the Chinese ancient mathematics. It has a broad meaning and refers to a wide variety of computing methods, including the method of *hua yuan wei fang* [turning round into rectangle]. The earliest description of this method can be seen in the famous Chinese ancient mathematical book - *Nine Chapters on Mathematical Art* [Jiu Zhang Suanshu] that was authored during Qin and Han periods (300BC-100AD). In the 16th century, a mathematician Cheng Dawei gave a mathematical definition of the word "guang" in his work: *General Survey of Algorithm* [Suan Fa Tong Zong]. The definition of *guang* is "horizontally wide".

From the above explanations we may now understand that "guang the map" by Luo Hongxian actually means that he used the extraction to the turn sphere map of Zhu Siben into a rectangle map of his own.

8. Luo Hongxian in *Preface to Enlarged Terrestrial Atlas* says: "*I therefore unfolded its map to consist of many copies. Its original descriptions prevail, and those couldn't be recorded due to limited space were contained in other sheets. I resided in the mountains and was short of means and the atlas was an accomplishment of efforts of more than ten years*".

Which Echoes Remain of Zhu Siben's Terrestrial Map?

Although it is impossible to see the original *Terrestrial Map* of Zhu Siben, from the old maps and historical records we may still catch a glimpse of how it looked.

Yao Jiheng (1647-1715) is a bibliographer and book collector in the Qing Dynasty, in his *Haogu Hall Bibliography* [Haogutang Shumu] he included Zhu Siben's *Terrestrial Map of the Yuan Dynasty* – from this we may learn that the original copy of Zhu Siben's *Terrestrial Map* was still extant during 18th century.

In 1730, a book called *Records of Sights and Sounds of Overseas States* [Haiguo Jianwen Lu] authored by Chen Lunjiong, included a map under the title *Comprehensive Map of Four Seas* [Si Hai Zong Tu] (Figure 1). It is a map of the eastern hemisphere and contains many early geographic errors, some of which were often seen in the maps made before the 16th century and couldn't have originated from the European cartographers.

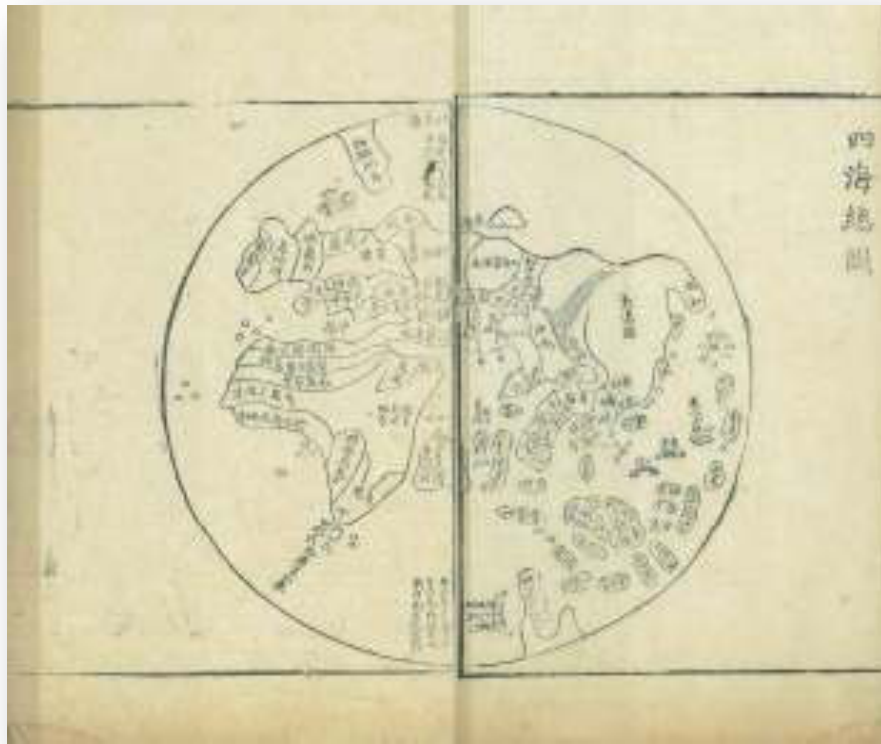


Figure 1. *Comprehensive Map of Four Seas.*

For instance, this map didn't include the Scandinavian Peninsula and the Baltic. It confused the Persian Gulf with the Red Sea, and made the Suez isthmus and Gibraltar Channel much wider than in reality. Among these mistakes the most noticeable are the two misplaced big landmasses. One is V-shaped and located to the northwest of the China another is to the southeast of China – what we all know is no modern maps have shown any continent at the above two positions. In the *Comprehensive Map of Four Seas* the names of most of the foreign places are given, only except for these two landmasses – on the land at the northwest we can see four characters *shi bao lan rou*, and on the southeast we read five: *ren ji bu dao chu* [land without human traces].

The positions of the two land masses on *Comprehensive Map of Four Seas* are exactly the same as that of the two regions to the “northwest of desert”⁹ and the “southeast of seas” charted on the *Terrestrial Map* of Zhu Siben; furthermore, these two land masses have been sparsely annotated in a way that is much like *gu yong que ru* (keeping the outline of land masses without retaining the descriptions in doubt)” described in the Preface to the *Terrestrial Map*.

The 1798 *General Maritime Map* [Huan Hai Quan Tu] which was included in the *Coastal Map of Seven Maritime Provinces* [Sheng Chao Qi Sheng Yan Hai Tu] (Figure 2) is also believed to have some remnants of Zhu Siben’s *Terrestrial Map*.

The *General Maritime Map* has some explanatory notes on its left side that tell us that it was based on an “old terrestrial map” [*jiu yu tu*], which was based on an “ancient map” [*gu qian tu*]. The interesting thing is the term of “ancient map” [*gu qian tu*]. “Gu” in Chinese means death or passed. In 1798 China was ruled by Qing Dynasty, which did not allow any person to call anything of this dynasty as “ancient”. Any person who misused this term would be thought to be cursing the Qing Dynasty to die and would be prosecuted for his error. Thus we may see that the so-called “ancient map” [*gu qian tu*] described in the notes was earlier than Qing Dynasty. Additionally the notes continue to tell us that the *General Maritime Map* is only “a half size of the old map”, while the latter consisted of two spheres and “shall be viewed comparing each other”.

Some Chinese historians argue that the *General Maritime Map* is based on the *Comprehensive Map of Four Seas* collected by Chen Lunjiong in his *Records of Sights and Sounds of Overseas States*, and charted with reference and modifications to other maps. If we compare the two maps, we may see they are indeed quite similar to each other. For example, the *General Maritime Map* also contains two landmasses on the northwest and southeast of China, the shapes and notes of the two landmasses are almost exactly the same as the *Comprehensive Map of Four Seas*.

The presence of these two land masses on *Comprehensive Map of Four Seas* and its time of making have suggested its origin from the *Terrestrial Map*.

But if we study them carefully, we may find lots of differences between the two. The main three differences are as follows:

1. Firstly, the *General Maritime Map* has a round frame on which the 24 directions are marked; while on the *Comprehensive Map of Four Seas*, there are none.
2. Secondly, at the bottom left of the *General Maritime Map* there is an outline of a landmass not to be found on the *Comprehensive Map of Four Seas*.
3. Third, in the *General Maritime Map*, the northeastern corner of Asia is protruding outside of the frame, but in the *Comprehensive Map of Four Seas* it is kept inside the sphere.

Based on these comparisons, it seems likely that the *General Maritime Map* is not a blueprint for the *Comprehensive Map of Four Seas*, but the two maps have a common origin, which is “ancient map” [*gu qian tu*] described in the notes of *General Maritime Map*. Such “ancient map” [*gu qian tu*] could be a copy of Zhu Siben’s *Terrestrial Map* or a map with the influence of Zhu Siben’s *Terrestrial Map*.

Not only can we see the influence of Zhu Siben’s *Terrestrial Map* on the Chinese ancient maps, its influence can also be traced in a map made by Europeans in the early 15th century.

9. “Deserts” in Zhu’s *Preface* refers to the Taklimakan Desert, which is located to the northwest of China.



Figure 2. General Maritime Map

This European map is the 1415 *de Virga World Map* (Figure 3, see monograph #240). This map contains areas of Asia with names used in the Mongol dynasty; some rivers and cities have similar names as those in *"The Travels of Marco Polo"*, and it shows that before the map was drawn the cartographer had referred to the maps made by Yuan scholars.

If we place the 1415 *Di Virga World Map* together with the *General Maritime Map* or Chen Lunjiong's *Comprehensive Map of Four Seas*, we will find that they resemble to one another amazingly - in particular they all include landmasses on the northwest and southeast of China. What requires special notice is there can be seen a remark on the V-shaped land on the upper left of the 1415 *Di Virga World Map* that says: *"the known furthest extreme of the world"*. This remark could not possibly be written by a European, because if we look at the map it is easy to see the furthest part from Europe is not the V-shaped land, but China, so obviously this remark is originally from the ancient Chinese. This suggests that when making the *de Virga World Map*, the map-maker copied the Chinese map and left this remark unchanged.

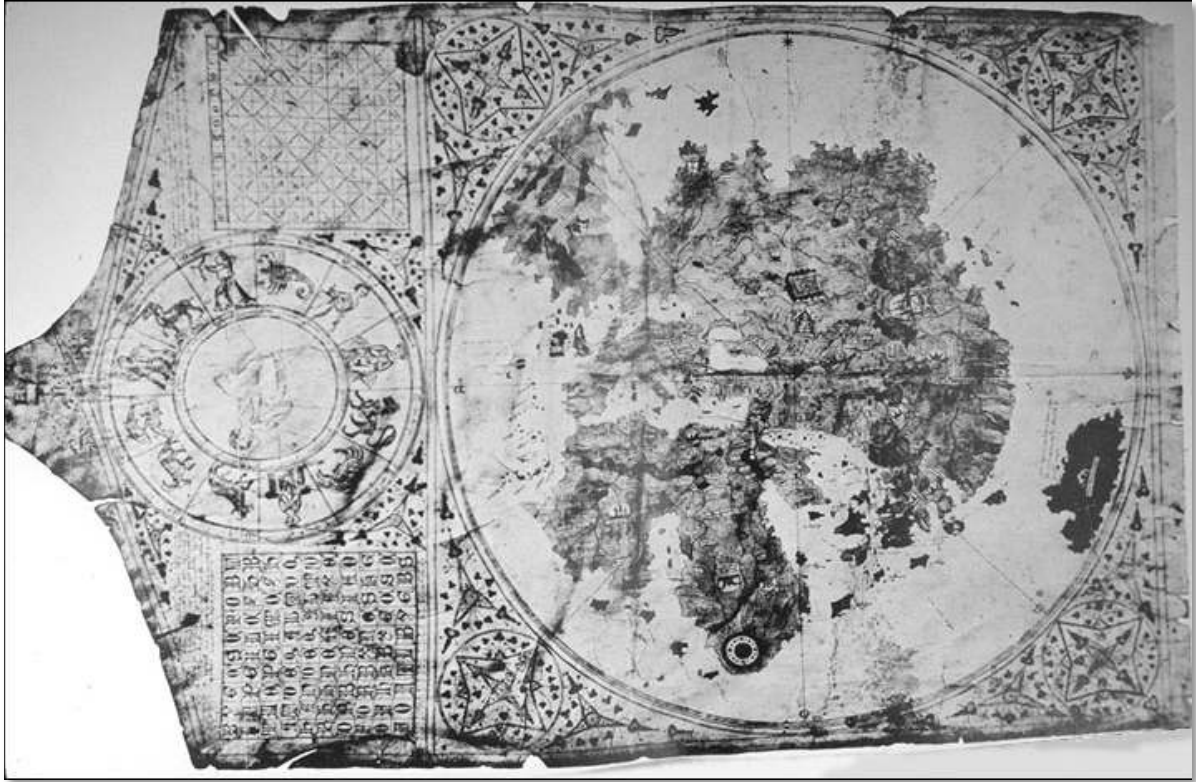


Figure 3. de Virga World Map, 1415 (see also #240)

Did The Chinese Navigate The World in the Yuan Dynasty?

The creation of the bi-hemispherical map by Zhu Siben clearly reflects the development in Chinese navigational range and technologies in the Yuan Dynasty. As early as in the Tang and Song dynasties, Chinese had made big advances in navigation and had laid down foundations for the later expansion of maritime trade in the Yuan Dynasty.

According to the *History of the Yuan Dynasty*, Kublai Khan, founder of Yuan Dynasty, had issued orders to attract foreign merchants to trade with Chinese; the emperors of later generations also sent envoys to visit and explore the foreign lands. It was the open policy of the Yuan Dynasty that made Chinese navigation one of the most advanced in the world, and their sea-faring capabilities may have surpassed the imagination and knowledge of Chinese historians. Zhu Siben, in a poem named *The Geology of Beihai* [Beihai Shi] wrote: "the south and east of the Four Seas are very close to China, where people can be seen and heard; the west sea is thousands of miles away but the merchants or messengers can sometimes reach. Only the north sea I totally have no idea about"¹⁰.

Wang Dayuan, the navigator in the Yuan Dynasty wrote a book named as *A Brief Description of Island Foreigners* [Dao Yi Zhi Lue]. This book recorded a preface written by Wu Jian, which says: "The four seas are encircling China and those foreign countries are numbered in thousands. Apart from the north sea that is blocked by horrible wind, the east, west and south seas all can be reached by navigations." These two documents tell us the same, that is, except for the waters to the north of the Bering Straits, the Chinese navigators in Yuan Dynasty could almost go to everywhere of the world.

10. Zhu Siben, *Poem Manuscript of Zhenyi Study* Vol. 1 [Zhenyi Zhai Shi Wen Gao], Wan Wei Bie collection.

"The Account of The Customs of Cambodia [Zhenla Fengtu Ji] and A Brief Description of Island Foreigners [Dao Yi Zhi Lue] are two travelogues that have been passed down to the present time. The former has a detailed traveling account but only focuses on one country; the latter was written by Wang Dayuan who made two sea trips and spent eight years traveling. The number of countries described in his book totaled more than two hundred.

Many other historical works record communications between the Yuan people and the foreign countries. The scholar Xie Zhaozhe of 16th century wrote in *Investigations on the Five Categories of Things* [Wu Za Zu]: "the Yuan Dynasty during its prosperous time accepted the tributes offered by thousands of foreign countries, it can be said that even in the remotest corners of the world, there couldn't be found a country that was not subservient." It is just because the navigators of Yuan Dynasty reached almost all the continents of the world, the globe in the modern sense could be found in the imperial court of Yuan Dynasty.

According to the *History of the Yuan Dynasty: Astronomy Chronicle*, in 1267, a scholar named Jamal-al-Din made a wooden globe in China. There are many small boxes drawn on the globe to measure distance, which is similar to Zhu Siben's *hua fang* method (i.e. the graticule). But what *History of the Yuan Dynasty* will tell us about the globe is more revealing than these small boxes.

The *History of the Yuan Dynasty* described the surface of the globe as 70% covered in green showing the waters and 30% in white to stand for the lands. The result from the modern geographic surveys shows that the oceans and the lands take up respectively 71% and 29% of the earth. How could the land-water proportion of Jamal-al-Din's globe be so close to the result of the modern geographic surveys? Could it be a coincidence? Or it was a lucky guess by Jamal-al-Din? The chances of such a coincidence is rather small, and suggest that during the Yuan Dynasty, the ancient Chinese had surveyed the earth and learned that the water to land area ratio is seven to three.

Conclusion

Liu Gang concludes that the bi-hemispherical world map created by Chinese cartographer Zhu Siben in the early 14th century was of crucial importance in the history of cartography, and reflects the history of world exploration. It shows that Chinese cartographers drew the first bi-hemispherical world maps, and suggests that Chinese navigators sailed the oceans and mapped the world before Zheng He's navigation in the early 15th century.

Chinese scholars seem to have misinterpreted descriptions of Zhu Siben's map, and this has been explained in terms of punctuation and linguistic errors.

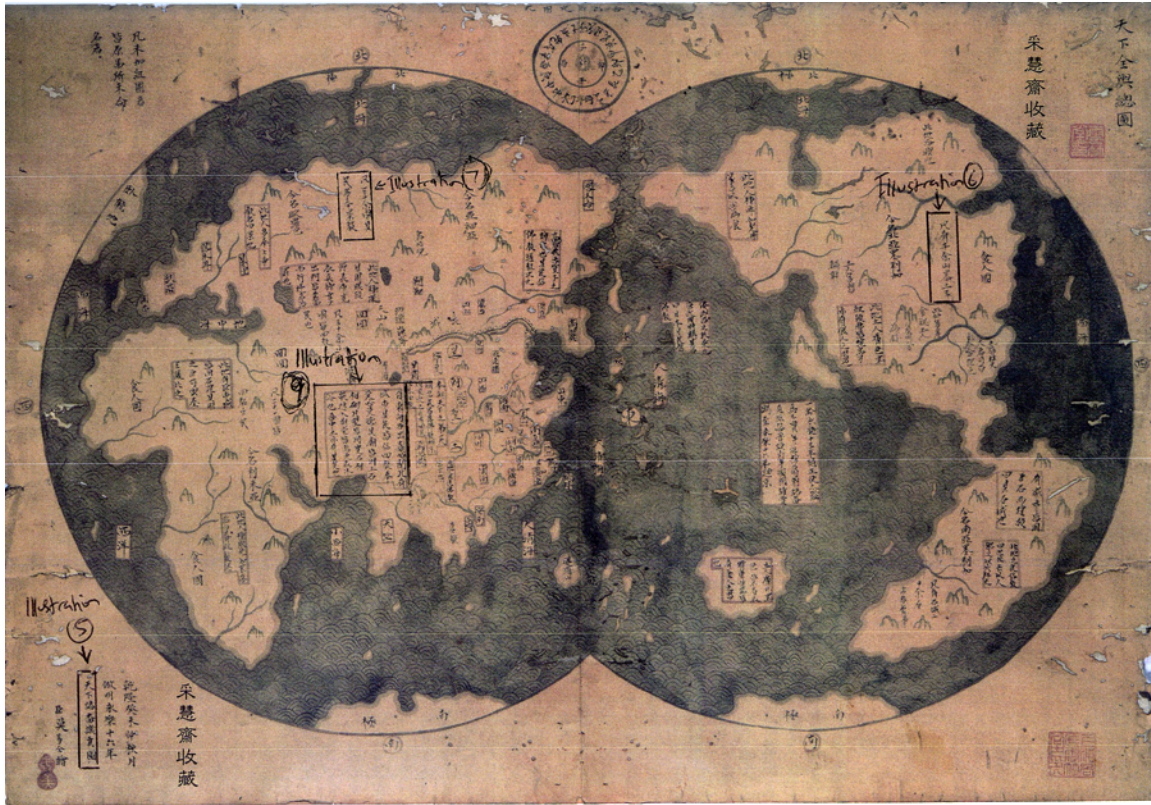
The echoes of Zhu Siben's map in later Chinese and pre-Columbian European maps, also show that the original, which seems to have been extant as late as the 18th century, was influential for successive generations of cartographers.

It is now time for historians to seriously reassess this key chapter in China's cartographical legacy and lasting influence.

HOWEVER - Geoff Wade, Michael Ross, Chinese scholars Jin Guo-ping, Hou Yang-fang, Zhou Zhen and Gong Ying-yan all conclude the following:

"In short, the map is simply a litany of errors, many simplistic. There is absolutely no possibility that it is anything but a product of the last 50 years, and quite possibly of the last five years. Not a single Chinese scholar

of cartography assigns it any veracity at all. In an article carried in *The Beijing News*, Professor Zhou Zhen-he, a prominent historical geographer employed in the Chinese Geography Research Institute of Fu-dan University in Shanghai, noted of the map: "The methods used in producing this fake map are so poor and low-quality, with even descriptions in recent newspapers being sufficient to show that it is a fake 'ancient map'." When the senior experts in Chinese cartography are so convinced of the fraudulence of this map, Mr. Menzies and Mr. Liu are going to be hard-pressed to convince the world otherwise."



Bibliography

- Bai Shouyi, *Outline of the History of China* [Zhongguo Tongshi], Volume 14, Shanghai People's Press (2002). In Chinese.
- Cordell D.K.Yee, "Taking the World's Measure: Chinese Maps between Observation and Text", *The History Of Cartography*, Volume 2, Book 2.
- Gai Jianmin, *A Study on Taoist Scientific Thoughts* [Dao Jiao Ke Xue Si Xiang Fa Fan]. Gang, L., "Zheng He: The Real Discoverer of the New World? An ancient Chinese map suggests pre-Columbus New World mapping by China's famous eunuch admiral", *MapForum* #9, pp. 38-43.
- Gang, L., "The Chinese Inventor of Bi-Hemispherical", *e-Perimtron*, Vol. 2, No. 3, Summer 2007 [185-193]
- Gao Wanru, et al., *An Atlas of Ancient Maps in China*. Cultural Relics Publishing House (1990). In Chinese.
- Lee, Siu-Leung, "Chinese Mapped America Before 1430", ICC Washington 2017, 10pp.
- Luo Hongxian, *Unfolded Terrestrial Atlas* [Guang Yu Tu] (1541). In Chinese.
- *Menzies, G., 1434. *The Year a Magnificent Chinese Fleet Sailed to Italy and Ignited the Renaissance*, pp. 128-130.

- Menzies, G., *1421, the year China Discovered America*, 2002.
- Song Lian & Wang Yi, *The History of Yuan Dynasty* [Yuan Shi] (1369). *In Chinese*.
- Ge Jianxiong (1998). *Chinese Ancient Mapping and Survey* [Zhongguo Gudai De Ditu Cehui]. Commercial Press. *In Chinese*.
- Sotheby's, *China, in Ancient and Modern Maps*, Philip Wilson Publishers Limited, p.102-103 (1998).
- Wade, G., "The "Liu/Menzies" World Map: A Critique", *MapForum* #9, pp. 44-49.
- Wang Dayuan, originally printed in 1250 and reprinted in 1778, *A Brief Description of the Island Foreigners* [Dao Yi Zhi Lue]. *In Chinese*.
- Wang Li, *Ancient Chinese Language* [Gu Dai Han Yu]. China Press (1999). *In Chinese*.
- Wang Yong, *History of Chinese Geography* [Zhongguo Dili Xueshi]. Commercial Press (1998). *In Chinese*.