Ancient Maps & Celestial Navigation

by Daniel Fisher

Holland Professional Club: November 15, 2013

Notability criteria [edit]

The list includes explorers which had contributed, and continue to contribute to human knowledge of the planet's geography, weather, biodiversity, human cultures, the expansion of trade, or established communication between diverse populations.

Although many maritime explorers also used force as part of their missions, these are not considered as a reason for exclusion from the list because it represents a subjective contemporary view of the use of force.

Ocean explorers [edit]

Nationality	Sailed for	Name	First voyage of exploration	Last voyage of exploration	Arctic[1]	North Atlantic	Indian	Pacific	South Atlantic	Southern
Portuguese		de Abreu, António								
Portuguese		de Albuquerque, Afonso								
Portuguese		de Alenquer, Pêro								
Portuguese		de Almeida, Francisco								
Portuguese		Álvares, Jorge								
Portuguese		de Azambuja, Diogo								
Portuguese		de Barcelos, Pêro								
Newfoundlander[2]		Bartlett, Robert								
Estonian[3]		von Bellingshausen, Fabian Gottlieb						•[4]		
Danish[5]		Bering, Vitus						•		
French		de Bougainville, Louis Antoine								
British		Byron, John								
Italian	Henry VII of England	Cabot, John								
Italian	Henry VII of England and Ferdinand II of Aragon	Cabot, Sebastian								
Portuguese		Cabral, Pedro Álvares								
Portuguese[6]		Cabrilho, João Rodrigues								
Venetian	Portugal	Cadamosto, Alvise								
Portuguese		Caminha, Álvaro								
Portuguese		de Caminha, Pêro Vaz								

Portuguese		Cão,Diogo								
		Cartier, Jacques								
		Cavendish, Thomas								
		de Champlain, Samuel								
Portuguese		Coelho, Gonçalo								
Portuguese		Coelho, Nicolau								
Italian	Spain	Columbus, Christopher								
English	Britain	Cook, James	1768–71	1776–79				3		1
Portuguese		Corte-Real, Gaspar								
Portuguese		Corte-Real, Miguel								
Portuguese		da Cunha, Tristão								
		Dampier, William								
English		Davis, John								
		Dezhnev, Semyon						*		
Portuguese		Dias, Bartolomeu								
Portuguese		Dias, Dinis								
Portuguese		Dias, Diogo								
Portuguese		Dias, Pêro								
Portuguese		do Pó, Fernão								
English		Drake,Francis	1577–81	1577–81			1	1	1	
Portuguese		Eanes, Gil								
		Ericson, Leif								
Portuguese		Escobar, Pedro								
Portuguese		Fernandes, Álvaro								
		Frobisher, Martin								
Portuguese		da Gama, Estêvão								
Portuguese		da Gama, Paulo								
Portuguese		da Gama, Vasco								
		Gilbert, Humphrey								
		Golovnin, Vasily						*		
Portuguese		Gonçalves, André								
Portuguese		Gonçalves, Antão								

Portuguese		Gonçalves, Lopes								
Portuguese		Grego, João								
Chinese		Zheng, He						*		
		Hudson, Henry								
Portuguese		Infante, João								
		von Kotzebue, Otto						*		
		Kruzenshtern, Ivan Fedorovich						*		
Portuguese		Lavrador, João Fernandes								
		Lazarev, Mikhail Petrovich						*		
Portuguese		de Lemos, Gaspar								
		Litke, Fyodor Petrovich						*		
Portuguese		Magellan, Ferdinand								
		le Maire, Jacob								
Portuguese		Martins, Álvaro								
Portuguese		Mascarenhas, Pedro								
Spanish		de Mendaña, Álvaro								
Genoese	Portugal	Noli, Antônio								
Portuguese		de Noronha, Fernão								
Portuguese		da Nova, João								
		Paulmyer, Binot								
Portuguese		Pereira, Duarte Pacheco								
Portuguese		Perestrelo, Bartolomeu								
		Pining, Didrik								
Portuguese		Pinto, Fernão Mendes								
Portuguese		Pires, Luís								
Portuguese		de Queirós, Pedro Fernandes								
Portuguese		Rodrigues, Diogo								
Portuguese		de Santarém, João								
		Schouten, Willem								

Portuguese		Silves, Diogo								
Portuguese		de Sintra, Pedro								
Portuguese[7]		Soromenho, Sebastião Rodrigues								
Portuguese		de Sousa, Martim Afonso								
		Tasman, Abel								
Portuguese		Teixeira, Tristão Vaz								
Portuguese or Spanish (Galician)		de Torres, Luis Váez								
Portuguese		Tristão, Nuno								
		Vancouver, George								
Portuguese		Vaz Corte-Real, João								
Portuguese		Velho, Gonçalo								
		da Verrazzano, Giovanni								
Italian		Vespucci, Amerigo								
		Wallis, Samuel								
		Wrangel, Ferdinand Petrovich								
Portuguese		Zarco, João Gonçalves								

Portuguese		Gonçalves, Lopes								
Portuguese		Grego, João								
Chinese		Zheng, He							*	
		Hudson, Henry								
Portuguese		Infante, João								
		von Kotzebue, Otto							*	
		Kruzenshtern, Ivan Fedorovich							*	
Portuguese		Lavrador, João Fernandes								
		Lazarev, Mikhail Petrovich							*	
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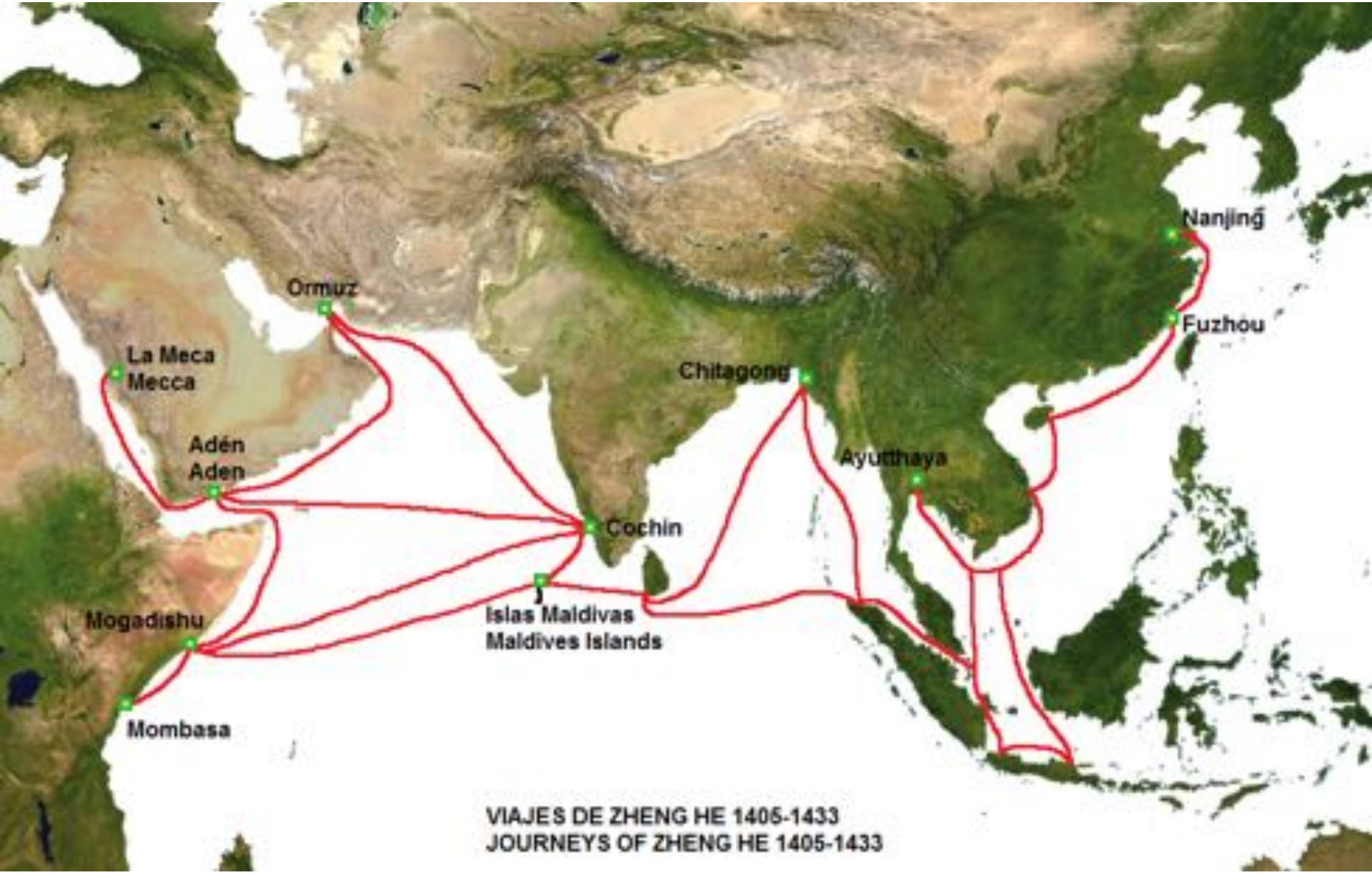
Portuguese		de Santarém, João								
		Schouten, Willem								

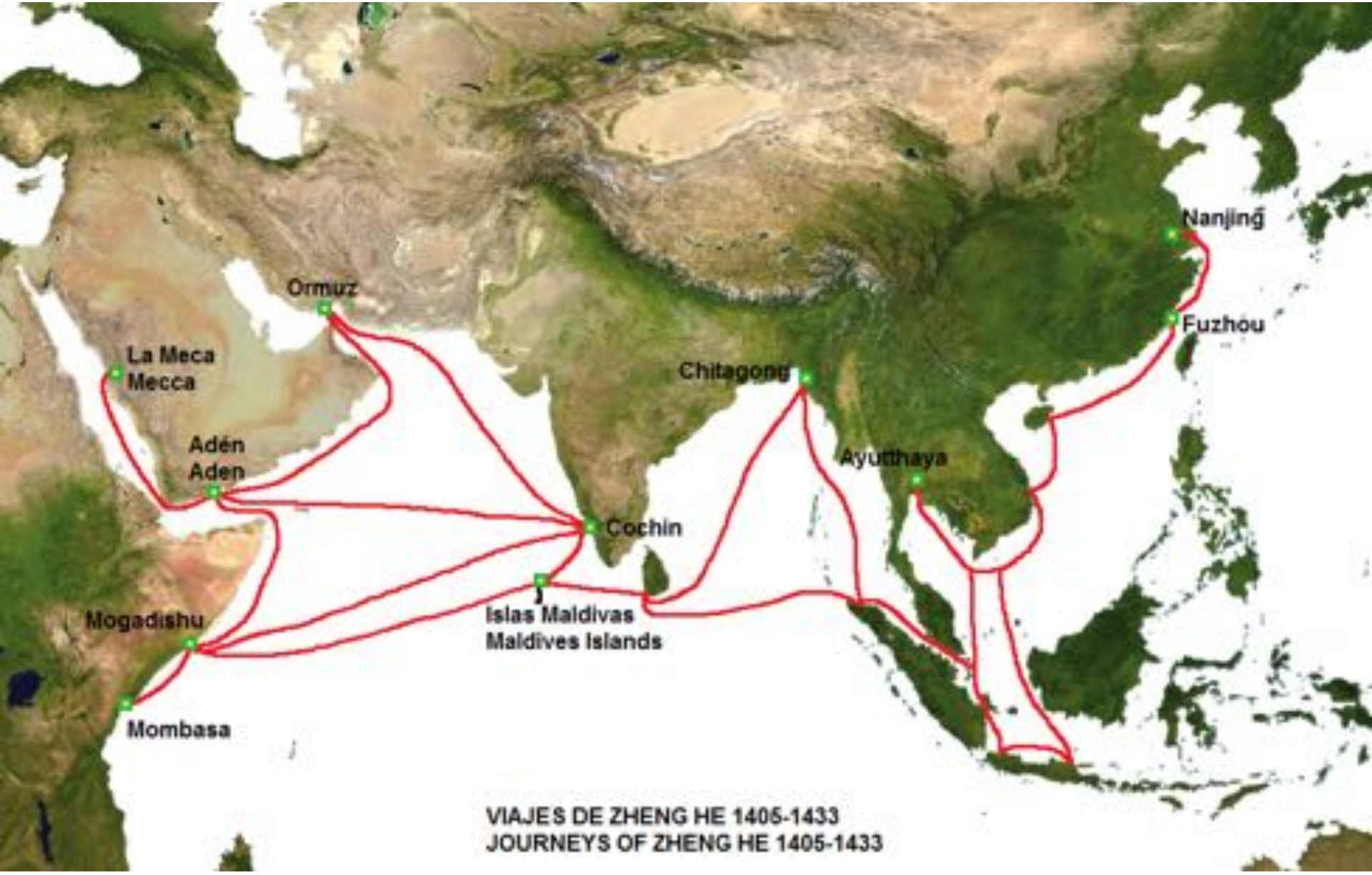

Nanjing
Fuzhou
Ormuz
La Meca
Mecca
Chitagong
Adén
Aden
Ayutthaya
Cochin
Islas Maldivas
Maldives Islands
Mogadishu
Mombasa
VIAJES DE ZHENG HE 1405-1433
JOURNEYS OF ZHENG HE 1405-1433

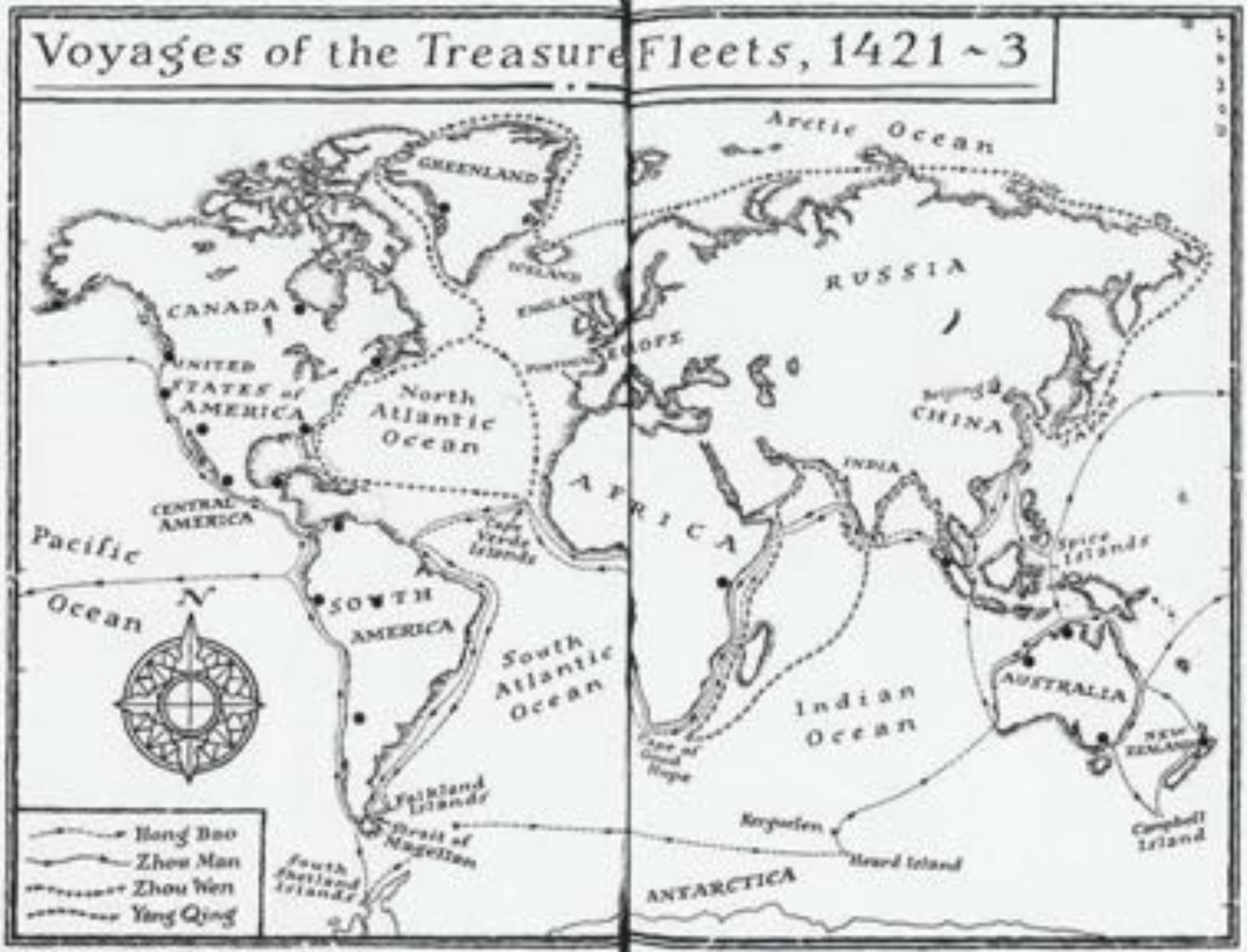
Chinese Treasure Ship compared to European Carrack.

THE FIRST TREASURE FLEET

Zhu Di's Treasure Fleet, represented in this picture, was the largest group of ships ever to sail under a single commander. When at sea, they would have adopted a military formation, with the warships and patrol boats encircling the more vulnerable cargo ships. The vessels communicated with each other by drums, cymbals, gongs, lanterns and even carrier pigeons.

Scholars are unsure precisely how many treasure ships sailed with the fleet but the number was probably between 60 and 65.

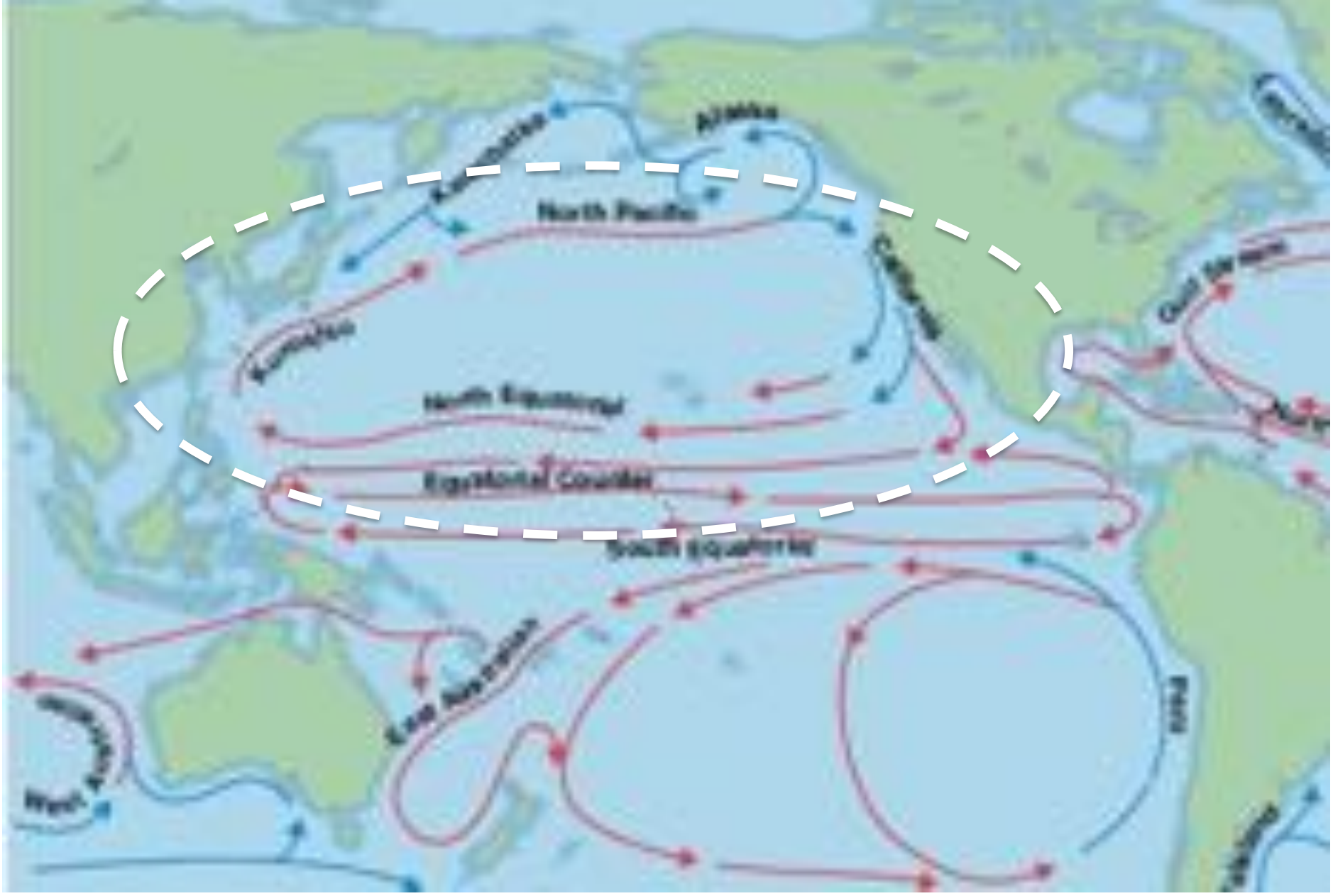

Nanjing
Fuzhou
Ormuz
La Meca
Mecca
Chitagong
Adén
Aden
Ayutthaya
Cochin
Islas Maldivas
Maldives Islands
Mogadishu
Mombasa
VIAJES DE ZHENG HE 1405-1433
JOURNEYS OF ZHENG HE 1405-1433



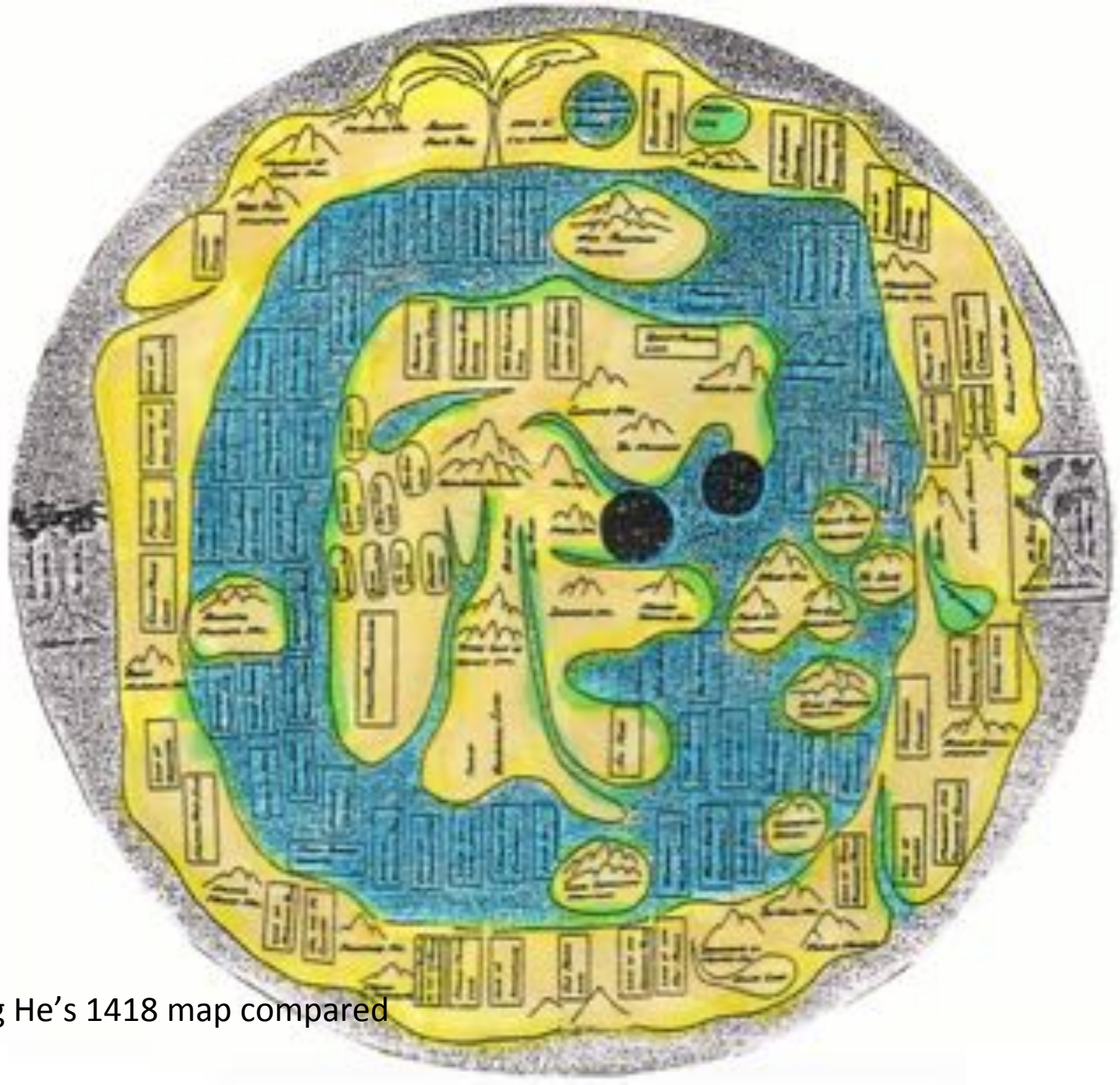
● settlements where Chinese people live today

1418 Map

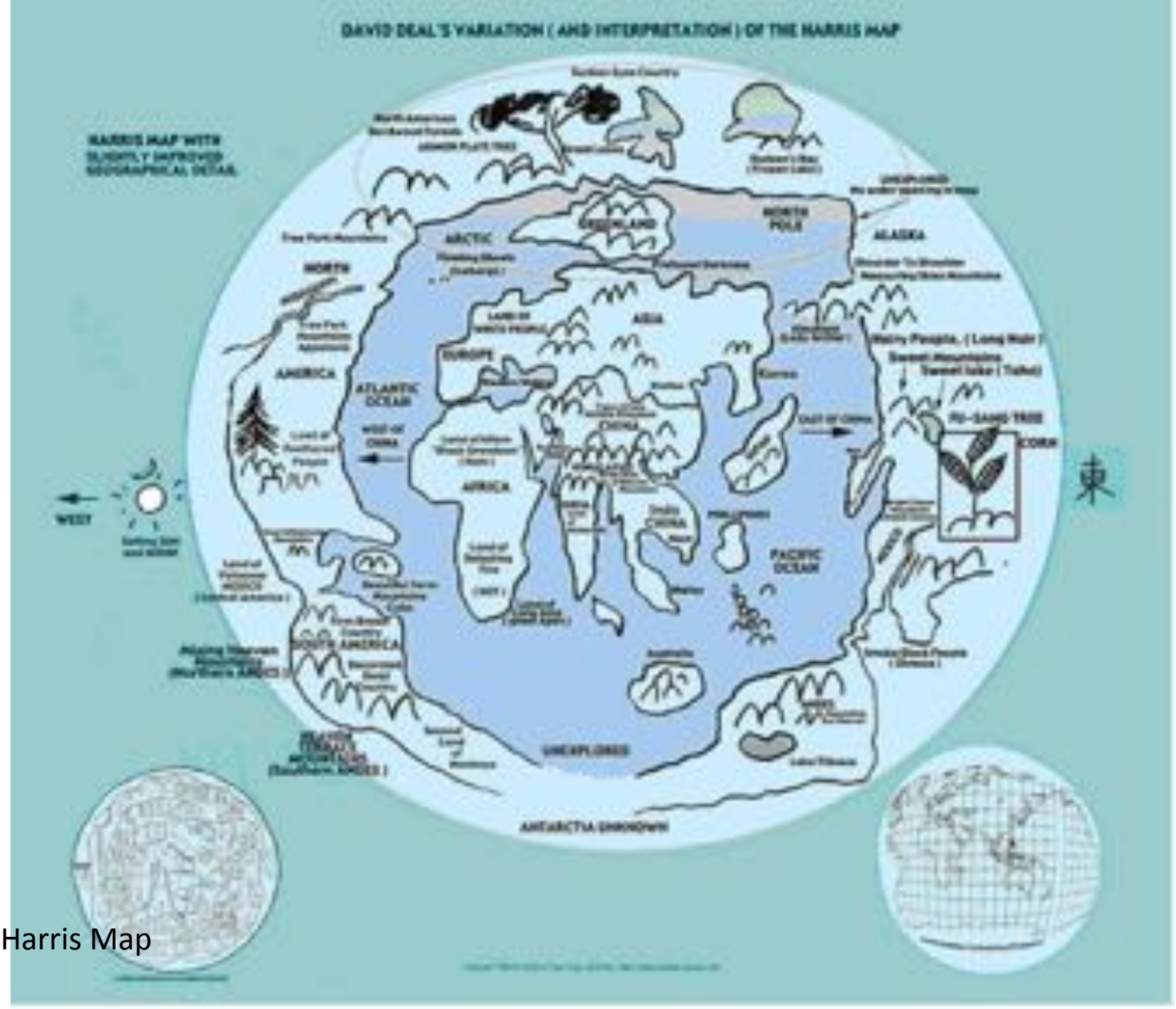
Harris Map



Ocean Currents



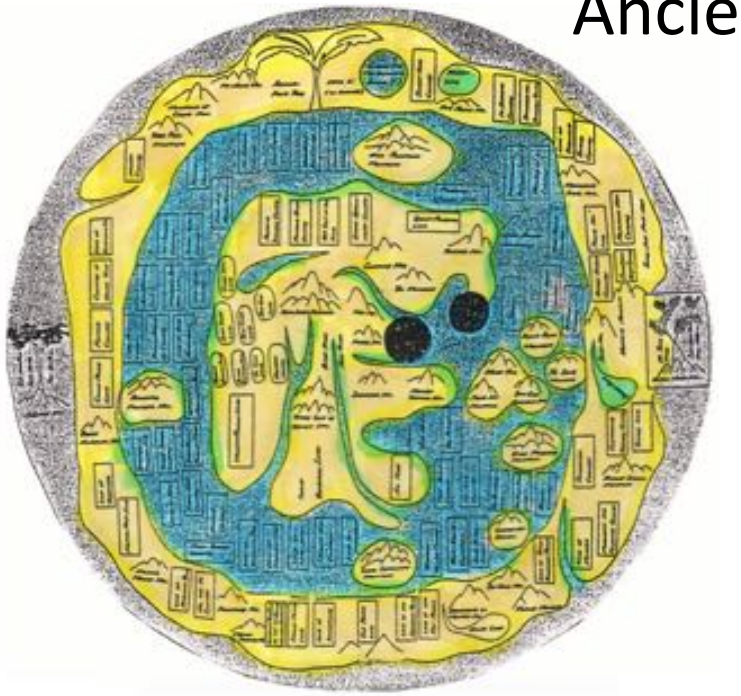
Zheng He’s 1418 map compared


DAVID DEAL'S VARIATION (AND INTERPRETATION) OF THE HARRIS MAP
HARRIS MAP WITH SLIGHTLY IMPROVED GEOGRAPHICAL DETAIL
ARCTIC
NORTH POLE
ALASKA
NORTH AMERICA
ATLANTIC OCEAN
EUROPE
ASIA
AFRICA
PACIFIC OCEAN
SOUTH AMERICA
UNEXPLORED
ANTARCTIA UNKNOWN
WEST
東

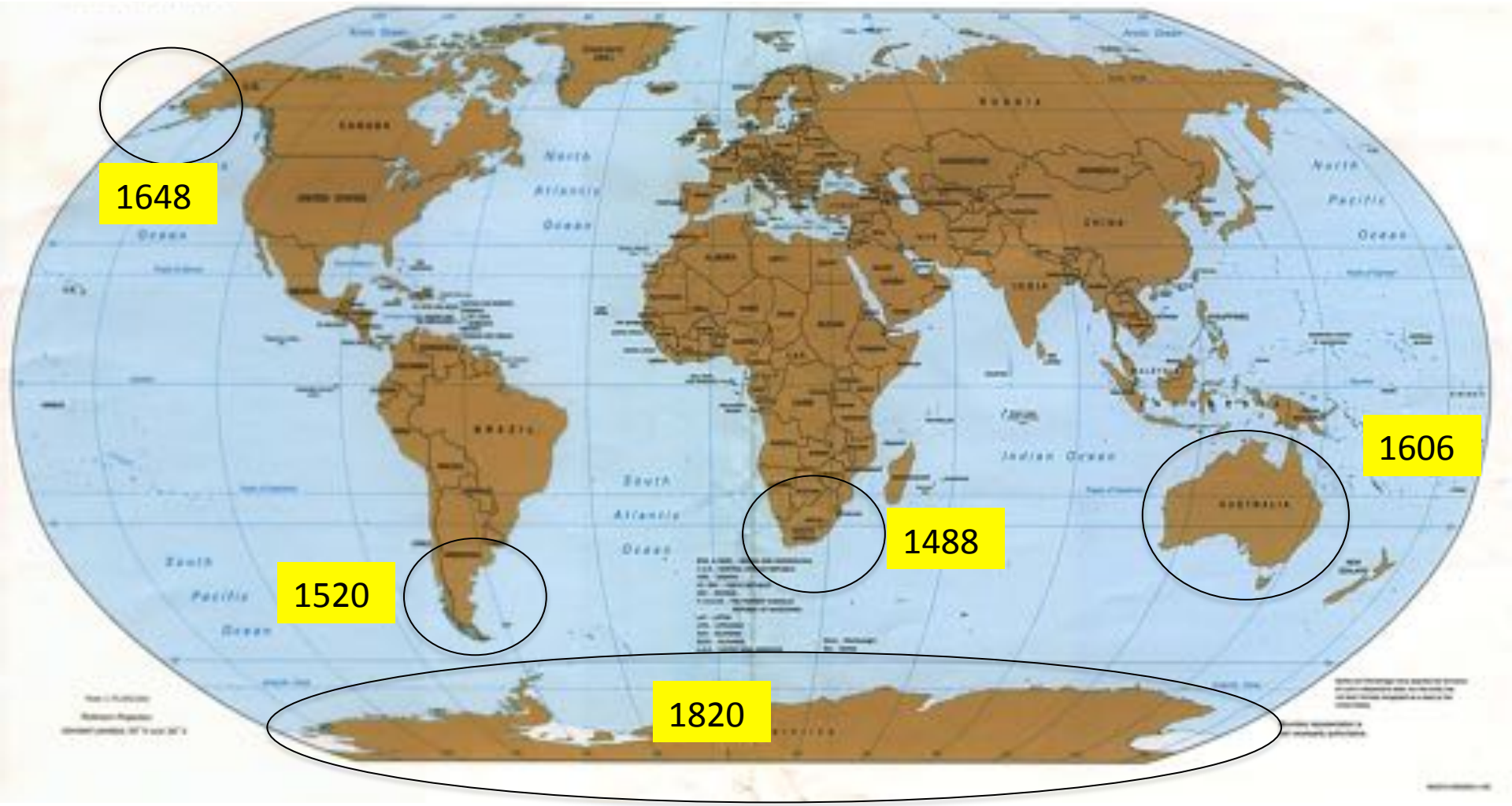
Harris Map

Song Dynasty
map of 1137.

Ancient Maps



First Explorations:



Bering Strait: Discovered 1648?.....or 1728?

Wikipedia: In 1648, Semyon Dezhnoyov probably passed through the strait, but his report did not reach Europe. Danish-born navigator Vitus Bearing entered it in 1728 and is the one who gets the credit for its discovery.

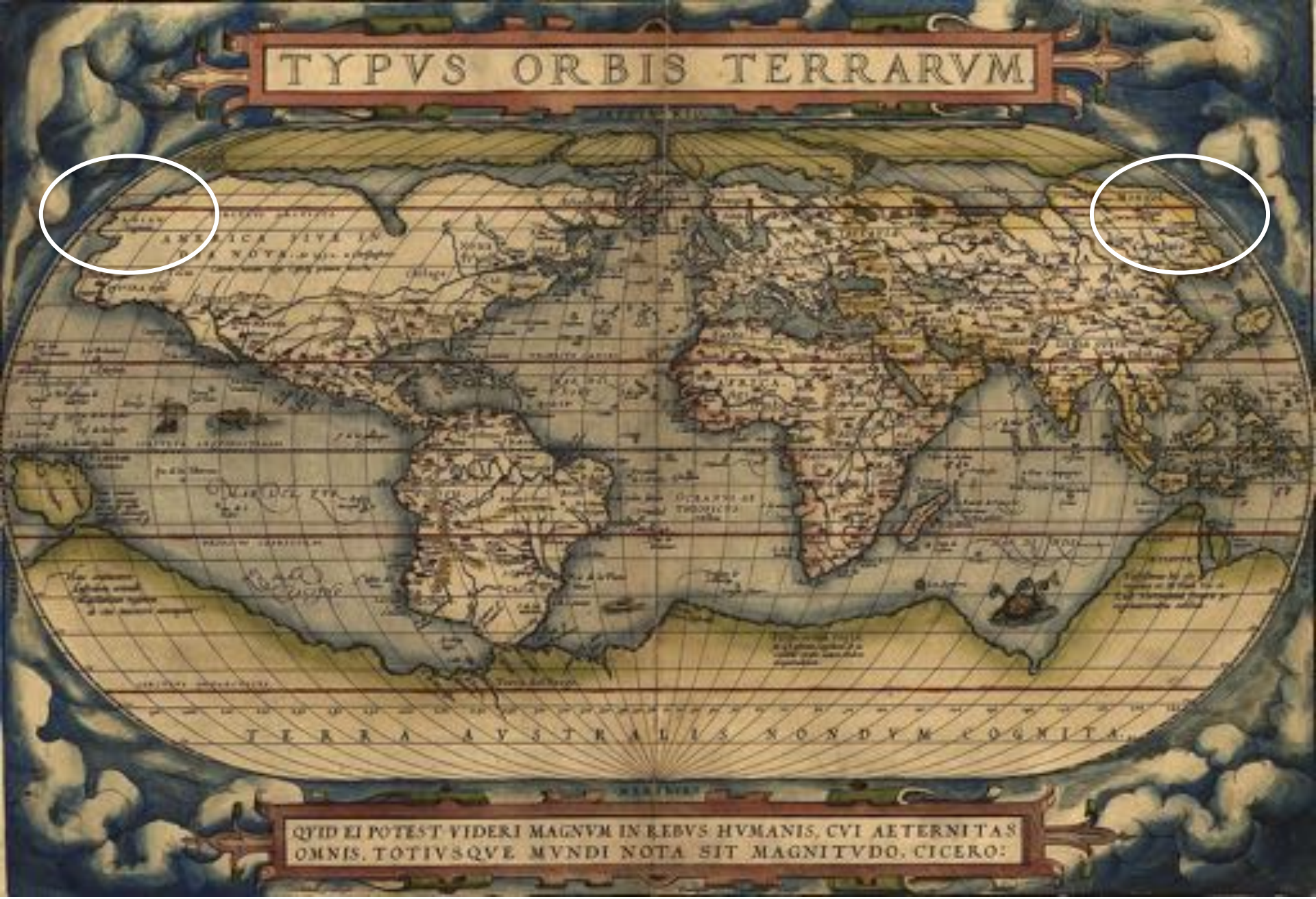
Bering Strait: Discovered 1648?.....or 1728?

Doge’s Palace Map: before 1428

Bering Strait: Discovered 1648?.....or 1728?

Doge’s Palace Map: before 1428

Map with ship. Rossi collection: Marco Polo



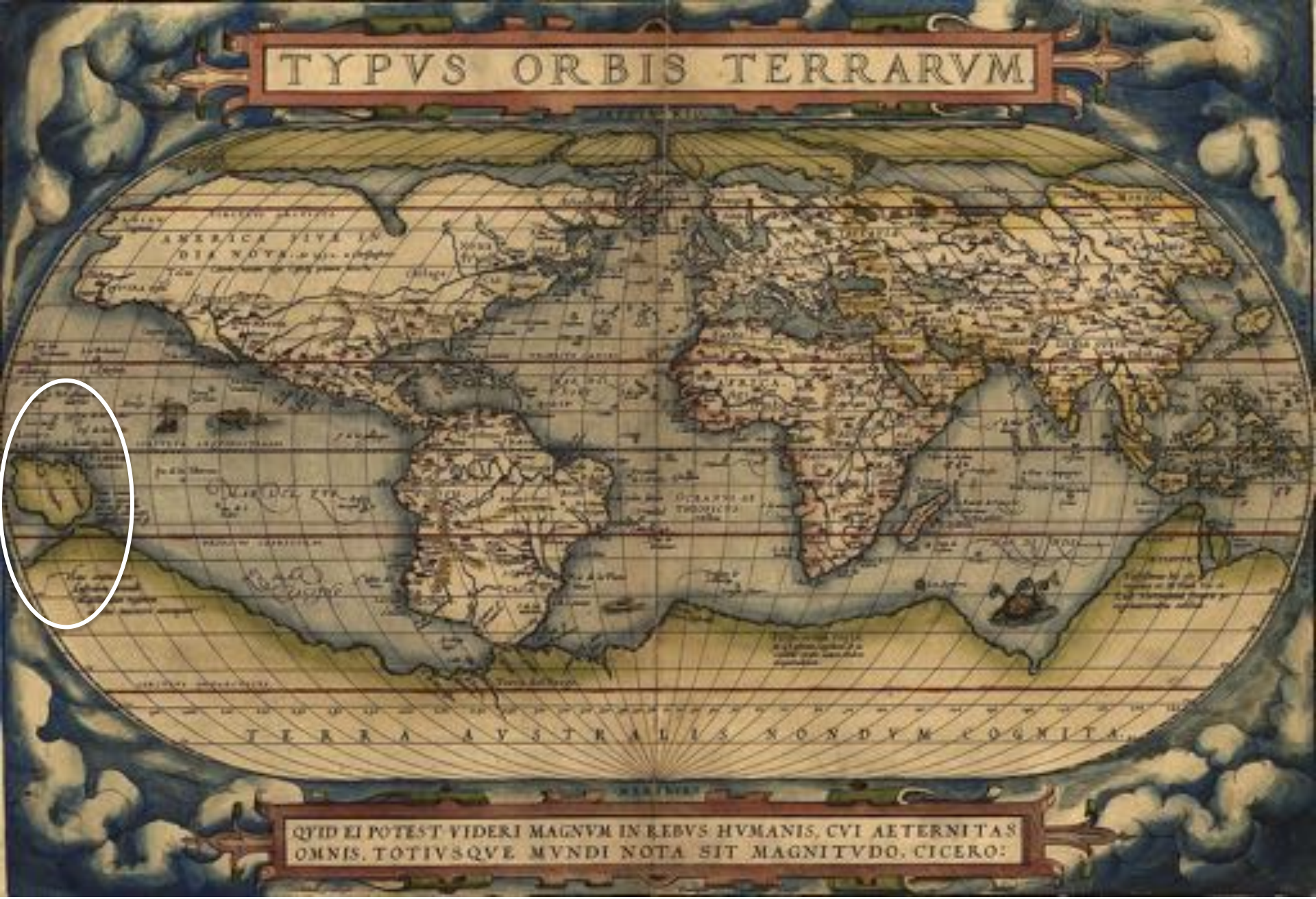
Ortelius World Map: 1570

Australia: 1606

Wikipedia: After the discovery of the continent by Dutch explorers in 1606, Australia's eastern half as claimed by Great Britain in 1770…

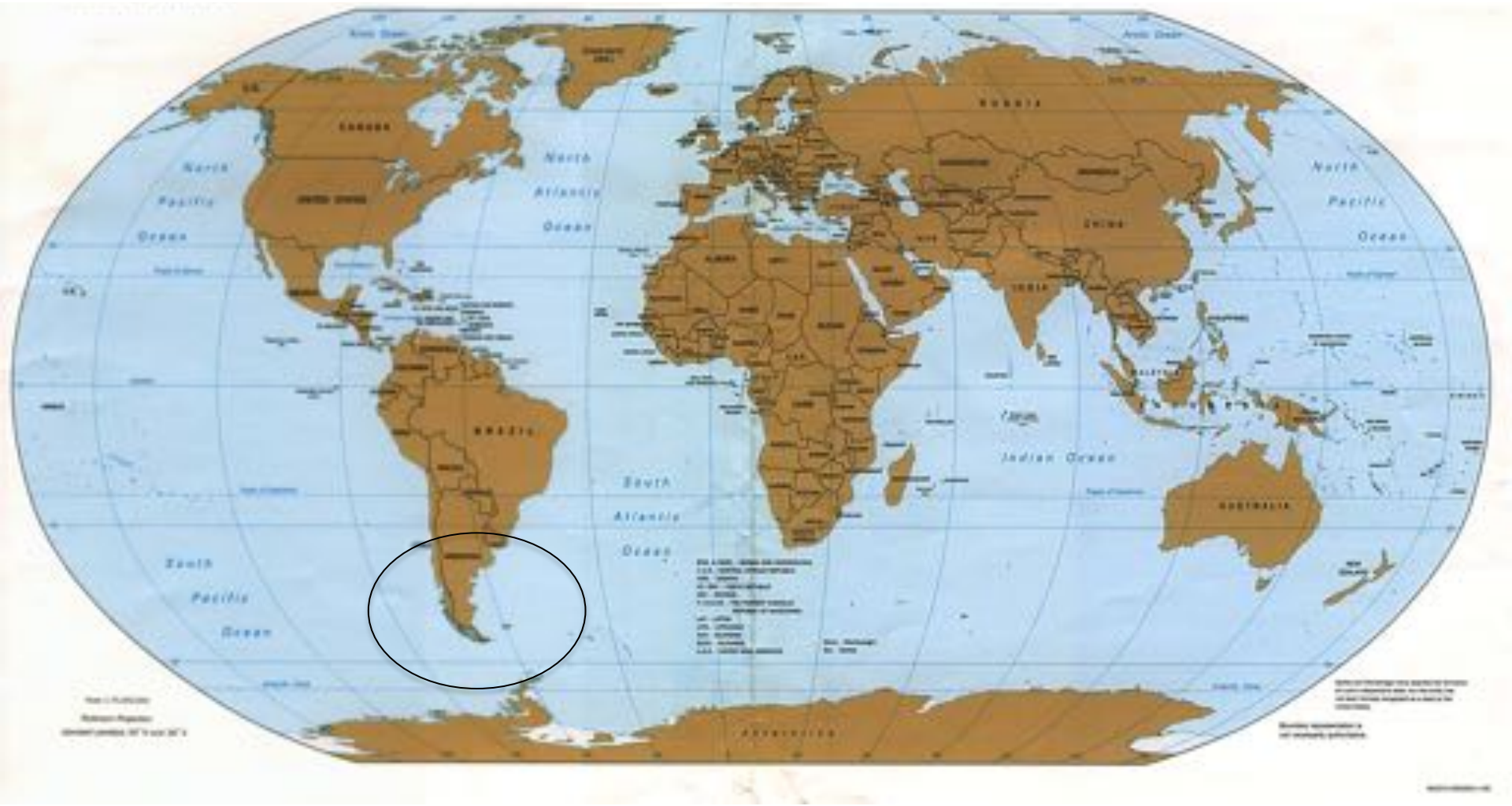
Di Virga Map: 1411 - 1415

Jean Rotz: 1542



Ortelius World Map: 1570

Strait of Magellan: 1520



Wikipedia: Magellan's ships entered the strait on November 1, 1520

The Green Globe, 1515.

a.

Johann Schoner: 1515

Johann Schoner: 1520


Johann Schoner: 1520

Rounding the Cape of Good Hope: 1488

Wikipedia: The first European to reach the cape was the Portuguese explorer Bartolomeu Dias in 1488, who named it the "Cape of Storms". It was later renamed by John II of Portugal as "Cape of Good Hope" because of the great optimism engendered by the opening of a sea route to India and the East.

Di Virga Map: 1411 - 1415

Fra Mauro’s Mappamundi (1459)

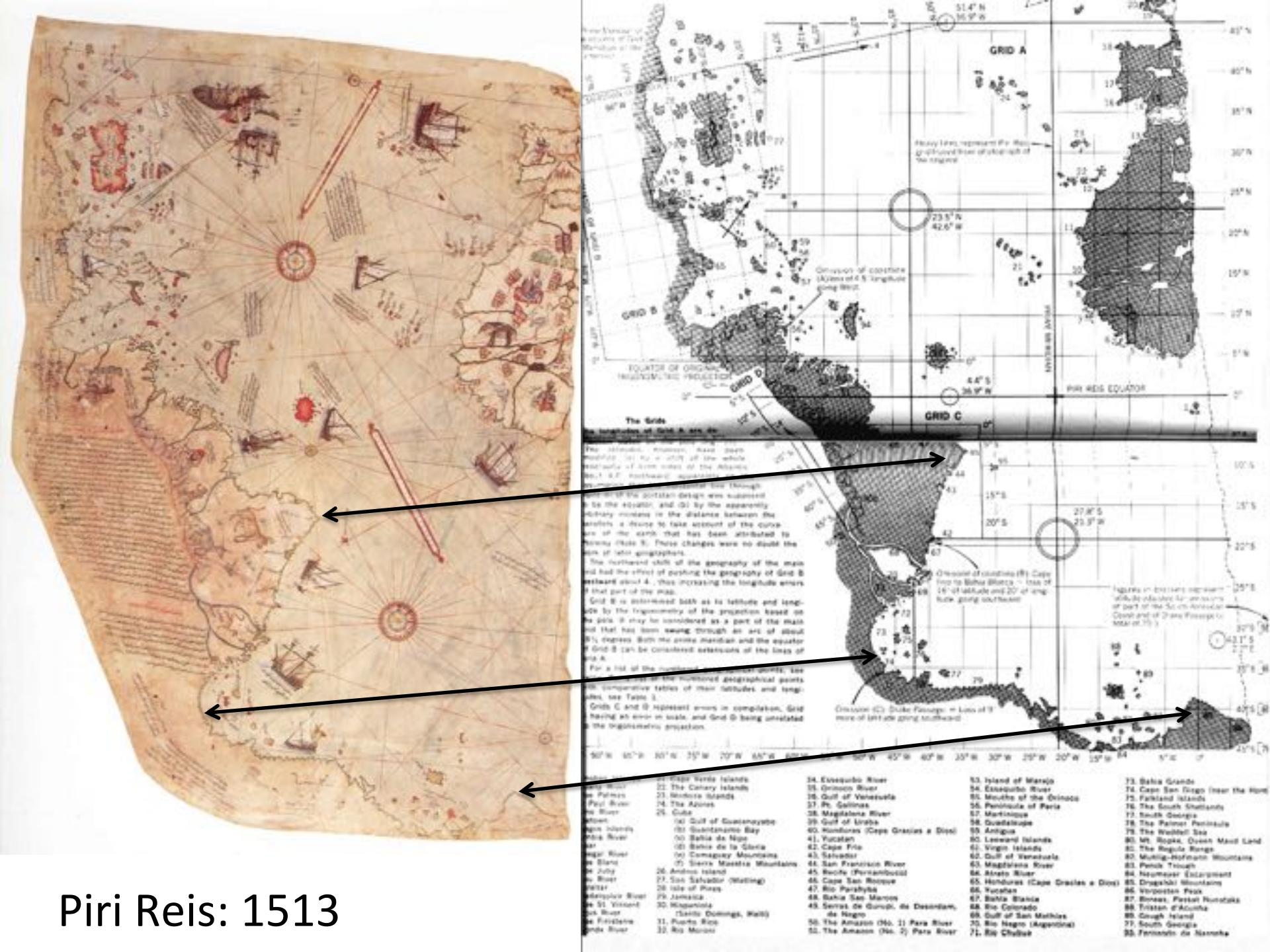
Da Ming Hun Yi Tu World Map: 1389

Kangnido World Map: 1402

Antarctica: Discovered 1820

Wikipedia: In 1820, several expeditions claimed to have been the first to have sighted Antarctica, with the very first being the Russian expedition led by Fabian Gottlieb von Bellingshausen and Mikhail Lazerev. The first landing was probably just over a year later when American Captain John Davis, a sealer, set foot on the ice.

Piri Reis: 1513



Piri Reis: 1513

Oronteus Finaeus: 1531

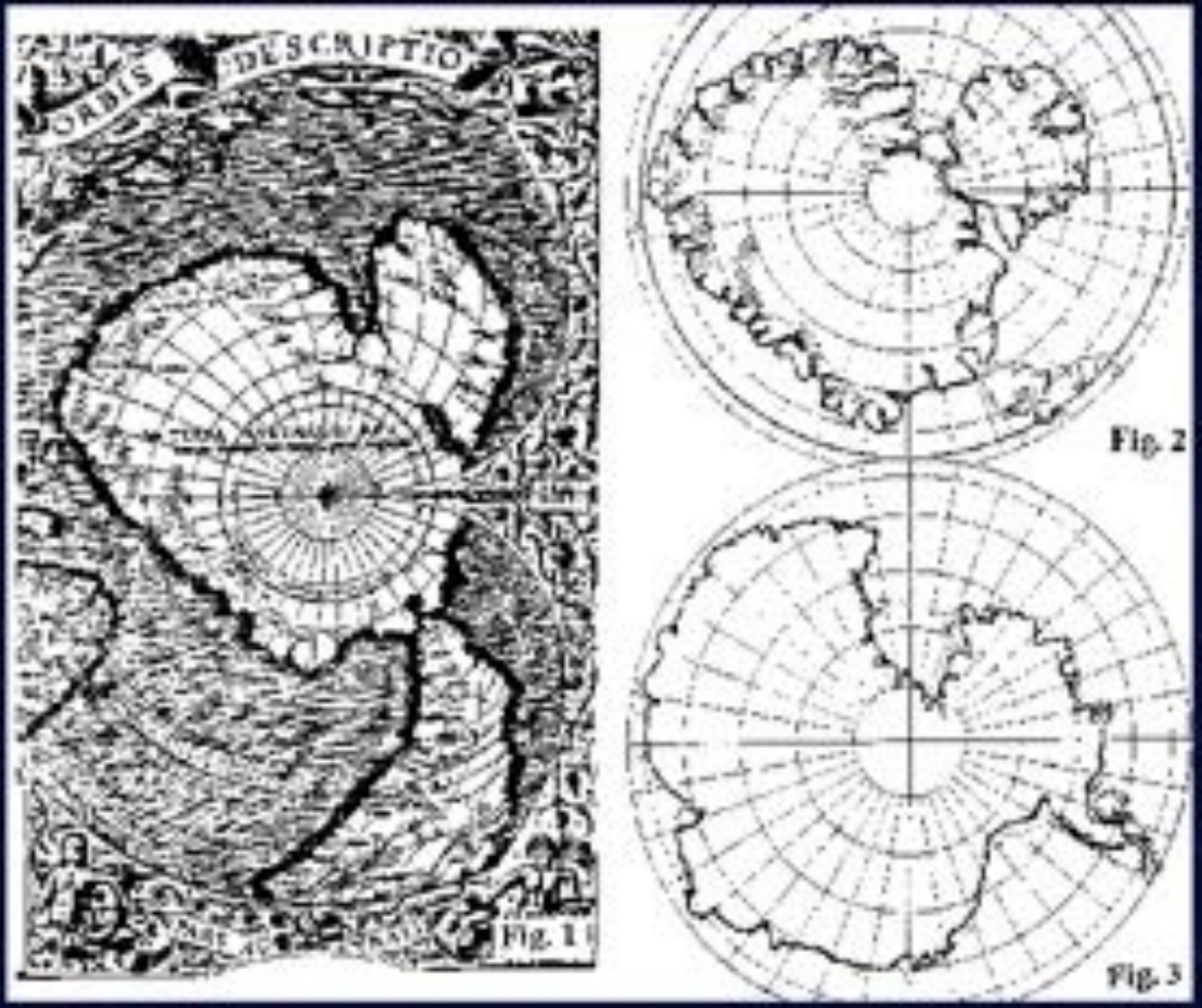
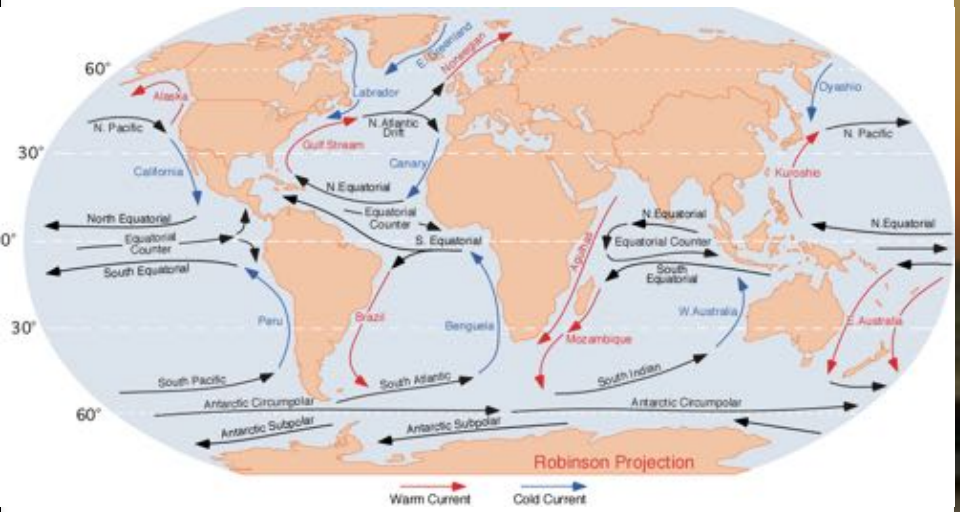


Figure 1 - The Oronteus Finaeus map of 1532, southern hemisphere
Figure 2 - The Oronteus Finaeus map redrawn on a modern polar projection
Figure 3 - A modern map of Antarctica drawn on a modern polar projection

Gilt Globe: 1528

Song Dynasty Map:
1137 A.D.

Basic Navigation Tools

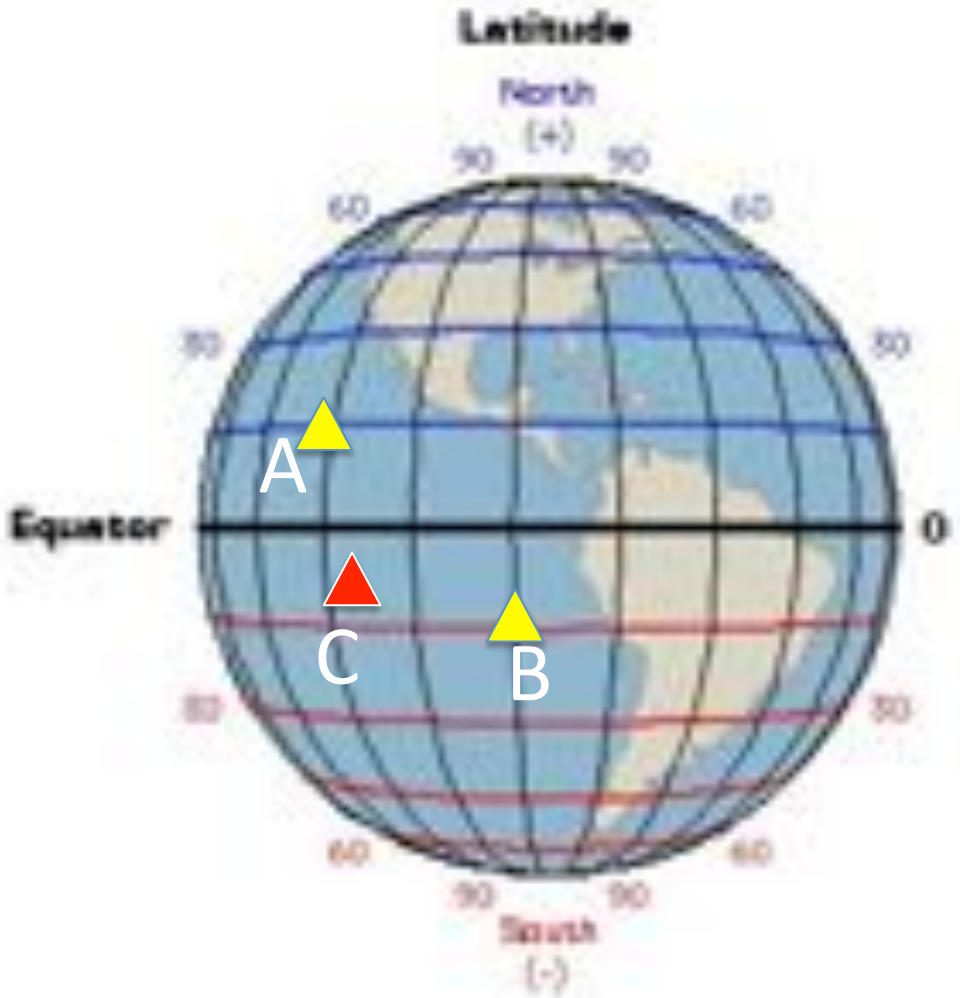


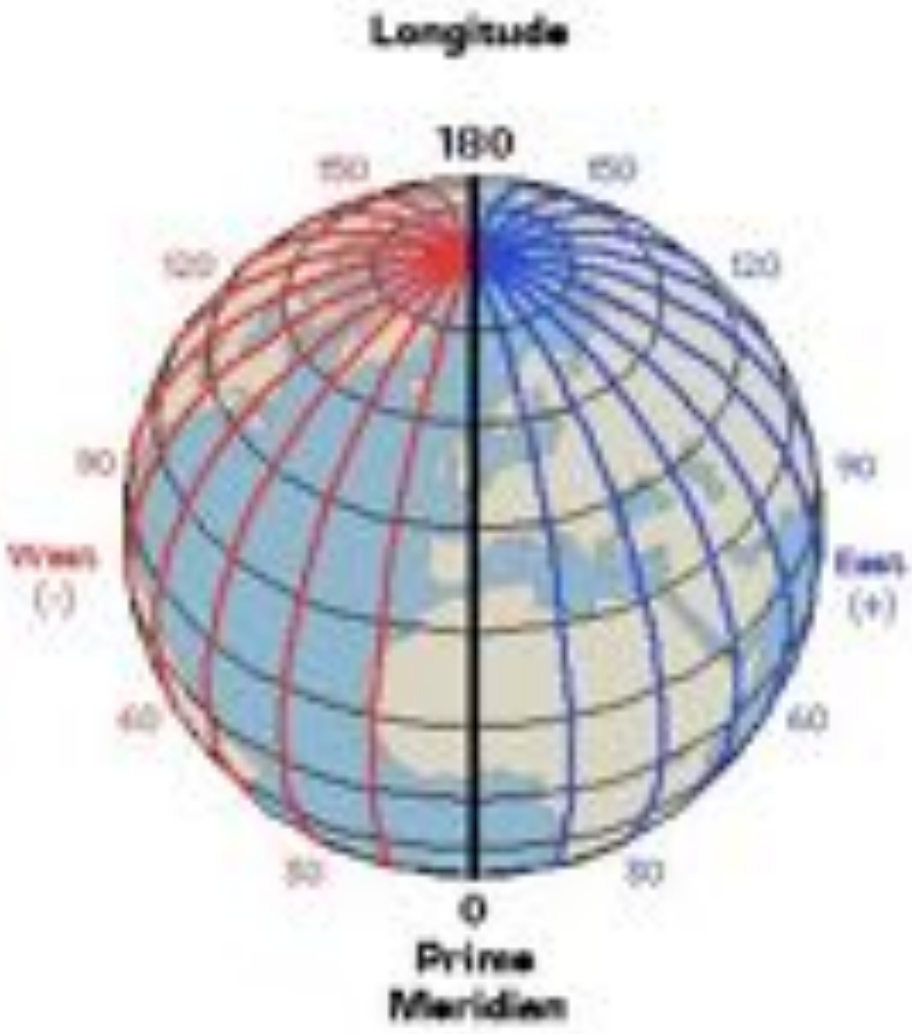
Ocean Currents & Seasonal Winds

Polaris (North Star)

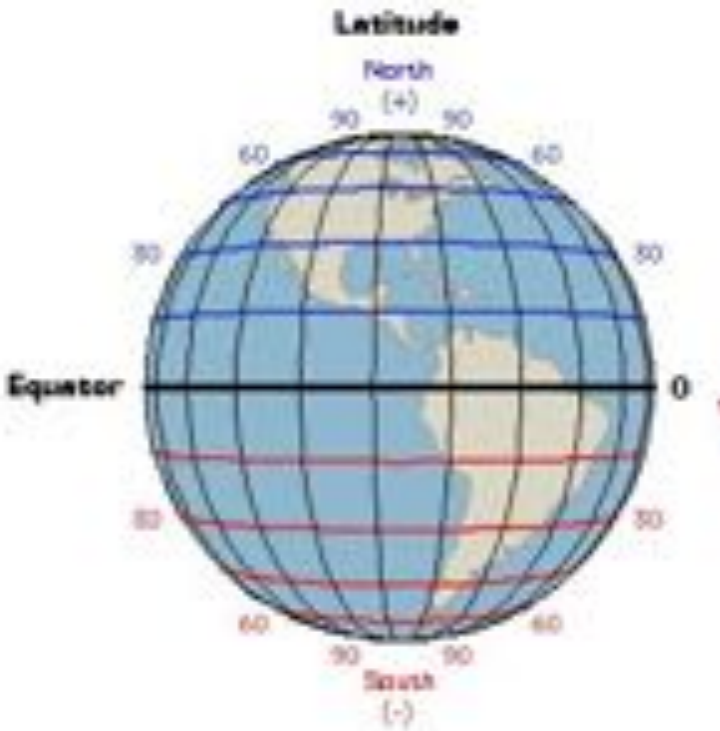
Compass

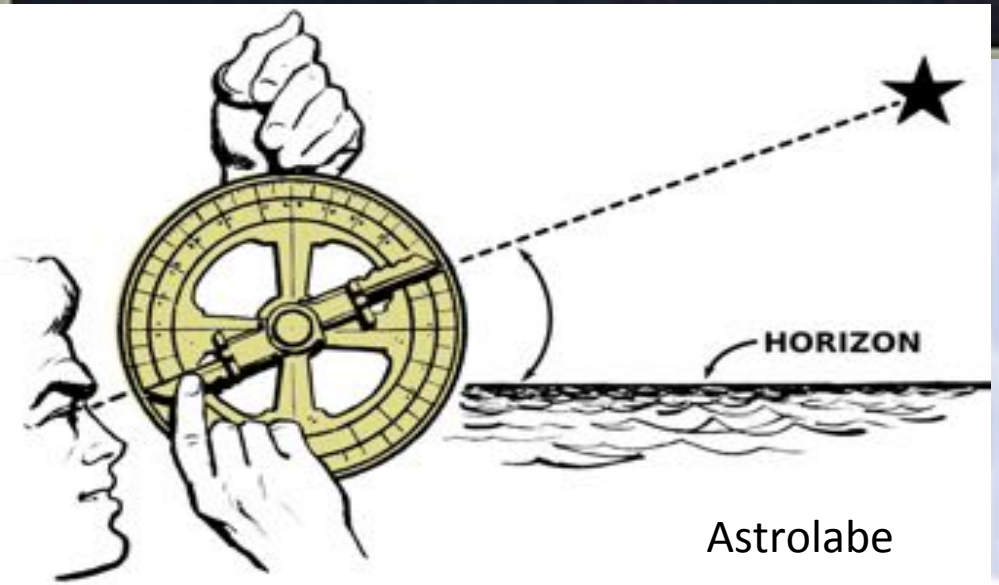
Global Markers



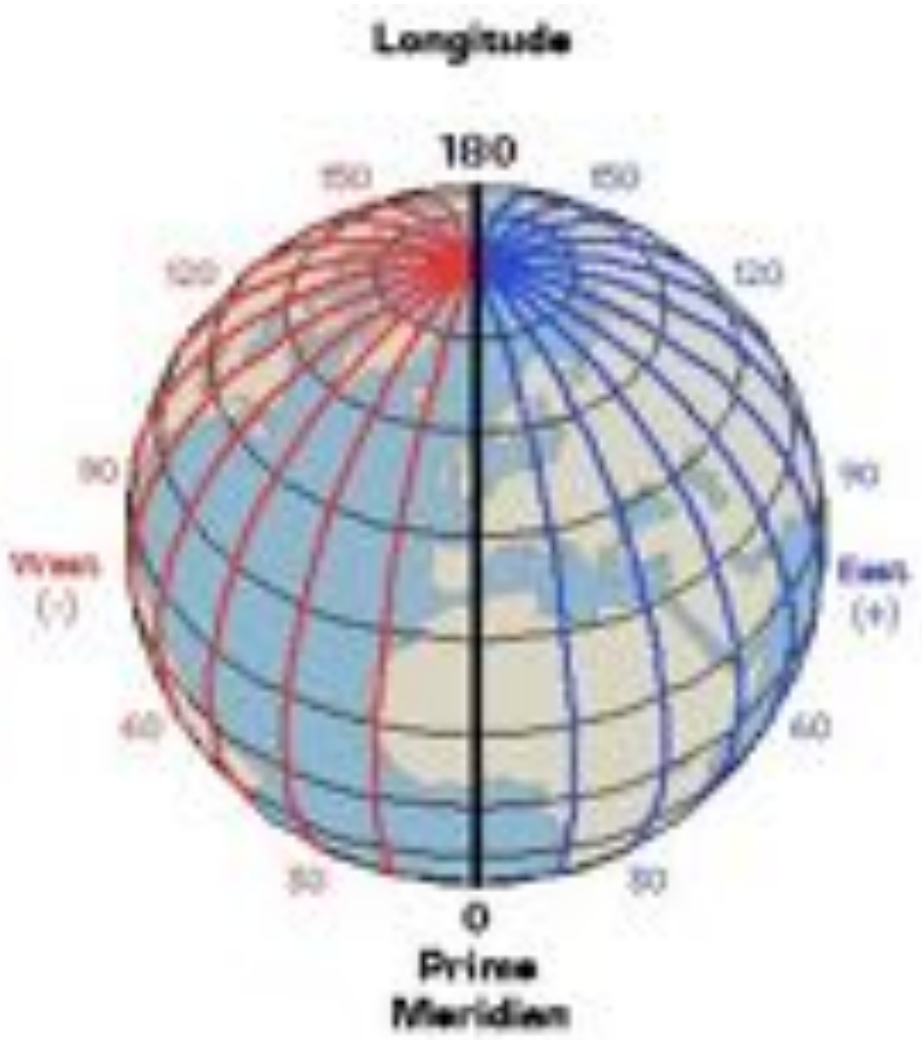


Latitude





Astrolabe


Longitude
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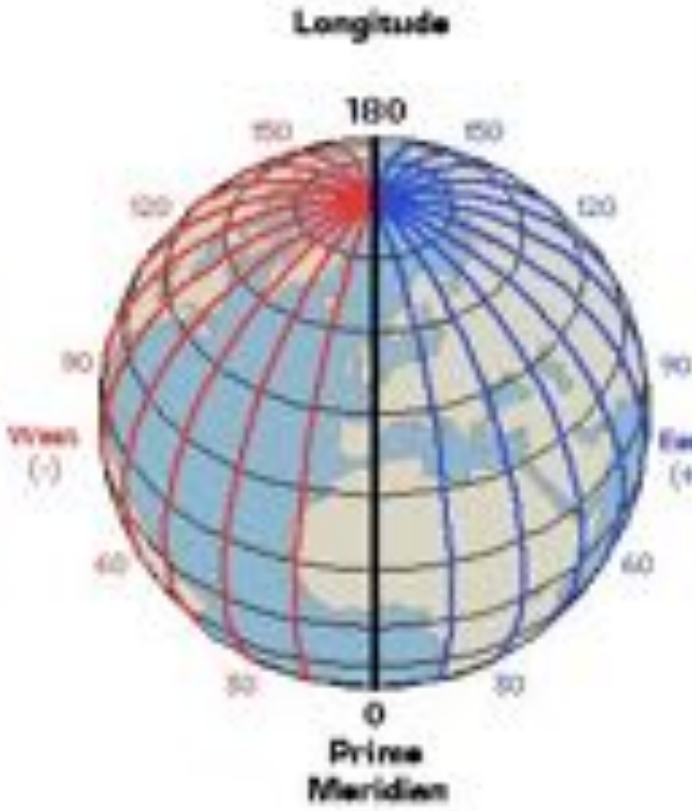
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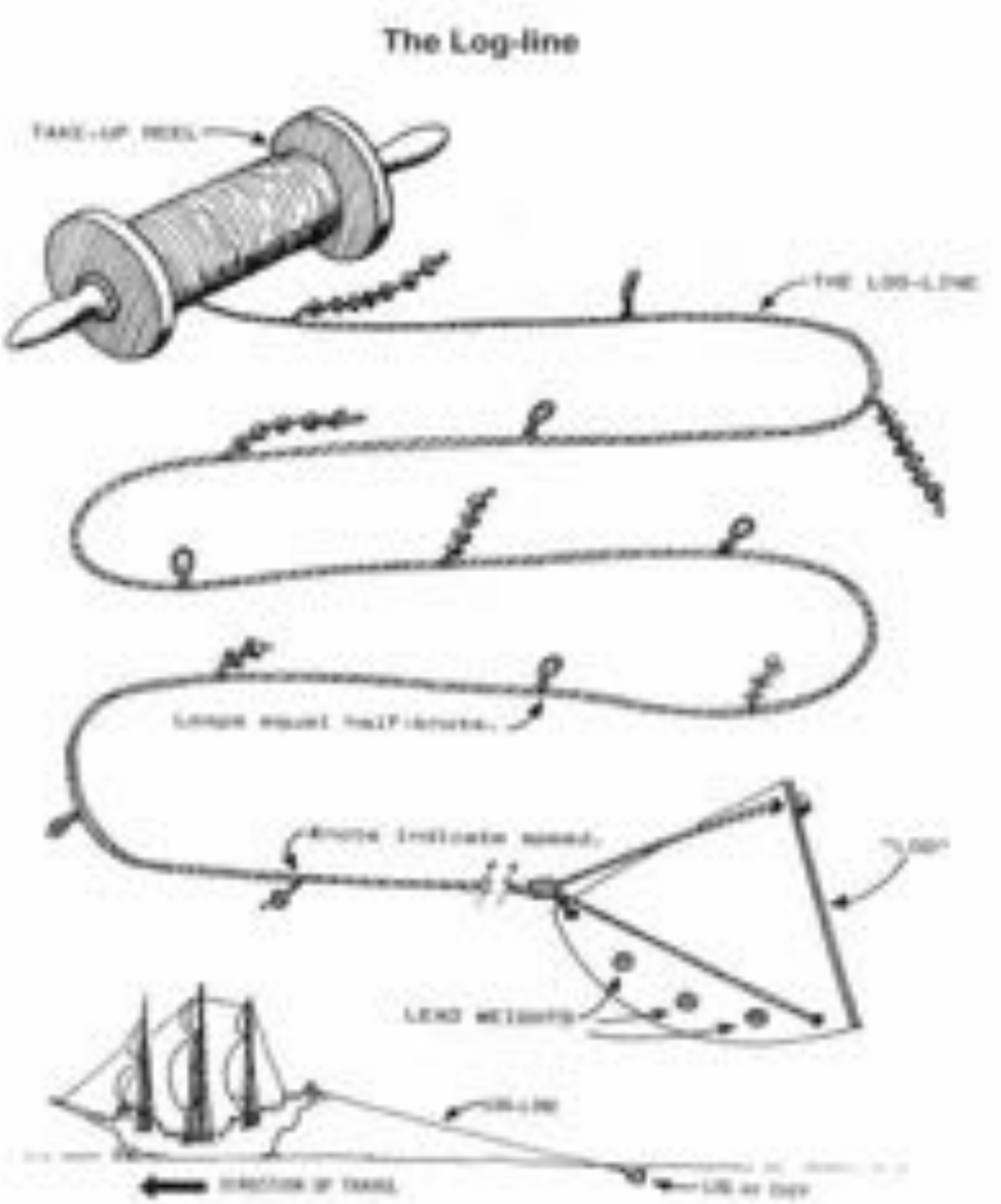
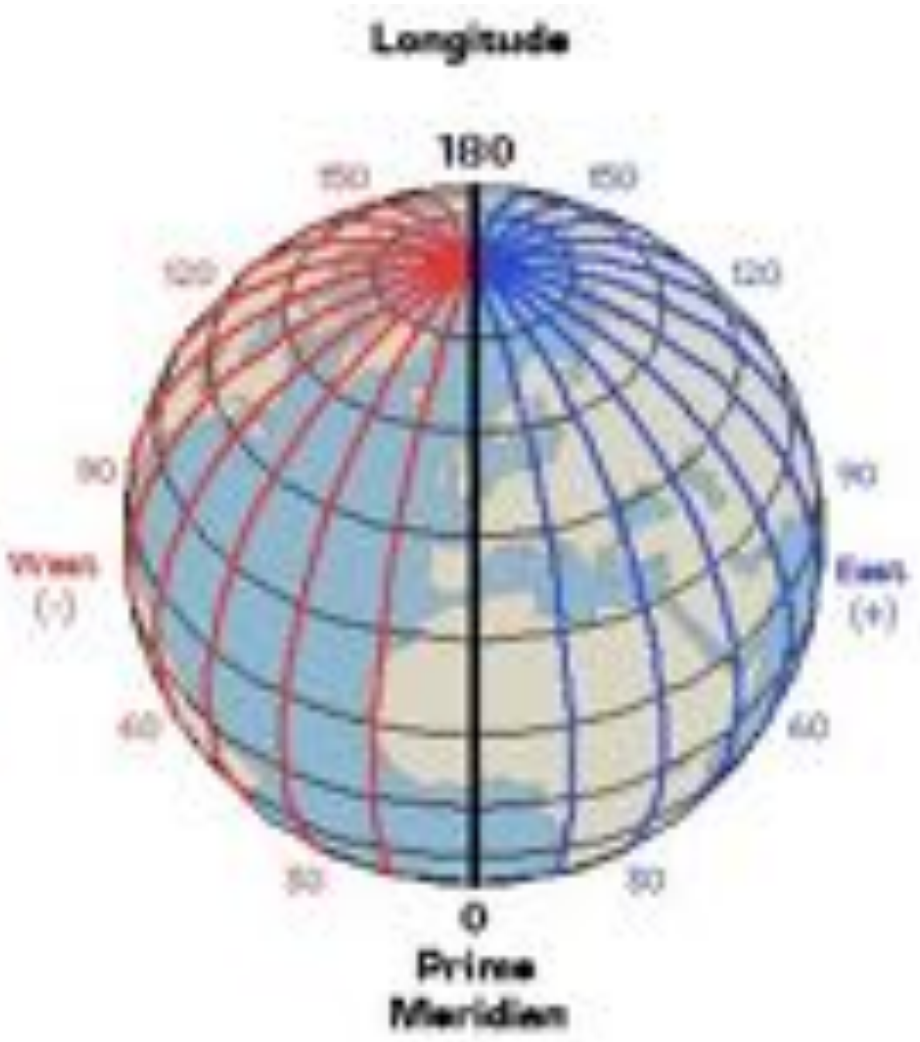
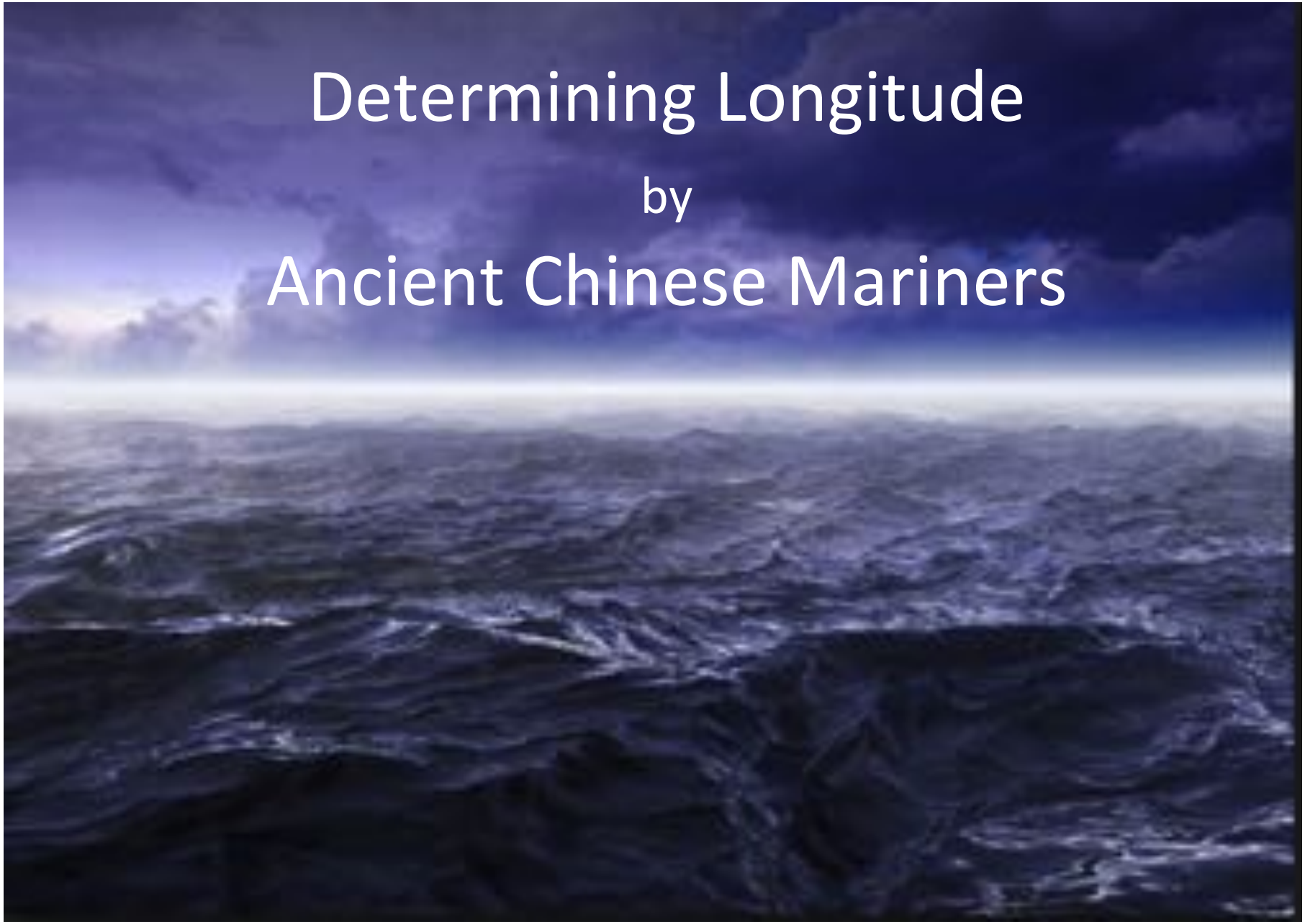
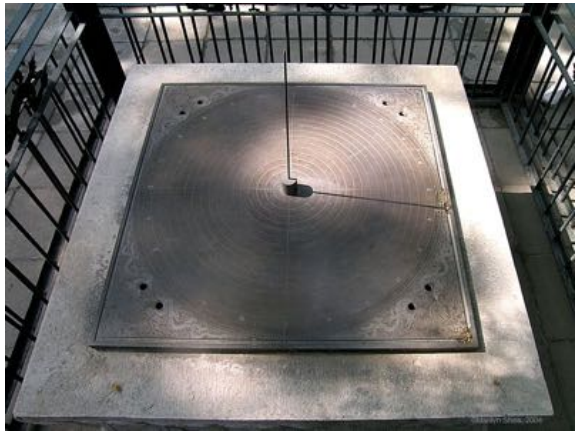

The Log-line
TAKE-UP REEL
THE LOG-LINE
LEAD WEIGHTS
LOG-LINE
DIRECTION OF TRAVEL



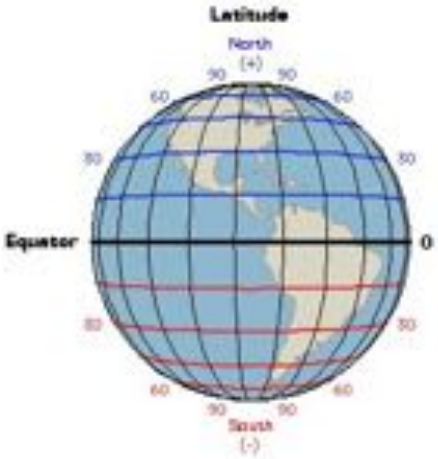
1763 Chronometer


Determining Longitude
by
Ancient Chinese Mariners


March 2013




March 2013


Latitude
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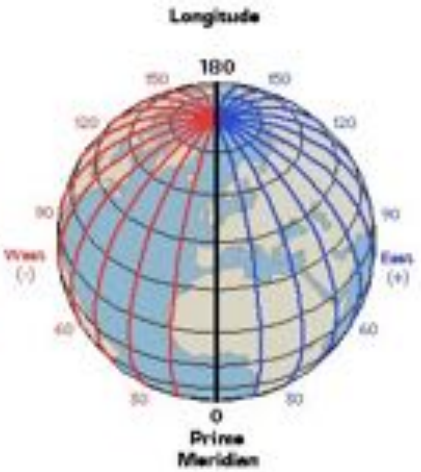
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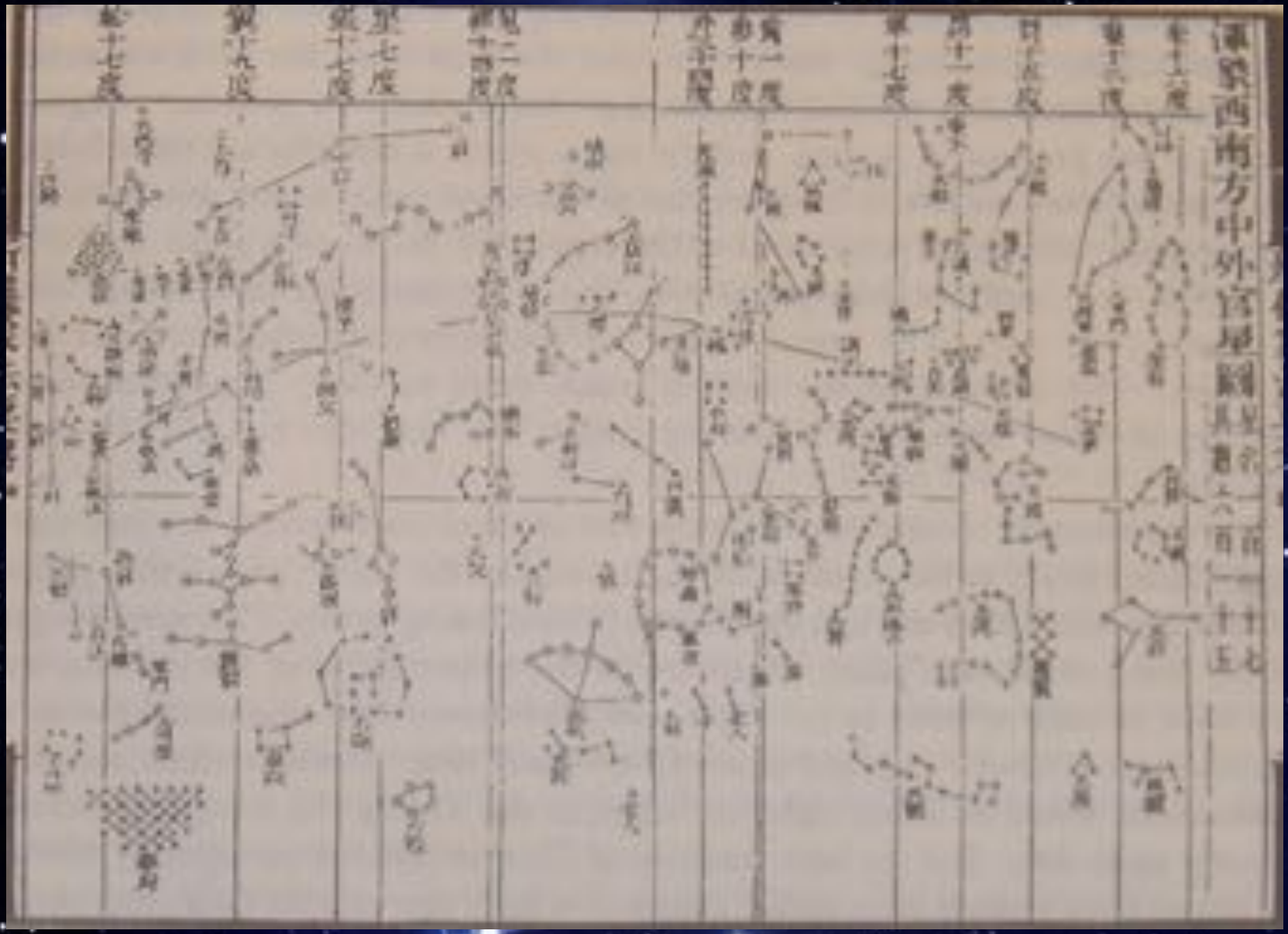
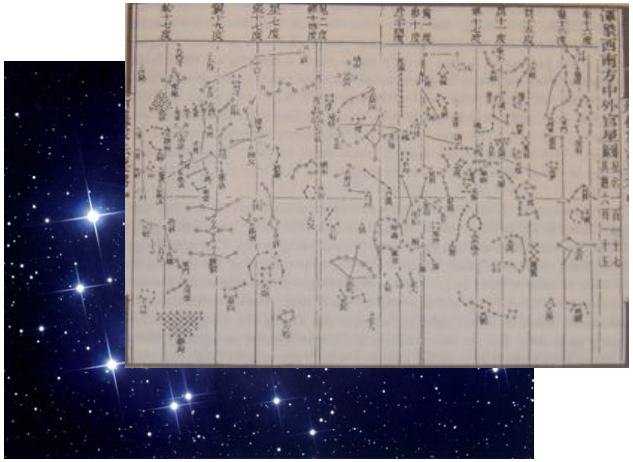
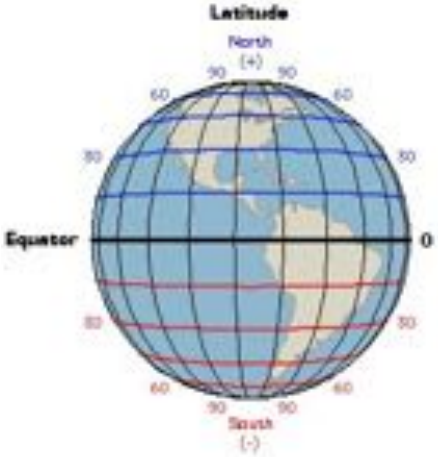



March 2013

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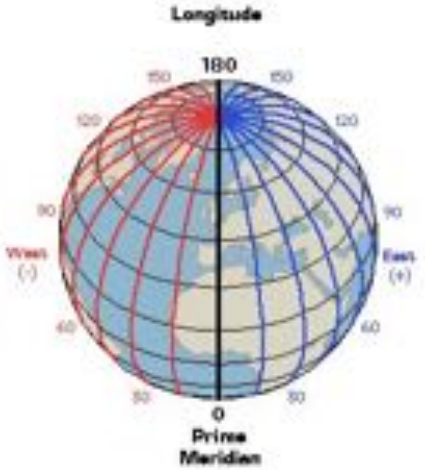
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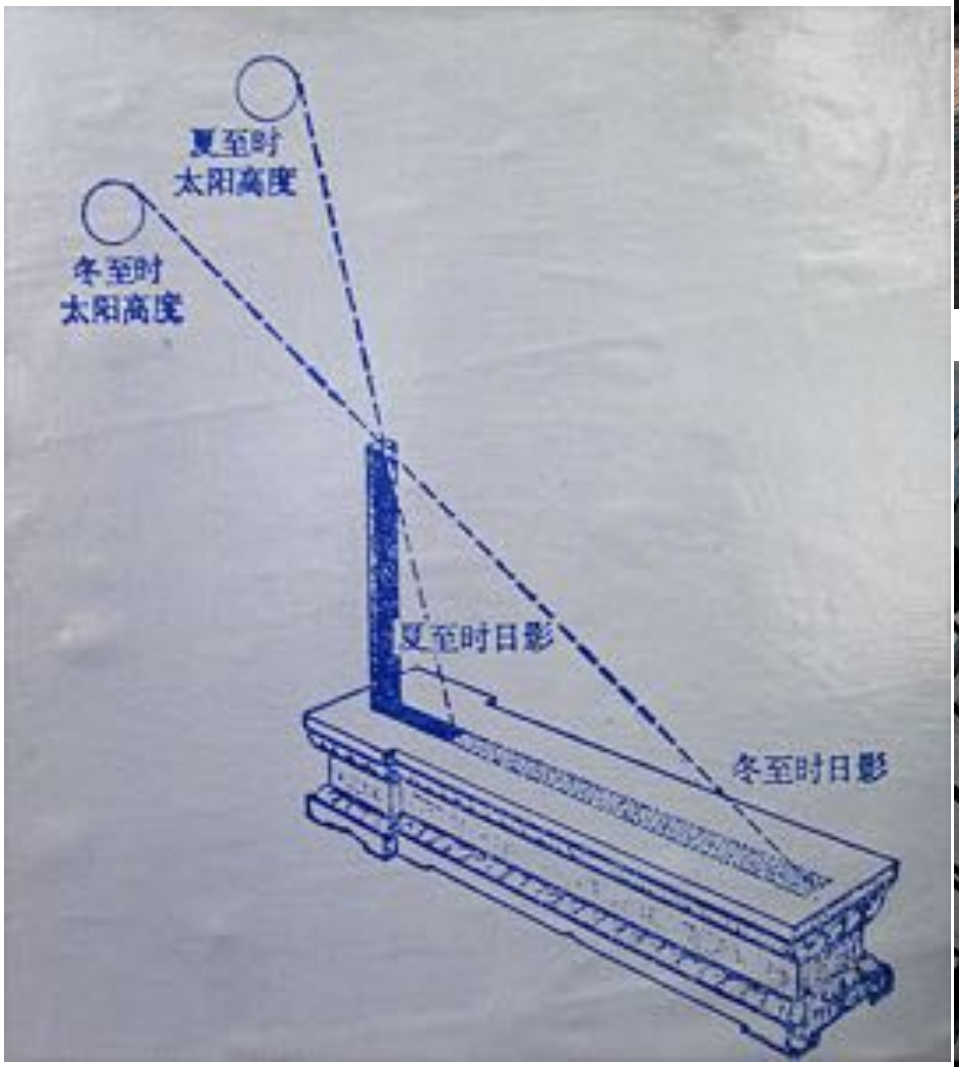
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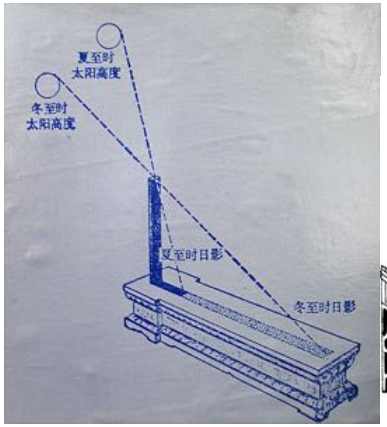
冬至时日影


March 2013

Time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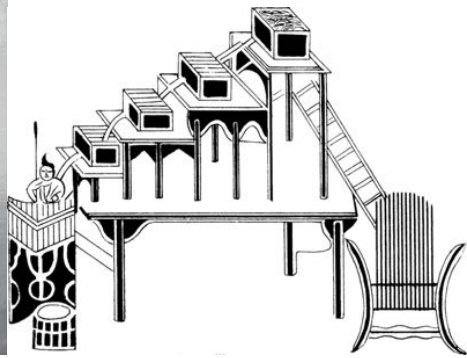
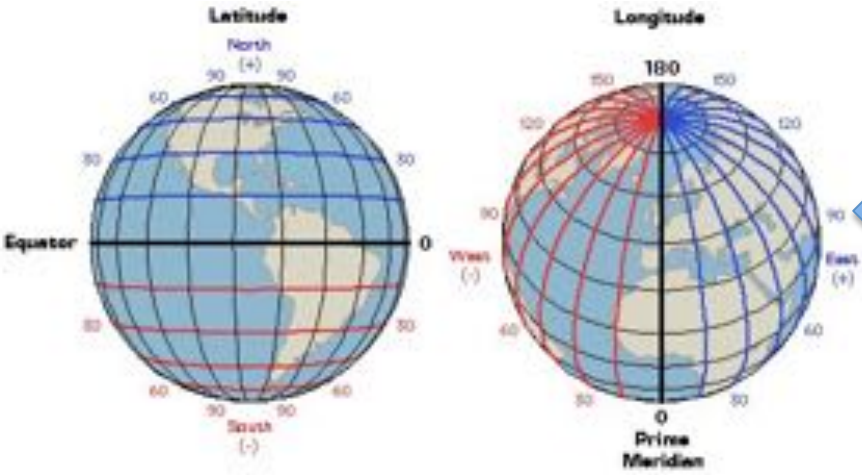
冬至时日影




Latitude
North
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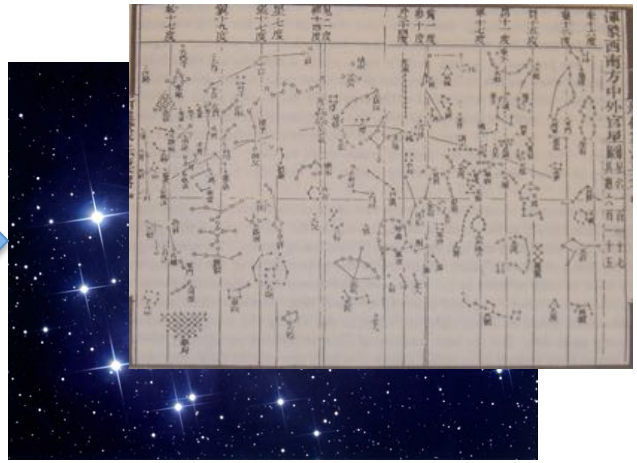
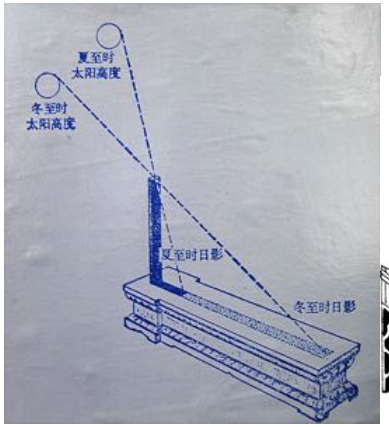
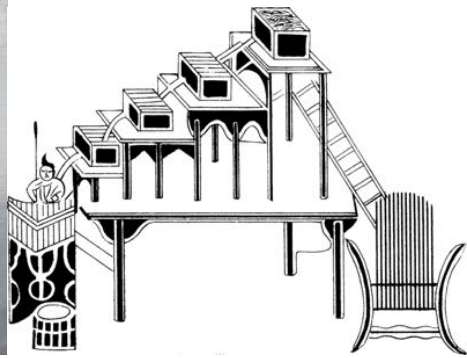
Space

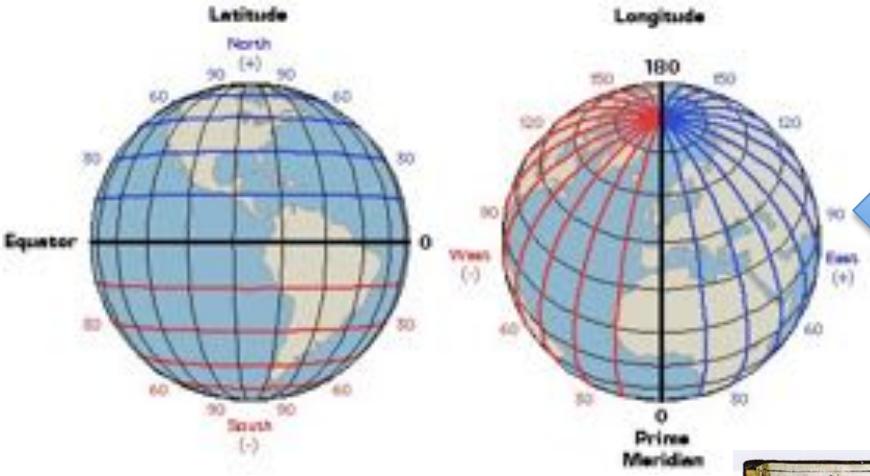


Ephemeris table from the Pepysian Library, Cambridge University.

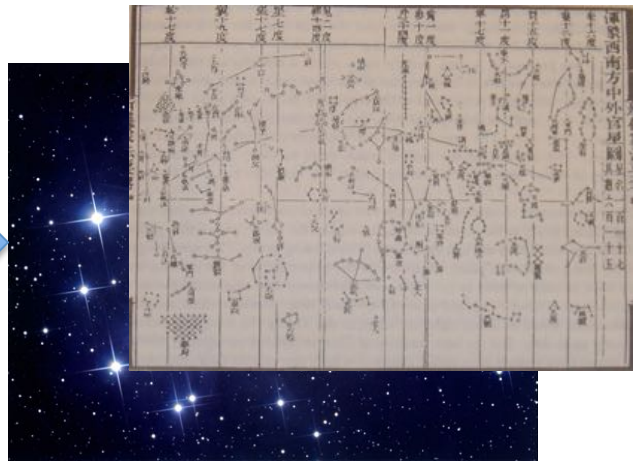
Time







Space

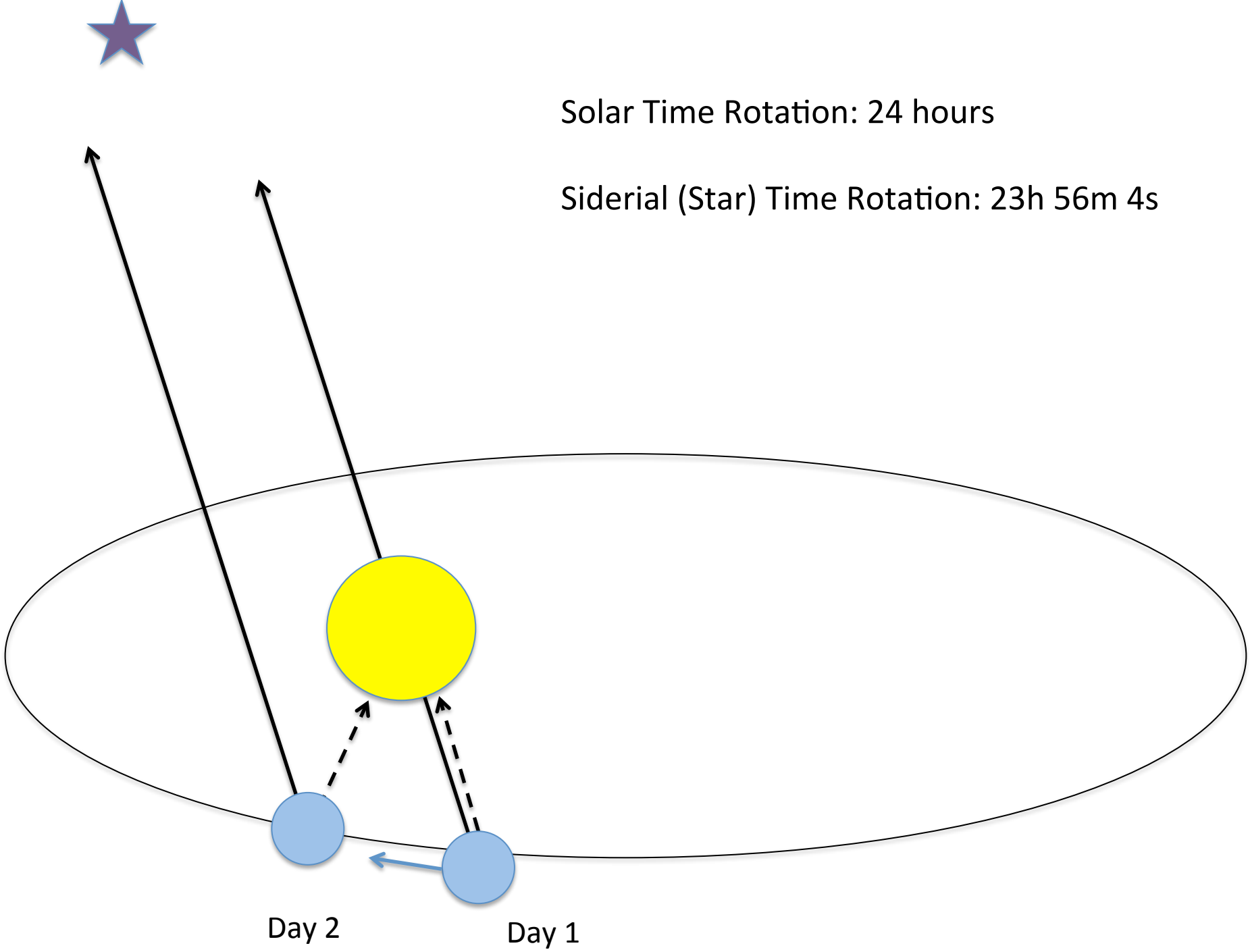


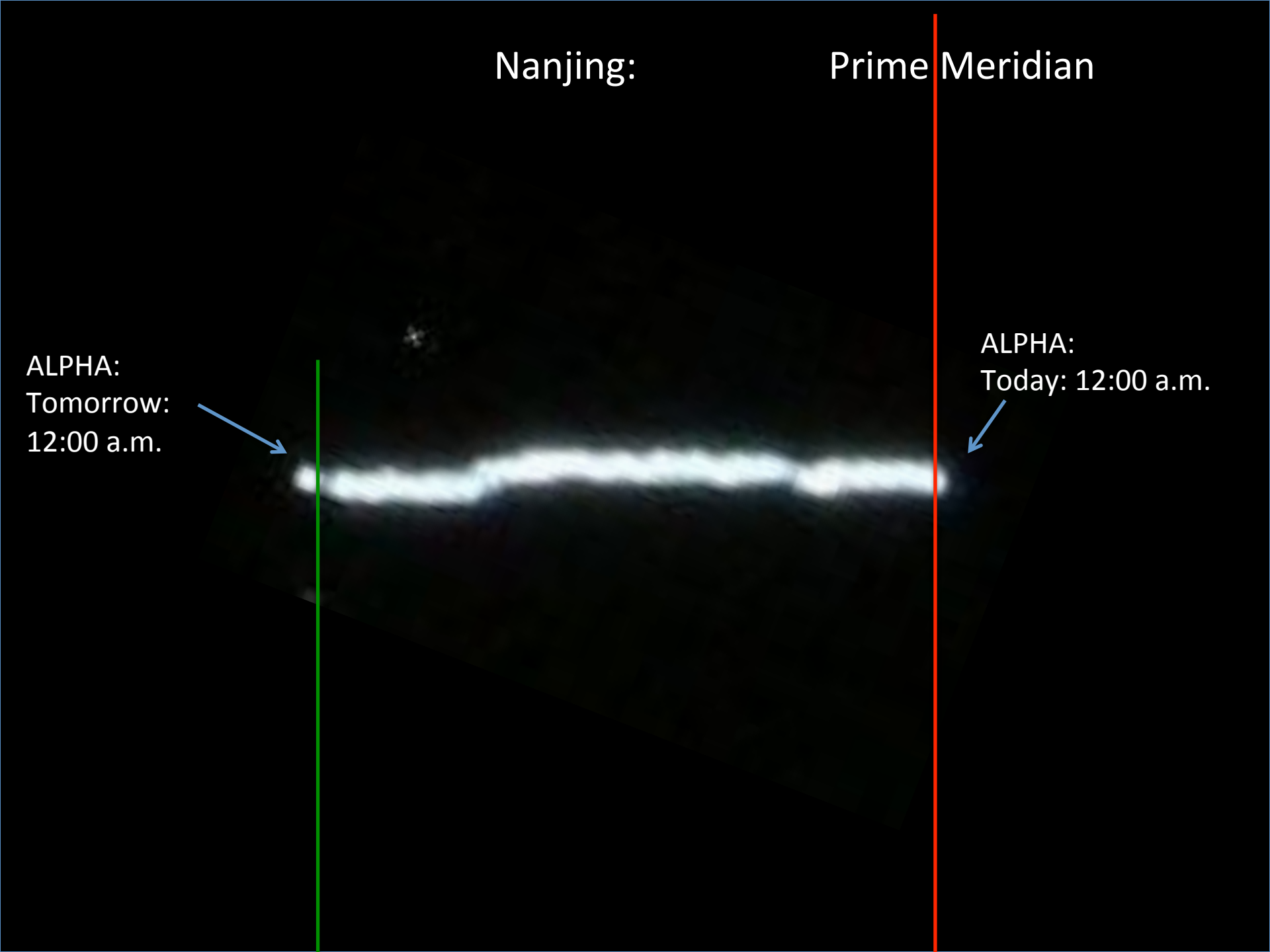
Ephemeris table from the Pepysian Library, Cambridge University.

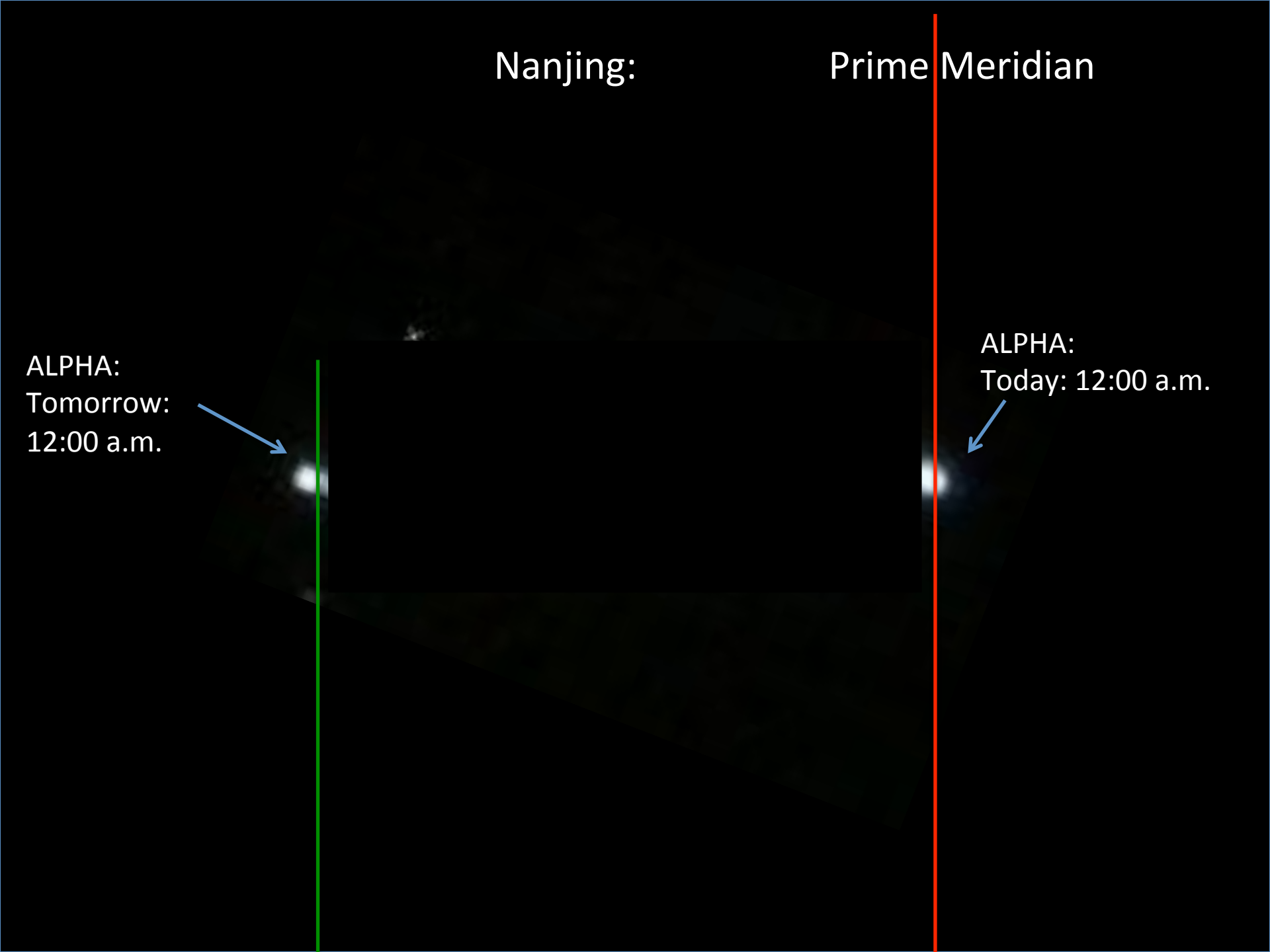
Determining Longitude by Lunar Eclipse

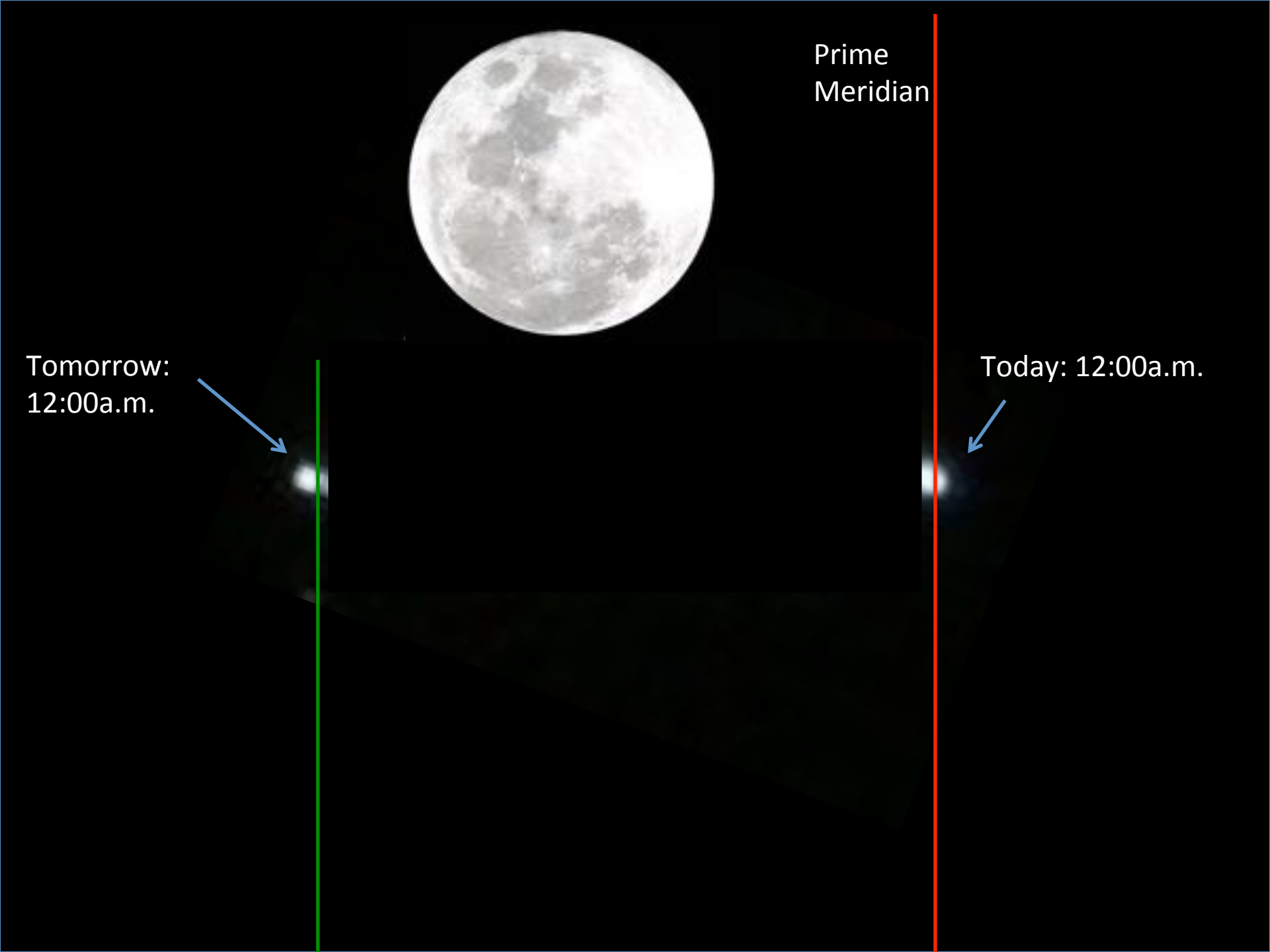
Solar Time Rotation: 24 hours

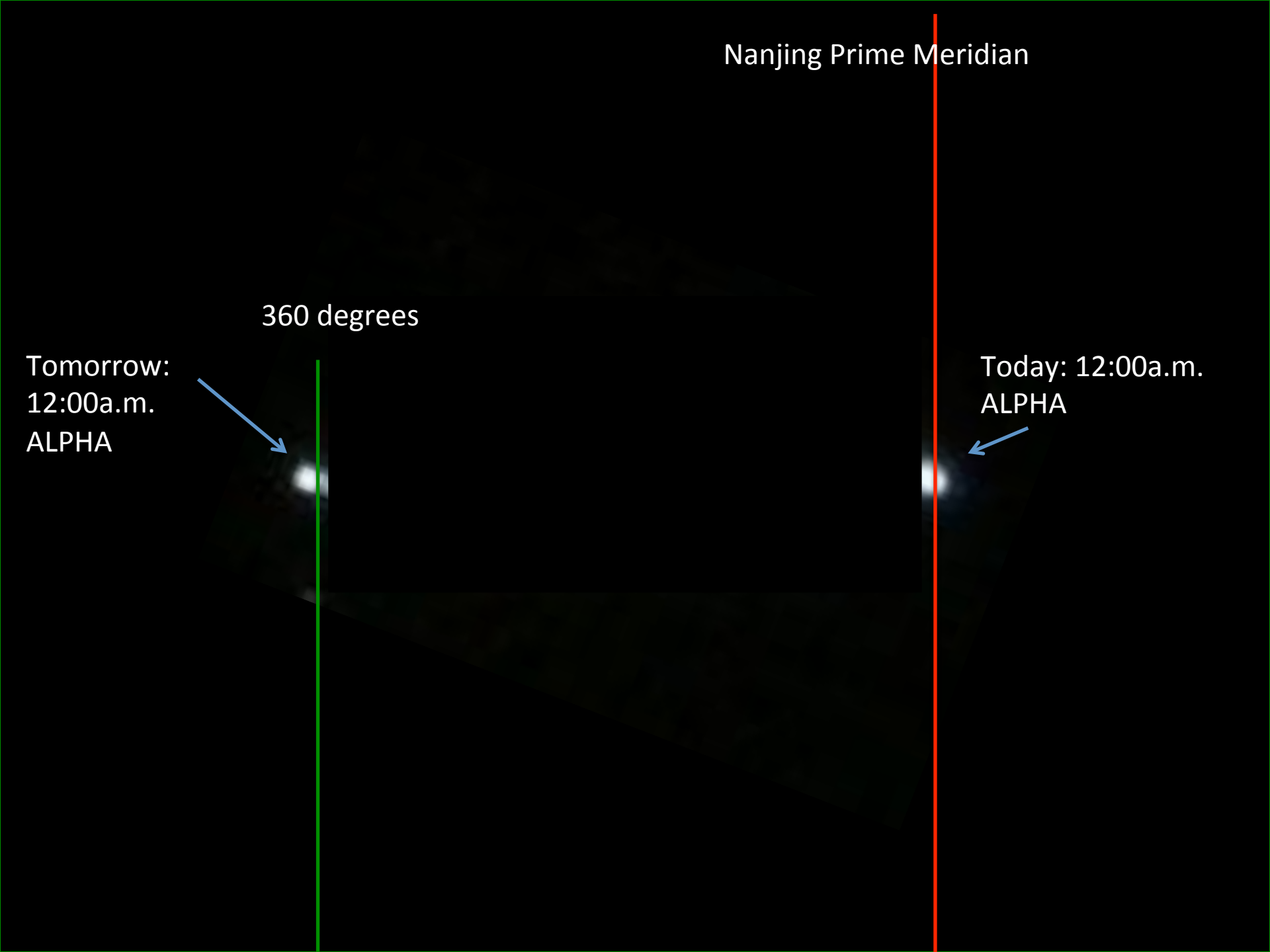
Siderial (Star) Time Rotation: 23h 56m 4s

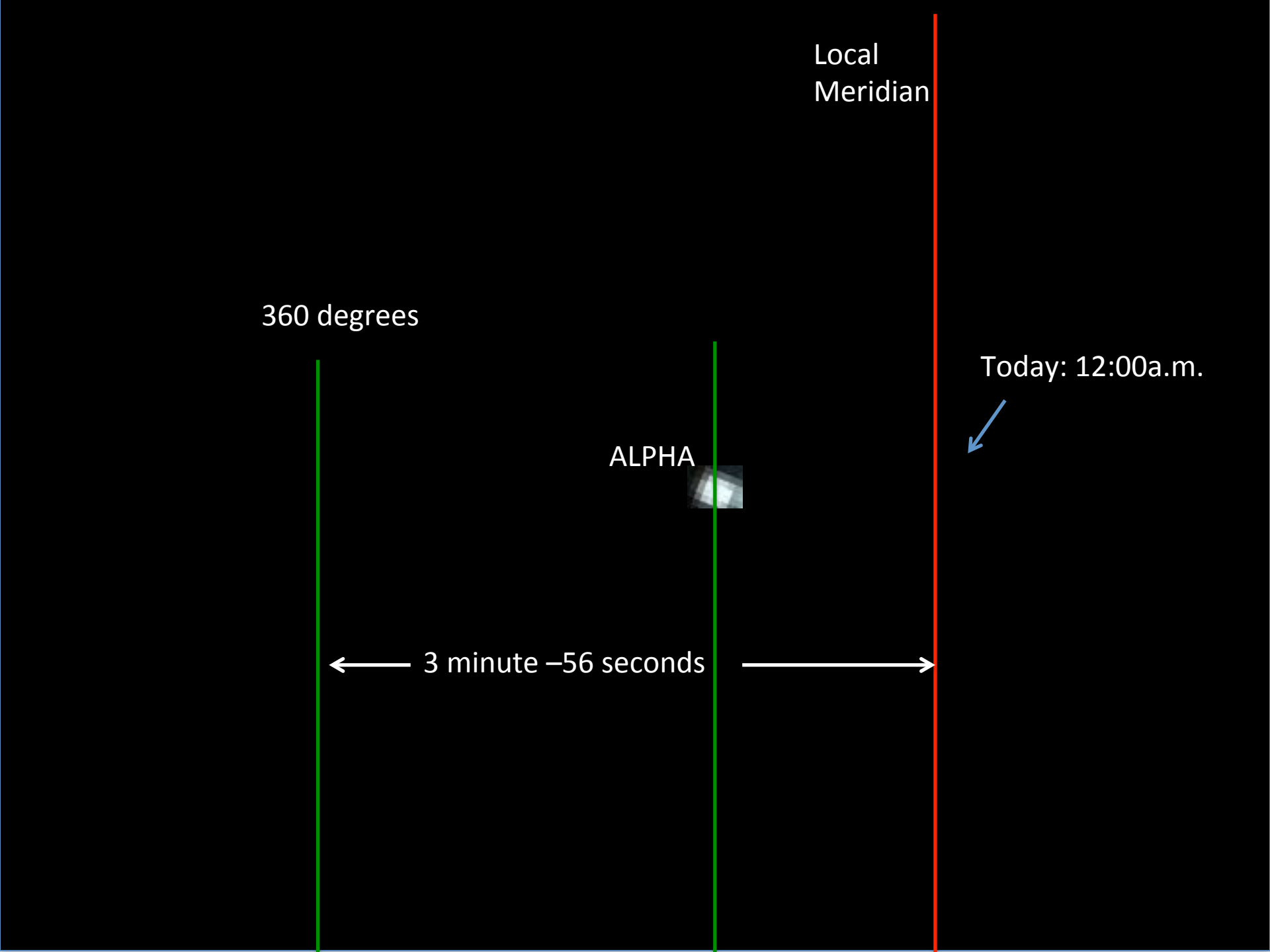


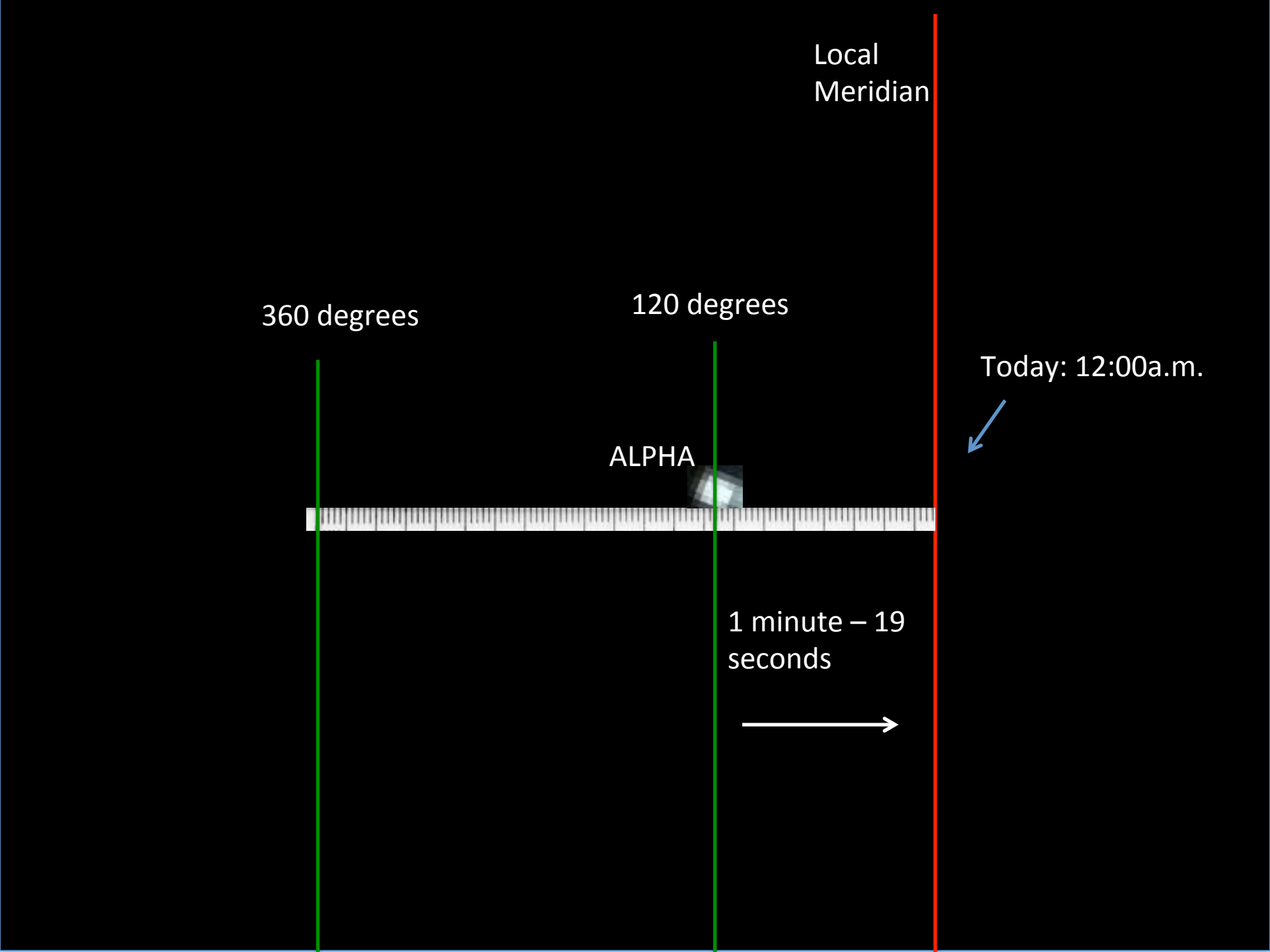

Nanjing:
Prime Meridian
ALPHA:
Tomorrow:
12:00 a.m.
ALPHA:
Today: 12:00 a.m.


Nanjing:
Prime Meridian
ALPHA:
Tomorrow:
12:00 a.m.
ALPHA:
Today: 12:00 a.m.


Prime
Meridian
Tomorrow:
12:00a.m.
Today: 12:00a.m.


Nanjing Prime Meridian
360 degrees
Tomorrow:
12:00a.m.
ALPHA
Today: 12:00a.m.
ALPHA


Local
Meridian
360 degrees
Today: 12:00a.m.
ALPHA
3 minute –56 seconds


Local
Meridian
360 degrees
120 degrees
Today: 12:00a.m.
ALPHA
1 minute – 19
seconds

Ancient Maps & Celestial Navigation

by Daniel Fisher

Holland Professional Club: November 15, 2013