

Paper I

World Maps Compiled in Aid of the East-West Exchange

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ABSTRACT

The maritime routes of the Silk Road can be regarded as the porcelain and Spice Roads as well as direct avenues of contact between the East and the West. Since maps and charts are efficient devices for storing information, four important world maps and charts have been selected to quickly scan the era of the Silk Road. They reflect cultural exchanges between the East and the West including international trade and religious activities from the 2nd century to the early 15th century, before the New World came onto the horizon. Among these maps, the Korean World Map compiled in 1402 is an important contribution to the history of mapmaking and early contacts between the East and the West.

INTRODUCTION

The Silk Road, a term coined by Baron Ferdinand von Richthofen (1833-1905), is now the most commonly used term for the East-West trade routes which crossed both land and sea during the early historical period. Silk, China's famed and for centuries exclusive export was not the only cargo carried by the camel caravans that steadily made their way over treacherously shifting deserts sands and ice-bound mountain passes. Through the centuries the caravans transported a host of natural and man-made products, from both East to West and the opposite direction. In the later period, merchants would travel by sea to carry back delicate eastern porcelain which was in great demand in the West it could not be safely transported overland on the backs of camels.

Adventurous and well-traveled merchants made history as they acquired knowledge of global natural environments, and they recorded their discoveries in simple visual representations. An old map or chart of the world is one of the most valuable records of earlier days. The words “map” and “chart” derive from the names of material used in cartography: the Latin word *charta* denotes paper and *mappa* means cloth. In modern usage, the term “chart” refers to a representation of the sea and map refers to land. As a significant part of human endeavor, cartography has a long and interesting history which aptly reflects the state of cultural activity, as well as man’s perception of the world throughout the Silk Road ages. Examining some world maps during this period, we may learn of exchanges of culture and civilization between the East and the West. Ptolemy’s world map reflects the Greek and Roman periods up to the 2nd century. Idrisi world map reflects the Islamic period up to the 11th century. The Catalan world chart and the Korean world map reflect the 14th century in different ways.

GREEK-ROMANWORLD MAP (CA. 150)

Throughout the Ancient Ages, the only real map of the World to which man could refer was the one devised by Claudius Ptolemy in about 150. He was the greatest geographer and astronomer of his time in Alexandria. He obtained much of his geographical material from Marinus of Tyre, whom we only know through Ptolemy's work. Although Ptolemy's idea of the world was limited and not strictly accurate, it was the most complete view available, and comparatively little information was added to it until the 15th century. His map may therefore be regarded as a fair representation of the world as it was known up to the 2nd century. The curious thing about Ptolemy's map is that, strictly speaking, it does not exist. Ptolemy himself may never have drawn more than rough sketches of his ideas for his own use. However, he prepared a volume of instructions in mapmaking which was used as a guide by later cartographers. The representations which are today referred to as Ptolemy's maps are based directly on this instruction, or are copied from earlier versions of Ptolemy's idea. The oldest of these still in existence dates only from the 13th century.

His list of places and regions is based on the material collected by Marinus. He supplies us with latitudes of 8,000 places, all the way from 67 degrees North to 16 degrees South. Furthermore, he gives the longitude of 180 of them. Marinus had calculated that the length of the entire land area as it was then known, i.e . the distance between the Fortunate Islands (now Canary Islands) and China, was 230 degrees in longitude. Ptolemy corrected this length to 180 degrees, which was still 50 degrees too much (Landstroem, 1964). Ptolemy's world has

the appearance of an inverted fan with the lines of longitude as the folds, introducing conic projection. The one serious mistake made by Ptolemy lies in enclosing the Indian Ocean by a southern land mass. This means that he did not accept Herodotus' account of the Phoenician journey around Africa. He joined Africa just south of the equator to Asia, showing the Indian Ocean as a vast inland sea. This was a misconception that was to persist until Bartholomeu Diaz rounded the Cape of Good Hope in 1488 in the West. Another strange feature of the map is the way in which the Indian peninsula is shrunk and Taprobane (now Ceylon) increased to 14 times its real size. However, both the Indus and Ganges rivers are correctly placed on this map indicating the influence of Alexander. Chersonesus or Chryse (not Malya Peninsula) is also located correctly. The eastern limit of the map fades out into Terra Incognita (unknown land), however, Central Asia could be mapped with some accuracy, because of correct information obtained from the silk trade by then.

Whether Ptolemy's world map shown in Fig. 1 is correct or not is only today's critical point of view. Ptolemy's world map is the most efficient device for the storage of geographical information collected by international merchants up to the middle of the 2nd century. As the ancient world came to an end and Europe entered the middle Ages, not all of the ideas and achievements of the early civilizations were forgotten, and it was the Islamic Empire that preserved, above all, this great heritage of classical learning. The Muslims collected many texts including Ptolemy's work in Damascus, and later, in Baghdad where a scientific academy was opened for translation into Arabic. A Arabic version of Ptolemy's Geography served an Arab author as a model for his own book on geography.

ISLAMIC WORLD MAP (1154)

The Arabs came across many scientific works by classical authors. Although at first Arab scholars seem to have accepted Ptolemy's astronomical works, in time they were criticized and improved. Astronomical works, in time they were criticized and improved. The length of the Mediterranean Sea, given by Ptolemy as 62 degrees, was revised to 52 degrees in the 9th century and further reduced to its correct figure of 42 degrees (Thrower, 1972). Among the Arab travelers who supplied accounts of their journeys, Masudi (885 -957) and Idrisi (1099-1166) were outstanding examples. However, the Arabs were better astronomers and geographers than cartographers. Of the Arab geographers, the best known in the West is Idrisi who, after undertaking extensive travels himself, was invited to Sicily by its enlightened Norman King, Roger II. In Sicily, Idrisi engaged in geographical writing and in the

compilation of maps. His most important work is a large rectangular world map, in 70 sheets, known as the Book of Roger in 1154. It is clear that the part of southern Africa which is extended far to the east is a legacy from Ptolemy, but Arab seafarers had taught Idrisi that the sea was open in the east, and in his own commentaries he writes: “The Sea of Sin (China) is an arm of the Ocean which is called the Dark Sea (the Atlantic)”. Otherwise his world map would not have been much better than the one according to Ptolemy’s description during classical times.

The rise of the Islamic Empire radically changed the pattern of trade. Islamic successors of the earlier Iranian and Arabian sailors entered the Indian Ocean trade in increasing numbers. Maritime trade made shipping of fragile and bulk commodities (i. e. porcelain and spice) feasible and vastly expanded the potential for merchandising. After the middle of the 8th century, Arab traders established direct maritime contact between the Abbasid caliphate in Baghdad and the Tang court of China. Merchant ships made regular voyages down the Persian Gulf to the Indian Ocean and then across it to India, Southeast Asia and China, traversing the longest and most important sea route of the early medieval period. The Arab merchants were established everywhere. Their ships sailed from Siraf and Ormuz on the Persian Gulf and from Katif and Muscat to the Indian ports of Sendapur, Mangalore, Fandarina and Cranganore. From here, they bought Indian cane (i.e Sugar cane), cinnamon pearls, perfumes and pepper. The Arabs also sailed to Ceylon, East India and China. The ships bound for these destinations used Kaukamoli, on the Malabar Coast, as the principal port of call. They also bought the bulk of their paper here. The voyage from Basra to Guangzhou took eight months, or even longer. Despite the high level of technical achievement on China and India, neither the Chinese nor the Indian seafarers were as good as the Arabs. International maritime commerce remained largely in the hands of Muslim merchants until the arrival of Portuguese in the Indian Ocean in 1498. Arabic documents from the medieval period suggest that the semi-annual reversal of surface currents in the North Indian Ocean was discovered in the 9th or 10th century (Warren, 1966), as well as a theory of tides based on the lunar cycle (Aleem, 1967). Knowledge of these Indian Ocean characteristics was the key for a safe journey through the maritime routes. Sindbad the Sailor and his seven voyages in the Arabian Nights could have been based on real voyages by real sailors.

As shows in Fig. 2, Idrisi’s world map indicates more advanced knowledge of the Far East than Ptolemy. He gives the name of Sila to the islands furthest east. This agrees with the account of Salayman written in 851 for his travels in the Far East.

“On the sea side of China, there are islands of al-Sila, whose inhabitants are white. They send gifts to the Lord of China and say that if they do not send gifts the heavens would not give them rain. None of our companions has reached their country to bring back reports about them. They have white falcons.”

Sulayman’s account clearly tells us that his information is first-hand. However, Khordabeh, a postmaster, describes it as a country joined to China by land in the geographical work which he published in 846:

“At the furthest limit of China near Khansu there are many mountains and many kings, and this is the land of al-Shila in which there is much gold. He who enters it of the Moslems settles in it because of its excellence. No one knows what is beyond it.”

He has sound information about Shilla (Korea) and Wak-Wak (Japan), being rich in gold. The above was copied by a 10th century geographer. Masudi’s account on Sila in about 947 is as follows:

“Beyond China on the sea side there are neither known kingdoms nor any country that has been described except the country of al-Sila and its islands. Foreigners from al-Iraq or any other land that go there rarely depart, because of the health of its air. The softness of its water, the fertility of its soil and the abundance of its resources. Its people are on good terms with the Chinese and their kings, to whom they send gifts almost ceaselessly. It is said that they are a part of the descendants of Amur who settled there in the same manner as we described the Chinese settling in their country.”

Sila or Shilla clearly comes from the Silla Dynasty which then existed on the Korean peninsula. Even in the Chinese map on Korea in the 16th century, there is an island named Sila off the southeastern part of the peninsula as shown in Fig. 3. There is also a name of Sylla in the *Jave-la-Grande* in Dieppe chart drawn in the 16th century in the West, suggesting Arab influence. Of the Arabs in Korea, several remarks are found in Korean histories in the 10th century Silla Dynasty period. There are records of Arab merchants named Yaraza (al-Razi?), Hasen Laza (Hasanal-Razi?), Burakah (Barakah?) and their associates who came to Korea on different occasions with presents for the king. When they left, the King presented them with golden gifts (Chung and Hourani, 1938). However, a closed court trade could not make any remarkable progress of cultural exchange.

CATALAN ATLAS (1375)

The Crusades had brought Western Europe out of the isolation of the preceding centuries. Merchants were all too keen to capitalize on the growing taste for Eastern goods brought back by the Crusaders, but they had little opportunity to engage in direct trade with the East. Muslims held a monopoly on the Middle Eastern trade routes- both by land and sea. It was just at that time that ominous new events occurred. Early in the 13th century the remarkable rise of the Mongols extended the horizons of both the East and the West in global scale, wider than Alexander's conquests. The great adventure of the period, which is dramatically recorded, was undertaken by a Venetian trading family named Polo. The Venetians who controlled the eastern Mediterranean and the Black Sea stood to gain an advantage if they could extend their trade to the East. In the Mediterranean, the compass came into use among sailors and with its help, great progress in mapping and in navigation was possible. A new cartographic form undoubtedly related to this development appeared as the portolan chart.

Portolan charts are typically drawn on a single sheepskin and are oriented according to the magnetic north. Since their purpose was to aid navigators, short lines are emphasized, and little geographical information about the land. Characteristically, portolans show the Mediterranean and the Black Sea coasts with remarkable accuracy, though with curiously stylized symbols in detail. Place names are lettered perpendicular to the shore. Striking features of these charts are the representations of wind roses and lines emanating from them which crisscross the charts. These lines were apparently used to assist the navigator to plot compass bearings, with the aid of a parallel ruler, before astronomical bearings came into general use. Although basically practical sea charts, the portolans, especially late ones, are richly illuminated with various colors on the coats of arms, flags, and miniature paintings of cities with which they are decorated.

The maritime cities of Italy were centers of chart-making at this time. However, in the later period, portolan charts embracing the Mediterranean, northern Europe and other parts of the world were made by Catalan cartographers of Majorca and Barcelona in the western part of the Mediterranean. In them, coastlines were extended and information from the Arabs and other sources was added so that portolan-type world charts eventually developed. The famous and very rich Catalan Atlas of Abraham Cresques is one example of this process. The Catalans had long been seafaring people, and the position of the country and its island possessions in the Mediterranean soon made it a great trading power. Like the Venetians and the Genoese, the Catalans obtained privileges for themselves in Constantinople, and even sailed the waters of the Black Sea.

Abraham Cresques compiled a world chart, known as the Catalan Atlas, in 1375 and he was called to Portugal to become the leading adviser to Prince Henry the Navigator. As shown in Fig. 4, details in the Catalan Atlas suggest that Cresques and other Catalans were familiar with stories of travelers to the East. Actually, Cresques was supplied with copies of Marco Polo's Book and Friar Odoric's Description of Eastern Regions. In the Atlas he marked cities and stations along the overland routes, including that followed by Nicolo and Maffeo Polo on their first journey. He also marked a more southerly silk route and the one on the Polos followed on their second outward journey except for a detour through Ormuz at the bottom of the Persian Gulf. In the extreme south-east, there is a great island of Taprobane with some note saying "This Taprobane is the last island in the East called by the Tartars Great Cauli". Cauli or Kaoli was the Chinese and Tartar name for Korea which came from Rubruck and Marco Polo. Taprobane in Ptolemy's world map was located in the middle of Indian Ocean, indicating present Sri Lanka (Ceylon). However, Cresques' Taprobane indicates Korea by note. The 7548 islands ascribed to the eastern archipelago are certainly derived from Polo.

KOREAN WORLD MAP (1402)

Soon after the Catalan Atlas with its accurate coastlines of western countries was compiled on the Iberian Peninsula in the extreme West, the most important world map in history was compiled in the extreme East, the Korean Peninsula. This Korean World Map was compiled by Keun KWON and Hoe LEE in 1402, indicating accurate geographical knowledge of Africa as well as the Far East. Surprisingly, the first known map that shows the shape of Africa correctly is this world map compiled by Koreans. The title of this map is read "Hon-Il-Kang-Ri-Yeok-Dae-Do-Ji-Do", meaning the 'map of the territories of the One World and the capitals in successive ages'. In this map, Chinese writing was used, which was the accepted written language in the Oriental World at that time. Just below the title, concise geographical and historical information about the Chinese province is listed. On the bottom, there is note on the map as follows:

The world is too wide to know how far it is from China to the outside oceans. A mapmaker cannot put into the map everything in detail and he may neglect unimportant matters or simplify them on the map. A map named Seong-Kyo-Kwang-Pi-Do (Map for the diffusion of Instruction) by Taek-Min Lee is excellent for its detail in shape, and the history of capitals in successive ages is well arranged in the map named Hon-Il-Kang-Ri-Do (Map of the territories of the One World) by monk Cheong-Jun. In the summer of 1402 first deputy

prime minister Sir KIM(KIM, Sa-Hyung) and second deputy prime minister Sir LEE(LEE, Mu) ordered Hoe LEE who is a fifth rank official to combine these two maps. However, a map compiled by Hoe LEE is not correct in the area east of Liao River and our country (Korea), because these regions were also not included in the map by Taek-Min LEE. Now I have compiled a new map with an enlarged map of Korea and included a Map of Japan. With this new map I could see the whole world without having to travel. Examining the distance from the map gives necessary information to govern the country. As a 2nd ranking official, I understand what the two deputy prime ministers sincerely study on the map. Followed by these seniors I have completed compiling the map and I feel very happy. I made what I wanted through many books and I will enjoy travelling everywhere with this map in mind while relaxing after retiring. So I am writing this note on the lower part of the map.

Autumn, 8th month of lunar Calendar in 1402

Written by Keun KWON.

Keun KWON(1352-1409) was an outstanding retainer and scholar from the late period of the Koryo Dynasty to the early period of the Chosun Dynasty. The above note on the world map is also included in KWON's Collection of Works named Yang-Chon-Jib. KWON's note gives us the date of the map's completion and the sources of the base maps. Four maps were used to complete this world map, two from China, one from Japan and one from Korea. Taek-Min LEE flourished around 1330's and Cheong-Jun(1328-1392) compiled his map around 1370's. Both of these maps got to Korea in 1399 by Sir KIM and were combined as a map during summer of 1402 by Korean mapmaker Hoe LEE, who made the Map of Korea. Then KWON completed the Korean World Map including the two countries, Korea and Japan. KWON was a man of excellent scholastic talent. He headed a group of astronomers who made the Korean planisphere in 1395, exhibiting his knowledge of geophysical sciences in broad terms.

The general shape of the world known to KWON and LEE is given in Fig. 5. This world map was drawn with Korea as its point of reference. The shape of Korea is relatively accurate and Japan is located simply south of Seoul. The Korean way of thinking was simply China first, Korea second, and Japan last, ignoring the other parties of the world. However, there are 55 place names in Europe and 47 in Africa on this map. It is interesting that the two largest cities by mark are balanced between the East and the West. The one in the East is Seoul; the capital of Korea, the other in West is read Seuk-Keuk-Na in Korean. The continent of Africa is well shaped and there is a large inland sea with a round in the middle of it.

The Korean World Map is preserved in the Ryukoku University Library in Kyoto. It is painted on a 171 cm x 164 cm piece of silk. The names of the Korean cities indicate that this map must be a copy around 1470 though Chinese city names reflect 1330's. Taguchi Ogawa was first to draw attention to this map in 1910 and the Asian section was carefully studied by Sadao Aoyama in 1938. There are two replicas of this map; one by Ogawa in 1910 and the other by Chan LEE in 1982, both copied from the one at the Ryukoku University. The original map was compiled in 1402. A document to support this is the Yang-Chon-Jib written by K. KWON and published between 1421 and 1426.

Though the Korean World Map compiled by K. KWON and H. LEE in 1402 might not have been of practical use, it reflects cultural exchanges between the East and the West, with Greek and Roman, Islamic, Chinese and Korean elements. This world map is more advanced than the Catalan Atlas of 1375. The correct shape of Africa, the accurate shape of Korea and the description for the map are three major characteristics of this map.

SUMMARY

The Silk Road formed the first bridge between East and West. It was essentially the rise of great empires in early times that led to the development of trade as well as the exchange of ideas. The Road also bore scholars, teachers, missionaries, and monks of different beliefs and practices, who met to exchange ideas. Alexander the Great extended the horizons of both the Greek and the Asian worlds. Western scholars gained access to Babylonian and Indian knowledge of mathematics and astronomy. Conversely, Greek influence made an impact in Asia. When Rome ruled the Mediterranean, trans-Asian commerce relied on a delicate balance of power. Initially the balance was maintained by Rome, Parthia and China. Ptolemy's world map reflects the Greek-Roman knowledge of known world by the 2nd century. The West knew a little about China through garbled accounts of Seres, the land of Silk.

The phenomenal rise of Islam in the Arabian Peninsula was to have a resounding influence on political, economic and cultural development throughout the West. Both as a political power and as a cultural force, Islam dominated territories more extensive than any empire since the time of Alexander the Great. A concomitant of that power was the control of trade between East and West. The Indian Ocean was opened by Arab maritime traders, changing trade pattern to porcelain and spice for the highest possible return on invested capital. The extensive

conquests of Islam resulted in a wide exchange of cultural ideas. Idrisi's world map reflects Muslim knowledge of the known world by the 12th century including Greek-Roman sources.

Christian pilgrims to the Holy Land felt the impact of the change in the West. It was at that time that ominous new events occurred in the East. Mongol China's conquests of the Old World were the most extensive in history. However, the interlude of European access to East Asia was so short. Marco Polo's description of the East became one of the most popular books in the West. After the compass (which was originated in China) came into use by Italian sailors, Italian merchant fleets gained control of the eastern Mediterranean and were effective in increasing Europe's access to the exotic goods of the East. The result was a level of commerce unmatched since the most active days of Imperial Rome. With expanded commerce came other benefits. Traders were vehicles for the acquisition and transmission of Islamic knowledge. The accumulated learning of the Greeks, the Romans, the Muslims and the Chinese was absorbed in the Catalan Atlas of Abraham Cresques. This was compiled in 1375, the dawn of discovery of the New World. This world chart reflects geographical details of the coasts of the Mediterranean, the Black Sea, and of south-Western Europe. It also includes some geographical knowledge of China, partly derived from Marco Polo's narrative of his travels, and partly from the reports of Arab navigators and merchants who had visited China. The map also shows details of the northwest coast of Africa extending southward past Cape Bojador to a point north of Rio D'Oro where Jacome Ferrer searched for gold in 1346. However, the actual shape of the continent Africa as a whole is not shown.

The Korean World Map compiled in 1402 correctly shows the shape of Africa. Another important feature of this map is the description of how the map was compiled in detail. It also reflects the influence of Arab geography in the Chinese World as well as the Korean conception of the world. The history of Silk Roads, once a symbol of human encounter and communion can be found on this map which stores visual information drawn on silk. This map is a very important source for the study of the Silk Road. This may be a notable contribution by Korea to the Silk Road project because of the information which is stored within it, untampered by corrections of a later period when the New World arose on the horizon.

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CAPTIONS

Fig. 1. World Map after Ptolemy ca. 150 (from Duche, 1969).

Fig. 2. Part of Idrisi's World Map in 1154 (from Hahn, 1988a).

Fig. 3. Island Sila in the Chinese map drawn by Jo-Tsen CHENG ca. 1561 (from Hahn, 1988b).

Fig. 4. Catakan Atlas in 1375 (from Hahn, 1988a).

Fig. 5. Korean World Map in 1402 (from Hahn, 1988a).