

IMPACT OF VOYAGES, DISCOVERIES, AND RENAISSANCE ON GEOGRAPHICAL THOUGHT

Component-I(A) - Personal Details

Role	Name	Affiliation
Principal Investigator	Prof. Masood Ahsan Siddiqui	Department of Geography, Jamia Millia Islamia, New Delhi
Paper Coordinator, if any	Dr. Taruna Bansal	Department of Geography, Jamia Millia Islamia, New Delhi
Content Writer/Author (CW)	Dr. Taruna Bansal	Department of Geography, Jamia Millia Islamia, New Delhi
Content Reviewer (CR)	Dr. Janki Jiwan	Assistant Professor Department of Geography, Shaheed Bhagat Singh College, University of Delhi
Language Editor (LE)		

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IMPACT OF VOYAGES, DISCOVERIES, AND RENAISSANCE ON GEOGRAPHICAL THOUGHT

Taruna Bansal

1. Introduction

The sudden increase of explorations and voyages in Europe in the fifteenth century is regarded as one of the major turning points of history. This happened as Europeans started discovering the earth surface through the sea. Their main motive was to find trading partners, new goods and even new routes for trade, especially by sea. The age of exploration is also known as the age of discoveries and it is said that it initiated in the early fifteenth century and lasted till the latter half of the seventeenth century. The most important characteristic of this age of that unlike Chinese explorations these voyages was planned and supported by the local governments or by big merchant companies in the search of new sea routes; thus were directed to the open oceans.

There were two motives behind this exercise. The first being the zeal to spread Christianity as a faith throughout the world and secondly, to restock the supplies of precious stones and metals as well as spices in Europe. In addition, some explore went into the open waters to simply know the unknown. Whatever, the reason or motive be, this age of exploration or discovery had a long-lasting influence on the geographical knowledge. This is because the knowledge gained through these experiences helped in the advancement of geographical thinking over time. Moreover, this age can be seen as a bridge between the Medieval and the Modern periods along with its contemporary Renaissance movement.

2. Birth of the Age of Explorations

Many European nations were looking for new trade routes, especially for spices and silk. When the Ottoman Empire took over Constantinople in 1453, Europe suffered a setback as it blocked important trade routes like North Africa and the Red Sea for Europe, thus limiting their trade. The Portuguese, Spanish, Italians and others have been plying the Mediterranean Sea for long but the first of the journey towards wider exploration came from Portugal. They moved beyond the known routes and ports. The first among them was *Prince Henry the Navigator*. He started with voyages to the Canary Islands along the African coast and reached the Madeira Islands in 1419 and the Azores in 1432. He even established the first institute of geographic research at

Sargres near Cape St. Vincent in 1418. In 1434 under the captainship of Gil Eannes one of his ships crossed the Equator only to find that water was not boiling and nobody turns black; a myth was broken. In 1441, they reached as far as today's Mauritania. Between 1444 and 1448 numerous voyages were sent to southern parts of Africa and these brought positive results; as Guinea coast and Cape Verde Islands were discovered in 1455-56.

Over the next few decades, they travelled farther south along the African coast and reached the Cape of Good Hope in 1490 under the able leadership of *Bartholomew Dias*. *Vasco da Gama*'s great voyage took place between 1497 and 1499 and he discovered India in 1498; less than a decade later. In 1511 Portuguese reached Malacca and established their base. Their explorations continued as they reached Japan in 1542, Macao in 1557 and Taiwan (Formosa) in 1590.

Due of so many discoveries the Age of Discoveries became a very important part of History as now it was also looked upon as a transition from Middle Ages to the Modern era. The most important developments that occurred during this period which needs to be examined are:

- a) Discovery of New World or Lands
- b) Scientific and Technological Development
- c) Improvement in Cartography and map making

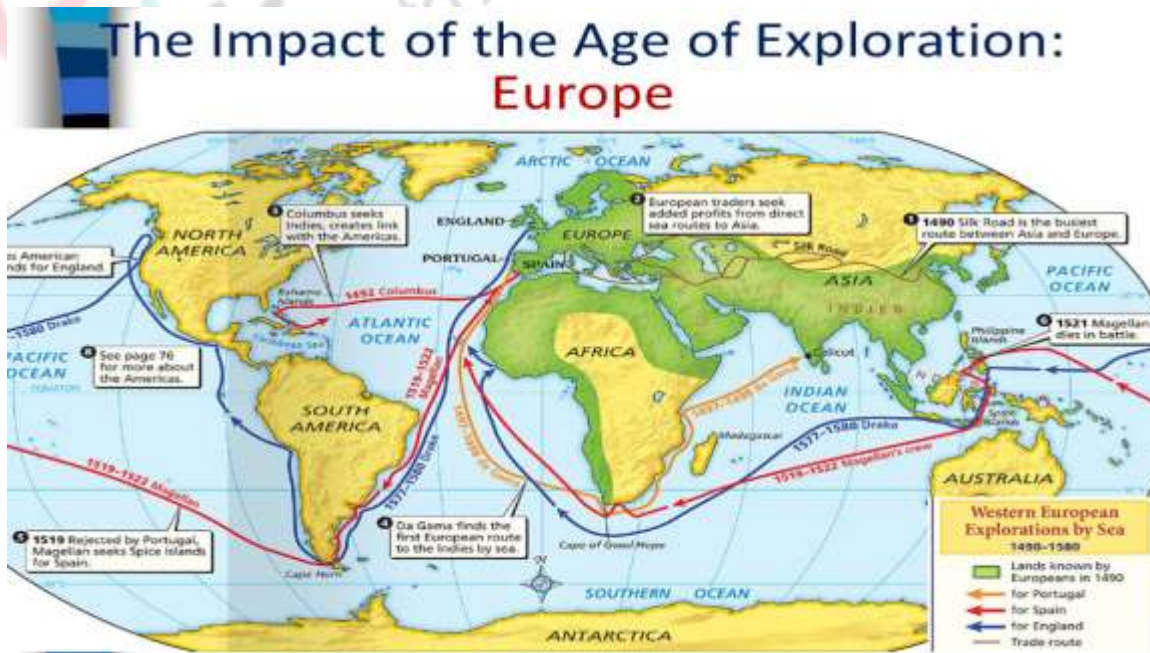


Figure 1: The Impact of the Age of Exploration

a) The Discovery of the New World:

During the early 15th century till the 18th-century European ships traveled around the world to search for new lands for trade. As Portuguese were exploring Africa, the Spanish also started dreaming of finding trade routes to the Far East. The first among them was taken by **Christopher Columbus** in 1492. In his first journey he went to discover India, instead reached the island of San Salvador (the Bahamas). His expeditions opened the door of the Americas to the Spanish. At the same time, the Portuguese also reached the New World when **Pedro Alvares Cabral** discovered Brazil. This resulted in a conflict between Spain and Portugal and to seize off this conflict the *Treaty of Tordesillas* was signed between them in 1494. This Treaty divided the world between these two countries; the dividing line was either 270 leagues west of the Azores or 370 leagues west of the Cape Verde. According to this, Portugal had exclusive rights on the lands right of the line while Spain had rights on the land left to it. Portugal, therefore, gained access to the entire Indian Ocean, while Spanish had open access to the entire New World west of the Atlantic (James and Martin, 1972).

Over the next few decades, British, French, and Dutch also started seeking new trade and sea routes. Among the most famous explorers of this period were- John Cabot, Yermak, Juan Ponce de Leon, Ferdinand Magellan, William Barents, Abel Tasman, Captain James Cook, Amerigo Vespucci, William Jansz, etc. The brief history of these explorers is presented in Table 1 and discussed hereafter.

Table 1
Explorers and the New Lands discovered by them in the Age of Discovery

S.No.	Name	Time	Nationality	Area explored
1	Prince Henry the Navigator	1394-1460	Portugal	Madeira Islands and the Azores
2	Bartholomew Daiz	1450-1500	Portugal	Cape of Good Hope
3	John Cabot	1450-1499	Italy	Newfoundland
4	Christopher Columbus	1451-1506	Italy	America
5	Amerigo Vespucci	1454-1512	Italy	America
6	Juan Ponce de Leon	1460-1521	Spain	Florida, USA

7	Pedro Alvares Cabral	1467-1520	Portugal	Brazil
8	Vasco da Gama	1469-1524	Portugal	India
9	Ferdinand Magellan	1480-1521	Portugal	Circumference of Earth
10	William Barents	1550-1597	Dutch	North Shores of Europe
11	William Jansz	1570-1630	Dutch	Coast of Australia
12	Abel Tasman	1603-1659	Dutch	Tasmania and New Zealand
13	Captain James Cook	1728-1779	Britain	Pacific Ocean

The explorers and discovers have been discussed in a chronological manner.

1. **Prince Henry the Navigator:** Prince Henry was a Portuguese prince who was also a patron of explorers. He sent a number of voyages to the southern part of African coast as is credited to have discovered Madeira Islands and Azores. He even established the first institute for geographic research at Sagres in 1418.
2. **Bartholomew Diaz:** Diaz was a Portuguese explorer who became the first explorer to round the southern tip of Africa; thus opening the sea route via Cape of Good Hope.
3. **John Cabot:** John Cabot was an Italian explorer. He was the first European to search for the North-West passage. John Cabot discovered the Island of Newfoundland in 1497.
4. **Christopher Columbus:** He was an explorer and trader from Italy who sailed across the Atlantic Ocean, to discover India so that trade could be done, instead of crossed the Atlantic Ocean and discovered the America on October 12, 1492.
5. **Amerigo Vespucci:** He voyaged and wrote about the America. He explored the east coast of South America between 1499 and 1502. His exploration journey along the eastern coastline of South America convinced him that new continents had been discovered. In 1507, this new continent was named as “America” after Vespucci’s first name.
6. **Juan Ponce de Leon:** He was a Spanish explorer famous for being the first one to reach Florida. He established the oldest European settlement in Puerto Rico and discovered the warm current Gulf Stream.
7. **Pedro Alvares Cabral:** He was a Portuguese navigator and explorer, who discovered Brazil (1500).

8. **Vasco da Gama:** He discovered the ocean route from Portugal to India. He was the first explorer who discovered and sailed directly from Europe to India, through Cape of Good Hope in Africa.
9. **Ferdinand Magellan:** Another Portuguese maritime explorer, Ferdinand Magellan (1480-1521), led the first successful attempt to circum-navigate the earth. He was the first to cross all the meridians of the globe. He becomes the first person to lead an expedition sailing westward from the Europe to Asia and to cross the Pacific Ocean.
10. **William Barents:** He was a Dutch navigator and explorer, a leader of early expeditions to far north. The Barents Sea is named after him.
11. **Willem Jansz:** He was a Dutch navigator and colonial governor. He is known to the first European who landed in Australia.
12. **Abel Tasman:** Abel was one of the greatest Dutch navigators and explorers. He was the first to travel in Australian and South Pacific Waters. He discovered New Zealand in 1642.
13. **Captain James Cook:** He was an English navigator and cartographer. He made three voyages to the Pacific Ocean, accurately charting many areas and recording several islands and coastlines on European maps for the first time. His most notable accomplishment was the discovery of the east coast of Australia.; he even discovered the Hawaiian Islands.

The Age of Exploration, which was rooted in new technologies and ideas, came to end in the early seventeenth century. Growing out of the Renaissance and these included advances in cartography; navigation is shipbuilding, besides the discovery of new lands. Obviously, geography was the most benefitted field of discipline during this period.

Although the travels had become very popular in Arab period itself, a number of other developments gave impetus to the explorations; they included-

- a) Colonization
- b) Use of Magnetic Compass
- c) Improvement in the art of navigation



Figure 2: T-O Map



Figure 3: Ancient Globe

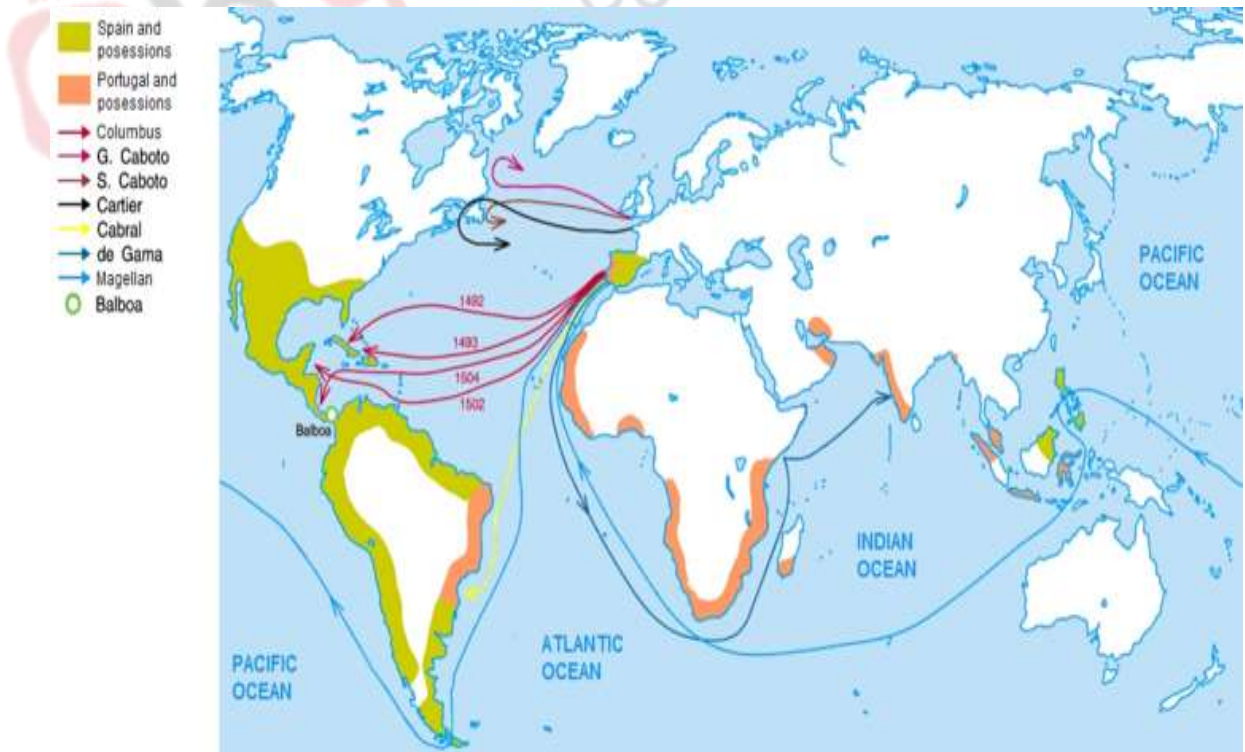


Figure 4: Sea Routes used by Voyagers

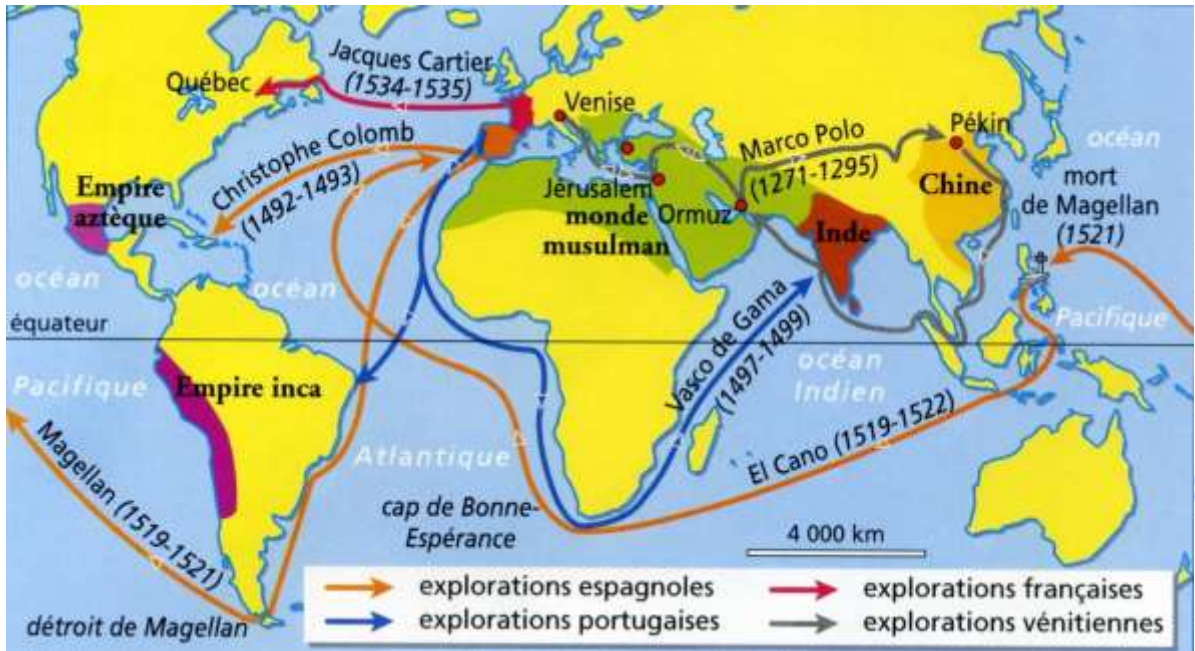


Figure 5: Different Countries Voyagers and their Navigation Routes



Figure 6: Ferdinand Magellan's Circumnavigation of the World (1519-1522)

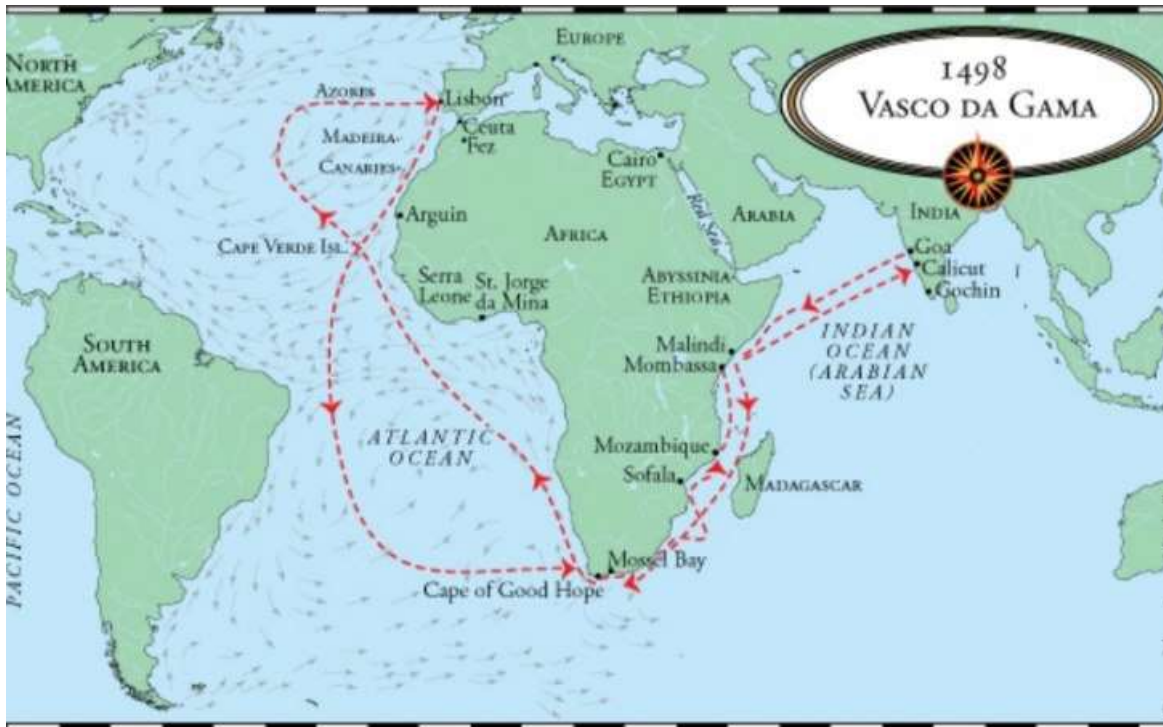


Figure 7: Vasco da Gama Sea Routes

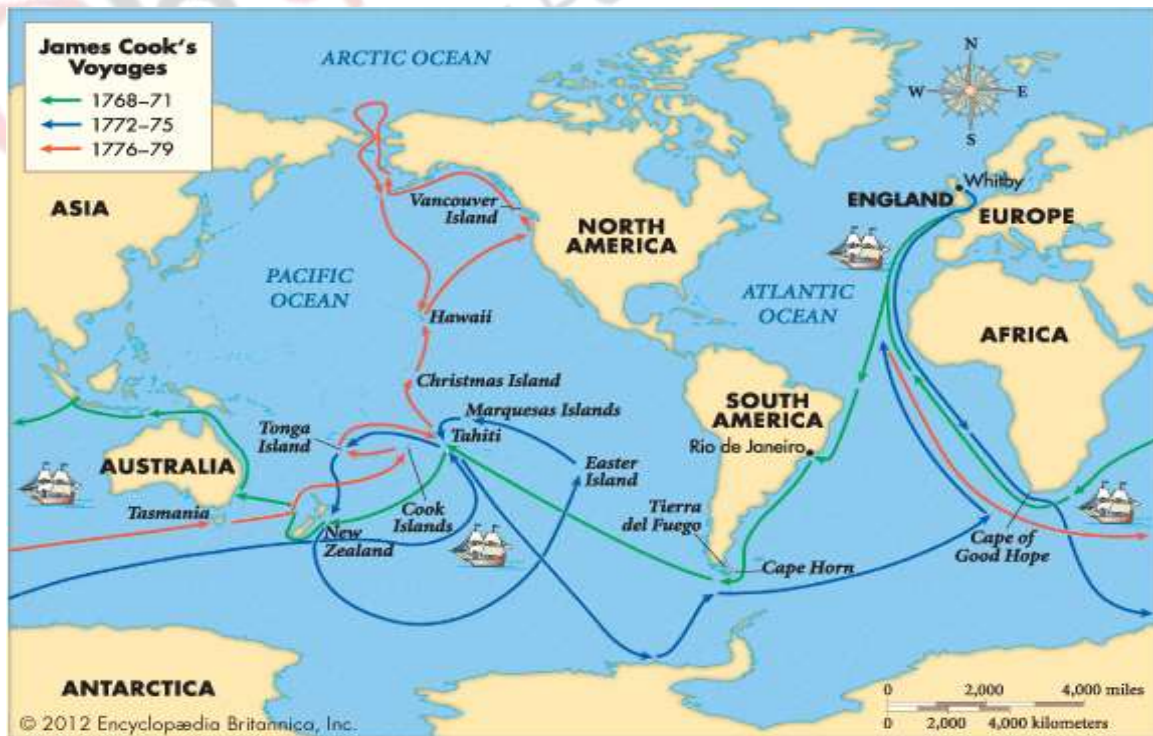


Figure 8: James Cook's voyages from 1768-1779

b) Scientific and Technological Development

Mainly the invention of the printing machine and the works of the scholars like Copernicus, Kepler, Galileo, and Newton brought the scientific and technological developments in geography during the age of discoveries.

The printing press was invented; the most popular printer for mass production was popularized by a German, *Johannes Gutenberg* in 1450. Until the 15th century the geocentric approach of the universe was dominant but, during the age of discovery, the heliocentric idea was strengthened. In this regard, the Polish scholar Copernicus (1473-1543) carried out numerous observations about the stars, planets, and moons for 32 years. His experiments provided the first modern version of the heliocentric approach in his book, *De revolutionibus Orbium Coelestium*.

In 1618, Kepler proved that planetary movements take place in elliptical shape and not in circular one. He was a German mathematician and astronomer (1571-630). He was the founder of "*Celestial Mechanics*", having been the first to explain planetary motion. He gave fundamental laws of planetary motion. He along with Galileo supported the heliocentric theory of Copernicus. Galileo (1564-1642) was an Italian physicist, astronomer, and philosopher who are closely associated with the scientific revolution as his put forward discoveries like improvements in the telescope along with the *first and second laws of motion*. He was referred as the father of modern physics and of science. John Harrison invented pendulum and John Hadley invented the octant during this age of discovery.

In 1686, Newton presented the *law of gravitation*. He was the first to show that the motion of bodies of earth and of celestial bodies was governed by Newtonian laws.

c) Improvement in Cartography and Map Making

The Renaissance in Europe provided fresh impetus for widening the existing horizons. There definite improvement in the field of navigation included a wide adaptation of magnetic compass. This led to the production of maps based on latest technological advancements. An example can be cited of the German cartographer *Martin Waldseemular*. He prepared maps for both North and South America in 1507. His map was the first world map that shows America as

a separate continent and is called *Carta-Marina*. There was another new development in map making –reference can be made of Mercator in particular who came up with the Mercator’s projection in 1596. The world’s first world map was created with fewer distortions and number of scholars started preparing different thematic maps like Edmund Halley prepared an isothermal map.



Figure 9: Carta-Marina by Martin Waldseemular

It was during this period that many wrong geographical concepts were corrected. The shape of the earth was finalized. Sebastian, Munster, Clavierius and Carpenter's works were highly appreciated because their geographical writings gave a new dimension to the discipline. In 1500 AD, Jone de la Costa created a map using Columbus's first three trips and also took reference from John Cabot voyage to North America.

3. The Impact of Voyages and Discoveries

The impact of the developments during the age of discovery on Geography was tremendous. A number of geographical societies constituted in different parts of the world to promote further research in the discipline. Due to the vast amount of accumulated knowledge, there started branching of geography into different specialized fields of study. Earlier geography was ‘all-in-

one'. Many old theories or concept were corrected and reestablished; and many new theories about the origin of the earth, continents and man-nature relationships were promoted.

Although printing of books had started in the fifteenth century itself, the number increased during this age. Giovanni Battista Ramusio published his work named *Navigazioni et Viaggi* between 1550 and 1559. Richard Hakluyt published his first edition on voyages in 1598. His three-volume collection was published between 1598 and 1600. He is credited to have introduced 'new geography' of the late sixteenth century. He even influenced Theodore de Bry, a German publisher to come up with the third collection of voyages. These included 25 volumes which were published between 1590-1634.

The German scholars Varenus (1622-1650) made the most fruitful use of all available information and knowledge about the earth during the age of discovery and gave the first scientific, literature in geography in the form of this book entitled '*Geographia Generalis*'.

The Positive Gain of this Period

- Discovery of new lands and completion of the world map.
- The revival of interest in geography from a scientific perspective.
- 'Academic Freedom' of geography, i.e; identification as an independent field of study.
- Accumulation of huge amount of data and knowledge and compiling them into books.
- Advancements in the cartographic technique of data representation and map making.
- Beginning of scientific or speculative investigations and generalizations in geography.
- The emergence of various modern schools of thought in geography (German, French, British, and America).
- Geography acquiring a new definition and methodology.
- Dualism in geography e.g. physical, human; regional or systematic etc.

In short, now answers were searched through logical deductions and it was opined that world was created especially as the habitat of man. Now, humans were seen as the creators of their habitat- their activities and the physical character were strongly influenced by environment.

4. End of the Age of Exploration

In spite of large-scale and worldwide exploration and voyages during the age of discovery, certain parts of the worlds still remained unexpected and untouched. They were the polar areas,

or more specifically the parts of Arctic and Antarctica regions. The scientific exploration of these regions began only in 20th century.

Further, due to vast knowledge, data and information as accumulated during the age of discovery, the field of geography could not remain unified. Consequently, the discipline entered into a long period of dualism, the dichotomies or controversies, as physical versus regional.

Peter Apian made a heart-shaped map in 1530, to remove distortions of earlier maps and to create more useful maps for navigators and searchers, but there was still a considerable amount of distortion in the distance on his map. This problem was eventually resolved by Mercator through Mercator projection (1569). The improved form of Mercator projection became an ideal solution for the navigators and the sailors because it was able to sail through the great circle route to reach the desired destination - possibly the shortest route on the earth surface.

When Edward Wright produced trigonometric tables in 1599, then Mercator projection was reproduced. Amsterdam became a major center for the publication of Atlas and wall maps. Later, printing of Atlas and Wall Maps on different scales in France and England became quite popular. In France, the first atlas producer was Nicholas Sanson D. Abbyville, who founded a lineage of mapping in the 17th century.

Several new principles were advocated about the origin of the relationship between earth and continents and human nature. The discovery of classical mapping in the expansion of European political and economic power in the 15th and 16th centuries played an important role.

The Renaissance saw the revival of another branch of ancient geography, that of topographic descriptions. Account of voyages provided the raw material for encyclopedic work on the world or on parts of it, called *Chorographic*. It was as early in 1459; *Fra Mauro* prepared a map showing the Indian Ocean open to the south. *Martin Behaim* was the first cartographer has devised the world first globe in 1490. This was based on the small estimate of earth circumference.

These discoveries invention and revolution in the art of map making may be collectively called the *Renaissance* which brought about renewed interest in the geographical knowledge and removed some earlier misconceptions.

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