



Title: Chinese Terrestrial Globe

Date: 1623

Author: Manuel Dias [Yang Manuo] and Nicolo Longobardi [Long Huamin]

Location: British Library, C.6.a.2

Description: This Chinese terrestrial manuscript globe was painted in lacquer on wood. Signed by the European officials Yang Manuo (Manuel Dias) and Long Huamin (Nicolo Longobardi). This earliest known Chinese globe is said to have come from the Imperial Palace at Peking. 23 inches (59 cm) in diameter, the globe is made to a scale of 1:21 million, and it would appear from the description of the original mounting, which is given in the title legend, that it was set on a vertical axis, as in the Ptolemaic system. On reaching Europe it was re-set on a new stand on a axis of 22.5°, in the Copernican system. Constructed by the Jesuit Fathers Manuel Dias the younger and Nicolo Longobardi, the globe was presented in 1961 to the British Museum by Sir Percival David, Bart (Maps C.6.a.2).

As the earliest known Chinese terrestrial globe, this work ranks with Father Ricci's world map (#441) as one of the two most important examples of early European cartography in China. While it is clearly derived in many features from Ricci's map, the globe incorporates later geographical knowledge, thus forming a sequel and complement to Ricci's work. The influence of the globe, which is in manuscript, was limited. That Longobardi and Dias had made a globe was not known until about 1938, when the son of a Parisian antique dealer discovered this one in Peking. Sir Percival

David, on being shown its photograph while on a visit to Paris, immediately ordered the globe, and it reached his home at Henley just after the outbreak of the Second World War. The second acquisition is an example of the Shoho world map, 1645, which the Museum purchased from Japan in 1963. This map, the earliest world map published in Japan, traces its descent from one of Ricci's world maps, and for many years it was the prototype of most Japanese world maps, other than those expressing the Buddhist idea of the world.

Ricci made his series of world maps to show the Chinese what the world was really like and to disabuse them of the traditional belief still held by many Chinese that the world was a square plain mainly comprised of Chinese territories. In a marginal note on his map of 1602, he wrote: "I should have made a globe, but because it was an inconvenient form for a map I was obliged to convert the sphere into two dimensions and turn circles into lines". Before 1585 Ricci had made for a scholarly friend, Wang P'an, prefect of Chao-ch'ing, and two other Chinese, three terrestrial globes, "entirely in their language and script", claiming that these and the astronomical instruments which he had also made were absolutely new in China.

This claim seems unjustified. In 1267 the Persian astronomer and geographer Jamal-ud-Din had presented Kublai Khan with a terrestrial globe and six other astronomical instruments. We learn from an accompanying description that the globe was a round ball made of wood, seven parts of which were colored green and represented water, and three parts of which were colored white and represented land. It is improbable that Ricci had heard about this globe. He may never have realized that his terrestrial globe was not the first in China. He did discover later that the Chinese had knowledge of astronomical instruments. At Nanking in 1600 he was shown at the College of Chinese Mathematicians various instruments, including a celestial globe dating from the Yuan dynasty in the 13th century; but, as Dr. Joseph Needham points out, Ricci, like others after him, underestimated Chinese scientific knowledge. Ricci was not aware that early in the 15th century the Chinese were producing world maps which surpassed those of western Europe, the most remarkable being the Korean world map of 1402 by Chüan Chin, based on the map of Li Tse-min, c. A.D. 1330 (*see* #236) and the very accurate maps of China, the *Hua I T'u* and *Yü Chi T'u* from the 12th century (#218, #218.1). M. Marcel Destombes pointed out that the records of native Chinese globes show that they comprised only the top half of the earth, and that, curiously enough, in the work of the Persian astronomer al-Biruni the 11th century (*see* #214.3) there is a reference to the fact that he had constructed a globe which comprised only one hemisphere. The globe that was made in 1623 by Nicolo Longobardi, Ricci's successor as Superior General of the China Mission, in collaboration with Manuel Dias, can thus be regarded as the completion of Ricci's work.



Like Ricci, Longobardi and Dias were dedicated to the propagation of Christianity. Expelled from China during the persecution of 1616, the Fathers returned in 1621 eager to continue their work. "We tried various ways to return to our former freedom", Dias wrote. "The second is through mathematics, for which we now have sufficient books and instruments. We are undertaking [the reform of] the calendar and similar projects which up to now have been impossible". Through the exposition of western science the Fathers hoped to win acceptance for western religion.

Measuring 23 inches (59 cm.) in diameter, the globe is made on a scale of 1: 21 million, which is large enough to convey a picture of the world in some detail. Like the globe of Jamal-ud-Din, it also is a round ball of wood. The geographical features are painted in lacquer on the wooden surface. The sea is green; the continents are distinguished by different colors. Asia, it may be significant, is in yellow (imperial yellow?) edged with red. Land and sea are not represented in their true proportions, for the southern regions contain the continent of *Magellanica*. The large title cartouche, which obliterates that continent in the eastern hemisphere, lies south of China, thus giving that country pride of place.

In certain major and minor features the globe diverges from Ricci's map. Some of these differences appear in areas in whose delineation Ricci was evidently following the Flemish cartographer Petrus Plancius. This may suggest that Longobardi and Dias were using one of the earlier versions of Ricci's map. A narrow strait, like Mercator's *Strait of Anian*, divides northern Asia from North America, whereas Ricci on his later maps depicts a wide expanse of ocean, as on Ortelius' map of the Pacific, 1589, and as on Plancius' world map, 1594. Similarly the Arctic coast of North America resembles that on Ortelius' world map of 1570. Ricci shows two gulfs, following Ortelius' map of America, 1587, appearing in the edition of the *Theatrum* published in 1592, and Plancius' world map, 1594. In areas of which Longobardi and Dias had personal knowledge or for which they had access to new sources, notably eastern Asia and the Pacific, the globe incorporates many improvements. The outline of China is more accurate than on Ricci's map, although there is less detail of inland geography. Japan, Korea, and the islands of the East Indies are better delineated. The most remarkable of the improvements lies in the shape of New Guinea. Ricci names it *New Guinea* and draws it as a peninsula connected by a neck of land to the southern continent.

Longobardi and Dias show New Guinea as an island named *Little Java*. Its remarkably accurate outline reveals knowledge of the discovery of the *Torres Strait* by Torres in 1606. We know that Father Giulio Aleni, an associate of Longobardi and Dias, had information about this discovery. He drew New Guinea in a similar shape on his manuscript world map of 1623 (#441), and on the maps of the Far East and Pacific in his world geography *Chih-fang wai-chi*, 1623, and he wrote that about ten years before 1623 a ship had discovered that New Guinea was not joined to *Magellanica*, as was first thought, but was an island lying from 1°S to 12°S, 165°-190°E in longitude. As Longobardi, Dias and Aleni had been working together in 1612, they could have learnt of the discovery from the same source, or one from another. Probably in 1623 the three Fathers consulted each other and used the same authorities. They were associating with the same group of Chinese scholar converts, including the three most eminent, known as the "Three Pillars of the Christian Religion in China". Of these, both Li Chih-tsao (Leo) and Hsi Kuang-ch'i (Doctor Paul) had been intimate friends of Ricci, helping him with the publication of his world maps, and after Ricci's death in 1610 they had continued their scientific work with Longobardi, Dias and Aleni as Ricci's successors. The third, Yang T'ing-yiin, Grand Mandarin of Hangchow, a late convert and godson of Li Chih-tsao, was in 1623 helping Aleni with his *World Geography*, as Li Chih-tsao records in his preface to the work. Any or all of these Chinese scholars could have sponsored the construction of the globe, or advised in the actual making of it. It may even have been intended as a present for the Emperor or was perhaps commissioned by him, as Sir Percival David believed; for the Emperor T'ien-ch'i was himself a great carpenter and lacquerer, and the globe is said to have come from the Imperial Palace at Peking.

From the globe the Chinese must have gained a truer idea of distances and of relationships between places and regions than from any of the earlier maps or globes made in China. The explanatory legend shows the Fathers' concern to convey the facts of world geography to the Chinese and to correct the idea that the earth was flat. Little knowing that Chinese astronomers were writing of the sphericity of the earth in the second century B.C., and that they must have known of it as early as the fourth century B.C., the Fathers write: "Chinese scholars, seeing only a flat surface, said that the earth was flat. Westerners, using the principle of the parallels, traveled far and wide over the oceans. Some went from west to east without interruption until they finally returned to their starting-point." Ships in full sail served to remind the Chinese how the Fathers themselves had come to China. The Fathers explain how eclipses reveal differences in time and, therefore, in longitude, and how this proves that the earth is spherical; and, accordingly, "We have made a model in the shape of a spherical ball." They set out the theory of the five zones of latitude, and describe the five continents in terms similar to Ricci's. In discussing the relativity of compass directions, of north and south, they labor their points as if expecting to encounter resistance. The traditional Chinese concepts of *Yin* and *Yang* made the force of opposites an overwhelming feature in daily life and every ritual observance. In the Chinese mind *Yang* was associated with hot and south and *Yin* with cold and north. It would, therefore, be very difficult for the Chinese to accept the fact stated on the globe that "the south can also be cold".



The Fathers also expounded their theory of the earth's place in the universe. Like Ricci, they wrote in terms of an earth-centered universe, and made use of a traditional Chinese idea in their explanation: "The earth is like the heavy turbid yolk of an egg concentrating in one place". Ricci had used the analogy of the yolk in an egg on his map of 1602. As Joseph Needham in his multi-volume *Science and Civilization in China*, has shown, the analogy of the yolk in a hen's egg and that of the spherical cross-bow bullet were the two oldest expressions in Chinese cosmological thought for the shape of the earth floating in the midst of the vast heavens. We find it in the *Commentary on the Armillary Sphere* by the great first century astronomer Chang Heng. This metaphor of the egg had also appeared in the cosmological ideas of the Orphic philosophers of ancient Greece, and in earlier Greek writings near the end of the fifth century B.C. It is clear from the description of the original mounting of the globe, which is given in the title legend, that it was set on a vertical axis, as in the Ptolemaic system. The Fathers have been criticized for withholding from the Chinese the new helio-centered astronomy of Copernicus and Galileo, but, as D'Elia has pointed out, this criticism does not take into

account their difficulties in coming to terms with the full implications of the Copernican revolution, nor their great interest in Galileo's work, even after the Injunction of 1616 against Galileo. The last page of Dias' treatise on the sphere *T'ien-wen lueh* (1615) gives the first references in Chinese to Galileo's discoveries, and Dias concludes with the hope that one of Galileo's telescopes would soon arrive in China.

It is of special interest that in one scientific theory the authors of the globe were ahead of scientists in Europe, and that this they owed to the Chinese. They refer in the title legend to the parallel between the attraction of the lodestone for particles of iron and the effect of gravitational force: "The center of the earth is the lowest point. All objects having mass by their nature tend towards it." This remarkably early conception of terrestrial magnetism was entirely derived from Chinese work on the magnet.

The authors end the title legend with a religious reference to the Creator or King of Creation: "So we can deduce the origin [of heaven and earth] in the King of Creation." To this they add the date 1623 and their names in Chinese, *Yang Manuo* (Manuel Dias) and *Long Huamin* (Nicolo Longobardi). If the King of Creation represents God in a Christian sense, it would suggest that the globe was made at the request of one of the Christian scholar converts; but to the Chinese the term would mean something quite different from a personal Creator. As Needham points out, the expression used, *tsao hua che* [Author of Change], or *tsao wu che* [Author of Things], is a very old one in Chinese thought, going back to the fourth century B.C. Needham shows that the highest spiritual being ever known or worshipped in China had not been a Creator in the Hebrew sense.

The globe reveals the achievements and limitations of Jesuit Renaissance science. It gave the Chinese a true picture of the world as it was then known. Yet the Fathers themselves accepted only part of the new learning, not understanding the Copernican theory sufficiently to present it to the Chinese in place of the earth-centered cosmology traditional both in Europe and China. They failed also to appreciate the antiquity and the achievements of Chinese science. They claimed western scientific discoveries as the natural outcome of Christian thought and civilization. The Chinese disputed this claim. To them the western knowledge was 'new' knowledge, and they objected to the term 'western' being applied to it, reserving this term for the Christian religion.

This globe, painted in lacquer on wood and signed by the European officials Yang Ma-no [Manuel Dias] and Lung Hua-min [Nicolo Longobardi], 1623 is the earliest surviving terrestrial globe made in China, and with Father Ricci's world maps (#441), it can be ranked as one of the two most important relics of early European cartography in China. The Fathers Nicolo Longobardi (1559-1654), who was Ricci's successor as Superior General of the China Mission, and Manuel Dias the Younger (1574-1659) carried on Ricci's work in the propagation of western geographical knowledge. The long explanatory legend in the southern hemisphere describes the earth and its place in the universe. Unaware that Chinese astronomers were writing of the sphericity of the earth in the second century BC, the Fathers wrote "*Chinese scholars, seeing only a flat surface, said that the earth was flat. Westerners, using the principle of the parallels, traveled far and wide across the oceans. Some went west to east without interruption until they finally returned to their starting-point.*" They described the earth's place at the center of the universe, like the yolk in an egg, thus expressing Ptolemaic astronomical theory in traditional Chinese terms. Another reference points to the parallel between the attraction of the lodestone for particles of iron and the effect of gravitational force: "*The center of the earth is the lowest point. All objects having mass by their nature tend towards it.*" This remarkably early conception of terrestrial magnetism was entirely derived from Chinese work on the

magnet. The legend ends with an allusion to the Creator or King of Creation: "*So we can deduce the origin [of heaven and earth] in the King of Creation.*" If the King of Creation represented God in a Christian sense, it would suggest that the globe was made at the request of one of the Christian scholar converts; but to the Chinese the word would mean something different from a personal Creator. The expression used, *tsao hua che* [Author of Change], or *tsao wu che* [Author of Things] is a very old one in Chinese thought, dating back to the 4th century BC.

In diameter 23 inches, the globe is made on a scale of 1: 21 million, and depicts the world in some detail. In various major and minor features the delineations differ from those on Ricci's map. Eastern Asia and the Pacific show various improvements, for example in the coastline of China, Japan, Korea and the East Indies. The accurate and insular form of New Guinea was presumably derived from a report of Torres's discoveries in 1606 which the Fathers probably obtained from their associate Father Giulio Aleni.

The globe, which is said to have come from the Imperial Palace, was acquired from Peking by Sir Percival David, Bart. in 1938 and presented to the British Museum in 1961 by Sir Percival and Lady David. Maps e.6.a. C8

References:

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