CHAPTER 15

ZHENG HE'S VOYAGES REVEALED BY MATTEO RICCI'S WORLD MAP[1]

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Matteo Ricci arrived in Macao, China in 1582. He never left China till his death in Beijing in 1610. While in China, Ricci completed the world map 坤輿萬國全圖 [*Kun Yu Wan Guo Quan Tu*, 1602] a year after he was allowed to enter the Forbidden City. It is thought that the map is based on Ortelius' map of 1570. However, many names on Ricci's map are not found in Ortelius map, including 44 per cent of the names appearing in Africa, 63 per cent of those in Asia, 46 per cent in Europe/Middle East, and 49 per cent in America. Some names did not appear in any of the available maps made by European cartographers between 1300 and 1800. Ricci's map provides a significantly more accurate and detailed description of the world. The nomenclature in Ricci's map is systematic and consistent, showing China at the centre of the map. On the other hand, there is confusion in European maps about names that show cardinal directions. Some were never corrected until 200 years later. Matteo Ricci's map uses outdated names in Europe, mentioning nothing about the Papal state and Florence, the cultural centres of his time. It is inconsistent with Ricci's background and mission as a Jesuit. The continent of America on Ricci's map is more detailed and accurate than any European map of the time. The presence and absence of African nations on Ricci's map dates the map to be between 1380 and 1460 CE. It is improbable that a copy is more accurate than the original map in so many aspects. Lacking notable contact with any European sources of information, Ricci could only have obtained the additional data from Chinese sources as he explicitly indicated on the map. The names of many places in China are associated with Yongle and Xuande, the emperors who commissioned Zheng He to undertake the seven voyages (1405-1433). The above observations lead to the conclusion that Ricci in China had access to better knowledge of

America and the Pacific acquired during Zheng He's time, some 60-70 years before Christopher Columbus' exploration. Thus, Zheng He and his team should be credited for pioneering circumnavigation of the world as revealed by this Chinese map of 1602 by Mateo Ricci.

Matteo Ricci (1552-1610), a Jesuit born in Italy, has been honoured as the first to bring western science and technologies to China. Ricci, a 26-year-old young man, left Italy in 1578 and arrived at Macao in 1582 after a period of stay in Goa, India. His major contribution is thought to be a world map he drew and completed in China based on the maps by Abraham Ortelius (1570) and/or Geradus Mercator (1595)[2], the most updated maps available in Europe at the time. His first world map displayed at Zhaoqing (肇慶) in 1584 was a much simplified version. Thereafter, he made several versions, among which only the last one survived. The final version of the map called 坤輿萬國全圖[*Kun Yu Wan Guo Quan Tu*, abbreviated as KYWGQT] was printed in 1602 (Fig. 15.1). Copies of this map are in the collection of the Vatican, Japan, and China. Details of the different versions are given in an excellent book by Huang Shijian and Gong Yingyan (2004). In 2010, University of Minnesota purchased a copy that is permanently displayed at the James Ford Bell Library. A scanned copy is kept at the Library of Congress.

The dimension of the original KYWGQT is 3.6m by 168cm. In print, the words on the map appearing in books are not legible. Tohoku University offers an Internet web version of the map that can be zoomed in for close examination.[3] Other than the addition of Japanese phonetics, the online map seems to be a direct copy of the 禹貢版 (*Yugong* version) quoted by Huang and Gong. The following discussion is based on the online version and the publication by Huang and Gong.

Ricci's introduction on the map indicates that he brought a map from his home country. He also consulted [統志 *Tong Zhi*, Chinese national gazetteer] to edit his original map by correcting the errors in translation and scale, and adding hundreds of names to his map.[4] There is another statement appearing in the map just south of China: "The Great Ming is famous for her rich culture between 15 degrees and 42 degrees.

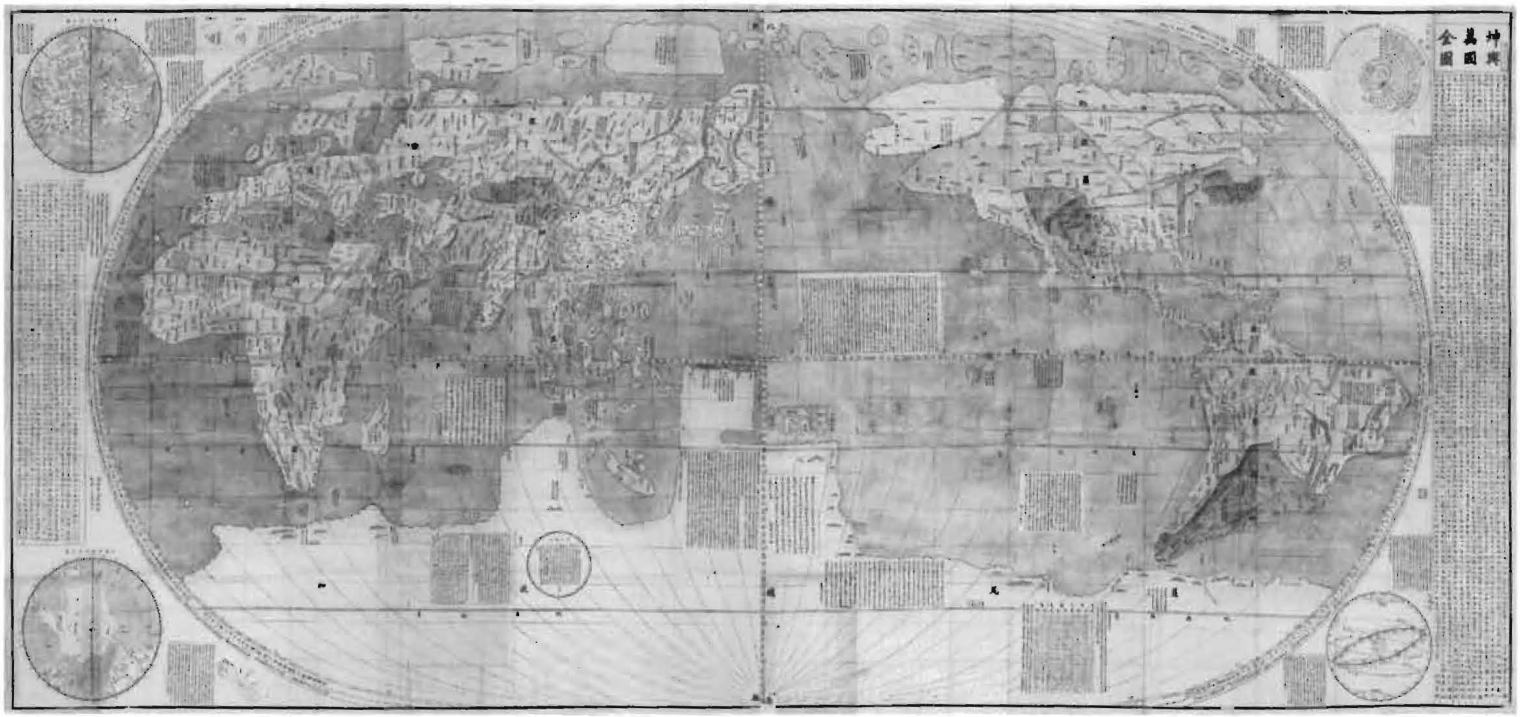

Fig.15.1 Matteo Ricci's World Map (Kun Yu Wan Guo Quan Tu, 1602).
http://en.wikipedia.org/wiki/Kunyu_Wanguo_Quantu

Many nations trade with her. This map only includes brief description of the mountains and rivers, provinces and administrations. For the rest, the national and local chronicles/gazetteers should be consulted. It cannot be mentioned exhaustively here."

In China, territorial surveys and astronomic observations were done by dedicated courtiers since the Qin dynasty (221-206 BCE). The first emperor of Qin accurately reproduced the celestial map of 332 stars on an area of 28,000 sq km.[5] The 馬王堆地圖 (*Mahuangdui* map) excavated from a Han tomb dated 2000 years ago is accurate in scale by today's standard. The tradition of compiling *Fang Zhi* [方志 regional gazetteers/ chronicles] began in the Zhou dynasty (1100-221 BCE). These were revised periodically in each subsequent dynasty. There are more than 10,000 regional chronicles/gazetteers, of which about 8,000 are available in China. This is a unique database of history and geography including maps.

Five hundred years ago, there were two categories of mapmakers in Europe - the explorers and the printers/publishers. Printers seldom left their own country. They pieced together information from travellers whose exaggerations were sometimes passed on as facts. There were few trained surveyors among the explorers whose interest was to hunt for treasures. For instance, Hernando De Soto, the first Spaniard who explored North America (1539-1542) , left no maps or notes of his own.[6] Before Abraham Ortelius and Gerardus Mercator, there were few maps available. World maps such as the Mappa Mundi (circa 1300) at Hereford Cathedral is claimed to be the first world map drawn in Europe (Fig. 15.2) showing Europe, the Middle East, and Asia up to India. With this in mind, we shall examine Matteo Ricci's KYWGQT.

AN OVERVIEW

The density of names on a map is a good indication of the mapmaker's familiarity of the place, especially for places within or close to their home country. Ricci's world map has significantly more details of Asia, not Europe. There has been some discussion and doubt about the source of Ricci's map (Liu 2010). Huang and Gong have indexed the 1,114 names

Fig. 15.2 Mappa Mundi at Hereford Cathedral, England (ca. 1300).
FROM:
http://upload.wikimedia.org/wikipedia/commons/1/17/Hereford_Mappa_Mundi_1300.jpg

on KYWGQT and compared them to those on the Ortelius map of 1570. Not found in the Ortelius map are 46 per cent of the names in Europe and the Middle East (Sections 13 and 16), 44 per cent of the names in Africa (Sections 14 and 17), 49 per cent of the names in the Americas (Sections 1-7) and 63 per cent of the names in Asia (Sections 10 and 11). Many of these missing names are descriptive labels that could only possibly be inserted by people who have been there. Based on this simple assumption, KYWGQT cannot be regarded simply as a copy of the Ortelius map. Pasquale D'Elia (1890-1963), an Italian sinologist and researcher of Matteo Ricci's map, has shown discrepancies between the names on Ricci's map and the Ortelius map or the Mercator map. He shows that some of the names on the Ortelius and Mercator maps could also have been translated from Chinese sources, rather than the reverse. The maps referenced in this chapter have been collected from different libraries. The scanned copies derived from the Internet have been cited here for better accessibility and expandability.

China at the Centre

Ricci is said to have changed the orientation of the map by placing China at the centre in order to please the Chinese people of the Middle Kingdom. This may not be the true reason as will be shown below.

On KYWGQT, the water body east of China, off the coast of Japan is East Ocean Minor (小東洋) while the water just off the coast of California is East Ocean Major (大東洋). The Southeast Sea and South Sea are correctly positioned with reference to China. West Ocean Minor (小西洋) is shown between the Malaysian Peninsula and Africa and West Ocean Major (大西洋) is displayed as the Atlantic Ocean as it is today. If Zheng He never went beyond East Africa, there would have been no need for a West Ocean Major, which already has a name Oceanus 'Cang' (河撚亞諾滄) where Oceanus is the same as 'Cang'(滄), meaning a deep, cold ocean. Having West Ocean Major on the map would have been redundant. On other European maps, West Ocean Minor is named the Indian Ocean, because it is to the east of Europe! Obviously, West Ocean Major and West Ocean Minor are original names from China, meaning China knew that West Ocean Major was larger than West Ocean Minor. The Chinese could only have named it such because they had already discovered the Atlantic Ocean, and knew it was bigger than the Indian Ocean. The Greek and Roman name for this ocean was Marc Atlanticum. It was only changed to Mare Occidentalis after the sixteenth century, apparently adopting the Chinese name.

Red Sea West (西紅海) is the Red Sea known to us today, and Red Sea East (東紅海) refers to the Gulf of California. Obviously, Red Sea East cannot be named as "East" in European world maps because it is to the west of Europe. The Gulf of California was earlier named Mare Bermejo (Sp.) or Marc Vermelho (Port.). In European maps, it was subsequently replaced by the Sea of Cortez or Gulf of California to avoid confusion.

After Balboa found his way across the Panama Isthmus from north to south (1513), the Atlantic Ocean was called North Sea and the Pacific Ocean the South Sea. This nomenclature exposes the limited knowledge of the explorer about the size of the Pacific Ocean. Even after Magellan's

transpacific trip, the name South Sea continued to be used for the entire Pacific Ocean almost 200 years until the mid-eighteenth century when it was realized that North Sea and South Sea were improper names for these two oceans. The following is a more in-depth discussion of the nomenclature.

Pacific Ocean and Atlantic Ocean

In 1520, Magellan passed by the southern tip of South America. It is said that his surviving companion Antonio Pigafetta named the Pacific Ocean attributing it to Magellan. However, the name Mare Pacificum was not used in maps until 1540, twenty years later (Table 15.1). The Pacific Ocean is not an appropriate name because some parts of this ocean may have waves up to 30 feet high, especially in the North Pacific. Ning Hai [寧海literally Pacific Sea] on Ricci's map is named for a limited area west of Chile. This is a relatively calm region by the wave map of National Oceanic Atmospheric and Administration (NOAA).[7]

Table 15.1. Chronology of Maps of the Pacific Ocean

Date	Author and map
1527	Franciscus Monachus[25] - No Pacific
1529	Diego Ribero[26] - *Mar del Sur*, west of Mexico
1540	Battista Agnese[27] - No Pacific Ocean or South Sea
1540	Sebastian Muenster[28] - *Mare Pacificum* off Chile
1544	Sebastian Cabot[29] - *Mar del Sur*, south of Equator
1544	Charta Cosmographica[30] - no label of Pacific Ocean
1546, 1552	Sebastian Muenster[31] - *Mare Pacificus*, west of Chile
1550	Tabula novarum insularum [32] - *Mare Pacificum*
1562	Diego Gutierrez, [33] - *Mar del Sur, Mare Magellanicum Sive Pacificum*
1581	Nicola van Sype, [34] - *Mare del Sur*
1602	Matteo Ricci - 大東洋 East Ocean Major (off California), 小東洋 East Ocean Minor (east of Japan), 孛露海 Peru Sea (west of Peru), 東南海 Southeast Sea (west of Peru Sea), 寧海Pacific Sea (west of Chile, displaced by words on the map, this is not as correct as Shan Hai Yu Di Quan Tu), 南海South Sea (near Indonesia and Australia), 大明海 Great Ming Sea, and 日本海 Japan Sea.

1586-1588	Francis Drake[35] - *Mar del Zur*, south of equator; *Mare Pacificum*, north of equator (wrong assignment!)
1587	Abraham Ortelius[36] - *Mar del Sur quod et Pacificum*
1664	Joan Blaeu [37] - mainly *Mar del Zur; Mare Pacificum* west of Chile
1697	William Dampiers [38] - *Pacific* or *South Sea*
1720	Adam Friedrich Zuerner [39] - north *Mar del Sur*; south *Mare Pacificum*
1766	Jacques Nicolas Bellin [40] - *Mer du Sud*
1771	Louis de Bougainville [41] - *Pacific* is the only name

Table 15.2. Chronology of Naming the Atlantic Ocean[42] (Greek and Roman name – *Atlanticum Mare)* [43]

Date	Author and Map
1513	Ptolemy - *Oceanus Occidentalis*
1520	Johannes Schoener - *Oceanus Occidentalis*
1527	Robert Thorne - *Oceanus Occidentalis*
1528	Benedetto Bordone - *Mare Occidentale*
1530	Ptolemy - *Oceanus Occidenlalis*
1532	Johann Jakob Grynaeus - *Oceanus Magnus*
1575	Petrus Apianus - *Mar Atlicum*
1565	Ramusio - *Mar del Nort*
1569	Gerardus Mercator - *Oceanus Atlanticus*
1595	Jodocus Hondius - *Mar del Nort*
1602	Matteo Ricci - 大西洋West Ocean Major, *Oceanus Cang*
1624	West-Indische Spieghel - *Mar del Nort*
1633	De Laet - *Mar del Norte*
1663	Jacob Colon - *Mar del Nort*
1671	John Ogilby, *Oceanus Atlanticum, Mar del Norte; Oceanus Aethiopicus*
1699	William Dampier - *the North Sea, Atlantic Sea*

So there was great confusion among European maps in naming the Atlantic Ocean and Pacific Ocean, because of their uncertainty of the size, orientation and lack of knowledge of existing names. The name Atlantic Ocean has been used since Roman times (Table 15.2), after Mount Atlas of North Africa. It was renamed Oceanus Occidentalis (West Ocean) after 1500s, apparently adopting the Chinese name that was also used by Ricci. It was changed to North Sea after Balboa crossed the Isthmus of Panama.

Most interestingly, a globe by Euphrosyne Ulpius (1542) shows the ocean west of Mexico as "Oceanus Orientalis et Occidentalis", meaning this ocean is both east and west[8] (Fig. 15.3). This ocean is only drawn as a small strip of water separating Asia from America. North America is only represented by a narrow strip on the east coast without a well defined west coast. The globe maker apparently knew about an East Ocean, yet it was shown to be located west of Europe. There was no way to resolve the ambiguity except to choose a name that indicates it as both east and west. The interior of North America is a blank and the west coast is not well defined and does not show California. This copper globe was engraved under the direction of Cardinal Cervinus, a Vatican librarian who later became Pope Marcellus II (Paulist Fathers 1922, p. 222). This globe represents the world Matteo Ricci knew before going to China.

Fig. 15.3. Globe by Euphrosyne Ulpius (1542), Note Oceanus Orientalis et Occidentalis (with permission from Jim Siebold).

Giulio Aleni (1582-1649), who came to China in 1610 as the successor of Matteo Ricci published a much simpler world map 萬國全圖 [*Wan Guo Quan Tu*] in 1620 but the map contains some serious errors. On Aleni's map, the same Atlantic Ocean as we know today is shown as大東洋 [East Ocean Major] on the right side of America, and 大西洋 [West Ocean Major] is shown west of Europe on the left side of

the map. This error is similar to the Ulpius globe, showing that European mapmakers learnt about the East and West Oceans from the Chinese, but they could not properly label them. This map is also displayed in the Vatican's exhibit (2009-2010) in memory of Matteo Ricci, acknowledging his contributions. Aleni did not correct this error because he came 30 years later to witness a declining Ming China. He never had access to the information Ricci saw in Beijing. Ricci was the first foreigner ever allowed in the Forbidden City.

The contradiction arising from naming east and west is the reason why the nomenclature of North Sea and South Sea was continued for another 200 years. North Sea was the entire Atlantic Ocean and South Sea the entire Pacific, north or south of the equator. Obviously this is also a serious error. Finally, North Sea was reverted to the old name Atlantic Ocean, and North Sea reduced to the small area between England and Scandinavia. South Sea became South Pacific, and later appeared simply as the Pacific Ocean, even though the entire Pacific Ocean is not peaceful everywhere. Today, Chinese maps still use 大西洋 [West Ocean Major] for the Atlantic Ocean.

A map 山海輿地全圖 [*Shan Hai Yu Di Quan Tu*], published about the same time as KYWGQT, is suspected to be an earlier map drawn by Ricci in Nanjing because it bears the same name.[9] On this map, what we call Pacific Ocean is labelled as 滄溟宗[*Cang Ming Zong*, viz. the ancestor of all oceans, a very classical Chinese name most appropriate as the origin of all dark and cold oceans for the enormity. The term *Cang Ming* (滄溟) appears in many of the records during Zheng He's time. The term *Cang Ming Zong* is highly significant as it implies that the Chinese at that time knew about the Pacific Ocean as the biggest of them all. This name was not found in any European maps or the KYWGQT. If indeed Ricci authored both maps, he could not have possibly missed naming the largest of all oceans in his best map of all. This casts serious doubt about Ricci as the author of both maps. Regretfully, the better name *Cang Ming Zong*, meaning "the origin of all oceans", was replaced by a less appropriate name, the Pacific Ocean.

Ricci had to change his map and follow China's convention because he realized that his original concept of the world had serious problems with orientations.

Europe

One would expect Ricci to bring a world map with updated information on Europe, if not anywhere else. KYWGQT does not show the Papal State (Status Pontificius), the most important place name to him as a Jesuit. Between 752 and 1870, the Papal State has always been in Italy except for the period 1305-1378 when the Pope was moved to Avignon, France.[10] This is one of the most important clues for dating Ricci's map. Also absent from the map are names of Florence, Tuscany, Milan, and Siena, the names made famous by the exploits of Leonardo da Vinci, Michelangelo and others during the Renaissance (see Fig. 15.4). The city of Florence and the Tuscany region were significant enough to have a dedicated map in the Ortelius atlas. If indeed Ricci copied from Ortelius, he could not have missed these names. The Medici family had some of the most dominant public figures from 1360 to 1737 ruling Florence for 400 years. During Ricci's time in Italy, Cosimo I de Medici (1537-1574) and Francesco I de Medici (1574-1587) were Popes. Strangely, Ricci used the name Mare Superum (上海) which should have been the Adriatic Sea, Mare Adriaticum, or Mare Hadriaticum. In the case of Mare Inferum (下海), which should have been Mare Toscana or Mare Tyrrhenum, they are ancient names already in use in Roman times.[11] The KYWGQT shows a map of ancient Europe that is inconsistent with Ricci's mission to evangelize China. Therefore, Ricci's map is unlikely to be based on a map by European mapmakers. Above Spain on Ricci's map, there is a short note, "There are some 30 nations in Europe, ... 80,000 miles from China. They had no contact with China until 70 years ago." Seventy years before the completion of Ricci's map or Ortelius' map would fall between 1500 and 1530, which was the period of Ming's maritime ban and isolation, unlikely for any contact to have taken place.

Fig. 15.4. Ricci's Map of Italy

The Vatican keeps a letter dated 1246 by the Great Khan Güyük to Pope Innocent IV.[12] Marco Polo's journey to China (1271-1295) was the first well recorded visit to China by any European. There were only minor or informal contacts between East and West at that time. The major contact between China and Europe was in 1338 when a total of 50 ecclesiastics were sent by the Pope to Beijing (capital of Yuan Dynasty) where they stayed on for years. John of Marignolli returned to Avignon in 1353 and delivered a credential from the Great Khan to Pope Innocent VI. This is historically the first state-to-state contact between China and Europe. Approximately 70 years after this contact (1338-1353) would be 1408-1423, exactly the time of Zheng He's voyages. This is the strongest evidence that KYWGQT is based on Chinese information of Zheng He's period rather than European maps.

ASIA

As expected, Ricci's KYWGQT is unsurpassed in details on China and Asia by any other map of his time. Ricci mentions explicitly the employment of Chinese chronicles/ gazetteers in drawing the map. Out of 396 names from sections 10 and 11 in Huang and Gong's book, 248 (63 per cent) are not found in the maps by Ortelius and Mercator. Almost all the names in China and Central Asia are taken from Chinese sources starting from Han dynasty (206 BCE-220 CE).

Interestingly, instead of more descriptions about the Chinese political and economic centres such as Beijing, Nanjing and places Ricci had visited, KYWGQT has more uncommon names on the remote southwest and northeast (see Fig. 15.5). Many of these names such as *Chang He Xi* (長河西), Song Pan (松潘), Yue Xi (越巂), and Meng Yang (孟養) only came to be known during the late Yuan to early Ming era that held little interest to the Europeans. Some of these towns were established during Yongle's reign (1403-1424) to resolve local conflicts. These towns were also located along the important trading routes of *Cha Ma Dao* [茶馬道 Tea-Horse Routes] in Yunnan which was Zheng He's home province. Products collected by Zheng He from foreign countries were transported back to China through these routes via Myanmar, Thailand, and Vietnam. This was a strategic way to deliver the products downstream from Yunnan via the two major rivers, Yangzi and the Yellow River, to Beijing, Nanjing and other parts of China. These little towns were labelled as landmarks to find the way to the major cities. Once the teams reached these cities, they had no problem moving the goods on to Beijing or Nanjing.

Fig. 15.5. Ricci's Map showing Southwestern and Northeastern China.

After Zhu Di's death, the conflict with Vietnam in 1428 left part of the Tea-Horse Route paralyzed. By 1557, the Portuguese had established Macao as the entry port. In 1565, the Spanish also inaugurated the Manila Galleon between Acapulco and the Philippines to trade with China. In 1567, during Longqing (隆慶) era, maritime routes were re-opened after a long ban. A lot more goods could be carried much faster via the sea routes. The Yunnan trading routes were losing their significance by the time Ricci was in China. There is little reason to include them on a world map.

On the northeast, the city Ying Chang (應昌) was the sole significant one because the last Yuan emperor died there. Another group of names is specifically related to Zhu Di (朱棣). The first emperor of Ming established three administrative districts — Duo Yan (朵顏), Tai Ning (泰寧), Fu Yu (福餘) for the northeast. The tribes belonging to these districts helped Zhu Di in overthrowing the young emperor, Hui Wen Di (惠文帝). In return, Zhu Di awarded them the land of Da Ning (大寧). Another group of place names was associated with a series of battles (1410 – 1424) led by Zhu Di against the northern tribes : Xuan Fu (宣府), Xing He (興和), Kai Ping (開平, the last capital set up by Kublai Khan, but later reverted to its original name), Lian Yun Qi (連雲磧), Cang Song Xia (蒼松峽), Yuan An Zhen (遠安鎮), Qing Lu Zhen (清虜鎮), Yin Ma He (飲馬河), Wei Lu Zhen (威虜鎮), Tu La He (土剌河), Sha Hu Zhen (殺胡鎮), and Wo Nan He (斡難河). A notable name is Yu Mu Chuan (榆木川), where Zhu Di died after fighting his last battle (1424). Most of these names are found in the book Bei Zheng Lu [北征錄, about the first and second war against the northern tribes) by Jin You Zi (金幼孜,1367-1431) and Bei Zheng Ji (北征記, The Battle Against the North) by Yang Rong (楊榮, 1371-1440) [13]. These accounts are also summarized in a history site.[14] Other than the relevance to Zhu Di, these names carry no other significance on a China map, much less a world map. According to the above analysis, Ricci constructed his map with information drawn from early Ming to about the year 1440.

Ricci's India is equally outdated. Before reaching China, Ricci stayed in Goa during the reign of Akbar the Great (1556-1605). Ricci

should have known that the Mughal Empire had taken over almost half of India, centred on Goa. However, the Mughal Empire on Ricci's map is shown only as a small name located north of Hindustan.

AFRICA

Africa is one of the last and least understood continents explored by Europeans at that time. On KYWGQT, Africa was called Libya (利未亞), rather than Africa as named in the maps by Mercator and Ortelius. Both Africa and Libya were names of countries on the African continent.

Most African maps at that time, e.g. Battista Agnese (1550), show only a few names in the interior. European interest in Africa began with the exploration of Gambia in 1618. The names on Mercator and Ortelius maps were copied from other sources, quite different from those shown in KYWGQT. Forty per cent of the names shown in Africa on KYWGQT are not found on the maps by Ortelius or Mercator. There is no record on how Ortelius and Mercator obtained the names of interior Africa. The details on KYWGQT are comparable to those on the map by Arrowsmith and Lewis (1812), drawn some 200 years later.

Cape of Good Hope on KYWGQT is called Da Lang Shan Jiao [大浪山角, meaning Cape of Huge Wave Mountain]. It is not a translation of Cape of Storms (Cabo das Tormentas named by Bartolomeu Dias in 1488) or Cape of Good Hope (renamed Capo de Buona Speransa by King John II in 1497). Ricci correctly placed the name on the western side of the southern tip, rather than the southern tip as on the Ortelius 1570/1584 map (see Figure 6). Storms around the Cape may not be frequent, but high waves area fact around the Cape as seen in the animated map of wave height at the website of NOAA.[15] During spring (September to November) the famous south-easterly gales from the Antarctic make huge waves that pound the coastline. Therefore, Ricci's map has a better nomenclature than European maps. To give a name of the general phenomenon of high waves would require careful observation over a period of time. A copy cannot be more accurate than the source maps in so many ways.

Fig. 15.6 Cape of Good Hope – Ricci (1602), Ortelius (1570, 1584)[left] and Actual Map of the Same Area [right].

Over a period of 500 years, Africa had undergone many changes. On KYWGQT, the Sahara Desert we see today was dissected by a large river from east to west. Ricci notes that "this river appears and disappears in three sections, separated by 200 miles." There is no visible river now except the name "Irharhar", meaning "river" in the Berberian language. "Sahara" in Arabic means desert. In KYWGQT, desert appears as only a small label near Mandingo and Lake Guber. That is, North Africa was abundant then, rich in resources and able to support large nations, such as Benin, Songhai and Kanem-Bornu.

The Benin Empire (not the same Benin nation today) was established in 1180 by the Bini people under a powerful person referred to as Ogisos (similar to an emperor). In 1440, the Ogisos declared his nation as an empire named Edo till 1897. This empire was one of the greatest in Africa, including part of Nigeria, Togo and Ghana. On KYWGQT, Benin is still a small name shown next to Dahomey. The name Edo did not appear on KYWGQT, implying the map was based on information available before 1440.

In North Africa, Songhai was founded as a small kingdom in 1340. By 1460, Songhai merged with several smaller nations and became a large kingdom. It was finally destroyed in 1591 by the Saadi dynasty. Songhai is not shown in KYWGQT, again implying that the map was drawn before 1460s.

Another notable kingdom, Kanem (700-1387 CE), occupied the centre of North Africa in the area around Chad and Libya. It was later replaced by Bornu (from 1472 until the end of nineteenth century). Kanem and Bornu are both absent in KYWGQT. Upstream of the Nile River, there is a lake Borno lacus (波爾諾湖) where the name of the kingdom was derived from. This is the evidence that Ricci's map was drawn with information made available between 1387 and 1472. From the above information, we can deduce that KYWGQT must have been drawn using information documented between late 1300s and mid 1400s. A map shows more than geography. It is also a record of history and discovery.

KYWGQT shows a hydrological pattern more accurate and detailed than those shown on Ortelius map. The interior of Africa was not explored until David Livingstone (1852-56) more than 250 years later. On KYWGQT, Lake Tanganyika is called Lake Cichlid (齊歷湖), which drains into the Indian Ocean (Fig. 15.7). This lake is a rich source of the fish Cichlid, the same name as the lake. Cichlids belong to a large family including 1,500 species of pet fish and food fish in the three lakes – Victoria, Tanganyika, and Malawi. KYWGQT is the only map known to preserve this name Cichlid as a lake.

Fig. 15.7 Hydrology of Central Africa shown on Ricci and Ortelius' maps respectively [left and middle], and satellite imagery of the same area [right].

The information above does not prove that Zheng He reached and surveyed the interior of Africa. What it shows is that the Chinese had information about Africa that Europeans had no access, viz. Ricci did not copy from Ortelius and Mercator. A possible source may be the Moroccan Muslim traveller Ibn Battuta (1304-1360) who made trips to Africa and China.

America

If Ricci's Europe is outdated, information on the Americas in KYWGQT is surprisingly advanced. The shape of South America is a great deal more accurate and detailed than what is depicted on Ortelius and Mercator maps. According to the index of Huang and Gong, 49 per cent of all the names of the Americas are not found in the Ortelius map. It should be noted that much of the interior of North America was not explored until the nineteenth century by Meriwether Lewis and William Clark (1804-06). European cartographers of the seventeenth century were not certain if America was connected to Asia (Robert Vaughan 1628[16]; Frederik de Wit, 1662[17] ; Joan Blaeu 1664[18]). Yet, some earlier maps have the two continents clearly separated (Battista Agnes 1544, Nicola Sype 1581, Gerardus Mercator 1569). They could be the products of imagination, or reproductions from a more accurate map similar to what Ricci saw in China. It is surprising that the later maps made by explorers were fragmentary, erroneous or uncertain.

The 1562 map of Diego Gutierrez is the first to show a part of California. There is no conclusive etymology about the name "California". However, it is definitely not named by the Spanish explorer Hernando Cortés, but existed before the arrival of the Spaniards (Chapman, 1921). Other than this name, Gutierrez's map has no other details of the west coast of North America. This should be one of the maps last seen by Ricci before he left Italy. Maps from 1541 to 1622 correctly show California as a peninsula similar to Ricci's map while those from 1622 to 1746 show it as an island (Richman 1911). The earlier European maps must be based on the geography known to the Ming Chinese. Ricci's KYWGQT shows a peninsula with considerable details. The maps drawn based on the Spanish explorers continued to depict California as an island until 1697 before Eusebio Kino concluded that California was a peninsula.

At the southern tip of the Baja peninsula, KYWGQT is a label 十字山尾, meaning the "End of Mount Crosses" (currently called Sierra de la Laguna) (Fig. 15.8). A series of ridges running east to west along a mountain range stretching from north to south, forming a series of crosses can be seen when viewed from the mountain top. The name indicates the

last of a series of crosses, not one cross (Fig. 15.9). Note that Chinese words do not indicate plural in the noun.

Fig. 15.8 California shown on maps of Ricci (1602) [top right], Ortelius (1570) [top left], and Granata Nova et California (1603) [bottom left], respectively. (extracted from Wikipedia).

Fig. 15.9 Satellite imagery of Baja, showing Bay at La Paz and Sierra La Laguna (extracted from Wikipedia).

A similar name "C +" appear in the map by Girolamo Ruscelli (1562)[19] and "C. de Cruz" in Johannes Matalius Metellus' Granata Nova et California (1603)[20]. The abbreviation "C" stands for "capo", a mountain. However, these names miss the important word "尾" ("end") on Ricci's map. Cortés, the first European to land in La Paz in1536, named the site "Santa Cruz" (Holy Cross). This is not by coincidence. Apparently he knew the name "cross", but did not know that the "cross" here represented

a physical description, not a religious symbol. Ruscelli and Metellus did not include the word "Santa" in the name showing they did not learn it from Cortés. If Ricci translated it after Cortés' assignment, there would be no reason why he as a Jesuit would omit the word "Santa".[21]

In addition, the shape of the Baja peninsula in Ricci's map is more accurate including the bay at La Paz and several islands that are absent in the maps by Ruscelli and Metellus after Cortés' visit. Obviously, Ruscelli, Metellus, and Cortés all had less information than that from a source that Ricci had access to in China. That means Ricci's Chinese source knew about California better than the European explorers and mapmakers.

Both Rumold Mercator's map (1587) and KYWGQT show Hudson Bay of Canada, but this large feature is not seen on Gerard Mercator's (1569) map.[22] Even assuming Ricci could obtain a draft copy of the 1587 map, Hudson Bay was not "discovered" until 1610 by Henry Hudson. Hudson discovered the bay while looking for a northwest passage to China instead of having to sail through the Magellan Strait. Ricci passed away in Beijing the same year when Hudson made his "discovery". This bay on KYWGQT does not occur by accident. It has a name 哥尼白斯湖 (Lake Conibaz per translation by Pasquale D'Elia; 哥尼自斯湖 is a transcriptional error on the map at Tohoku University website) which appears only in KYWGQT and maps *after* Ricci was in China.

A river named 哥入河 (translated by D'Elia as Cogib fiume) running into the Hudson Bay on the east side is absent on the maps by Ortelius, Mercator and Plancius prior to 1600s. The Chinese name corresponds to "Co-Ngib", a pronunciation in Hakka Chinese, a dialect spoken by the crew members on Zheng He's ships. The nasal *ng* sound, absent in many European languages, is erroneously transcribed by dropping off the letter "*n*". If translated from a European language to Chinese, different words should have been used. It is clear then the name originally was in Chinese, rather than in any of the Latin languages. Another river 何皮六河 (translated as Hopilieu fiume by D'Elia) west of Hudson Bay is also absent in maps by Ortelius and Mercator. The river is well defined with two branches joining before running into the

Arctic Ocean. It is labeled as Obilo River on Plancius's map which was published in 1594, at a time when Ricci was in China. This second largest river of North America was not "discovered" by McKenzie until 1789, almost 200 years after the 1602 map. Ricci could not have obtained the information of these rivers unless they were from Chinese sources.

The accurate appearance of Cogib River, Lago Conibas (also spelled as Conibaz, Connibaz), and Obilo River in the maps by Conrad Löw (1598) and Wytfliet-Ptolemy (1597) is "stronger than holy writ" when there is no record of any European venture north of 80 degrees, according to Bancroft (1884, p. 84), the most authoritative source on early North America geography. The explanation lies in the 1602 map.

The region west of the Mississippi was not explored by Europeans during Ricci's time, yet there are quite a few names on Ricci's map. A Spanish team led by Hernando Cortez (Hernán Cortés) explored Mexico and Mesoamerica from 1519 to 1540. Another Spanish team led by Hernando De Soto travelled from Florida northward and then to the west, following down the Mississippi River (1539-1541). The first Englishman landed on Roanoke Island in 1587, but failed to set up a permanent colony. The first English town is Jamestown, established in 1607. In 1763, King George III actually proclaimed the Blue Ridge as the limit of the colony. Exploration of the west of Mississippi was undertaken by Lewis and Clark 200 years after KYWGQT. Ricci could not have known about this region west of the Mississippi unless he learned it from Chinese sources.

Ricci did incorporate names given by European explorers, such as Noua Francia, Hispania Noua, Magellanica, giving an impression that the entire map was based on European discovery. However, place names on a map are not justification of discovery without other supporting primary records. Maps by Ortelius, Mercator and Plancius alone are not sufficient support for the exploration of Hudson Bay and other places mentioned.

No discussion of world maps is complete without mentioning the intriguing and controversial Waldseemüller map (1507). In 2007, the US Library of Congress purchased the only surviving copy of a thousand

copies printed. The US government paid for US$10 million because it is the first map that displayed the word "America" on it. North America and South America are seen with a vast ocean to the west and dotted with islands. The map is clearly dated six years before Balboa first saw the Pacific Ocean, and 13 years before Magellan actually crossed it. How did Waldseemüller know about the Pacific Ocean before it was "discovered"? This question has been raised by many including Menzies (2003). The shape of South America is surprisingly accurate after correcting for projection.[23] The entire western coastline of the American continent does not have an explanation even to John R. Hébert, the chief of the Geography and Map Division of the Library of Congress. The Waldseemüller map has to be drawn with similar data available to Ortelius, Mercator and Ricci, who incorporated significant information from Chinese sources.

CONCLUSION

History is often written with certain special interests. Limitations of tools and personal perspectives often introduce errors and biases. A responsible historian has to use the most vigorous approach to correct any distortion, omission and exaggeration, whether deliberately or inadvertently introduced.

As in scientific research, historical investigation must be subject to scrutiny, review and revision when additional information becomes available. The scientific principle of falsifiability and objectivity must be applied to all cases. Maps made in the sixteenth century are collaged from many secondary sources. There are a number of hypotheses that the Portuguese made "secret" journeys that discovered Australia and the west coast of South America. Without the primary supporting sources, these hypotheses should face the same scrutiny. If Zheng He's final destination could be questioned by the absence of first-hand documentation, the same is true for the maps of Ortelius, Mercator and Waldseemüller.

What we should all agree is that an original map containing first-hand information must always be more accurate than subsequent copies. In other words, a copy can never be consistently more accurate than the original without documented updates by explorers. Surprisingly,

the earlier world maps drawn by sixteenth century mapmakers are more accurate than those produced in the seventeenth century by explorers. This could only be the case if the former had access to more accurate first-hand information. This chapter points out some of the more obvious as listed below.

(1) The Europe presented in Ricci's map is outdated with little details, missing the Papal State and important cities during the Renaissance. This is inconsistent with Ricci's mission to introduce Europe to China and evangelize China. A note above Spain implies that the Europe on KYWGQT was drawn at the time of Zheng He's voyages.

(2) Ricci's 1602 map was believed to be a copy of the 1570 Ortelius map, yet many names on Ricci's map are not found on the 1570 Ortelius map (44 per cent of the names for Africa, 63 per cent for Asia, 46 per cent for Europe/Middle East, and 49 per cent for America), with some place names not found on any other map. Ricci stayed in China from 1584 till he died in Beijing in 1610, without notable contact with Europe. The only other sources he had were from Chinese chronicles and gazetteers as he explicitly stated in his map.

(3) The orientation of Ricci's map with China shown at the centre is holistic, logical and systematic, in contrast to the random naming of cardinal directions in western maps at that time. Ricci did so not to please the Chinese, but to faithfully adhere to the original Chinese data made available to him, as well as to reconcile the contradictions in western maps.

(4) Many of the Chinese names on the American continent on Ricci's map are descriptive, that can only be attributed to actual eye witnesses. These are not found in western maps.

(5) Ricci's map shows America and Africa to be much more accurate and in greater details than European maps of his time.

(6) The absence and presence of certain nations in Africa on Ricci's map are consistent with the dating between 1380 and 1460, in line with the period of Zheng He's voyages.

(7) The southwest and northeast of China on Ricci's map include names strongly affiliated with Zhu Di (1403-1424) who commissioned Zheng He for the first six voyages. These names have no other significance except for their relevance to Zhu Di. Ricci's map details a China after Zhu Di's death in 1424 and shortly after the Vietnam trade route was interrupted in 1428.

Ricci may have added names to the map, but the geography of the map was completed well before his arrival in China by the analysis as shown in Fig. 15.10.

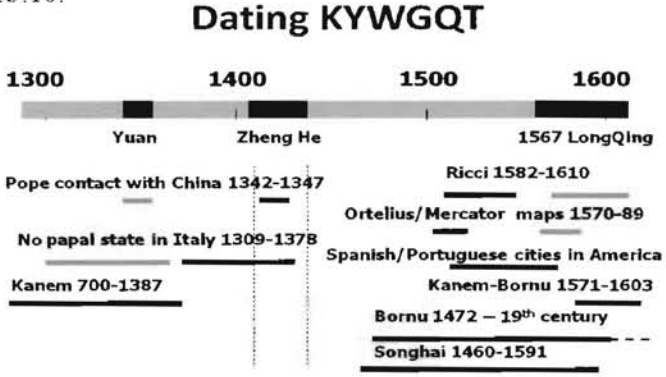

Fig. 15.10 An Analysis of Ricci's 1602 World Map (KYWGQT) to show that it was drawn during Zheng He's time.

China only had brief periods opening to Europeans (the black bars), viz. (1) exchange of credentials during Yuan dynasty, (2) during Zheng He's voyages, and (3) after Longqing's lifting the maritime ban. The gray bars on the time scale are periods of maritime ban when no contact was made with the outside world. The note on KYWGQT indicates that it was drawn 70 years after the first official contact of China and Europe (represented by the Pope). Seventy some years prior to the Ricci's presence in China or the Ortelius/Mercator world maps would fall in the period of the maritime ban, conflicting with the statement on the map. On the other hand, seventy years after the Yuan-Pope contact and the Avignon Papacy would put it within the period during Zheng He's voyages. The absence of the first ports established by the European explorers in America (Rio de Janeiro, Veracruz, Sao Paulo, Buenos Aires)

and the absence of the most prominent African empires are also consistent with the map being drawn during Zheng He's time.

All the points above are incompatible with the notion of European authorship of the map, but are consistent and supportive of KYWGQT as a map based mostly on Chinese information collected during Zheng He's voyages. The evidence is in agreement with the three criteria in investigative research :

(1) Motive - Zheng He was commissioned during Yongle (1403-24) and Xuande (1426-1435) to explore the world for trading partners and to announce the new reign.

(2) Means –Ming China has been estimated to have 1/3 to 3/4 of the world's GDP at the time. With almost unlimited support from the emperors of the world's strongest nation of the time, Zheng He led seven expeditions, each on the average with 27,000 people and about 300 ships of different sizes. Each of his trips lasted three years on the average. Compared to Christopher Columbus supported by a newly established Spanish monarchy, Zheng He's capability was at least 1000-fold stronger.

(3) Timing – The details of Africa, Europe and China on Ricci's map are consistent with a completion date around Zheng He's era, not Ricci's era.

China started a maritime trade route in the East Han Dynasty (25-220 CE). The Batu Hitam shipwreck of Tang Dynasty (618-907 CE) near Belitung, Indonesia is found to carry Chinese goods destined for India and Arabia.[24] Yuan dynasty's contact extended to as far as the Mediterranean. Chinese traders reaching Europe via both land and maritime routes prompted Marco Polo to visit China (1271-1295). If Zheng He only reached East Africa, he was no more than repeating what navigators did during the earlier Yuan dynasty, unworthy of the title as the greatest navigator.

Ricci's map is decades to centuries more detailed and accurate than some of the best maps drawn by his contemporaneous European mapmakers. He apparently had to abandon the earlier versions of his map and redraw it with better information from China. Multiple clues show

that the geographic information Ricci used was compiled after the death of Zhu Di (1424) and shortly after the conflict with Vietnam (1428). Ricci's Africa shows nations existing between 1380 and 1460, consistent with period inclusive of the reigns of Zhu Di to Zhu Zhanji, the two emperors who commissioned Zheng He for seven voyages (1405-1433). Ricci's map shows an America more detailed than depicted by Ortelius and Mercator, meaning that China at Zheng He's time already had much better understanding of the "New World" than did the Europeans. Indirectly, this provides proof that Zheng He's fleet visited and surveyed America 60-70 years before Christopher Columbus did. **Unless more primary information can be found to demonstrate European exploration of certain places before they appear on the 1602 map, KYWGQT, should be an indication of Chinese geographic knowledge during Zheng He's time. That is, Zheng He's team pioneered circumnavigation and drew the first world map according to their survey.** The fragmentary information left overseas during Zheng He's voyages was picked up by European cartographers, leading to the European Era of Great Discoveries. Evidence in metallurgy, vexillology, pottery, agriculture, tradition in costume and burial, religion, etc. supporting the presence of Ming Chinese in America will be discussed in future papers.

REFERENCES

Bancroft, Hubert Howe and Henry Lebbeus Oak. *History of the Northwest Coast.* Vol. 1. San Francisco: A. L. Bancroft, 1884.

Chapman, Charles Edward. *A History of California: the Spanish Period.* Macmillan, 1921.

Huang Shijian and Gong Yingyan. *Study of the World Map by Li Ma Dou (Matteo Ricci).* Shanghai Guji Publisher. 黃時鑒，龔纓晏:《利瑪竇世界地圖研究》上海古籍出版社. 2004.

Liu Gang. *The Secret of Matteo Ricci's Map* (in Chinese). 劉鋼，古地圖密碼。台北：聯經出版社。2010 <http://tech.sina.com.cn/d/2006-03-23/1456875643.shtml> (accessed 10 December 2011).

Menzies. Gavin *1421: When China Discovered America*, New York: Harper Collins, 2003 <http://www.washingtonpost.com/wp-dyn/content/

article/2008/11/16/AR2008111601753.html> (accessed 10 December 2011).

Paulist Fathers. *Catholic World*, Vol. 114, New York: Paulist Fathers, 1922.

Richman, Irving Berdine. *California under Spain and Mexico, 1535-1847*. Boston and New York: Houghton Mifflin, 1911.

ENDNOTES

1 Some parts of this chapter have been published in Chinese in *Zheng He Yanjiu* (Nanjing) no.4 (2010): 14-20 and *ibid.* no.1 (2011): 14-21.

2 Assuming Matteo Ricci could receive European information in China, the 1595 edition of the Mercator map was the last he could have seen. He could have brought the preprinted 1587 edition with him to China.

3 日本東北大學圖書館<http://www2.library.tohoku.ac.jp/kano/ezu/kon/kon.html> (accessed 25 November 2011)

4 利瑪竇，坤輿萬國全圖序：“乃取敝邑原圖及通志諸書，重為考定.訂其舊譯之謬，與其度數之失，兼增國名數百.” Ricci also mentioned *Tong Zhi* (統志 national gazetteers) and *Sheng Zhi* (省志 provincial gazetteers) “大明聲名文物之盛，自十五度至四十二度皆是。其餘四海朝貢之國甚多。此總圖略載嶽瀆省道大略，餘詳統志省志，不能殫述.” *Tong Zhi* (統志) should be 大明一統志， a national chronicle/gazetteer of Ming dynasty, completed in 1461 CE.

5 西安新聞 Xian *News*, 17 November 2008.<http://news.qq.com/a/20081117/000267.htm. > (accessed 25 November 2011)

6 Donald E. Sheppard, <http://www.floridahistory.com/inset44.html> (accessed 25 November 2011) The author is the most authoritative researcher on De Soto's expeditions; Lawrence A. Clayton, Vernon James Knight, Jr., Edward C. Moore, Hernando De Soto's Chronicles. <http://www.nps.gov/archive/deso/chronicles/Volume1/toc.htm> (accessed 25 November 2011)

7 National Oceanic and Atmospheric Administration (NOAA) : <http://polar.ncep.noaa.gov/waves/> (accessed 25 November 2011) <http://polar.ncep.noaa.gov/waves/main_table.html> (accessed 25 November 2011)

8 <http://www.henry-davis.com/MAPS/Ren/Ren1/367.html> (accessed 25 November 2011)

9 Available in *San Cai Tu Hui* (三才圖會), published in 1607. See also Roderich Ptak, *The Sino-European* (*Sanhai yudi quantu*) In *Encyclopedia San Cai Tu Hui*. <http://www.humanismolatino.online.pt/v1/pdf/C003-022.pdf> (accessed 25 November 2011)

10 The inclusive years vary in different sources because of the decision and actual

return of the Pope to Italy. <http://www.christianchronicler.com/history1/avignon_papacy.html.> (accessed 25 November 2011) See also <http://www.provence-hideaway.com/218.html> (accessed 25 November 2011)

11 *The Edinburgh Magazine and Literary Miscellany 93*, (Archibald Constable, 1824), p. 150.

12 <http://asv.vatican.va/en/doc/1246.htm> (accessed 25 November 2011)

13 明・金幼孜《北征錄》<http://www.guoxue123.com/biji/ming/0000/050.htm> (accessed 25 November 2011); 明・金幼孜《北征後錄》<http://www.guoxue123.com/biji/ming/0000/055.htm> (accessed 25 November 2011); 明・楊榮 後北征記. <http://www.guoxue123.com/biji/ming/0000/023.htm> (accessed 25 November 2011)

14 <http://www.dzszx.gov.cn/xszx/html/?2915.html> (accessed 25 November 2011)

15 NOAA, <http://www.lajollasurf.org/sata.html> (accessed 25 November 2011)

16 <http://www.mapsorama.com/robert-vaughan-in-17th-century/> (accessed 25 November 2011)

17 <http://www.mapsorama.com/frederik-de-wit-map-in-17th-century/> (accessed 25 November 2011)

18 <http://www.mapsorama.com/joan-blaeu-map-in-17th-century/> (accessed 25 November 2011)

19 <http://www.raremaps.com/gallery/detail/16111/Nueva_Hispania_Tabula_Nova/Ruscelli.html> (accessed 25 November 2011)

20 <http://www.raremaps.com/gallery/detail/5627/Granata_Nova_Et_California/Metellus.html> (accessed 25 November 2011)

21 On Ricci's map, there are many other names such as 仙勞冷祖島 (San Lorenzo, i.e. Madagascar today), 仙多默島 (Sao Tome), and 仙瑪利亞峰 (Capo de Santa Maria).

22 Rumold Mercator (1545-1599) carried out the work of his father Gerardus Mercator (1512-1594) who was the chief cartographer. Unless mentioned specifically, Mercator refers to the father Gerardus.

23 <John Hessler, <http://www.sunysb.edu/libmap/coordinates/seriesa/no4/a4.htm> (accessed 25 November 2011)

24 <http://arabic.china.org.cn/english/2004/May/96658.htm> (accessed 25 November 2011)

25 <http://www.henry-davis.com/MAPS/Ren/Ren1/337.html> (accessed 25 November 2011)

26 <http://1h3.ggpht.com/_IK2MCI6JIKE/SIZOJc1bCzI/AAAAAAAAEQ0/3IwvcHjwsTc/s00-r/1529_Diego-Ribero.jpg> (accessed

25 November 2011)

27 <http://www.mapsorama.com/maps/world/1544_Battista_Agnese_Worldmap.jpg> (accessed date)

28 <http://www.cummingmapsociety.org/J_1552_Tabula_nouarum_infularum_Munster_Americas.jpg> (accessed 25 November 2011)

29 <http://www.henry-davis.com/MAPS/Ren/Ren1/372B.html> (accessed 25 November 2011)

30 <http://www.nla.gov.au/apps/cdview?pi=nla.map-rm145-e> (accessed 25 November 2011)

31 <http://www.henry-davis.com/MAPS/Ren/Ren1/381.html> (accessed 25 November 2011)

32 <http://www.library.unt.edu/rarebooks/exhibits/southborder/images/mapgebig.jpg> (accessed 25 November 2011)

33 <http://www.loc.gov/exhibits/treasures/images/gutier2k.jpg> (accessed 25 November 2011)

34 <http://www.mapsorama.com/maps/world/Sype_-_La_herdike_.jpeg> (accessed 25 November 2011)

35 <http://www.sonofthesouth.net/revolutionary-war/maps/francis-drake-voyage-map.htm> (accessed 25 November 2011)

36 <http://www.cummingmapsociety.org/J_1588_Americae_Sive_Novi_Orbis_Nova_Descriptio_Ortelius_cropped.jpg> (accessed 25 November 2011)

37 <http://www.mapsorama.com/maps/world/J.Blaeu-1664.jpg> (accessed 25 November 2011)

38 <http://www.nla.gov.au/apps/cdview?pi=nla.map-nk11599-e> (accessed 25 November 2011)

39 <http://www.nla.gov.au/apps/cdview?pi=nla.map-rm3170-e> (accessed 25 November 2011)

40 <http://en.wikipedia.org/wiki/Jacques-Nicolas_Bellin> (accessed 25 November 2011)

41 Suárez, Thomas, *Early mapping of the Pacific: The Epic Story of Seafarers, Adventurers, and Cartographers who mapped the Earth's Greatest Ocean.* (Tuttle Publishing, 2004).

42 Extracted from Herbert Howe Bancroft, *The Works of Hubert Howe Bancroft 6* (A. L. Bancroft & Co., 1882), p. 373.

43 William Smith, *A Dictionary of Greek and Roman Geography, Vol. 1,* (John Murray, 1872), p. 313.

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