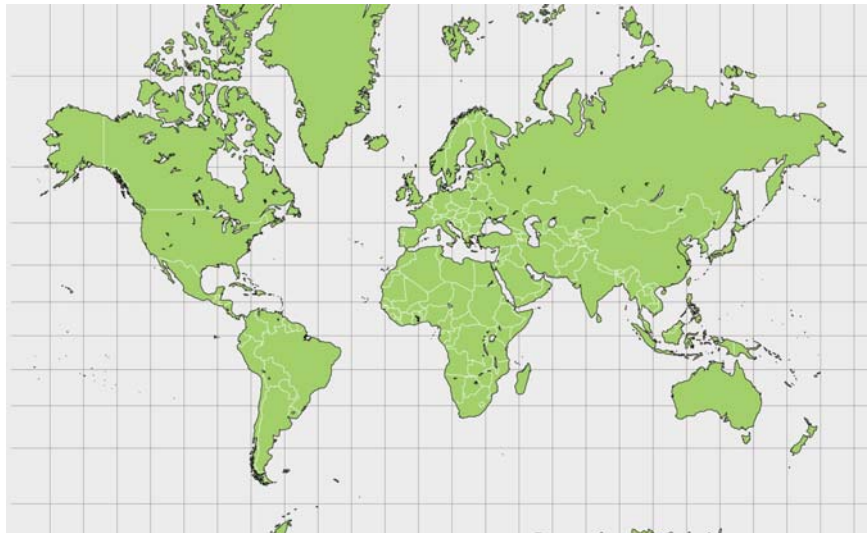


## Map Projections: A Flat Sphere Won't Work!

The maps on page 245 seem to present an accurate image of the world. They may not look distorted, yet they are. All maps misrepresent the land masses of the world in some way. The distortion of maps results from having to represent a sphere on a flat surface. The way the world (or any part of it) is represented on a map is called a **projection**. The smaller the area of land projected on the map, the less distortion that occurs. For example, there is little distortion in a map of your city or region, while a map of the world has the greatest amount of distortion.

Gerardus Mercator was the first **cartographer**, or mapmaker, to come up with a useful way of depicting the curving surface of Earth on a map. In 1546, he devised what we call “the Mercator projection,” which represents the lines of latitude and longitude as straight lines that cross the map at right angles. This projection distorts the shape and size of areas, making countries near the equator smaller and those further from the equator larger (see Figure 1). Despite the distortions, this projection became popular because it was a great aid to navigation. Early navigators could rely on compass directions between two points on the map as being accurate.



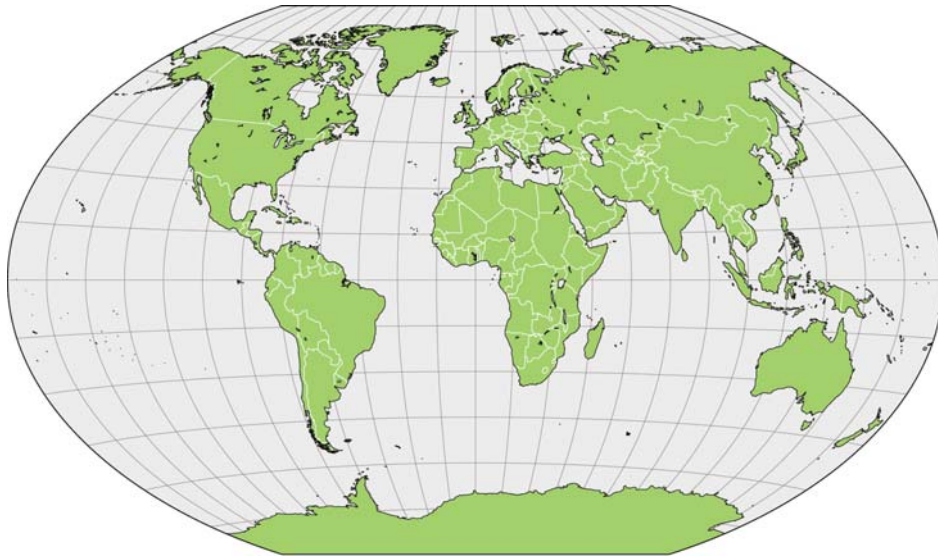
**Figure 1: Mercator projection**

The Mercator projection was used so widely that it influenced the way people saw the world. Some governments even used the distortions of the Mercator projection to their advantage. Leading up to World War II, for example, Britain used Mercator projections to emphasize the size of the British Empire, exaggerating the size even further by colouring British possessions red. Germany countered this distortion by using map projections that reduced the size of British territories, which were coloured in dull colours.

Today, cartographers use projections that represent Earth's regions more realistically. An example of a more accurate projection is the Winkel Tripel projection (see Figure 2). Notice that only the equator and prime meridian are shown as straight lines on this projection. All the other lines of latitude and longitude on the Winkel Tripel projection are curved, which helps to show the shape and size of the land masses more accurately. The National Geographic Society has been using the Winkel Tripel projection since 2000. In an era of globalization, it is important to depict areas of the world as accurately as possible.

**projection:** the way the world is represented in a map

**cartographer:** person who draws maps



**Figure 2: Winkel Tripel Projection**

### **WHAT DO YOU THINK?**

1. Test a map projection by getting an outline map of the world, or a continent, from your teacher. Place the central point of the paper on a globe and try to flatten the paper against the globe. Describe the distortions that result.
2. Indicate which of the following areas on a map would have the greatest distortion on a map. Explain why.
  - a) Canada
  - b) British Columbia
  - c) Australia
  - d) Brazil
3. Compare Africa and Greenland on the Mercator and Winkel Tripel projections. What differences can you note? What other areas in the world appear differently on the two projections?
4. Examine the projection on page 245 of *Pathways*. Is it a Winkel Tripel projection or another projection? Explain your answer.