

The Mythic Geography of the Northern Polar Regions:  
*Inventio fortunata* and Buddhist Cosmology  
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Where is the center of the world? Is it the omphalos in the *adytum* of Apollo's temple at Delphi? The "Navel of the World" pillar in the *catholicon* of the Church of the Holy Sepulcher in Jerusalem?[1] The temple of Madhyameshrava, "The Lord of the Center," in the holy city of Benares, India? Easter Island in the South Pacific, whose ancient name, "To Pito o Te Henua," means "The Navel of the World"? The stone marking Kilomètre Zéro on the Ile de la Cité, Paris, just in front of Notre Dame? The Kanro-dai pillar at the Tenrikyo Main Sanctuary in Tenri, Japan? The monument at El Mitad del Mundo, 22 km north of Quito, Ecuador? Lake Poso in the center of the island of Sulawesi, Indonesia, the pivot of the earth and heavens, and the spot where a rope once joined the two?

Sacred centers are usually located near the people in whose mythology they play a part,[2] but there are distant spots on the earth that many different peoples recognize have a special central status: the North and South Poles. These spots are pierced by the axis of the heavens; they are the crowns of the world, about which all the stars dance, the points to which all compasses direct their needles. The recognition of the centrality of the earth's poles is reflected in one of the names of sacred centers, *axis mundi*, as well as in various attempts to connect sacred centers with the Poles. The city of Beijing is known as the "Pivot of the Four Quarters," and the sacred center of the city, the Forbidden City, is more precisely known as the "Purple Forbidden City" (Zi Jin Cheng), purple being the symbolic color of the North Star, and the designation "Purple Forbidden City" thus signifying that the emperor's residence is the center of the world. [3] There was also a ninth-century Islamic tradition, argued by al-Kisa'i of Kufa, that the Kaaba in Mecca (for which "the center of the earth" is a common epithet among Muslims) is located directly beneath the North Star.[4]

Thus symbolism of or connection with the Pole (in this paper I will be dealing almost exclusively with the North Pole) is often ascribed to local sacred centers, while the Pole itself, until this century both in belief and in fact unattainable, has received little mythological attention as a center. I will examine two systems of mythology relating to the northern polar regions, systems which, though from very different cultures, turn out to be remarkably similar.

Gerardus Mercator (1512-94) is perhaps the only figure in the history of cartography whose name has become a household word, and his system of map projection, called the Mercator projection, is still widely used today, albeit usually in slightly modified forms. Mercator was famous for his meticulous research and accuracy, and thus it is quite a surprise to see for the first time Mercator's map of the northern polar regions, *Septentrionalium terrarum descriptio* (1595)[5]: the map shows a North Pole that is very unfamiliar to modern eyes (see figure 1). At the center of the map, and right at the Pole, stands a huge black mountain; this mountain was made of lodestone, and was the source of the earth's magnetic field.[6] The central mountain is surrounded by open water, and then further out by four large islands that form a ring around the Pole. The largest of

these islands perhaps 700 by 1100 miles, and they all have high mountains along their southern rims. These islands are separated by four large inward-flowing rivers, which are aligned as if to the four points of the compass-- though of course there is no north, east, or west at the North Pole: every direction from this center is south. Mercator's notes inform us that the waters of the oceans are carried northward to the Pole through these rivers with great force, such that no wind could make a ship sail against the current. The waters then disappear into an enormous whirlpool beneath the mountain at the Pole, and are absorbed into the bowels of the earth. Mercator also tells us that four-foot tall Pygmies inhabit the island closest to Europe.

More remarkable than this map itself is the fact that many other contemporary maps, maps by the most respected cartographers of the time, show a very similar configuration around the North Pole. Martin Behaim, who died before Mercator was born, made a famous globe in 1492 (this is in fact the oldest surviving terrestrial globe) that shows land surrounding the North Pole. There are two large islands right near the Pole in the western hemisphere, while extensions of Europe and Asia reach northwards so as to form, together with the two islands just mentioned, a broken circle of land around the Pole. A world map by Johannes Ruysch, the *Universalior cogniti orbis tabula*, published in an edition of Ptolemy's *Geographia* in Rome in 1508, shows four islands around the North Pole; two (the one north of Greenland and its opposite across the Pole) are labeled "Insula Deserta"; the one north of Europe is that of the Hyperboreans; and the one north of America is labeled "Aronphei." He labels the waters within the four islands as the "Mare Sugenum," and speaks of a violent whirlpool that sucks the incoming waters down into the earth; in addition, his map shows a ring of small, very mountainous islands around the four islands, which numerous islands Ruysch says are uninhabited.

Other maps that show these northern islands include:[7] Orontius Finaeus' *Nova et Integra Universi Orbis Descriptio*, published in 1534-6, but designed about 1519 for Francis I; Abraham Ortelius' famous *Typus Orbis Terrarum* (1570) and also his *Septentrionalium regionum descriptio* (1570), which latter follows Mercator particularly closely; the anonymous world map in George Best's *True Discourse* (London, 1578); Cornelius Judaeis' *Speculum orbis terrae* of 1593, as well as his maps of *Quiviriae regnum* and *Americae pars borealis* (also 1593; see figure 2); and Petrus Plancius' *Orbis terrarum typus de integro multis in locis emendatus* (1594), published in Jan Huygen van Linschoten's *Itinerario* (1596), as well as his influential *Nova et exacta terrarum orbis tabula geographica ac hydrographica* (Amsterdam and/or Antwerp, 1592). There are many, many other contemporary maps -- literally scores, including examples from as late as the 1700s[8] -- that show the same configuration of islands around the Pole.

The suggestion that there must be a large mountain of lodestone at the North Pole to account for the earth's magnetism goes back to at least the 13th century, not long after the invention of the compass,[9] but what was the source of the four islands and the inward-flowing rivers, of the mountains and the Pygmies? Mercator cites his authority for his delineation of the northern regions: the *Itinerarium* of a Flemish traveler named Jacobus Cnoyen (now lost); Cnoyen gave as his sources the *Res gestae Arturi britanni* (now lost), and a book written by an English Minorite, a mathematician from Oxford, who had

traveled in the far north in 1360 and recorded what he saw; this work was called the *Inventio fortunata*, which also, (ironically, in light of its title) is lost.[10] Ruysch cites the same sources, and Fridtjof Nansen argues convincingly that Behaim was working from the *Inventio fortunata* also.[11] Mercator and his contemporaries believed the author of the *Inventio fortunata*, the English Minorite, to be Nicholas de Linna (Nicholas of King's Lynn); others have argued against this identification.[12]

Thus the source of this mythical polar geography is a lost work by an unknown author of the 14th century. Nonetheless, it is possible to speculate about where the author of the *Inventio fortunata* may have derived this geography. Fridtjof Nansen has found mentions of a great northern whirlpool in Norse legends of the world's well, "Hvergelder," which causes the tides by pushing and pulling water through its subterranean channels, Isidore of Seville (c.560-636), the *Gesta hammaburgensis ecclesiae pontificum* of Adam Bremensis (11th century), the *Topographia hibernica* of Giraldus Cambrensis (1146-1220; his description of the northern whirlpool is cited by Mercator), the *Historia norvegiae* (c.1180), the *Speculum regale* (c. 1250) of Einer Gunnarson, and a particularly interesting quote from the Langobard author Paulus Warnefridi (c.720-790), also called Diaconus:[13]

"And not far from the shore which we before spoke of, on the west, where the ocean extends without bounds, is that very deep abyss of waters which we commonly call the ocean's navel. It is said twice a day to suck the waves into itself, and to spew them out again; as is proved to happen along all these coasts, where the waves rush in and go back again with fearful rapidity.... By the whirlpool of which we have spoken it is asserted that ships are often drawn in with such rapidity that they seem to resemble the flight of arrows through the air; and sometimes they are lost in the gulf with a very frightful destruction. Often just as they are about to go under, they are brought back again by a sudden shock of the waves, and they are sent out again thence with the same rapidity with which they were drawn in."

Delno West has argued that for the author of the *Inventio fortunata*, the whirlpool at the North Pole represented an entrance to Hell, which was believed to be in the center of the earth, and also that the four inward-flowing rivers and whirlpool are the counterpart to the fountain in the Garden of Eden, whence the four great rivers branch out to water the world (see *Genesis* 2:10-14) if the rivers flow out, they must flow back in somewhere and be recycled.[14]

West's argument that the author of the *Inventio fortunata* saw the whirlpool as an entrance to Hell seems far-fetched, as neither the map makers nor any of the author's likely textual sources for the whirlpool mention that it was an entrance to Hell. West's suggestion of a connection between the northern whirlpool and the fountain in the Garden of Eden is very intriguing, but it must be noted that there is no evidence that Behaim, Ruysch, Mercator, and the other cartographers who followed the geography of the *Inventio fortunata* believed that the northern whirlpool was the counterpart to the fountain in Eden. The Garden of Eden may have been a fixture on medieval *mappae mundi* (i.e. world maps more or less contemporary with the *Inventio fortunata*; see for

instance the Hereford Mappa Mundi of c. 1280), but it appears on none of the maps under consideration here. Indeed the Jesuit polymath Athanasius Kircher (1602-80), who published the earliest chart of the global ocean circulation in his *Mundus subterraneus* (1665), and who follows the geography of the *Inventio fortunata* in asserting that there is a whirlpool at the North Pole sucking in the waters of all the oceans, also asserts that the waters emerge again, not in Eden, but at the South Pole.[15] Nonetheless, I believe that the analogy between the polar geography of the *Inventio fortunata* and the Garden of Eden is important.

The persistence of the *Inventio fortunata* geography on maps for, say, 150 years is to some extent a testament to the esteem in which Mercator and Ortelius were held by other cartographers; it is also, I think, a testament to the great psychological and mythical power of the concept of the center. It was well-known that the North Pole was the true center of the earth, and the author of the *Inventio fortunata* gave an account of the geography that was so mythologically satisfying, that it continued to be believed or at least repeated well past the time when scholars and explorers knew that the account was false. Many sacred centers are aligned to the four cardinal directions: the Purple Forbidden City has four gates opening out to the four cardinal directions; the Throne Room of the Royal Palace of King Mindon, a perfect square oriented to the cardinal directions, was in the middle of Mandalay, which is thought to be the center of Burma, and hence of creation; above the throne room rose a gold-plated, seven-story, 256 ft tower or *pyathat*, which was thought to funnel the wisdom of the universe to the king in its center.[16] The Great Temple Tenochtitlan (now Mexico City) was at the center of the island, the first spot colonized, and the spot where the eagle eating the serpent on the cactus was seen, and the sacred precinct had gates in the four directions. And many other examples of sacred centers oriented to the cardinal directions come to mind-- not least the Garden of Eden with its four streams.

The *Inventio fortunata* places a mountain at the Pole, and of course many sacred centers are mountains; a passage into the depths of the earth is another common feature of sacred centers. Moreover, the powerful flow of water from the four corners of the earth in through the rivers to the Pole, and there down a whirlpool, is the strongest possible confirmation and emphasis of the Pole's centrality, as strong almost as the thought of millions of Muslims facing Mecca from all corners of the earth five times a day in prayer. This role the North Pole plays in the circulation of the earth's waters gives the spot the global importance we expect of a sacred center. Also a number of sacred centers seem to be connected with primal waters: the Garden of Eden again; the Rock of the Temple of Jerusalem, which closes "the mouth of the *tehom*," or the watery chaos beneath the earth that was involved in Noah's flood; Uisneach Hill in Ireland, seat of the Stone of Divisions, and the center of Ireland according to the division of the country made by the god Fitnan, son of Ocean, was also the source of the waters of the Deluge; and the mountain Haraiti or Alburz, to the east of Iran, which is the "navel of waters," as the fountain of all waters springs there. And a text by Mich-Tzu dating from the era of Liu-ch'ao (420-588) places the Chinese Isles of the Immortals at the point where all the waters of the earth and the rivers of the Milky Way flow together.[17]

Thus the surprisingly long survival of the *Inventio fortunata* geography reflects the mythological power of that geography: it asserted a polar configuration consistent with people's expectations for one of two spots on the planet pierced by the celestial axis.

The other example of northern polar mythology I would like to examine is the Brahmanic Hindu and Buddhist conception of the earth.[18] Brahmanic Hindu and Buddhist mythology is very complex, partly because of the creativity of Indian mythographers, which results in many different versions of each myth, and partly because Indian mythographers rarely abandoned old ideas or theories, but continued to present them alongside new ideas, even when the new and the old were inconsistent; the complexity may increase even further, when one cosmological scheme, for instance, is presented not merely alongside another, but is encapsulated within another.[19] I will look at an early and relatively simple Hindu/ Buddhist conception of the earth, which may be found as part of many later and more complicated schemes: the *catur-dvipa vasumati*, or "four continent earth" model.

In Brahmanic Hindu and Buddhist belief, the earth's sacred center is (quite unusually) not near at hand, but far off to the north, on a separate, unattainable continent:[20] the center is Mt. Meru or Sumeru or Sineru, and it is the *axis mundi*, the fixed point about which the heavens revolve; its summit is the dwelling-place of the Trayastrimsa gods, the highest of the six Buddhist worlds of gods. According to the "four continent earth" model, the earth's continents are arranged in the form of a lotus flower.[21] Mt. Meru stands at the center of the world, the pericarp or seed-vessel of the flower, as it were, surrounded by circular ranges of mountains. Around Mt. Meru, like the petals of the lotus, are arranged four island-continents (*dvipas*), aligned to the four points of the compass: Uttarakuru to the north, Ketumala or Aparagoyana to the west, Bhadrasva or Puvvavideha to the east, and Bharata or Jambudipa to the south; Jambudipa is the part of the world inhabited by humans.

The dimensions of all these elements are fantastic. Mt. Meru is 84,000 *yojanas* (420,000 miles)[22] high, and the island-continent of Jambudipa, which includes India, is 10,000 *yojanas* (50,000 miles) in extent, with the area occupied by the Himalayan Range and human habitations being 3,000 *yojanas* (15,000 miles) in extent. The level of detail in the descriptions of all these mythical regions is astonishing: there are named mountain ranges, rivers, and races of semi-divine beings everywhere, and we learn the height of each of the races, how long they live, and the shape of their faces. In addition, it was held that on or near Mt. Meru was Lake Anotatta (or Anawdat), which was the source of the world's rivers. The lake is surrounded by a mountainous rim, and through rocky openings in this rim shaped like the heads of an ox, horse, lion, and elephant, four rivers flow to the south, east, north, and west, respectively. These rivers flow three times around Anotatta in spirals, and then continue in their original directions towards the four cardinal points. The river flowing to the south (from the ox's head) is the proto-Ganges; after dashing against a mountain, spurting high (60 *yojanas*/ 300 miles) in the air, falling back to earth, and following an underground course, it emerges to form five rivers whose names can be traced to rivers in northern India, namely the Ganges and its tributaries.[23]

Mt. Meru is the point about which the heavens revolve, the *axis mundi*, and thus something very similar to the North Pole of the Buddhist/ Hindu universe. Indeed, the North Star was held to stand directly above Mt. Meru, linked by ropes of wind to all the heavenly bodies.[24] The spot beneath the North Star should, according to our conceptions, be the North Pole; but the cosmographical texts in this tradition hold that the earth is a flat disc or shallow bowl, and thus the concept of a North Pole is absent. The continent Uttarakuru was held to be north of Mt. Meru, and indeed the particle "uttara" means "north."

However, there is a very long tradition of Indian cosmological globes: such globes (or *bhugolas*) were known to the Indian astronomer Aryabhata (b. 476), and are frequently described in medieval Indian texts.[25] Transferring the terrestrial features of Hindu cosmography from a flat disc to a sphere required a number of changes, the most important of which was that Mt. Meru was moved to the North Pole. The pericarp of the lotus now being at the North Pole, the petals of the lotus, the four continents, stretch southward from Mt. Meru towards the equator, and the continent Uttarakuru, whose name implied that it was north of Mt. Meru, has its name changed to Kuruvarsa. One such globe, probably made in Orissa in the early to mid-nineteenth century, but depicting cosmological traditions that are centuries older, is illustrated in figure 3.[26]

The similarities between the *Inventio fortunata* and the Brahmanic Hindu and Buddhist conceptions of the northern polar regions of the earth should by now be obvious. Both place a large mountain at the Pole surrounded by four islands aligned as if to the four points of the compass. From the one mountain radiates the earth's magnetic field; the other is the pivot of the universe, and the home of the divine. And while the while the *Inventio fortunata* has the waters of the world's oceans flowing in towards the Pole from the four quarters and then down into the earth, the Buddhist conception has a large lake with four huge rivers flowing out to the four corners of the earth. Of course there are many differences between the two conceptions: the one is a secular or geographical mythology, the other divine, and there are differences of scale, differences in degree of elaboration, the difference between water flowing in and water flowing out, and others. But the similarities are impressive.[27]

To attempt to argue that the *Inventio fortunata* was by some circuitous means derived from Buddhist conceptions of the northern polar regions would be at best a highly precarious undertaking. Quite aside from the inherent improbability of such an influence, when the work itself is lost and its author uncertain, no such argument can have a foot to stand on. I am inclined rather to see the fact that two so similar mythographies of the northern polar regions should arise and persist in two so different cultures as a testament to both the creativity of these two cultures, and to the degree to which these mythographies match our innate transcultural conception of what a sacred center should be.

## Notes

1. St. Adamnan (late 7th century) in his *De locis sanctis* 1.11.1-3 alleges as a proof of the centrality of Jerusalem the fact that a column in the city casts no shadow at midday during the summer solstice. The pilgrim Saewulf, who was in the Holy Land in 1102 and 1103, writes: "At the head of the Church of the Holy Sepulchre, in the wall outside, not far from the place called Calvary, is the place called Compas, which our Lord Jesus Christ himself signified and measured with his own hand as the middle of the world, according to the words of the Psalmist, 'For God is my king of old, working salvation in the midst of the earth.'" Quoted from Thomas Wright, trans. and ed., *Early Travels in Palestine* (London, 1848), p. 38. This tradition continued into later centuries: in 1664 the French priest Eugene Roger in his *La Terre Sainte, ou, Terre de promission* put forth a detailed argument that the precise center of the earth is a spot marked on the pavement of the Church of the Holy Sepulcher, and the pillar in the Church marks this spot today. For a good discussion of early texts relating to the centrality of Jerusalem (without reference to the pillar in the Church of the Holy Sepulcher) see Philip S. Alexander, "Jerusalem as the Omphalos of the World: On the History of a Geographical Concept," *Judaism* 46.182 (Spring, 1997), p. 147-59, also published p. 104-19 in Lee I. Levine, ed., *Jerusalem: Its Sanctity and Centrality to Judaism, Christianity, and Islam* (New York, 1999); also see Samuel Terrien, "The Omphalos Myth and Hebrew Religion," *Vetus Testamentum* 20 (1970), p. 315-38; Rudolf Simek, "The Journey to the Centre of the Earth: Jerusalem as the Hub of the World," p. 73-81 in his *Heaven and Earth in the Middle Ages: The Physical World Before Columbus*, trans. Angela Hall (Woodbridge, UK, 1996); Dorothea R. French, "Journeys to the Center of the Earth: Medieval and Renaissance Pilgrimages to Mount Calvary," p. 45-81 in Barbara N. Sargent-Baur, ed., *Journeys Toward God: Pilgrimage and Crusade* (Kalamazoo: Medieval Institute Publications, Western Michigan University, 1992); F. Niehoff, "Umbilicus Mundi - Der Nabel der Welt. Jerusalem und das heilige Grab im Spiegel von Pilgerberichten und -karten, Kreuzzügen und Reliquiaren," vol. 3, p. 53-72 in Anton Legner, ed., *Ornamenta ecclesiae: Kunst und Künstler der Romanik : Katalog zur Ausstellung des Schnütgen-Museums in der Josef-Haubrich-Kunsthalle, Köln, 1985* (Cologne, 1985); Kerstin Hengevoss-Dürkop, "Jerusalem - Das Zentrum der Ebstorf-Karte," p. 205-222 in Hartmut Kugler and Eckhard Michael, eds., *Ein Weltbild vor Columbus: die Ebstorfer Weltkarte: Interdisziplinäres Colloquium 1988* (Weinheim: VCH, 1991); and Iain Macleod Higgins, "Defining the Earth's Center in a Medieval 'Multi-Text': Jerusalem in *The Book of John Mandeville*", p. 29-53 in *Text and Territory: Geographical Imagination in the European Middle Ages*, eds. Sealy Gilles and Sylvia Tomasch (Philadelphia, 1998).

2. See the discussion of the "omphalos syndrome" (the tendency to locate the center of the world near oneself) by J. B. Harley, "Maps, Knowledge, and Power," p. 277-312 in *The Iconography of Landscape: Essays on the Symbolic Representation, Design and Use of Past Environments*, eds. Denis Cosgrove and Stephen Daniels (Cambridge, 1988).

3. See Florence Ayscough, "Notes on the Symbolism of the Purple Forbidden City," *Journal of the North China Branch of the Royal Asiatic Society* 52 (1921), p. 51-78; John A. Agnew and James S. Duncan, eds., *The Power of Place: Bringing together*

*Geographical and Sociological Imaginations* (Boston, 1989), p. 202-27; Jeffrey F. Meyer, "Traditional Peking: The Architecture of Conditional Power," in *The City as a Sacred Center: Essays on Six Asian Contexts*, eds. Bardwell Smith and Holly Baker Reynolds (Leiden, 1987), p. 114-33, esp. p. 119-20; and Paul Wheatley, *Pivot of the Four Quarters: A Preliminary Enquiry into the Origins and Character of the Ancient Chinese City* (Chicago, 1971), *passim*.

4. Mircea Eliade and Lawrence E. Sullivan, *The Encyclopedia of Religion*, ed. Mircea Eliade (New York, 1987), s.v. "Center of the World."

5. The *Septentrionalium terrarum descriptio* was printed (posthumously) in 1595, and is very similar to an inset map of the northern polar region Mercator made on his world map of 1569, *Nova et aucta orbis terrae descriptio ad usum navigantium emendate accommodata*, commonly referred to as *Ad usum navigantium*. The 1595 map has been widely reprinted. The northern islands did not appear on Mercator's world map of 1538.

6. Mercator held that there were two additional magnetic poles north of the strait between Asia and the New World, in order to account for the deviation of the compass; these do not appear in the *Inventio fortunata*, to be mentioned shortly.

7. It should be noted that on world maps centered on the equator, rather than the Pole, the northern islands appear as elongated strips across the top of the map, due to the distortions involved in projecting the surface of a sphere onto a two-dimensional map. A good source of facsimiles of early maps is Rodney W. Shirley, *The Mapping of the World: Early Printed World Maps 1472-1700* (London, 1983). Mercator's *Septentrionalium terrarum descriptio* was popular enough to inspire a number of blatant imitations, including maps by Matthis Quad (Cologne, 1600), Petrus Bertius and Jodocus Hondius Jr. (Amsterdam, 1616), and Johannes Cloppenburg (Amsterdam, 1630); these are conveniently illustrated in Philip D. Burden, *The Mapping of North America* (Rickmansworth, 1996), p. 161, 224, and 278-9.

8. The cartographic influence of Mercator and Ortelius even extended to China: there are Chinese maps that show the northern islands (e.g. *Shanghai Yudi Quantu*, Complete Geographic Map of the Mountains and Seas, 1609, illustrated in *The History of Cartography*, eds. J. B. Harley and D. Woodward (Chicago, 1987-), vol. 2.2, p. 176). These maps are derived from the world maps of the Jesuit missionary Matteo Ricci (1552-1610), who established a mission at Zhaoqing Prefecture (in present-day Guangdong Province) in 1583. Mercator-influenced maps also appear in Japan: Abe Yasuyuki's *Banukoku Chikyu Yochi Zenzu* or Map of the World (1853), shows the four northern islands; it is illustrated in Hugh Cortazzi, *Isles of Gold: Antique Maps of Japan* (New York, 1983), p. 119; also see his p. 102. For later fringe believers in a northern hole and/or whirlpool, see Joscelyn Godwin, *Arktos: The Polar Myth in Science, Symbolism, and Nazi Survival* (Grand Rapids, 1993), p. 105-123 (Chapter Nine, entitled "The Hole at the Pole"); and M. Gardner, *Fads and Fallacies in the Name of Science* (New York, 1957), p. 19-22. The concept of a northern whirlpool played a central role in an anonymous early science fiction novel, *Le Passage du Pôle Arctique au Pôle Antarctique*



par le Centre du Monde (Paris, 1721), as well as in William Bradshaw's *The Goddess of Atvatabar, being the History of the Discovery of the Interior World and the Conquest of Atvatabar* (New York, 1892). Basically though Mercator's view of the northern regions lost favor after 1598, when the Dutchman Willem Barentsz made his famous chart of the northern polar regions showing open water there.

9. Pliny *Naturalis historia* 2.97 (1st century) mentions two lodestone mountains in India, Ptolemy *Geographia* 7.2 (2nd century) mentions ten magnetic islands, the Maniolae, near India, and the ensuing history of magnetic mountain and island myths (chiefly eastern, rather than northern) is traced by A. Graf, "Un mito geografico (il monte della calamita)", p. 363-75 in *Miti, leggende, e superstitione del medio evo* (Torino, 1892-3); see also Claude Lecouteux, "Die Sage vom Magnetberg," *Fabula* 25.1-2 (1984), p. 35-65; Caroline Cazanave, "L'île d'Aimant," p. 37-46 in *L'insularité thématique et représentations: actes du colloque international de Saint-Denis de La Réunion, avril 1992*, eds. Jean-Claude Marimoutou and Jean-Michel Racault (Paris, 1995); and the works cited by Richard Hennig, *Terrae Incognitae* (Leiden, 1944-56), vol. 3, p. 319-20. The compass is first mentioned by Alexander Neckam in his *De naturis rerum*, written about 1180, though it was probably in use in European ships for some time before that. By 1276, the theory that there was a mountain of lodestone at the North Pole was well enough known for the poet Guido Guinizelli to use it in a simile to describe the power of his lady's love ("Madonna, il fino amor ched eo vo porto," vv. 49-55):

In quella parte sotto tramontana	In that land beneath the North Wind
sono li monti de la calamita	Are the magnetic mountains,
che dàn vertud' all'aire	Which transmit to the air their power
di trar lo ferro, ma perch' è lontana,	To attract the iron, but because it is far away,
vòle di simil petra aver aita	It needs help from a similar stone
per farlo adoperare	To make the compass needle
che si dirizzi l'ago ver' la stella...	Turn towards the polestar...

The northern lodestone mountain theory was supported by Girolamo Fracastorio (1483-1553) and Olaus Magnus (1490-1558), who writes in his *Historia de gentibus septentrionalibus* that ships in the north must be built with wooden pegs, as iron nails would be pulled out by the northern lodestone. The lodestone mountain theory was also popular among Arab sailors; see Ian Darragh, "Pole Position," *Geographical Magazine* 67.9 (1995), p. 30-32. Many medieval and renaissance maps do not show this mountain at the North Pole, but it was 1600 before someone came up with a better explanation of the earth's magnetism: Sir William Gilbert, physician to Queen Elizabeth I, in his famous study *De magnete*, concluded that "magnus magnes ipse est globus terrestris," "the earth's globe itself is a great magnet." Nonetheless, as late as the 1650s Peter Heylyn recounts the *Inventio fortunata* polar geography as fact in the fourth book of his *Cosmographie in Four Books* (London, 1652).

10. For a good discussion of the *Inventio fortunata* and its influence see R. A. Skelton et al., *The Vinland Map and the Tartar Relation* (New Haven, 1965), p. 179-82; also see Richard Hennig, *Terrae Incognitae* (Leiden, 1944-56), vol. 3, p. 315-323; B. F. de Costa, "Arctic Exploration," *Bulletin of the American Geographical Society* 12 (1880), p. 159-92; and Urte E. de Reyes. "Mercator's Changing Concept of the Nature of the North

Pole," Master's Thesis (History), University of Manitoba, 1973. Mercator corresponded with John Dee about his map of the northern polar regions and about the *Inventio fortunata*, outlining for Dee the contents of the book, and Mercator's letter remains the best account we have of the contents of the book. See E. G. R. Taylor, "A Letter Dated 1577 from Mercator to John Dee," *Imago Mundi* 13 (1956), p. 58-68, and also the introduction to the facsimile edition of Mercator's *Atlas sive cosmographicae meditationes...* of 1636, published in the *Theatrum Orbis Terrarum* series (Amsterdam, 1968). Dee created a world map incorporating the *Inventio fortunata* northern polar geography: it is titled "Sir Humfray Gylbert knight his chart," and is dated 1583. Originally in the library of Henry Percy, 9th Earl of Northumberland, it is now in the Free Library of Philadelphia. It is illustrated for example in Samuel E. Morison, *The European Discovery of America* (New York, 1971), p. 581.

11. Fridtjof Nansen, *In Northern Mists: Arctic Exploration in Early Times*, trans. Arthur G. Chater (New York, 1911) vol. 2, p. 288-9.

12. E.g. R. T. Gunther, *Early Science in Oxford*, vol. 2 (Oxford, 1923, 1967), p. 62-3; for full discussion see the introduction (esp. p. 3) to *The Kalendarium of Nicholas of Lynn*, ed. Sigmund Eisner, trans. Gary Mac Eoin and S. Eisner (Athens, GA, 1980).

13. Fridtjof Nansen, *In Northern Mists*, vol. 2, p. 150-9, 184, 195. Reference should also be made to the theory of rivers and seas in Plato's *Phaedo* 111c+, according to which all of the rivers of the world flow into a great chasm that pierces the earth from one side to the other; this theory is discussed and criticized by Aristotle *Meteorologica* 2.2.

14. Delno C. West, "Inventio fortunata and Polar Cartography 1360-1700," a paper presented at the conference "De-Centering the Renaissance: Canada and Europe in Multi-Disciplinary Perspective 1350-1700," Victoria University in the University of Toronto, March 7-10, 1996.

15. See *Mundus Subterraneus* Book 3, sect. 3, chapt. 2, "De Oceani Pericycloi seu Circulatione"; Kircher does reject some aspects of the *Inventio fortunata* account as fabulous, but firmly believes in the north polar vortex. Kircher, it is interesting to note, was influenced in his theories by the recently discovered circulation of the blood, to which he likens the circulation of the waters through the earth: see *Mundus Subterraneus* Book 2, chapt. 19. Mention should be made of the world map of Urbano Monte (1544-1613), *Universale geographia et descrizione de tutta la terra* (Milan, 1604), which shows not only the northern islands of the *Inventio fortunata*, but also a similar ring of islands along the Antarctic Circle, around the South Pole; Monte held that water flowed down into the earth at both poles. For illustrations of Monte's maps see Rodney W. Shirley, *The Mapping of the World: Early Printed World Maps 1472-1700*, #239, p. 253-5, pl. 189, and #247, p. 263, pl. 194; for discussion see R. Almagaia, "Un prezioso cimelio della cartografia italiana. Il Planisfero di Urbano Monte," *La Bibliofilia* 43 (1941), p. 156-93, esp. p. 189.

16. All this was destroyed on March 20, 1945.

17. On the *tehom* and the Rock of the Temple see *Genesis* 7:11 and 8:2; Louis Ginzberg, *The Legends of the Jews*, vol. V (Philadelphia, 1968), p. 15-16; Zev Vilnay, *Legends of Jerusalem* (Philadelphia, 1987), p. 78-80; *The Encyclopedia of Religion*, s.v. "Center of the World"; and the *Encyclopaedia Judaica* (Jerusalem, 1972), s.v. "The Deep." On Uisneach see Michael Dames, *Mythic Ireland* (London, 1992), p. 197; John Michell, *At the Centre of the World* (London, 1994); and note that "Uisneach" derives from the Gaelic root "uisce," meaning "water." On Mt. Haraiti or Alburz see the *Bundahishn*, Chapter 13, in *Sacred Books of the East*, vol. 5, trans. W. E. West (Oxford, 1897). And on the Isles of the Immortals see Germain Bazin, *Paradeisos: The Art of the Garden* (Boston, 1990), p. 235. Also note that Mt. Parnassus, which overlooks Delphi and its omphalos, was the mountain upon which Deucalion's ark landed after the flood, so that this area has both an omphalos and a mountain connected with a flood.

18. One of the classical literary expositions of this cosmography is contained in the Puranic texts known as the *Bhuvanakosa*; another is in the third *kosasthana* of the *Abhidharmakosa* of Vasubandhu, composed in the fourth or fifth century, a basic text of Buddhism. This text has been translated into French by Louis de la Vallée Poussin as *L'Abhidharmakosa de Vasubandhu*, in six volumes (1923-31, 1971), and Poussin's French has been translated into English by Leo M. Pruden as *Abhidharmakosabhasyam* in four volumes (Berkeley, CA, 1988-). Also see Sukomal Chaudhuri, *Analytical Study of the Abhidharmakosa* (Calcutta, 1983); W. R. Kloetzli, *Buddhist Cosmology: From Single World System to Pure Land; Science and Theology in the Images of Motion and Light* (Delhi, 1983); D. C. Sircar, *Cosmography and Geography in Early Indian Literature* (Calcutta, 1967); R. F. Gombrich, "Ancient Indian Cosmology" in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe (London, 1975), p. 110-42; Louis de la Vallée Poussin, "Cosmogony and Cosmology (Buddhist)" in the *Encyclopedia of Religion and Ethics*, ed. J. Hastings (Edinburgh, 1911); and W. R. Kloetzli, "Cosmology: Buddhist Cosmology" in the *Encyclopedia of Religion*, ed. Mircea Eliade (New York, 1987).

19. R. F. Gombrich, "Ancient Indian Cosmology" in *Ancient Cosmologies*, ed. C. Blacker and M. Loewe (London, 1975), p. 111-2; Joseph Schwartzberg, "Cosmographical Mapping," Chapter 16 in vol. 2, book 1, p. 333-4 of *The History of Cartography*, eds. J. B. Harley and D. Woodward (Chicago, 1987-).

20. Mt. Kailas in western Tibet, the most sacred mountain in Asia, and known as the "Center of the Mandala," is believed to be the physical embodiment or Avatar of the mythical Mount Meru, and this more attainable mountain has been a pilgrimage site for 2,500 years.

21. On this imagery see I. W. Mabbett, "The Symbolism of Mount Meru," *History of Religions* 23 (1983), p. 71-2, who cites *Visnu Purana* 2.2, *Devibhagavata Purana* 8.6, and *Kurma Purana* 1.43.9.

22. A *yojana* is generally thought to be from two to nine miles; here and elsewhere I use a conversion factor of 1 *yojana* = 5 miles.

23. Different sources place Lake Anotatta in different locations; its is placed on Meru by Mabbett, "The Symbolism of Mount Meru," *History of Religions* 23 (1983), p. 66 and 69; and also by G. Obeyesekere, *The Cult of the Goddess Pattini* (Chicago, 1984), p. 334. For an illustration and discussion of Lake Anotatta and its rivers see *The History of Cartography*, eds. J. B. Harley and D. Woodward (Chicago, 1987-), vol. 2, p. 732-3. Mt. Kailas was chosen as an avatar of Mt. Meru in part because (or Mt. Kailas influenced the mythography of Mt. Meru in that) the headwaters of four major rivers of the Indian subcontinent find their sources within 75km of Mt. Kailas: the Sutlej, the Karnali (a major tributary of the Ganges), the Tsangpo/Brahmaputra and the Indus. In addition, Lake Manasarovar and Lake Rakas Tal, both near Mt. Kailas, have at different times both been identified with Lake Anotatta. Another related tradition should be mentioned here, namely that the waters of the Ahas Ganga, the "starry river" that we see as the Mandakini (the Milky Way) fall on the top of Mout Meru, and then divides into four branches flowing as if to the four cardinal points. See James S. Duncan, *The City as Text: The Politics of Landscape Interpretation in the Kandyan Kingdom* (Cambridge and New York, 1990), p. 45, 47, and 198 note 8.

24. I. W. Mabbett, "The Symbolism of Mount Meru," *History of Religions* 23 (1983), p. 69-70; also see Edward C. Sachau, trans., *Alberuni's India* (London, 1910), vol. 1, p. 243, for a quote to this effect from the Indian astronomer Brahmagupta; and Paul Wheatley, *Pivot of the Four Quarters* (Chicago, 1971), p. 428.

25. Joseph Schwartzberg, "An Eighteenth-Century Cosmographic Globe from India," *Cartographica* 30 (1993), p. 75. Aryabhata was the author of the *Aryabathiyam*, a versified study of mathematics and astronomy; he was the first Indian astronomer to mention that the diurnal motion of the heavens is due to the rotation of the earth about its axis.

26. For discussion of this globe see Joseph Schwartzberg, "Cosmographical Mapping," Chapter 16 in vol. 2, book 1, p. 352 of *The History of Cartography*, eds. J. B. Harley and D. Woodward (Chicago, 1987-); and Simon Digby, "The Bhugola of Ksema Karna: A Dated Sixteenth Century Piece of Indian Metalware," *Art and Archaeology Research Papers* 4 (1973), p. 12-13.

27. Reference should also be made to the 5th century BC Babylonian cosmological map, with descriptive cuneiform text, on a clay tablet in the British Museum (No. 92687). The map has nothing to do with the North Pole, but its sacred center geography is reminiscent of the *Inventio fortunata* and Buddhist geography: it places Babylon, the "hub of the universe," at the center of a circular inhabited world-disc, which is encircled by the "Bitter River" or "Earthly Ocean," and around the Bitter River there are seven symmetrically placed triangular islands, which point outward into the "Heavenly Ocean." See E. Unger, "From Cosmos Picture to the World Map," *Imago Mundi* 2 (1937), p. 1-7; and W. Horowitz, "The Babylonian Map of the World," *Iraq* 50 (1988), p. 147-65.