Setting the Stage: Francesca Fiorani writes in her chapter *Mapping and voyages*, that it is fundamentally human to need to know the places that we inhabit and to dominate them through mapping. In the process of mastering the geography of our world, we define our place within it and our relations to others. If the need to represent the surrounding space is universal, how to map it, what to include and what to omit, is always a selective cultural process that involves choices. Renaissance mapping is traditionally associated with the beginning of modern cartography, and its history has often been reduced to documenting the gradual conquest of mathematical accuracy in the representation of a world of expanding borders. Early European voyages beyond the Mediterranean Sea and the rediscovery of Ptolemy’s *Geographia*, the foundational text for locating places precisely on a cartographic grid, date from the late 14th century. But Ptolemy’s mathematical geography, which has become the dominating concern of modern cartography, coexisted in the Renaissance with the verbose descriptions of places that other ancient authors had presented in their geographical texts and which have disappeared from modern maps. As cultural artifacts, maps participated in major cultural trends of the Renaissance period, from humanism to the exploration of trading routes and the emergence of the printing press, as well as in religious expeditions and the formation of overseas dominions. Their techniques and conventions of representation emerged in relation to the intentions of their makers and the expectations of their patrons and users. In this process of defining the practices of Renaissance mappings and the conventions of cartographic representations, humanists, nationalism, and conquests a significant roles.

In the Renaissance, mapping was not an independent discipline or a distinct profession but an integral component of geography, the study of the earth. A complex endeavor, mapping required the skills of such diverse disciplines and crafts as philology, surveying, computation, mathematics, geometry, drawing, painting, engraving, printing, the making of instruments, and knowledge of Greek and Latin. Because only rarely did one single person master the full array of skills required to make maps, Renaissance mapping resulted from the close collaboration of humanists, artists, merchants, and printers, who were all obsessed with the measurement of the universe, the visualization of the Earth’s globe, the philological exegesis of ancient texts, and the trade of exotic goods. Based in Florence, Venice, Ferrara, Rome, Genoa, Naples, and Mantua as well as in Paris, Seville, Lisbon, Nuremberg, and later also in London, Antwerp, and Amsterdam, these heterogeneous groups of mapmakers operated within a European network of relations that often intersected with the network of the republic of letters, the courts of rulers, the councils of the church, the associations of merchants and bankers, and the mercenary armies of European powers. Each center and group was under a different rule, pursuing cartography with different objectives in mind and often keeping news of travels and lands jealously guarded from others, but nonetheless legal and illegal exchanges abounded in cartographic matters. Images destined for a restricted public in the Middle Ages, maps became one of the most favored forms to represent the world in the Renaissance. By the end of the 16th century millions of maps representing the whole world, continents, individual countries, regions, and cities were produced in Europe. It has been calculated that only a few thousand maps existed in the years 1400–1472, but that their number jumped to about 56,000 from 1472 to 1500, while millions of maps were produced from
1500 to 1600. The emergence of the printing press contributed to this unprecedented diffusion of maps, which were sold as individual prints but also used as illustrations in bibles, history books, classics, and contemporary texts. Maps came to be used for a variety of purposes. Objects of learning and delectation, they were collected and displayed in audience halls, libraries, and studies. They were even painted in city residences, villas, and princely palaces. They were used as visual aids in estimating the daily reports on European wars and in establishing merchandising franchises. Some were visual aids to study the bible and the classics, to learn history, or to facilitate the contemplation of the divine through the study of nature.

The burst of activity that characterized Renaissance cartography was due to a set of concomitant factors. It built on the long-standing western tradition of representing the earth visually and verbally. Although ancient maps were unknown until the late 15th century, medieval maps of the world, the Mediterranean and the Holy Land were well documented and continued to be made throughout the 16th century. Medieval mappaemundi [world maps] represented the three continents of Europe, Africa, and Asia schematically, placing Jerusalem at the center of the globe, and were mainly intended as memory-images to visualize and recall encyclopedic knowledge. Charts of the Mediterranean recorded coastlines, ports, and directions of navigation (rhumb lines); their origin is still hotly debated but it is plausibly due to the interactions of Islamic, Pisan, Genoese, and Venetian sailors and mapmakers in the 13th century. Maps of the Holy Land, the first area of the world to be represented individually in Western maps, served for biblical studies but also for planning pilgrimages, crusades, and commercial expeditions. Also popular were geographical descriptions of the world and its regions included in ancient texts, among which Pliny’s Natural History, Macrobius’ Commentarius in somniun Scipionis [Commentary on the Dream of Scipio], Solinus’ Collectanea rerum memorabilium [Collection of Remarkable Things], and Martianus Capellas’ De nuptiis Philologiae et Mercurii [On the Marriage of Philology and Mercury] held authoritative status, while the 14th century travel reports written by merchants’ and missionaries’ journey to Cathay was favored reading of early humanists, nobles, clergy, and bankers across Europe.

Equally important for the diffusion of maps in the Renaissance were the rediscovery of ancient geographical texts by Pomponius Mela, Ptolemy, and Strabo, and the journeys of European travelers beyond the Mediterranean Sea and in central Africa. The recovery of these geographical texts coincided with defining moments in the early history of humanism, while the texts themselves rapidly generated a widespread interest that exemplifies the different motivations coexisting in Renaissance mapping and the wide-ranging cultural relations from which it emerged. More importantly, these texts were systematically read against each other, in the effort to reconcile their contradictory information on the shape of the world, the size of continents, and the extension of oceans. They were also read in conjunction with modern travel reports from northern Europe, the Atlantic, and Africa, which related that these lands were not inhabited but situated beyond the world known by the ancients. Initially the recovery of ancient geographical knowledge and early travels were independent pursuits, carried out by different people for different purposes. Eventually they came to interact in such significant ways that by the late 15th century the study of ancient geography and the recording of modern voyages
Renaissance Introduction

became part and parcel of Renaissance mapping. Indeed, the Renaissance notion of mapping as a mathematical and descriptive record of the entire world emerged from the practice of comparing ancient texts to modern voyages.

As put forth by Peter Whitfield in his book *New Found Lands, Maps in the History of Exploration* (1998), in reality European exploration, during what we may call its “classic period”, or the Renaissance, between 1500 and 1900, is the story of the growth of knowledge, geographical knowledge that was recorded, centralized and used as never before. But discovery is a relative and misleading term, and perhaps the most persistent and subtle legend is that exploration and discovery are synonymous, whereas the lands or routes discovered during this period were of course already inhabited or known for centuries before Europeans arrived. “Newly-discovered” routes across the Pacific and Indian Oceans, the Sahara Desert, or through the Rocky Mountains invariably represented knowledge simply borrowed from native peoples. The discoverer of a certain land, or the route to it, may have been simply the first to record his discovery and incorporate it within the body of knowledge. In order to do this he had obviously to find his way home again, therefore the first duty of an explorer was to survive; but the rivers and mountains which challenged his powers of endurance were already home to indigenous peoples, therefore the term *Encounter* is a more accurate one than *Discovery*.

The vital difference in these historic Renaissance encounters, compared with earlier encounters, was that knowledge once acquired by Europeans was recorded in map form and became part of a conscious world geography. Men in Seville, Amsterdam or London had access to knowledge of Mexico, India, Canada or Brazil, while the native peoples knew only their own immediate environment. The Europeans’ true discovery was that all this knowledge could be merged into an accurate map of the world, which in turn became a vital tool of political power. The breakthrough which enabled them to achieve this synthesis was their mastery of the sea, for the great navigators linked the oceans and the continents in a way that was unprecedented in world history, and they arrived in their new-found lands as the possessors of unique skills and revolutionary knowledge. Historically, this explosion of knowledge must be seen in the context of the intellectual revolution that we call the Renaissance, but the immediate motives of the explorers were overwhelmingly worldly – rapacious, mercenary, military and imperial.

Other advanced cultures during this period like those in Asia: China, India, and the Americas: the Aztecs, Incas, while interested in trade and territorial conquest, were not motivated to venture out past their own limited “world” due either to lack of technology and/or need/desire to acquire exotic goods. In India a long period of conflict between rival kingdoms had not prevented a cultural flowering in literature, temple-building and especially science (with mathematics probably more advanced than anywhere in the world), yet any movement to explore the wider world by land or sea was totally absent. The brilliance of the Sung period made China technically the most advanced civilization of its time, but one consciously confined within its own borders, with no curiosity about the barbarians beyond. The American peoples were isolated not only from the rest of the world but also from each other, their ethnic identity having fragmented into a myriad of tribes and nations. The same is true of African and Polynesian peoples, whose pre-literate culture prevented the emergence of any formal geographic sense. In all of these
cultures there was no escape from the perception that “The World” was simply limited to “Our World”. To cross over from one world to another - if that were physically possible - would mean to be at the mercy of the unknown: barbarians, face the hostile sea or seemingly insurmountable land barriers. And of course it was equally impossible intellectually, for no man could set out to explore regions of the world of whose very existence he was ignorant. The crucial motive for exploration was missing, which is a distinct sense of the known and the unknown, and the challenge of bridging those two realms. It is precisely that sense which is mirrored in the map, displaying the borderland between the known and unknown regions of the world. Again, according to Whitfield, in the post-classical era, this kind of cartographic awareness was absent: there was no conceptual model of a world map awaiting completion. The age of the great European voyages, when it dawned, was characterized by motives that were unmistakably worldly and political. Yet these political goals came into focus only as part of an intellectual revolution, which included the discovery of Ptolemy’s geography and the techniques of navigation. The challenges consciously accepted by the protagonists of the Age of Discovery/Encounter could only be understood in geographical terms. A knowledge or at least a theory of world geography was essential as they defined their aims, and essential to the means they used to achieve them.

This is not to say that individuals from these cultures did not venture forth and find new lands outside “their world”. A list of just some of the non-European explorers purported by some historians to have actually crossed the Atlantic prior to Columbus include West Africans the from Mali Empire, 800 B.C.E. – 1311 C.E. (recreated by Dr. Alain Bombard, 1952 & Hannes Lindemann, 1955), the Phoenicians, 480 B.C.E. (recreated by Thor Heyerdahl in 1970) and the Chinese Admiral, Zheng He, 1421. These often nameless explorers, and potentially many others, remain nameless and unrecorded because they either did not return to their original country, and/or they left no written account of their “discovery”. This is also true for the unrecorded trans-Atlantic voyages by some Romans in 64 A.D./CE, the Irish in 565, the Vikings during 982-1355, the Welsh (Prince Madoc) 1171 and Prince Henry Sinclair and the Zeno brothers in 1395. Some of these adventurers were simply sailors who were blown off course in a storm and had no way of returning. Others who may have returned were not able to record their journey either textually or graphically, or if so, these records have been lost. Therefore, besides the technological advancements that enabled Europeans to “discover” new lands, they also made the effort to record those travels both textually and cartographically.

So what motivated Europeans more than the other advanced cultures of this time period? Asia (China and India) offered all of the luxury items desired by the ever-affluent European states: silk and spices only available from this part of the world, pepper, fruits, fragrances, oils, porcelain, gold, silver, shells, glass works, brass, pearls. Trade with Asia had been controlled by the “middle men” Arabs and the Venetians (either over the Silk Road (until recently controlled by the Mongols), or by sailing through the Indian Ocean). The Spanish, Portuguese, Danish, French, British all wanted to avoid these “middle men” and looked to sailing around Africa, Northwest or West of Europe to find a direct route to the Far East - to trade, colonize and convert. None of these were motivating factors for the Indians, Chinese, Aztecs, or Incas.
If one had to name the most influential book in European history written between say 1200 and 1600, the choice might well fall not on the works of Aquinas or Dante, of Machiavelli or even of Copernicus, but on Marco Polo’s narrative of his journey to China. By unveiling Chinese civilization to Europe - its social magnificence, its technical inventiveness, its great cities and its fabulous wealth - Marco Polo created the motivation for the Age of Discovery/Encounter, and all the consequences that flowed from it. When they turned their eyes beyond the shores of Europe, the navigators of the 15th century and their patrons were not seeking new lands: they were seeking new routes to countries already known by report and reputation, and the most enthralling of these reports was that of Marco Polo, whose own eastern journey became the most powerful single inspiration for the European era of exploration.

But the impetus to find alternate routes to these treasures actually begins with two second century geographers, Claudius Ptolemy and Marinus of Tyre and carried forward in the 13th century by Roger Bacon and Albertus Magnus, in the 14th century by Paolo Toscanelli and Pierre d’Ailly, in the 15th century by Martin Behaim, Henricus Martellus and the Laon globe and finally executed by initially Christopher Columbus in 1492.

Part of the reason it took Europe so long to fully “discover” America as a separate continent was the fact that Columbus’ first encounter with it in 1492 actually revealed to his
Renaissance Introduction

contemporaries only a fractional part of this continent and was evidently insufficient for determining its actual cosmographic status. The full cartographic picture of America that we now have could not have possibly been available to anyone back then, as it presupposes, for example, the subsequent “discoveries” of Vespucci and Magellan in South America, Balboa and Pineda in Central America, Corte-Real and Verrazano in the North Atlantic, and Bering and Cook in the North Pacific. Yet part of the delay was also a result of the fact that the process of discovery presupposes a certain readiness to accept that what one discovers may require changing the way one sees the world. This kind of readiness to challenge the classical tri-continental image of the world (Europe/Africa/Asia) was something Columbus and many of his contemporaries obviously did not have.

For several decades after Magellan’s 1520 voyage, Europeans continued to map the Pacific as a relatively narrow expanse, to fill it with imaginary islands or a hypothetical landmass to the south, or to keep the Americas linked to Asia across the northern hemisphere. To do otherwise would have been to accept any or all of a number of ideas that contradicted the prevailing wisdom, such as the fact that Ptolemy had underestimated the circumference of the Earth, or that Ptolemy and Scripture were wrong in their belief that land predominated over water on the surface of the globe, or that the New World was indeed best understood as ‘America,’ the ‘fourth part of the world.’ All of these ideas, of course, would eventually be accepted, but not quickly, and not without a period of anxious effort to jam Magellan’s discovery, and its implications, into existing intellectual cartographic frameworks.

Outside of Spain, the culture of denial was rampant. To some extent, this was due to the paucity of accurate information. Neither the logbook of the Victoria’s pilot, with its latitudes and distances, or the maps their cosmographers constructed from that data, was allowed to circulate in print. The printed sources, meanwhile, were either vague or inaccurate when it came to the necessary numbers. For example, although the first edition of Antonio Pigafetta’s eye-witness chronicle of the Magellan expedition (Paris 1525) included lurid details about the horrors of the Pacific crossing, and even suggested that this was a voyage to ‘never again be made,’ it also contained a printer’s error that fudged the longitudes in a way that allowed readers to hold onto their view that the Pacific as a narrow oceanic basin.

Vagaries of this kind, moreover, had to be assessed in light of new knowledge arriving from other places. One of these was Mexico, which was conquered by Hernan Cortes during the same years that the Victoria was making its way around the world. While Magellan’s Pacific suggested that America was separate from Asia, the glittering cities of the Mexico recalled the East Asian civilizations of Marco Polo, suggesting that the opposite was true. Reconciling what seemed to be competing information proved to be no small task. The solution proposed tended to favor established ideas about the world’s geography over the potentially revolutionary implications of Magellan’s discovery. During the second quarter of the 16th century, it actually became more rather than less common, among European mapmakers, to depict the New World as a part of Asia rather than as a separate continent.

It actually took another 271 years before the absolute separateness of North America from Asia was conclusively demonstrated by the explorer James Cook. However, many European
Renaissance Introduction

cartographers even during the early part of the 16th century already envisioned the two as indisputably detached from each other. Despite the total lack of any empirical evidence, they nevertheless preserved on their maps and globes, beginning with Martin Waldseemüller’s original image of North America as absolutely distinct and separate from northeast Asia. Consider, for instance, the maps, globes, and gores of Johannes Schöner (1515, 1520), Simon Grynaeus (1552), Joachim von Watte (1554), Gerardus Mercator (1538), Batista Agnese (1542), Sebastian Munster (1544), Gemma Frisius. (1544), and Michele Tramazzino (1554) world maps, as well as the ca. 1515 Paris globe and the Georg Hartmann (1555) and François Demongenet (1552) globe gores. They all portray America as fully detached from Asia even in the far north - an absolutely insular fourth continent totally surrounded on all sides by the ocean just as Martin Waldseemüller first envisioned it back in 1507.

Despite Waldseemüller’s tremendous influence on the way Europe came to view America, not until the late 18th century did it have any conclusive evidence that it was indeed fully detached from Asia even in the far north. For nearly three centuries European cartographers were basically promulgating on their globes and world maps an audacious cosmographic theory which, given the actual geographical information that was available to them, had no basis whatsoever in reality!

It is not easy for 21st century readers to appreciate the challenges faced by 16th century cartographers, especially when trying to depict little-known parts of the world. They had to rely on a number of sometimes fictional, sometimes faulty, and often speculative and contradictory sources for their information. Some material was obtained by word of mouth, but most sources reached them via manuscript copies, sometimes in unreliable translations, or in printed versions based on manuscript originals. The misreading and miscopying of place-names was frequent. It is vital when investigating problems on early maps and charts to compare as many variant depictions of the areas concerned as possible, especially their varying inscriptions, as recorded by previous, contemporary, and later cartographers alongside their sources when identified. Added to these challenges is the reality that there was no standard spelling in any language and many letters were liable to be confused. For instance, the letters l, f, and j, often undotted, and f, the long s, were commonly confused. The letters y, j, and i were virtually interchangeable in spelling. The usually undotted letter i meant that three in a row could be read as iii, or the number three, or as ui, iu, ni, in, or m. The letter u was often used where v is used today, and sometimes v for u; the lower case u was capitalized as V but because the manuscript u and n were virtually indistinguishable, V could be a capitalization of a lower case u or of a lower case n.

How did explorers and their patrons understand their expanding world and their place in it? What were they really seeking, and how did they believe they could achieve it? How did they balance the known and the unknown in their minds? Historical maps are vitally important in answering these questions, and these selected old maps attempt to display the geographical ideas of the explorers themselves, through the maps which they used or the new maps which they made. Many excellent books on exploration have been written using modern maps to trace the voyages and journeys, but this can be unsatisfactory for several reasons. First, modern maps obviously show a modern view of the world, clear, precise and complete, not the explorer’s own
view with its blank spaces and uncertainties. Second, we often do not know the exact routes of the early explorers, and the paths so clearly traced on the map may be misleading. And third, contemporary maps often show features which contemporaries believed were there - legendary cities, islands or straits - whose supposed existence was crucial to the explorers’ whole course of action. Thus the maps of a given historical period serve as a revealing index to contemporary knowledge, belief and motivation.

And yet these maps and theories do not only reflect actual geographical realities. They very often portray the purely speculative, empirically unsubstantiated ideas of the people who originate them. In so doing, however, they sometimes help generate amazingly correct new cosmographic visions even when there is no evidence yet to support them. Long before his theory was indeed proved to be correct, Waldseemüller had already provided Europe with a most compelling first image of an absolutely insular America. As we shall see later, that was also true of the purely conjectural—though, prophetically enough, empirically correct—image of a narrow strait separating North America from northeast Asia generated by Venetian cosmographer Giacomo Gastaldi 167 years before Bering actually reached it.

Pre-Columbian influences: the following writers and cartographers presented theories and concepts that led Columbus and many Europeans to envision a smaller tri-continent (Asia, Europe, Africa) world.

- Roger Bacon (13th century)
- Albertus Magnus (13th century)
- Marco Polo text (14th Century)
- Claudius Ptolemy (14th century translations and maps)
- Pierre d’Ailly map and text (1410)
- Paolo Toscanelli (1470)
- Henricus Martellus maps (1489 and 1490)
- Martin Behaim globe (1492)
Renaissance Introduction

Behaim Globe 1492

detail of the Atlantic Ocean, Zipangu [Japan] on the left, real and mythical islands such as Antilia and St. Brendan's island center and right

The world as known by the Europeans in the 1490's
The following maps and globes, created under conditions of limited available information, perpetuated the tri-continent world concept for nearly 300 years after Columbus' initial 1492 voyage by creating maps and globes that overtly, explicitly displayed an integrated America and Asia:

- Alessandro Zorzi's three sketch maps (1506)
- Giovanni Matteo Contarini's world map (1506)
- Johannes Ruysch's world map (1507)
- Francesco Rosselli's marine chart of the world (1508)
- Martin Waldseemüller's world map (1516)
- Franciscus Monachus, 1529
- Lopo Homem and Antonio de Holanda Atlas Miller planisphere (1519)
- Paris Gilt globe (ca. 1528)
- Nancy globe (ca. 1530)
- Oronce Fine's world map (1531)
- Oronce Fine's cordiform world map (1534/1548)
- Nuremberg globe gores (ca. 1535)
- an anonymous map from ca. 1535
- Paris Wooden Globe (1535)
- Caspar Vopel's globe gores (1536/1543)
- Giacomo Gastaldi * Carta Marina Nova Tabula [A new sea chart of the world] (1548)
- Giacomo Gastaldi/Matteo Pagano's Dell Universale world map (1550)
- Francesco Ghisolfi Portolan Atlas: World (1550)
- Giorgio Calapoda, Florentine Goldsmith's map (1555)
- Giovanni Vavassore's 1558 copy of Caspar Vopel's 1545 world map
- Haggi Ahmed's world map (1559)
- Paolo Forlani* (1560, 1562, 1565)
- Girolamo Roscelli's Orbis Descriptio (1561)
- Benito Arias (1571)
- Giovanni Cimerlino's world map (1566) *copy of Oronce Fine's 1534/48 map
- Tommaso Porcacchi world map (1572)
- Georg Braun's world map (1574)
- Mario Cartaro* globe and globe gores (1579)
- Giacomo Franco's cordiform world map (1586) *copy of Oronce Fine's 1534/48 map
- Matheus De Chiara, Portolan Atlas, world map (1599)
While there were many maps produced in the early 16th century that portrayed the new discoveries as separate and distinct from the Asian continent, the following early 16th century cartographers took the risk and applied their analytical skills against the available known data to portray the new discoveries as absolutely distinct and separate from northeast Asia and their leadership exerted influence on the others:

- Nicolo Caveri world map (1502-04)
- Martin Waldseemüller’s * world map (1507)
- Lenox/Jagellonian globes (1503-07)
- Bernard Sylvanus world map (1511)
- Johannes de Stobnicza western hemisphere (1512)
- Henricus Glareanus* world map (1513)
- Tross globe gores by Louis Bouleniger (1514)
- Leonardo da Vinci globe gores (1514)
- Paris globe (ca. 1515)
- Johannes Schöner’s globes (1515, 1520, 1533)
- Giovanni Vespucchi world map (1523)
Renaissance Introduction

- Pietro Coppo’s *De Summa Totius Orbis* (1524)
- Juan Vespucci world map (1526)
- The Paris Green (Quirini) Globe (1515-1528)
- Diego Ribero’s *Carta Universal... Propaganda, Second Borgian edition* (1529)
- Girolamo de Verrazano world map (1529)
- Simon Grynaeus world map (1532)
- Joachim von Watte world map (1534)
- Gerardus Mercator world map (1538)
- Batista Agnese world map (1542)
- Gemma Frisius world map (1544)
- Sebastian Munster’s *Die Nüw Welt [The New Islands]*, (1546)
- Michele Tramazzino world map (1554)
- Georg Hartmann globe gores (1555)
- Francois Demongenet globe gores (1552)

![Image of globe gores](Copy of the globe gores in the Ludwig-Maximilians-Universitat, Munchen, ULM Cim. 107#2. Courtesy of the University Library of Munich)

Ambiguous maps that “hedged their bets” because of the lack of concrete evidence and thus were non-committal about where the new discoveries should be placed.

- Juan de la Cosa portolan world chart (1500)
- Cantino world map (1502)
- *The Kuntsmann II (a.k.a. The Four Finger)* world map (1502-06)
Printers and editors engaged in fierce competition to publish the most updated maps and travel reports. Armed with the rich heritage of ancient geographical knowledge and news from recent voyages, Renaissance editors, scholars, and mapmakers aimed at completing the work of ancient geographers: to map the world that ancient geographers did not know, and to describe the entire terrestrial globe both mathematically and graphically. This process of integrating ancient geography with modern voyages was pervasive in Renaissance mapping, affecting many different kinds of manuscript and printed maps made both for the wider public and for selected viewers. Maps that differed in terms of purpose, medium, context, and technique shared nonetheless a syncretistic approach to their visual and verbal cartographic sources. This kind of syncretism, rather than the search for cartographic accuracy, characterized Renaissance mapping, as it can be elucidated through the analysis of printed editions of Ptolemy’s, Geography, manuscript nautical charts, and printed world maps.