

Profile

The Mercator exhibition at the Rotterdam Maritime Museum (see box on page 23) features one of three remaining original 1569 world maps and the only one that was colored and bound into a book (probably by Mercator himself)



Gerardus Mercator *the man who named North-America*

The Flemish inventor of modern cartography first penciled ‘America’ into a map of the northern part of the hemisphere.

BY RONALD VAN ERKEL

Imagine yourself to be living in the 16th century Low Countries. If you didn't succumb to an untimely death during an epidemic, famine, or war, you might even live to an age of forty or forty-five. Unless, of course, you contravened the teachings of the Catholic Church in which case you were burned at the stake. Sounds like an unattractive place? Then consider that at the time the cities of the muddy floodplains of the Low Countries (what is now The Netherlands and Belgium) were probably one of the most exciting places to live. It was a time when the light of reason was finally beginning to dispel the darkness of the Middle Ages, propelling society into what we now call the Renaissance – that cultural movement which encompassed a flowering of literature, science, art, religion, cartography, and politics. It heralded a resurgence of learning based on classical sources, the development of linear perspective in painting, a gradual but widespread educational reform

and a renewed interest in the outside world, spurring adventurers on trips across uncharted oceans to discover new lands. Originating in the 14th century in Italy, the Renaissance had spread to the rest of Europe in the following centuries and found particularly fertile soils in the prosperous, densely populated Low Countries, more specifically in burgeoning cities such as Antwerp, Ghent, Den Bosch, Breda, Brussels and Bruges. Ranking among the world's most important centers of trade and commerce and politically powerful, these cities were the breeding grounds of an affluent and aspiring class of traders and manufacturers, patrons of the arts and sciences. It is in this climate that one of Europe's oldest universities, Leuven, flourished. Of the scores of universities that Europe counted, only Paris could compete in terms of numbers and prestige.

One of Leuven's most notable graduates was Gerard Kremer, better known by his Latinized name Gerardus

Mercator. Mercator was ‘the prince of modern geographers.’ This man with his universal vision revolutionized the way we perceive the world. He has been named the first modern, scientific cartographer. Where his contemporaries had developed a fragmented, unstructured approach to map making, Mercator pursued wrapping the world in overlapping, uniform maps. In the process, he helped mapping and naming America (he was the first to designate the name ‘America’ also to the northern part of the double continent). His greatest and most celebrated contribution to science, however, was the discovery of how to project the sphere of a three dimensional globe onto a two-dimensional map. The ‘Mercator projection’, as we still know it today, revolutionized seafaring as all lines of constant bearing (the so-called rhumb lines), are represented by straight segments. This allowed ships, for the first time in history, to sail in a straight line to their destination using their compass.

Who was this genius and what inspired him to make the groundbreaking discoveries that we still profit from today?

Mercator was born in the Southern Netherlands in 1512 to German parents who had migrated from the famine-stricken Rhineland to the Low Countries in search of a better life. The Kremers settled in Rupelmonde, a village near Antwerp, where Mercator’s uncle, Gisbert, was a priest in the hospice of St Johann. In Gisbert, the family had proof that there was an alternative to rural poverty and it was this ‘third parent’ who provided the young Gerard with spiritual guidance. Gisbert secured Gerard a place in the local school. His education began with learning the common European language: Latin, the lingua franca of the church, of law, philosophy and medicine, of commerce and diplomacy and of education. By the age of seven, young Gerard was speaking and reading Latin.

He was still in elementary school when Flanders was incorporated into an empire of unprecedented scale. In 1519, Charles V, the Spanish king and heir to a patchwork of European territories, was elected Holy Roman Emperor. The young emperor’s realm included much of Western Europe, the Spanish colonies in Asia as well as the vast new territories only recently discovered on the other side of the Atlantic: the New World. It was an em-

pire ruled from Brussels in which ‘the sun never set’ and with each new discovery, new territories were added to it. And as that expansion took place, accounts from distant lands and maps, spread with the help of the new printing press, fed the rise of humanism and worldly curiosity, ushering in further scientific and intellectual inquiry. It is in this exciting environment that young Gerard grew up.

There was hardship too. Harvests failed. Wars ravaged cities. Floods took their toll in human lives. Many died of diseases that are easily curable today. One of these victims was Hubert Kremer, Gerard’s father, only about 45 years old. Luckily, Gisbert continued sponsoring Gerard and the young master was sent to Den Bosch to join the Latin school of the Brethren of Common Life.

Three years later, when Gerard was 18 and his mother had also died, Gerard’s uncle, now his sole guardian, transferred him to the ‘famous university of Leuven’.

Gerard enrolled at the Academy of Arts where his instruction comprised grammar, rhetoric, dialectics, arithmetic, geometry, music, and astronomy. The curriculum was steeped in tradition and there was no room for intellectual maneuvers, causing Gerard

to endure ‘empty and senseless babbling’ for most of his first year at the university. Things picked up during the second year when he attended lectures at the new Collegium Trilingue. Here, through comparison and experimentation, students criticized and tested the old authorized texts. Sources were questioned rather than accepted and for Gerard, exploring territories unknown to the Church Fathers, this was learning at its most adventurous. It was dangerous too. Ideas of what the world and the universe looked like were confined to what the Bible and the classical Greek philosophers (especially Aristotle) taught. Straying from these canonical views was heresy, but that was exactly what the freshly graduated Gerard (who now had taken on the name Mercator) was doing. “I took particular pleasure,” he wrote, “in studying the formation of the whole world.” It was the suspended orb of the earth, “which contains the finest order, the most harmonious proportion and the singular admirable excellence of all things created”. The map maker in him was born. But his treatise on the creation of the world had drawn the attention of the ortho-



Mercator at age 62, portrait by Frans Hogenberg

dox clergy in Leuven and his presence in the city became untenable. He went to live in Antwerp, the cosmopolitan metropolis where he met Franciscus Monachus, the first map maker in the Low Countries who broke with the synthetic mix of biblical cosmogony (the science of the origin of the universe) and Aristotelianism that had characterized geography for almost a thousand years. Monachus's map making drew on investigation, experience and observation. The man who became Mercator's mentor, however, was a brilliant mathematician from Friesland, Gemma Frisius. Gemma is remembered for providing a solution to the longitude problem that seafarers encountered, especially during expeditions of discovery.

Maps in the Renaissance were usually derived from Ptolemy's authoritative work 'Geography' dating back to the second century A.D., which included a map of the world as it was known then (limited to Europe and bits of adjoining Asia and Africa). In addition to his own surveying, Ptolemy's sources were earlier observations and the accounts of travelers, seafarers and explorers. Ptolemy put all this information into a grand scheme. He assigned coordinates to all the places and geographic features he knew, in a grid that spanned the globe. Latitude was measured from the equator, as it is today. For the first time in history every known place on earth, was given coordinates, expressed in degrees of latitude and longitude. In

1513 a cartographer from the Lorraine (in present day France), Waldseemüller, produced a daring new edition of Geography, accompanied by new maps that showed, for the first time, not only the New World (whose southern portion Waldseemüller named 'America') but also covered the full 360 degrees of the earth's sphere.

The name 'America' may well have been introduced to the Low Countries around 1520 on a world map of Apian, who elaborated on the work of Waldseemüller and who published his 'Cosmographicus Liber' (Book of Cosmography) in 1524. It would become a major influence of Mercator's life. To Apian, cosmography was not so much a separate discipline, but an umbrella term



for study using descriptions, maps and diagrams of the whole universe. His diagrams illustrated the earth's climatic zones, methods for calculating longitude and latitude and the application of trigonometry for distance measuring. The book also touched on astronomy, geography and theoretical cartography. Different map projections were included and an elaborately printed world map. To the up-and-coming Mercator, the work of Apian was an invaluable source of inspiration.

Meanwhile, uncle Gisbert had died and Mercator, left to his own devices and with a family to feed, decided to pursue a career as a scientist and cartographer. To further his studies, he returned to Leuven University to at-



names of places on his maps, setting the standard for map makers in the centuries to come. So fast was the world view changing that the globe made in 1535 was already outdated four years later. Mercator undertook it to create a new one, on a scale and with a precision that was unprecedented, although it also contained errors. Its publication, in 1541 was followed by turbulent years of war, revolt, invasions and violent purges to rid the Low Countries of 'Lutheran heresy'.

Mercator was not spared. He was arrested in 1544, allegedly for writing heretical letters, and locked up in dank Rupelmonde Castle for nine months. He escaped the stake, but after his release he realized it was time to move away from the Low Countries and find himself a peaceful, quiet place where he could devote himself to science. He made the reverse of the journey his parents had undertaken and left the Low Countries to settle in Duisburg in the Rhineland with his family.

By this time Mercator was widely recognized as one of the foremost scientists of his time and although he never traveled he was in touch with all the great minds of his age.

In Duisburg, Mercator opened a workshop where he completed a six-panel map of Europe in 1554. It was a remarkable achievement. When the three rows of five prints were pasted together, the map was as wide as a man is tall. It was exquisitely executed, but its true marvel lay within, for here was a new Europe. For the first time, Mercator

had succeeded in representing the countries of Europe as they actually were. Outside the relative tranquility of Duisburg, the world was in turmoil. France and Spain were frequently at war. Europe was torn by religious conflict and after the abdication of Charles V in 1555, the now protestant north of the Low Countries rose against catholic Spain. It was the beginning of a bloody 80 year revolt. In the midst of this depression, Mercator conceived the monument which he wished to bequeath on humanity. The plan was unbelievably ambitious. "I should undertake a study of the whole universal scheme uniting the heavens of the earth and of position, motion and order of its parts", he wrote. In his fifties, Mercator

tend the lectures of his old mentor, Gemma.

In 1535, Gemma and a collaborator, Van der Heijden, were commissioned by Charles V to construct a globe that would be a true representation of the world as it was known at the time. Gemma involved Mercator in the project and it would be the young geographer's first professional success. It was soon followed by a map of Palestine that was received to much acclaim in 1537 and established Mercator as one of the foremost map makers of the era. With the Holy Land in print, Mercator felt confident enough to produce a map of the world. It appeared in 1538. An innovation Mercator introduced was the use of the superior italic script to engrave the

was proposing nothing less than the book of the Universe, a cosmography.

Some volumes of his magnum opus would never see the light of day, others would be published in different installments through the remainder of his years and even posthumously. As part of the cosmography, Mercator published a completely revised and updated map of the world in 1569. Consisting of eighteen separate sheets, this was the largest map Mercator had ever produced. The detailing, precise lettering, the numerous legends and the compositional symmetry of the huge map created a cartographic spectacle even though it contained many geographical errors, especially at the unexplored margins of the known world. The map was conceived for the purpose of providing seafarers with a map that would enable them to reach a destination by following a straight line set out with the aid of the compass. What would be known as the Mercator projection, was born. The man who himself had never sailed the sea, transformed navigating the world's oceans from a gamble to a science, even if it took decades for his discovery to sink in and be actually deployed.

Now, reaching old age, the flame of Mercator's intellect was sparkling as never before. For the next twenty years he labored on his cosmography, studying the classics and collecting information from other scientists, explorers and seafarers. The result was a series of maps unlike any seen before. They were editorially consistent, universal in scale and more accurate than anything that was published before. The new maps were part of Mercator's final project: a collection of maps of all countries of the world, bound in one volume. He called it 'Atlas'



Mercator's mentor, Gemma Frisius

and thereby coined the term for all posterity. Mercator never lived to see the publication of his Atlas. He died, at the exceptionally old age of 82, in 1594. His son Ruymold completed the project and the Atlas was finally published in 1596, one year after his father's death. 🍷

Steady as she goes! Sailing by Mercator's Map

To commemorate the 500th anniversary of Mercator's birth, the Rotterdam Maritime Museum is featuring an exhibition of the Mercator projection called 'Steady as she goes! Sailing by Mercator's Map'. The interactive exhibition enables visitors to discover everything about navigation at sea – both with and without Mercator's map. Historical maps, distorting mirrors and film clips will help the visitor, but they will also be working with globes, binoculars, compasses, the stars and modern navigation equipment such as satellites and GPS. The only remaining copy of Mercator's world map in atlas format and his recently restored globe can also be admired at the exhibition. *Until 8 September 2013.*

