

# Free research paper about the development of navigational tools in western europe...

[Parts of the World](#), [Europe](#)



## **Annotated Bibliography**

Cline, Duane A. *Navigation in the Age of Discovery: An Introduction*. Rogers, AR: Montfleury, 1990.

This book provides an analysis of the tools used by navigators during the early days of the discovery age. These includes the challenges faced by the early navigators in their attempt to understand the rough waters and overcome the challenges of a rough and dangerous voyage..

Koeman, C. *Flemish and Dutch Contributions to the Art of Navigations in the XVIth Century*. Lisboa: Instituto De InvestigaçãO Científica Tropical, 1988.

This book provides some of the major contributions of the Dutch to the development of various navigation instruments that are still in use today. It begins with an analysis of the early navigation instruments and their modification to provide better services for the navigators.

Fritze, Ronald H. *New Worlds: The Great Voyages of Discovery, 1400-1600*. Stroud: Sutton, 2002.

The discovery of the New Worlds is greatly discussed in this book and the changes it brought to the navigation history. The book provides an insight on how navigation enabled the discovery of new lands and how this impacted the history of navigation in Western Europe.

Nijjer, R. I. S. " Marine Navigation in the 21st Century: A Shift to Precision Navigation." *Journal of Navigation* 3, no. 45, 395.

This journal discusses some of the major technological innovations that contributed to navigation perfection. It provides a list of some of the instruments used in navigation in the 16th century and its impact in navigation.

<https://assignbuster.com/free-research-paper-about-the-development-of-navigational-tools-in-western-europe-pre-16th-century/>

Szostak, Rick. " Modern Europe Inland Navigation and Economic Development in Nineteenth-Century Europe. Edited by Andreas Kunz and John Armstrong. Mainz: Verlag Philipp Von Zabern, 1995. Pp. 330. DM 58, Paper." The Journal of Economic History 54, no. 87, 523.

**This journal also discusses some of the major contributions of urbanization, commerce and discovery in the navigation innovation.**

Introduction

At the beginning of the fifteenth century various European states took an interest in taking on global explorations that marked the beginning of a new world history. This was the age of discovery when Europeans ventured into places like America, Africa and the Far East. Boats were used by the explorers to move from one place to the other. This era marked the beginning of navigation which is assumed to have started between 3000-3500 B. C. This paper takes into account the definition of navigation and development of navigation before the sixteenth century. Navigation changed immensely with time calling on navigators to adapt to the changes in the tools used. Europeans had many reasons that made them explore.

Commerce was one of the key driving forces for navigation in Europe. This was brought about by major changes in the 14th century where increase productivity and urbanization led to commercial activities. This later prompted the emergence of capitalism that provided an impetus for voyage trade across oceans for economic purposes. Colonies founded in the New World provided a good ground for mercantilism. The other reason that increased navigation activities in Europe is technological factors brought

about by discovery of new land that prompted the creation of superior navigation tools.

## **Beginning of navigation**

Navigation is the skill of moving from one place to the other. During the beginning of 3000 B. C, the first records of boats that had the ability to carry trading goods were recorded. The boats were large enough to enable the transit of these goods through the various points the explorers passed through in their expeditions. The first navigators stayed close to the shorelines to enable them to use landmarks as navigation points. These first navigators also had to travel during the day as they relied heavily on the use of sight of landmarks to mark their positions. During the night, they found safe harbors to sleep during the night. With time, the navigators found a way to create rudimentary charts that provided a list of directions with the use of crude drawings showing major landscapes. These charts also pointed out some of the dangerous places like the presence of sandbanks and rocks or reefs that made the journey dangerous. The documentations of early navigations also show that the experienced mariners and navigators made use of star constellations to plan for their journey in advance using the east to west sun movement. Dead reckoning was the form of navigation used by the navigators in the early days as they had to approximate the time it took them to move from one point to the other as they lacked the accuracy to determine their position using longitude. In order to make an approximation of the distance travelled, the navigators had to multiply the time spent to sail by the speed the vessel was moving. These were crude calculations as it

was difficult to provide an accurate time as it was measured using a sandglass while, on the other hand, speed was measured by observing the movement of seaweed or wood as they passed by the hull of the boat.

## **Instruments used in early navigation**

The early navigators utilized various navigation tools to enable them have a successful voyage. One of these instruments was the sounding reed also called the sounding weight that was in existence in around 1500 B. C. the device was used to determine the coastal water depths. It combined the use of depth soundings, the position of the sun and the stars and the rose of the wind. the main challenge with these instruments is that the navigators had to always second guess where they were especially when they could not see land.

The first Mediterranean navigators to manage a voyage from one coast to the other during the night were the Phoenicians. They utilized the use of the first navigator aid tools like the bonfires on mountain tops or on top of huge rocks to enable them pinpoint locations. Most of the other successful explorations of the oceans were possible through navigational mistakes that enable the navigators to make new discoveries about navigations. Some of these mistakes included miscalculations of speed or a wind blows off the ship off course. One such person to benefit from miscalculations was Christopher Colombo whose ship discovered the Americans. This was due to his lack of competence in latitude calculation. He thought that he was in India; hence, the presence of the names Indians and West Indies.

The Italian compass was created in 1570 and had an inner bowl and a

compass that has a gimbal brass ring mounted on top of it. Its work was to reduce the effects of motion in the sea. The diamond-shaped iron needle on the underside divided the compass face into thirty-two different compass points. The compass had decorations on the north and east end and were present up to the nineteenth century. The Europeans focused on decorating the east side as they believed it was the direction to the Holy land. The other instrument used by navigators is the sextant that has a sixth part of a circle used for astronomical uses since the 16th century. Captain John Campbell developed the instrument in 1756.

The Persian Astrolabe 1660 has mathematical representations through its likeness of heaven. Muhammad Mahdi al-Khadim al-Yazdi developed this device and it was helpful in solving astronomical issues and positioning the stars and planets depending on the time, date and latitude. The other device is the cross staff circa 1700 crafted by Thomas Tuttell. The device was useful in measuring of the sun and polar altitude using right-angle properties of a triangle. In order to fully utilize the device, the captain adjusted the position of the staff on scale in terms of minutes and degrees. The octant was created in 1760 and is also known as Hadley's quadrant. Hadley also demonstrated the use of the octant, but the principle for creation was done by Sir Isaac Newton. The other device used by navigators is the Spanish or the Portuguese astrolabe made in 1588 that was developed by Arabic Astronomers. A similar device was used by Christopher Colombo during his expedition of the new world. The mariner's quadrant made between 1720 and 25 helped in the development of measuring angles of a star above the horizon or on a hill top level.

Apart from the instruments mentioned above the navigators from Europe also required ships and sails to move them from one point to the other. The coastal waters of Europe and Atlanta were rough, and this gave them a glimpse of what the oceanic waters would be like when they set sail. The Europeans modified the Chinese Stern to make a ship with a combination of square and lateen sails that could enable them navigate the rough waters. These also enabled them to utilize any time of wind that arose during their sails. The Europeans also had the ability to advance against a strong wind through sailing across enabling them to navigate through strong winds working against them. Some of the first ship to be utilized by the navigators was the caravel with distinctive admirable features including a gentle bow and stern castle that gave it a strong end against the wind. As the time went by, the caravel underwent various changes that enabled it to gain speed and navigate through tough waters. For example, the caravel ships used by Columbus named Nina and Pinta were praised for their great speed, its ability to maneuver and its safety abilities.

The knowledge of winds and various current in the rough waters was also important for the early European navigators. They had to understand the earth's geography, though it was difficult due to lack of knowledge and longitude and latitude calculation. However, with the recurrent venture into the ocean, the European Mariners and navigators were able to compile a vast knowledge of the earth's landscape on charts that could be used as reference points by other navigators going through the same routes. With time and experience, the European mariners and navigators were in a

position to reach various coast lines in different parts of the world with manageable difficulties.

## **Major voyages by European navigators**

Prince Henry of Portugal was able to navigate and oversee the conquest of Ceuta port in Morocco in 1415. He was also known as the Prince Henry the Navigator. This led to the establishment of strategic economic locations in Ghana and other coastal parts of Africa. The other navigator is Vasco Da Gama departed from Lisbon in 1497 set for India. He had a four fleet ship with a cargo of pepper and cinnamon. However, his voyage was not successful as he encountered many problems. He went back to Portugal with only half of his crew alive. After his unsuccessful voyage to India, other European countries took an interest and the English and Dutch sent more expeditions on various trips.

## **Conclusion**

Navigation in the pre-16th century in Western Europe was successful and recorded immense successes due to the demand for successful voyages. Some of the key reasons for the immense investment in navigation included commerce, political superiority and acquisition of colonies. Many of the countries in Western Europe wanted to have an upper hand in the investment of navigation tools and ships. Some of the key instruments required for successful navigations were not discovered until the demand for speed and safe navigation became paramount. As such, these tools evolved over time to create a better traveling tool for the navigators. These instruments and ship enabled navigators to go through various voyages



safely. With time, the navigators were in a position to create charts that could be used to pinpoint locations and some of the dangerous places during a voyage. These innovations helped the navigators understand the waters, and know how to navigate fast and safely through the rough waters.

## **Bibliography**

Cline, Duane A. *Navigation in the Age of Discovery: An Introduction*. Rogers, AR: Montfleury, 1990.

Fritze, Ronald H. *New Worlds: The Great Voyages of Discovery, 1400-1600*. Stroud: Sutton, 2002.

Koeman, C. *Flemish and Dutch Contributions to the Art of Navigations in the XVIth Century*. Lisboa: Instituto De Investigação Científica Tropical, 1988.

Nijjer, R. I. S. " Marine Navigation in the 21st Century: A Shift to Precision Navigation." *Journal of Navigation* 3, no. 45, 395.

Szostak, Rick. " Modern Europe Inland Navigation and Economic Development in Nineteenth-Century Europe. Edited by Andreas Kunz and John Armstrong. Mainz: Verlag Philipp Von Zabern, 1995. Pp. 330. DM 58, Paper." *The Journal of Economic History* 54, no. 87, 523.