

## ASTR 308 "Into the Final Frontier"

The Discoverers: BOOK VIII

### 1. In "A World of Oceans"

- (a) What did Vasco Nunez Balboa "discover"? What did he name it? What was his fate?

Balboa was the first Spaniard to "discover" the Pacific Ocean. He hiked over land based upon a statement made during a squabble over gold. He named it the "Southern" Sea. Balboa was captured by the next installment of Spaniards as a traitor who had usurped power from the previous governor (who was unable to govern the natives). He was hung.

- (b) What was the main assignment that Magellan undertook? What year did he set out to sea and which nation sponsored the voyage? What was the political relationship between Portugal and Spain at this time regarding this voyage?

Magellan was conscripted by Spain to find the sea passage to the Spice Islands by sailing westward. He set sail on September 20, 1519. Even after the Treaty of Tordesillas, the Portuguese and Spanish in competition for the lands and goods of the East. There was great distrust and suspicions. In fact, it is suspected that the Portuguese sabotaged Magellan's mission by shorting the food and other supplies on the ships.

- (c) Once Magellan's first goal was accomplished, what *geographical* "surprise" was awaiting him? From where did the name "Pacific Ocean" derive? What was Magellan's fate before he could circumnavigate the globe?

After finding the sea passage to the open ocean, Magellan and his crew were met with the vast open Pacific Ocean, more than three times more ocean than they had expected to cross. He named it the Pacific because they had no storms and very calm weather the entire voyage. On the small island of Cebu, Magellan was killed trying to save his men over a squabble with the Cebu king.

- (d) Describe the return of his men to Spain (how long a journey? Did they circumnavigate the globe? How many survived out of how many departed?)

Three years less 12 days after setting sail, 18 of Magellan's original 250 man crew returned to Seville, Spain. They had circumnavigated the earth for the first time ever!

## 2. In "The Reign of Secrecy"

- (a) Provide at least three examples (different nations) of the attempts to keep the knowledge of sea routes as national secrets.

(any 3 of the following will do) 1. King Manuel of Portugal had decreed the death penalty if anyone transported a chart of any voyage out of Portuguese territory (including India). 2. The Spanish maintained a lock box containing the maps and charts that could be opened only by two keys held by different people. They had created a single master chart in order to circumvent falsification of the knowledge. 3) The Roman government made it a capital crime for a citizen or anyone else to have possession of a map. 4). The British must have had a secret lock box as well- and in the case of Sir Francis Drake's voyage, the charts never materialized throughout history.

- (b) Provide a few of the main reasons that these routes and the knowledge of the distant lands were kept secret.

Boorstin says "secrecy breeds monopoly" and "monopoly breeds secrecy". The point is that this knowledge provided (1) economic power, (2) political power, (3) and the ability to maintain those powers.

- (c) What was the policy of the Roman Empire regarding maps?

As mentioned above, it was a capital crime for a citizen, freeman, slave, or subject to possess a map of any kind.

- (d) Describe the impact of the advent of the printing press with regards to the attempted secrecy policies of nations? What "rediscovery" was probably partially responsible for the beginning of "professional map making"?

The printing press mass produced maps, whether correct or incorrect. It had the effect of opening the "secret" knowledge of the maritime powers to all people. The rediscovery of Ptolemy was reproduced thousands of times over the next century and in several languages. The errors in Ptolemy's geography spurred enterprising men to develop and print more accurate maps.

## 3. In "Knowledge Becomes Merchandise"

- (a) What was the downside of the printing press?

Both the truths and the fallacies were printed side by side with equal influence on what was accepted knowledge. In many cases, incorrect knowledge was disseminated far and wide and had the same "authority" as did correct knowledge. (kind of like the Internet!)

- (b) Who was Mercator and what was his great contribution to how lines of longitude and latitude were applied that made navigating the seas much more straightforward? What was it that first appeared on his maps of the world?

Mercator seized the opportunity of the press to influence the creation of accurate maps. His greatest contribution was the Mercator projection, in which a spherical surface could be laid out flat such that all lines of longitude remained parallel. This meant that the direction of a ship's course remained a straight line on an even grid and that the angle of the direction with respect to longitude did not change as latitude changed. He was the first to show the continent of America on his maps.

- (c) Who was Ortelius and what was his "business"? Due to his works, what was the outcome for continued contributions of Ptolemy's worldview to making maps of the earth?

Ortelius was an astronomer mathematician who first understood that a great deal of money could be made by selling maps. He traveled far and wide to gather the latest and most accurate data. His maps were a great commercial success and he was viewed with great respect. His maps replaced Ptolemy's in their entirety.

#### 4. In "The Ardors of Negative Discovery"

- (a) Provide the reasons why the European belief in a great southern continent was so strongly adhered to?

The notion goes all the way back to Aristotle that the universe is characterized by symmetry and balance (a sense of beauty, if you will). One belief (from the Greeks) was that the earth had to be balanced (by this time people realized the earth rotated on its axis every 24 hours). Boorstin gives the reason as "the universal love of symmetry" adhered to by humans.

- (b) Briefly describe Cook's first voyage. That is, what was the first task he was commissioned to perform and then what was he supposed to do? What nation sponsored his voyage?

Departing from the sponsor state England in 1768, Cook was to first to observe the transit of Venus across the sun in Tahiti. Then he was to sail south and in an attempt to chart the Great Southern Continent.

- (c) There was something unique about Cook's second voyage that gives it a very special place in history. What was the sole focus/mission of Cook's second voyage? Compare and contrast how this differed from all previous sea voyages that came before it. What was the outcome of this voyage?

Cook's second was unique in that it was the first voyage commissioned 100% for scientific discovery, having no political or economic objectives. Again, his mission was to find and chart the extent of the Great Southern Continent. All previous voyages (with a little bit of an exception to Cook's first voyage) had been for economic and political gain. Cook discovered that in fact there was a southern continent it was virtually a polar continent and was impossible to reach since it was surrounded by ice fields even in the southern winter.

- (d) What years were Cook's first two voyages? What major event in the history of the USA did they barely proceed? What was the name of Cook's flagship on his famous second voyage? (I ask this because it will later connect with the space program).

Cook's first voyage began in 1768. His second voyage was in 1772. These voyages were both within a decade of their signing of the Declaration of Independence in America (1776). The Resolution was the flagship and the Adventure was the second ship. (His ship on the first voyage was the Endeavor, which is the name that Apollo astronaut Dave Scott named his ship when he went to the moon on Apollo 15.)

- (e) What was the purpose of Cook's third and final voyage? What was Cook's fate on this voyage (where did it take place)?

Cook's third and final voyage was to find a northern passage around the North American continent. Sailing to Hawaii after having failed to locate a passage, Cook was killed in a squabble that paralleled the death of Magellan.