

Critical Examination of the History of the Geography of the New Continent and of the Progress of Nautical Astronomy in the 15th and 16th Centuries

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Translated by Vera M. Kutzinski

NOTE: Translator’s additions in square brackets. In general, the the translator has followed the orthography of the 1836 Gide edition of the text.

To

Dominique-François Arago,

whose brilliant insights extended the fields of physical astronomy, optics, and the theory of electro-magnetism.

As proof of my unflagging friendship and loyal devotion.

Alexander von Humboldt

Preface

¶₁ The distinctive character of the persistent pursuit of a specific purpose is most evident in those centuries in which a lively movement of the mind comes to the fore. It is the dynamic momentum of this disposition that lends them grandeur and vibrant luster. An uninterrupted parade of geographical discoveries, resulting from the Portu-

guese and Castilian peoples’ noble collective vision and devotion; a prolonged bloody struggle spawned by the religious discord in the wake of the reformation; political movements aimed at reshaping [viii] social institutions—all these successively engaged minds and spirits and gave certain epochs their singular physiognomy.

¶₂ The fifteenth century, on which I will concentrate in this work, merits the kind of interest and attention one would rank very highly on the temporal scale of the spread of reason. Situated between two types of civilization, it is something of an interstitial world, belonging at once to the Middle Ages and to modern times. The fifteenth century is the era of the great discoveries in space, of new paths for connecting peoples, of the earliest glimpses of a physical geography that embraced all the different climates and elevations. If, for the populations of old Europe, it “has doubled the works of creation,” the contact [ix] with all things new, it also imperceptibly changed opinions, laws, and political relations through an enormous increase in information and knowledge. Never before had a purely material discovery expanded human horizons to produce more extraordinary and lasting change; at that time, the

veil was lifted, behind which half the globe had remained hidden for thousands of years, much like that half of the moon that, despite the small oscillations caused by its *libration*, remains invisible to the inhabitants of the Earth for as long as it does not fundamentally affect the actual order of the system of planets. The modern times have also spawned geographical discoveries, especially through daring and admirable explorations [x] to the southwestern areas of the Great [Pacific] Ocean and to the polar regions; but none of these endeavors, tied as they were to purely scientific interests, had been anything like those of the second half of the fifteenth century and the beginning of the sixteenth in their ability to display the dominant character of the epoch, its singular proclivity.

¶3 The historical research I am now presenting to the public is an extract of investigations to which I have devoted any spare time I have had for the last thirty years with passionate predilection. Having visited, during the course of my first voyages, the southern part of the Island of Cuba, the eastern and western reaches of the *Tierra Firme*, and the coastal areas of Guayaquil and Puná [grasslands in the central Andes Mountains], whose fame dates back to the history of the first discoveries, I find particular appeal in reading [xi] works that include the narratives of the *Conquistadores*. Conducting research in several archives in America and in libraries in different parts of Europe aided my studies of a neglected branch of Spanish literature. I take pride in hoping that a long sojourn in some of the least explored parts of the New World, a local familiarity with the climates, places, and customs, the practice of calculating the astronomical position of places, of tracing the course of rivers and mountain chains, and finally the most meticulous care in collecting the different names that the indigenous inhabitants, with their marvelously diverse languages, use for

the same points and places, would have given me the ability to recognize in the accounts of the earliest voyagers connections and combinations of facts [xii] that must have escaped the sagacity of the modern geographers and historians of America. This hope has bolstered my courage; for, in returning to the sources, it is necessary to study the books, some characterized by the simplicity of old turns of phrase and an admirably descriptive exactitude, while others evince the pompous wordiness and a fondness for false erudition typical of monastic authors. I have not limited myself to research about America's geography and the history of its original inhabitants depicted in ancient paintings and handed down through [oral] traditions and myths from Peru, the Andes of Quito, and Cundinamarca; I have extended my work to the cosmography of the fifteenth century and the astronomical methods the seafarers had tried out since the time when the papal bull [xiii] about the *demarcation line* intensified the fervor with which one sought "the secret of the longitudes." Because I regularly took recourse to documents that in modern times have been more often cited than seriously analyzed, my research almost always bore fruit, and the audience that lent me courage and support as I undertook my lengthy writings has welcomed with interest the results of my work as it has appeared in the *Political Essay on [the Kingdom of] New Spain*, the description of my travels in *Voyage to the equinoctial Regions [of the New World]*, and [*Views of the Cordilleras and] Monuments of the Indigenous Peoples of the Americas*.

¶4 Before I set out for the coast of Paria, the first point on the mainland of the New World that Columbus espied, I had the pleasure in Madrid to enjoy the advice [xiv] of the learned historiographer Juan Bautista Muñoz [y Ferrandis] and to admire the precious materials King Charles IV had directed him to collect and lodge in the archives of Simancas, Seville, and Torre do Tombo [in Lisbon]. These

supporting documents were supposed to have been included at the end of his *Historia del Nuevo Mundo* [1793], of which unfortunately only the first volume has so far appeared in print, which conveys but an imperfect sense of the extensive plan of this historiographical project. Not until 1825 was the educated world amply compensated for this lack by the publication of three volumes of the *Collecion de los viages y descubrimientos que hicieron por mar los Españoles desde fines del siglo XV*. This work by Don Manuel [Martín] Fernández de Navarrete, conceived on a vast scale and written [xiv] throughout in the spirit of enlightened critique, is one of the most important historical monuments of modern times. The *Collection diplomatique* [part of this collection] alone offers nearly four hundred documents about the remarkable period from 1487 to 1515, of which some had already been included in the *Codice Columbo-Americano* published in 1823 at the expense of the Genoese decurionate. These historical materials, compared to each other and with the earliest accounts of the *Conquistadores*, assuming that such comparisons are undertaken by people familiar with the local circumstances of places in the New World and also steeped in the spirit of the century of Christopher Columbus and [Pope] Leo X, would gradually and for a long time yet lead to valuable insights about the results of the discoveries and the older state of America. France [xv] is in the possession of translations of the major parts of [Fernández de] Navarrete's writings by [Alphonse Chalméau] de Verneuil and [Alexandre Dezos] de la Roquette, and the same work also contains the material for *Vie de Colomb*, created by a writer who won renown for his fatherland with writings full of poetic inspiration and a talent for sketching scenes of a raw, undeveloped land fertilized, as it were, by a budding civilization. Washington Irving has proven that, in the realm of a higher spirit, the culture of the imaginative arts need not

always foreclose commitment to serious historiographical study; but, in accordance with the aim and the literary form of his work, the American writer had to eschew the minute discussions of geography and nautical astronomy to whose dryness my habitual studies have long doomed me.

¶5 [xvii] In probing the events that led to the discovery of the other hemisphere, I had to make an effort above all to render visible the continuity of ideas and the entanglement of opinions that connect the end of the fifteenth century with the times of Aristotle, Eratosthenes, and Strabo, the purported darkness of the Middle Ages notwithstanding. I wanted to prove that, in all epochs of human life, what furthers the advancement of human reason has its roots in previous centuries. The development of intelligent understanding and its application to societies' material needs appears ineffective only when either the slowness or the isolation of progress renders its movement imperceptible, or at least less noticeable. I do not believe that it is the destiny of the human race to be subjected to revolving states of lightness and darkness that affect humanity [xviii] as a whole. A preserving principle supports the vitality of the advance of reason among individuals and among large populations. The century of Columbus could succeed so swiftly in fulfilling its destiny only because the seeds had been sown throughout the Middle Ages by a series of eminent men, such as Roger Bacon, Albertus Magnus, [John] Duns Scotus, and Vincent de Beauvais. [By the time Diego Ribero [Rivero] returned from the Congress de la Puente de Caya near Yelves [Elvas, Portugal] in 1525, the New World had already been sketched in broad contours from the Tierra del Fuego to Labrador. Progress was naturally slower on the west coast; in 1543, however, [Juan] Rodríguez Cabrillo already sailed north of Monterey, and after this great, fearless navigator perished close to the [xix] Santa Barbara Channel near Nueva [or

Alta] California, his pilot Bartolomé Ferrello [also Ferrer] explored the land up to latitude 43° near Cape Orford, as Vancouver called it [later Cape Blanco, now in Oregon]. Such were the ambitions and the rivalry of the trading nations, the Spanish, English, and Portuguese, that fifty years were sufficient to determine the shape of the mainland of the other hemisphere south and north of the Equator. And it is true, as the judicious author [Abel-François] Villemain observed (in [*Discours et Mélanges historiques [et littéraires]*], Vol. I, p. 452), that “when a century sets out to create the space for some great expectation, it does not rest until that expectation has been fulfilled.”

¶6 Since my travels in North Asia and to the Caspian Sea, I have neglected the extensive work I had planned about the history of geography in the two Americas and the gradual process of correcting astronomical positions [xx]. A new series of ideas presented itself to my mind, attenuating the fancy I had had for this sort of intellectual work since my first return to Europe. I thought that I had to bring my work on America to an end; and I did not much regret this decision since one of the most learned travelers of modern times, [Jean-Baptiste] Boussingault, has happily been returned to his motherland after twelve years of difficult and dangerous voyages and will be able to continue to circulate information about magnetic and meteorological phenomena, geology, the hypsometric shapes of the land, and the chemical elements of the natural products of the New [xxi] World. I hope soon to be able to publish the fourth and last part of my travel narrative, the *Relation historique*, the only as yet unfinished portion of my long series of writings about America. Of the two atlases that accompany this travelogue, the first, the *Atlas pittoresque*, provides an explanatory text for the plates that appear in *Vues des Cordillères et de monumens des peuples indigenes de l'Amérique* [*Views of the Cordilleras and Monuments of the Indigenous*

Peoples of the Americas]. The work I am presenting here is also printed in a folio format and serves as a textual complement to the second collection of maps, the *Atlas géographique et physique*.¹ In order not to lose entirely the results of the research I mention above, I have focused in this *Critical Examination* on [xxii] the outcomes that seemed to me of the greatest interest. In this work, I have placed new facts alongside older, perhaps familiar ones, and the combinations in which I arranged them suggest new insights.

¶7 I provide some details about the mysterious figure of Martin Hylacomylus [Martin Waldseemüller] and his *Cosmographiae Introductio* [Introduction to Cosmography], in which he, in 1507, had already proposed the appellation America, that is, one year before the fragmented map of the New World without a name in an edition by Ptolemy. We find that this designation had already been used not on a map but in an anonymous book (*Globus Mundi*) falsely attributed to Loritus Glareanus [Heinrich Glarean] and published in 1509, three years earlier than Vadianus's [Joachim Vadian] letter to Rodolphus Agricola) and thirteen years before Ptolemy's map with the name [xxiii] America. A world map by Appianus [of Alexandria], engraved in 1520 and inserted in Vadianus's edition of *De situ orbis* by Pomponius Mela, uses the name America two years earlier than Ptolemy's map from 1522. I would neglect the duties of affectionate gratitude if I did not, at the end of this preface, pay public homage to the Baron [Charles] Walckenaer, my colleague at the [French] Institute, whose noble passion for cultivating the sciences was not limited to elevating himself through his own work but extended to advice and the generous use of his library in the support of all those who endeavored to follow the same calling as he did. In the midst

1— This folio edition will additionally offer a *Reasoned Analysis* of the material I used to draw the maps and the hypsometric outlines.

of the treasures in this library, I was fortunate to identify in the spring of 1832 during my [xxiv] final stay in Paris, together with Baron Walckenaer himself, the author and date of a world map that gave rise to very enlightening observations. On this map from the year 1500, the New World is drawn by Juan de la Cosa, who had accompanied Christopher Columbus on his second voyage [he was in fact part of all three voyages], and who had been the chief pilot for Alonzo Hoyeda [Alonso de Ojeda] on the expedition of 1499, of which Amerigo Vespucci was also a part. In order to indicate the full importance of this geographical landmark, suffice it to recall that this map was created six years prior to Columbus's death, and that the oldest known maps of America included neither in the editions of Ptolemy nor in the sixteenth-century cosmographies were those from 1527 and 1529, housed in the library of the Grand Duke [Charles Augustus] of Saxe-Weimar. The latter map is the better known of the two because [xxv] it carries the eminent name of Diego Ribero.

¶8 I close this preface with an expression of profoundest sorrow. The intense and so wearily awaited joy, with which the release of my friend and travel companion [Aimé] Bonpland [in Paraguay] filled me, has been clouded by a bitter loss. A few days ago, M. [Jabbo] Oltmanns, a member of the Berlin Academy, who bestowed upon me a token of affection by editing the astronomical observations I had carried out on the New Continent, succumbed to an agonizing ailment. I do not know of a better way to praise him than by recalling the esteem of him that a famous scholar-scientist, M. Delambre, put into words in the analysis of the mathematical works presented to the institute: "M. Oltmanns," M. Delambre said, "has demonstrated in his works [xxvi] on astronomical geography that he, equipped with exceptional knowledge and the patience necessary to pursue very lengthy, monotonous calculations,

combined those tasks with the acumen that leads either to the discovery of new methods or to adjustments of already familiar ones." Every year, the interesting nautical almanac *Annuaire du bureau des longitudes*, publishes M. Oltmann's tables, which show how to derive the altitude of mountains from barometric observations, tables that, through their precision and ingenious brevity, have contributed so much to our knowledge of the unevenness of the Earth's surface. It was only a few days before his death that M. Oltmanns had completed his analysis of all the astronomical observations I had made in Siberia, of which I had been able to calculate only a small part during my rushed [xxvii] and difficult voyage. This tribute to my indelible gratitude is not out of place in a work devoted to the study of the history of geography.

Berlin, November 1833

A. de Humboldt

Critical Examination of the History of the Geography of the New Continent and of the Progress of nautical astronomy in the 15th and 16th centuries

[Volume I]

¶9 The discovery of the New Continent and the efforts undertaken to further the knowledge of its geography not only lifted the veil that had hidden an enormous part of the surface of the globe for centuries; this uncovering and this research have also had a most remarkable influence on the improvement of maps and graphic representations more broadly as well as on the astronomical tools and procedures best suited for determining the position of [I.2] of places. By studying the advancement of civilization, we can see that humans' understanding grows wherever their field of research expands. Nautical astronomy, physical geography (a term that enfolds knowledges of

the diversity of the human species and the [geographical] distribution of animals and plants), the geology of volcanoes, descriptive natural history—all the branches of the sciences have been completely turned around since the end of the fifteenth century and the beginning of the sixteenth. A new world gave seafarers a greater number of shorelines at 120 degrees latitude; it offered naturalists new families of plants and quadrupeds that were difficult to classify according to known methods; it presented the philosopher with the same human race in many ways modified by the long impact of alimentation, temperature, and customs, humans who, without moving through the intermediate state of nomadic herdsmen, passed straight from a life of hunting to an agricultural existence, divided as they were by an almost infinite number of languages whose structures, though grammatically curious, were still part of the same body. It offered physicists and geologists an immense mountain chain [I.3] that, raised up by subterranean fires and rich in precious metals, brought together on its sheer slopes and terraced plateaus the climates and crops of the most distant and different zones in a small space. Never since the founding of human societies has the sphere of ideas in relation to the external world grown to such an extraordinary degree; never before had humanity felt the urgent need to observe nature and to multiply the means and tools of examining nature effectively.

¶10 One may be tempted to assume that these astonishing and, as it were, mutually imbricated discoveries, these double conquests in the material and the intellectual world, have only been fully appreciated in our day, in a century where the history of human civilization has been traced by philosophers who could grasp, in the blink of an eye, the advancements in astronomical and physical geography, in the art of navigation, in descriptive botany and zoology. But Christopher Columbus's

contemporaries teach us how the superior minds of their day had already felt deeply the value of that which was marvelous and grand at the [I.4] end of the fifteenth century. "Each day," wrote Peter Martyr d'Anghiera in his letters from 1493 and 1494,² "each day presents us with new wonders in this New World, in these antipodes of the west that a certain [I.5] Genoese (*Christophorus quidam*

2— "Præ lætitia prosiliisse te, vixque a lachrymis præ gaudio temperasse, quando literas adspexisti meas, quibus de antipodum orbe latenti hactenus, te certiore feci, mi suavissime Pomponi, insinuasti. Ex tuis ipsis literis colligo, quid senseris. Sensisti autem, tantique rem fecisti, quanti virum summa doctrina insignitum decuit. Quis namque cibus sublimibus præstari potest ingeniis isto suavior? quod condimentum gratius? A me facio conjecturam. Beari sentio spiritus meos, quando accitos alloquor prudentes aliquos ex his qui ab ea redeant provincia (*Hispaniola insula*). Implicent animos pecuniarum cumulis augendis miseri avari: nostras nos mentes, postquam Deo pleni aliquandiu fuerimus, contemplando, hujuscemodi rerum notitia demulceamus." [You, my dearest Pomponius, intimated that, upon reading my letter, in which I reported to you about the so far unknown world of the antipodes, you jumped for joy, and could barely hold back tears and contain your enthusiasm. I infer your sentiments from your letter. You have, moreover, felt and judged the matter in a way fitting for a man with the highest erudition and learning. For what dish sweeter than this one might be served higher intellects? What spice could be more highly prized? I speak from my own experience. I feel how happy and excited I am when, from among the many who return from this part of the world (the island of *Hispaniola*), I invite knowledgeable people and converse with them. May the greedy confuse their senses with pitiable pecuniary gain. We, however, when one day we belong to God, want to flatter and woo our spirit by observing and understanding such things.] According to common opinions, this letter, which portrays so well the pleasures of the [human] intellect, was written at the end of December 1493. (*Opus Epistolarum Petri Martyris Anglerii Mediolanensis, Protonotarii Apostolici, Prioris Archiepiscopatus Gratanensis, atque à consiliis rerum Indicarum Hispanicis*. Amsterdam, 1670; Ep. CLII, p. 84.) See note A at the end of the First Section.

Columbus, *vir Ligur*) was to discover. Our friend Pomponius Laetus, the remarkable propagator of classical Roman literature who was persecuted in Rome for his unrestrained religious opinions, could not hold back tears of joy when I brought him the first news of this unexpected event.” Anghiera added, with a truly poetic flair: “Who among us today can be amazed at the discoveries attributed to Saturn, Ceres, or Triptolemus? What more did the Phoenicians accomplish when they gathered nomadic peoples in remote regions and founded new cities? It was reserved for our times to see our understanding expand and to glimpse the sudden appearance of new events and phenomena on the horizon.” [These last two sentences are missing from Ideler. Transl.]

¶11 When one devotes oneself to the study of the earliest historians of the conquest, and when one compares their works, above all those by [José de] Acosta, [Gonzalo Fernández de] Oviedo, and García, with modern travelers’ research, one is astonished already and quite often to find kernels of the most important physical truths in the texts of the [I.6] sixteenth-century Spanish writers. For the active curiosity of the earliest travelers as much as for those who pored over their texts, the sight of the new continent, secluded as it was by the immensity of the oceans, raised most of the important questions that still occupy us today: questions about the unity of the human species and its divergence from an original type; about the migration of peoples, the filiation of languages often more dissimilar in their roots words than in inflexions or grammatical forms; about the migration of plants and animals; about the trade winds and the ocean currents; about the decrease of the temperature on the steep slopes of the Cordilleras and in the depths of the oceans; about the reciprocal reaction of volcanoes and their impact on earthquakes. Advances in geography and nautical astronomy, the two sciences on which this

work primarily focuses, occurred at the same time as improvements in descriptive natural history and the physical history of the globe more broadly.

¶12 It is evident from the *Fénix de las maravillas* [I.7] *del Mundo* [del Orbe], written in 1286 by Raimond Lulle [³ [Ramon Llull or Raymond Lully] of Mallorca, that real nautical maps were used until the end of the thirteenth century. But when one compares the later maps, those by Andrea Bianco, Benincasa [da Montepulciano], Giacomo Girolodi, Fra Mauro, and Martin Behaim, to a world map Baron Walckenaer and I recently identified as dating back to 1500 and drawn by Juan de la Cosa, a companion of Columbus, one is surprised that half a century would have been enough to bring about such a significant transformation; I am not only speaking of changes in cosmographic ideas but also in the drawing and matching of position lines. One should not forget that Behaim, Columbus, Vespucci, [Vasco da] Gama, and [Ferdinand] Magellan were contemporaries of Regiomontanus [Johannes Müller von Königsberg], Paolo [dal Pozzo] Toscanelli, Roderic Falero [Rui Faleiro], and other famous astronomers who shared their insights with the seafarers and the fellow geographers of their times. None of the great discoveries of the western hemisphere [I.8] resulted from a happy accident. It would be unwarranted to search for the earliest kernel of these discoveries in those intuitive dispositions of the soul to which posterity is often inclined to attribute what was really the fruit of lengthy reflection. Columbus, [Juan Rodríguez] Cabrillo, [Francisco] Gali, and so many other seafarers up to Sebastián Viscaíno [Viscaíno], whose fame adorns the annals of the Spanish Navy, were in their day venerated for their learning. They made important discov-

3— For the scientific work of this extraordinary man, see [Antonio de] Capmani [y de Montpalau], *Memorias historicas [sobre la marina,] comercio [y artes de la antigua ciudad] de Barcelona* [1779], Quest. II, p. 68.

eries because they had the correct ideas about the shape of the Earth and about the length of the distances to be traversed; because they knew to consult the work of their predecessors, to observe the winds that prevailed in different zones, to measure the variations of the magnetic needle in order to correct the direction and determine the length of their passages; to apply to their practices the least imperfect methods that the geometers of their day had proposed for a ship to find its way in the solitude of the oceans. Nautical astronomy as well long remained in its infancy during a time when neither the use of reflection instruments [reflecting sextants] nor of nautical chronometers was known. [I.9] Because of its intimate link with and dependence on developments in the mathematical sciences and the perfection of optical instruments, advancements in the art of navigation could only be slow and were often disrupted and delayed to the point of a standstill. Piloting as practiced during the great expeditions of Columbus, Gama, and Magellan, which appears to us now rather inexact and unpredictable, would have been admired not only by, say, Phoenician, Carthaginian, and Greek seafarers but even by the skilled Catalanian, Basque, Dieppian, and Venetian navigators of the thirteenth and fourteenth centuries. One can find traces of various methods of determining longitude from that time that are almost identical to ours; but their use required tremendous effort and proved impractical because of the inadequacy of the very instruments needed for measuring time and angular distances.

¶13 In this *Critical Examination*, I will address in order (1) the circumstances that paved the way for and brought about the discovery of the New World; (2) facts and events related to Christopher Columbus and Amerigo Vespucci and to the dates of geographical discoveries; (3) the earliest maps of the New World, and the [I.10] epoch during which the

name America was proposed; (4) the progress of nautical astronomy and the art of drawing maps in the fifteenth and sixteenth centuries. The material used in different parts of this work is so closely connected that it is often necessary to return to the same sources to bring to light the history of a discovery that has influenced until today the destiny of the peoples of Europe, of the improvements in the sciences and the theory of institutions more or less favorable toward freedom.

First Part

ABOUT THE CAUSES THAT THAT PREPARED AND BROUGHT ABOUT THE DISCOVERY OF THE NEW WORLD

¶14 [Jean-Baptiste Bourguignon] D’Anville made the at once witty and profound remark that the greatest errors in Ptolemy’s geography⁴ led to the greatest discoveries of new lands. In a similar way, the legend or, rather, the Nestorian myth of Prester John had gradually, from the eleventh to the fifteenth century, spread from the East of Asia to the Abyssinian highlands, in the process exerting an extraordinary influence on the geographical knowledges of the Middle Ages. All that inspires movement—be it error, vague intuitions, resolute reasoning—may be a driving force leading toward widening the scope of ideas, toward opening new routes for the powers of the intellect.

¶15 When one compares documents from different epochs with each other, one notices a dramatic change in the opinions Christopher Columbus expressed about the real motives for his first and fortunate expedition before and after his triumph and relative to his advancing age. It has recently⁵ been proven that it was in Portugal

4— The belief that Asia was located toward the east, beyond 180° latitude. See also [James] Rennell, *Geography of Herodotus*, p. 685. [655?]

5— [Fernández de] Navarrete, *Viages de los Españoles*

where, around 1470, that is, three years after having received advice from Paolo Toscanelli of Florence, Columbus had already had initial thoughts about his travels. At that time, the hopes this great man harbored were, [I.13] as is known, founded on what he called “well-reasoned rules of cosmography;” on the small distance of the western coasts of Europe and Africa from the coasts of Cathay and Cipango; on the views of Aristotle and Seneca; as well as on conjectures about lands located to the west based on indication from Porto Santo, Madeira, and the Azores. In *Vida del Almirante* [*Historia del Almirante*] Ferdinand Columbus provided an overview, in five chapters⁶ based on his father’s authentic manuscript, of the reasons for a plan whose implementation had been deferred [I.14] for 22 years until Columbus’s ripe old age. At age 24, Newton had already discovered everything that made him famous—fluxion notation [differential calculus], the laws of gravity, and what he called the analysis of light—while Columbus was 58 years old when, setting out from the reef of the Rio de Saltes [Isla de Saltés in the Rio de Huelva] on August 3, 1492, he joined the ranks of the great discoverers: He was 68 when he embarked on his last, dangerous voyage to the coast of Veraguas and the Mosquito Coast. Before his first expedition in 1492, Columbus, in order to validate his theory and prove that one

[*Coleccion de los viages*], Vol. I, p. Lxxix.

6— Chaps. 5–9. To this day, the Spanish original of this life-narrative, whose manuscript Don Luis [Colón de Toledo], first Duke of Veraguas and grandson of Christopher Columbus, had handed over to a Genoese patrician named Fornari in 1568, has not been found. It was translated into Italian in 1571, no doubt from a text riddled with errors, by Alfonso de Ulloa, and again translated, from Italian into Spanish, in 1749, to be included in Andrés González Barcía’s anthology *Historiadores primitivos* (Vol. I, p. 128). Compare also Antonio de León [Pinelo], *Epitome de la Bibliotheca oriental y occidental nautica y geografica* (1629), p. 62; and [Giovanni Batista] Spotorno, *Codice diplomatico Colombo-Americano* (1823), p. LXIII.

could take a very short route to reach “the land of exotic spices by sailing toward the west,” deemed important circumstances and trivial events, from which his enemies profited after his death in the infamous legal proceedings that the King’s fiscal brought against Don Diego Columbus to prove the claim that the discovery of America had long been foreseen and was therefore easy and not entirely new. The closer he came to the end of his life, the more Christopher Columbus abandoned all the unimportant events, the considerations drawn from the beliefs of the ancients, from certain indications of the land, and from general cosmographic concepts. The [I.15] *Lettera rarissima*⁷ from the Island of Jamaica dated July 7, 1503 and addressed to King Ferdinand and Queen Isabella, and even more so the fantastic text of the *Profecias* partly handwritten by the admiral after 1504 (18 months before his death), show the full extent to which the influence of a mystic theology gradually took hold of his great mind and soul.⁸

7— This rare letter became famous in 1810 through an Italian reprint from Bassano edited by the Venetian librarian [Jacopo] Morelli. A Spanish edition had already been printed in the early sixteenth century (Antonio de Leon Pinelo, *Bibliotheca occidental*, 1738, Vol. II, p. 566), and, according to [Guiseppe] Bossi, editor of an 1810 reprint, in Italian translation had been published in Venice in 1505.

8— *Documentos diplomaticos*, n. CXL. *Libro de las Profecias que junto el Almirante Don Christóbal Colón, de la recuperacion de la santa ciudad de Hierusalem, y del descubrimiento de las Indias* ([Fernández de] Navarrete, [*Coleccion de los viages*], Vol. II, pp. 260, 265, 272). In September of 1501, Columbus sent this theological manuscript which, despite differences in lands and centuries, inadvertently recalls the serious discussions of the immortal Newton about the eleventh horn of Daniel’s fourth beast (Brewster, *Life of Newton*, 1831, p. 279), to a Carthusian monk, Father Gaspar Gorricio, so that he might complete it and adorn it with scholarly citations. I date this fact eighteen months before the Admiral’s death on May 20, 1506, because of the mention at the end of the manuscript of *Profecias* of a lunar eclipse Columbus had observed near the eastern cape on the island of Haiti on September 14, 1504. But a different part

[I.16] “Neither human reason nor mathematics nor world maps,” wrote Christopher Columbus, “profited me at all to help carry out my voyage to the Indies” (*Profecias*, Fol. IV)⁹: “what the prophet

of *Profecias*, for instance, the one about the dangers of the approaching end of the world, dates to before 1501. “Saint Augustin teaches us,” writes Columbus, “that this end will occur during the seventh millennium after the creation of the world. This is also the belief of the holy theologians and Cardinal Pedro de Aliaco (Pierre d’Ailly, born in Compiègne in 1350). Your Highness knows that one counts 5,343 years and 318 days from Adam to the birth of Christ, following the exact calculation of King Alfonso [of Portugal]. Almost 1501 years have now passed since the birth of the Lord; the world has thus existed for 6,845 years, meaning that 155 years remain until the destruction of the world.”

9— *Ya dije que para la ejecucion de la impresa de las Indias, no me aprovecho razon, ni matematica, ni mapamundos.* [I said already that in the execution of my project in the Indies, I made use neither of reason, nor mathematics nor world maps.] Even so, earlier in the same letter to his Sovereigns, Columbus comments in the naivest of ways on his own learning, whose importance he hardly underestimates. “I was drawn to the sea from a tender age, and I went on to be a navigator, which I am to this day. Whoever devotes himself to the art of navigation desires to find out about the secrets of nature here on earth. I have busied myself with this for more than forty years now. [Ideler has 50 years.] Wherever people have sailed (on the surface of the oceans), I myself have also sailed. I have been in constant contact with scholars and scientists, clergymen, laymen, Latians as well as Greeks, Jews and Arabs, and members of many other sects. I found the Lord favorably inclined toward my plans (my desire to learn the secrets of the world): He granted me abilities and intelligence. The Lord blessed me with an abundance of knowledge about navigation (*en la marineria me hizo abondoso*); about the stars and astronomy, He supplied me with what I needed; the same with geometry and arithmetic. What is more, he gave me the spirit and the skill (*me dio ingenio en el anima y manos*) to draw world maps and on them to set cities, rivers, and mountains in their right places. At this time (during my youth) I studied all sorts of texts: historiography, chronicles, philosophy, and other arts and sciences to which the Lord had opened my mind. Unmistakably guided by his arm, I sailed from

Isiah had foretold simply occurred. Before the end of the [I.17] world, all prophecies must come true: the Gospel must be preached across the lands, and the holy city must be restored to the Church. With my voyage to the Indies, God had wanted to create a miracle. One must make haste to complete this work of divine inspiration [I.18] (*lumbre que fú del mundo*), because, according to my calculations, only 150 years remain until the end of the world (*hasta el fenecer del mundo*).” According to Columbus, then, the [I.19] world should have ended in 1656, between the death of Descartes and that of Pascal. Without tracing these musings further, we will examine very closely the earliest and truest reasons for the great discovery of America. I am well aware of how often able historians have discussed this subject, although generally without any critical perspective, without deep, detailed knowledge of earlier times, and without the serious study of original sources and documents, which is regrettably the case even in certain parts of [William] Robertson’s famous writings [*Historia de América*, 1777 and 1796]. The topic is far from having been exhausted, since the Spanish government generously made available

here to the Indies; for the Lord instilled me with the will to implement my plans, and with this burning passion, I approached Your Highness (*me abrió nuestro Señor el entendimiento con mano palpable, à que era hacadero navegar de aqui à las Indias, y me abrió la voluntad para la ejecucion dello; y con este fuego veni à V. A.*). All who had heard me speak of my plan denied that it could be carried out and mocked me (*con a risolo negaron burlando*); all the knowledges I mentioned did not profit me; and if Your Highness was the only one whose faith and perseverance remained unshaken, whom else to thank for the insight and clarity than the Holy Spirit” (*Profecias*, Fol. IV). In translating these words written with such beguiling candor, one feels strongly the need to acknowledge the difficulty of rendering with dignity the true energy and power of the old language of a man who, with much modesty, calls himself *lego mariner*, *non doto en letras y hombre mundanal* [a simple seafarer without higher education, a common man].

so much new material to help clarify the facts; since then, the specific facets of the great Genoese navigator's personality have emerged much more clearly from his own writings.

¶16 Columbus stayed in Portugal near the end of the reign of Alfonso V from 1470 [1474 in Ideler; other sources mention 1476–1494 and 1495] until the end of 1484. In 1485, he made a brief trip to Genoa to offer his services to that republic. These dates are derived from documents¹⁰ recently examined with special care. It [I.20] is, however, still unclear whether Columbus traveled to Genoa from Lisbon after having been to Spain. One after the other, he visited the monastery [Santa María] de La Rábida (near Palos), Seville, Córdoba, and Salamanca, and waited there in vain until April 1492, hoping that his expectations be fulfilled. “It was in Portugal,” said Ferdinand Columbus in his biography of his father, “that the admiral began to speculate that, if the Portuguese had sailed so far south, one might also take the western route and find land that way.” One may complain at least of solecism in this account. All we have from the hand of the admiral, the astronomer Paolo Toscanelli's letter, and Bartolomé de Las Casas' *published chronicle*¹¹ [the abstract based on a copy

10— Muñoz [y Ferrandis], *Historia del Nuevo Mundo*, book II, § 21, [Fernández de] Navarrete, [*Coleccion de los viages*,] Vol. I, p. LXXIX–LXXXI. Columbus had been in the service of Spain since January 1486, and it was at the end of that same year that the cosmographic disputes took place in Salamanca in the convent of Esteban, during which the Dominican monks showed themselves more accommodating and more enlightened than the professors from the university ([Antonio de] Remesal, *Hist[oria] de Chiapa* [1619], book. II, chap. 7).

11— After having studied jurisprudence at Salamanca, Las Casas traveled to Haiti with Ovando in 1502. He had in his possession many of the admiral's letters and even a handwritten text by him “about the signs of western lands gathered by Portuguese and Spanish pilots and seamen.” Ferdinand Columbus was only fourteen when he accompanied his father on his

of Columbus's diary] which [Antonio] Herrera [y Tordesillas], Muñoz, [I.21] and Navarrete used in their own work, proves that Christopher Columbus declared as the main, and I would almost say sole, purpose of his endeavors “the search for the east¹² by way of the west (*buscar el levante por el poniente*), to travel to the west of the Earth, the birthplace of spices (*pasar a donde nacen les especerías¹³ navegando al occidente*).” “I welcomed the admiral to my home,” recalled [Andrés] Bernaldez,¹⁴ a close friend of Columbus's better known [I.22] as the Cura Párroco of the Villa de los Palacios, “after his

fourth and last voyage, and although he was generally a better critic and a more perceptive historian than Bartolomé de Las Casas, his writing is very reserved and at times of a dispiriting terseness about everything concerning the admiral's genealogical origins and his adventures before 1492.

12— Herrera [y Tordesillas], *Historia de las Indias occidentales* [known as *Décadas*], Década I, Book I, chap. 6.

13— First and second letter from Paolo Toscanelli to Christopher Columbus (“*Collección diplom.*,” n. 1 in [Fernández de] Navarrete, [*Coleccion de los viages*,] Vol. II, pp. 1 and 3).

14— Bernaldez, *Historia de los Reyes católicos*, chap. VII. The reason « for visiting the lands of the Great Khan in order to instruct him in the Christian faith, should he so desire, » can be found in the letter to the Catholic Majesties, which, in the copy Las Casas made, was placed at the top of the travelog of Columbus's first voyage: *Vuestras Altezas ordenaron que no fuese por tierra al oriente (à la Indio y los pueblos del Gran Kan) por donde se costumbra de andar salvo por el camino de occidente, por donde hasta hoy no sabemos por certia fé que baya pasado nadie.* [Your Majesties ordered that one should travel to the east (to India and the peoples of the Great Khan) not as usual by land, but by the western route, of which we have no certain knowledge even today, so that no one has ever followed it.] The royal instructions Amerigo Vespucci received on September 15, 1506, and which Muñoz [y Ferrandis] copied in the archives of the [Casa de la] Contratación [House of Trade] in Seville, also speak of *l'armada que el señor Don Fernando mandó hacer para ir à descubrir al nacimiento de la especeria* [the armada that Don Fernando had ordered to be built to discover the origins of the spices] ([Fernández de] Navarrete, [*Coleccion de los viages*,] Vol. I, p. 2: *Cod. diplomatico*, n. CL, vol. II, p. 317).

return (from his second voyage) to Castile in 1496; as was his habit, he wore as a sign of his faith the rope of Saint Francis and garments whose style and color made them closely resemble the attire of the Observantine monks.¹⁵ At the time he traveled [I.23] in the company of the Great Cacique. He himself told me how he had first conceived of the idea to search for the lands of the Great Khan (the ruler of East Asia) by sailing to the west [*buscando las tierras del Gran Can navegando al occidente*].” Until the beginning of the sixteenth century, these articulations of the reasons for the admiral’s first voyage had become entrenched to such an extent that one reencounters them in the account of Sebastian Cabot’s first adventures by the legate Galeatius Butrigarius¹⁶ [Galeazzo Bottrigari?]. “In London at the court of King Henry VII,” narrates this legate, “when we received this initial news of the discovery of the coasts of India, presumably by the Genoese Christopher Columbus, everyone agreed that it was ‘a thing more divine than human, to sail by [I.24] the West to the East, where spices growe.’” For Columbus, as for Toscanelli, finding great lands by sailing from Europe to the eastern coast of Asia was only a secondary goal. On the first voyage, when, on September 19, 1492, the admiral was at 9° west of the meridian of the island Corvo near 28° latitude, he believed himself near land,¹⁷

15— Las Casas also says (*Hist. inédit.*, book I, chap. 102): “Given that the admiral is very devoted to Saint Francis, he had a decided preference for the color grayish-brown: we have seen him in Seville dressed almost entirely like a Franciscan monk.” Herrera’s claim that the famous seafarer Alonzo de Hojeda [Alonso de Ojeda], who accompanied Columbus on his second voyage, had joined the order of Saint Francis, is baseless ([Fernández de] Navarrete, [*Collecion de los viages,*] Vol. III, p. 176).

16— [Richard Biddle, ed.], *Memoir of Sébastian Cabot; [with a Review of the History of Maritime Discovery]*. Illustrated by Documents from the Rolls, Now First Published, 1831, p. 10.

17— [Fernández de] Navarrete, [*Collecion de los viages,*] Vol. I, p. 11. See also the diary entries for Wednesday

but his intent was (in the words of his travel diary) “to continue his route to the Indies, because he could explore more at his leisure upon his return.”^{¶17} Toscanelli, who had occupied himself theoretically with the same projects as Columbus at least since 1474, mentions for the westward route only the island of Antilia which one would find at the distance of 225 leagues before reaching Cipango (Japan). “The map I hand you for the King (of Portugal),” Toscanelli writes in his letter to Fernando Martínez, the canon of Lisbon, “shows you the entire space between the west (that is, from Ireland to the coast of Guinea) and the beginning of the Indies. On it, I have marked by hand *islands and other places located en route*, and where one might stop over should unfavorable winds or some other accident make it necessary to seek shelter. You will not be surprised that I call the west the land of spices, even though it is typically known as the Orient; for those who continue to sail toward the west will find there the same lands that those who travel toward the east by land encounter in the east.” The geographical system of the times, based, with respect to eastern Asia, and the neighboring ocean, almost exclusively on the accounts by Marco Polo, Balducci Pellogetti [Francesco Balducci Pegolotti], and Nicolas de Conti [Niccolò de’ Conti] imagined countless islands rich in spices and gold in the Sea [I.26] of *Cin*, that is, in the oceans of Japan, China, and the great archipelago of the Indies. Martin Behaim’s world map shows us a chain of islands opposite the tip of Asia, from 45° north to 40° south. This string of islands includes little Cathay,

and Saturday (pp. 16 and 17), where Columbus says: “To stop on the way, when the goal of the voyage is to sail to the Indies, would be great folly (*no fuera buen seso*); and further below (distinguishing between the continent of Asia and the islands that surround it to the east), the admiral “does not want to visit the island Cipango, because he prefers to go to the mainland first and then to the islands.”

Zipangu (Nipon), situated almost entirely in the torrid zone; [the legendary island] Argyre situated at the eastern end of the world the ancients and the Arabs knew; Java major [(Borneo), Java minor (Sumatra), which Marco Polo visited for five months and where he encountered the sago palm and a species of rhinoceros with two horns and barely wrinkled skin, both native to this island, Candyn and Angama. When on his first voyage (on November 14, 1492) Columbus landed on the northern coast of Cuba, which he initially believed to be Zipangu, he was enthralled, in the Old Canal near Puerto del Principe, by the beauty of a group of verdant keys that, to his impassioned imagination, appeared to belong to “these countless islands situated (these are his own words) on the world maps in the far East.”¹⁸

18— See “Journal de l’Amiral” in [Fernández de] Navarrete, [*Coleccion de los viages*,] Vol. I, p. 58. The copy of the journal by Las Casas reads: “Wednesday, November 14, 1492. Dice el Almirante que cree que estas islas son aquellas innumerables que en los mapamundos en fin del Oriente se ponen” [The admiral says that he believes that these islands are among the uncountable ones that the world maps place at the end of the East]. Columbus also says that he thinks that the group of these islands would extend and increase in number towards the south, and that he would find there “grandismas [sic] riquezas, y piedras, preciosas, y especeria” [immense riches and precious stones and spices]. The Catalan Atlas from the Royal Library in Paris, which dates back to 1374 and our knowledge of which was significantly enhanced by the learning of [Jean Alexandre] Buchon, includes a legend about the Indian Ocean that mentions the existence of 7,548 islands “rich in precious stones and metals.” Martin Behaim’s world map, completed in 1492, has a quotation from Marco Polo ([*Travels*,] Book III, chap. 42) and mentions 12,700 islands “with” mountains of gold, pearls, and dozens of different spices [and wondrous people, much to write about this (*mit vil Edelgestain, Perlein und Golt Peragen 12 lei Spezerey und wunderlichem Volck, davon lang zu schreiben*, as Behaim put it in his powerful old diction. [Christoph] Gottlieb von Murr, *Diplom. Gesch. von Martin Behaim [Diplomatische Geschichte des portugiesischen berühmten Ritters Martin Behaims]*, 1778, p. 37. The quotation from Marco Polo

¶18 Not without reason has it been said that Columbus, in defending his plan, reveals himself less audacious and more adept than how he had been [I.28] described elsewhere.¹⁹ The reasons he presented are better explained in Herrera’s *Décadas*²⁰ than in the *Vie de l’Amiral* by his son Ferdinand, although all the modern histories of the discovery of America have depended on the latter work. When one arranges these reasons according to the nature of the information from which they had sprung, and when one compares each with the original documents we can today consult, one realizes that Columbus’s hope to reach the east from the west [*le levante por el poniente*], to reach regions of Asia rich in spices, diamonds, and precious metals, rested on the idea of the spherical form of the earth; on the relation between the size of the oceans and that of the continents; on the view that the coasts of the Iberian Peninsula and tropical Africa were not distant from the islands adjoining tropical Asia; on a serious error about the longitude of the Asian coasts; on details culled from ancient works, from Arabic writers, and perhaps from Marco Polo; on [I. 29] signs of lands to the west of the Cape Verdean Islands, Porto Santo Island, and the Azores which, at different times, were believed to have been located either by observing certain natural phenomena or from the accounts of seafarers who had been thrown off course by storms and ocean currents. It is also necessary to distinguish carefully between the ideas that occupied the great man before and during his discoveries and the thoughts to which these discoveries gave rise in his mind

is incorrect. The Venetian traveler speaks of 12,700 islands (book III, chap. 38), an allusion to the Maldives ([*The Travels of Marco Polo, the Venetian*], ed. by [William Percival] Marsden, p. 717). Behaim moved this island group to the northeast, which influenced the views of the navigators at the end of the 15th century.

19— [Conrad] Malte-Brun, *Géographie universelle*, 1831, Vol. I, p.616.

20— [Herrera y Tordesillas,] *Décadas* I, Book I, chap. 1–6.

afterwards. One has to compare those with facts that have neither been equally verified nor interpreted correctly, among them the report of a Buddhist priest, Hoeïschin [Huïsheng] about the Fusang [a mythical world tree or place in China] and Tahan [in Myanmar?] (from the year 500), the discoveries of Greenland, Vinland, and the delta of the Saint Lawrence Stream by Eric Rauda (985), Bjoern (1001), and Madoc ap Owen (1170), the adventurous expedition on which nomadic Arabs (*Almagrurim*²¹) embarked from Lisbon (1147), the sea voyages to the west to India by the Genoese Guido de Vivaldi (1281) and Teodosio Doria (1292), whose fate has remained unknown [1.30], and finally the frequently studied and commented on voyages by the Venetian brothers Zeni (1380). I have arranged these facts and legends chronologically in order to prove that they go back a thousand years before Columbus who, even in a century of resurgent bravery and learnedness, took great pleasure in remembering of Solon's Atlantis [or rather the Egyptian priest Sonchis of Saïs's account of Atlantis in Plutarch's *The Life of Solon*] and the famous prophecy from a chorus in Seneca's *Medea*.²²

21— The name *Almagrurim* refers those whose "hopes have been betrayed" and is derived from the root word *meghrur*. [Ideler adds: the real root is *gharra*, "he has betrayed."]

22— [The relevant stanza from Seneca's *Medea* is added in Ideler's German translation: "Venient annis saecula series, / Quibus Oceanus vincula rerum / Laxet, et ingens pateat tellus, / Tethysque novos detegat orbes, / Nec sit terris ultimate Thule." Frank Justus Miller's English translation (from the Loeb Classical Library edition, 1917) is as follows: "There will come an age in the far-off years / when Ocean shall unloose the bounds of things, / when the broad whole Earth shall be revealed, when Tethys shall disclose new worlds / and Thule shall not be the limit of the lands." See Seneca, *Seneca's Tragedies*, trans. Frank Justus Miller (Harvard University Press, 1917), 261.]