Thematic Map

Concept

A thematic map is a map that focuses on a specific theme or subject area. This is in contrast to general reference maps, which show the variety of features—geological, geographical, political—together. Thematic maps use the base data, such as coastlines, boundaries and places, only as points of reference for the feature being mapped. General maps portray the base data, such as landforms, lines of transportation, settlements, and political boundaries, for their own sake.

Thematic maps emphasize spatial variation of one or a small number of geographic distributions. These distributions may be physical phenomena such as [climate](https://en.wikipedia.org/wiki/Climate) or human data such as [population density](https://en.wikipedia.org/wiki/Population_density) and [health](https://en.wikipedia.org/wiki/Health) issues. Barbara Petchenik described the difference as "in place, about space". While general reference maps show where something is in space, thematic maps tell a story about that place.

Thematic maps are sometimes referred to as graphic essays that portray spatial variations and interrelationships of geographical distributions. Location, of course, is important to provide a reference base of the location of the featured information.

A thematic map is a map that illustrates more than simply geographical relationships or locations, but rather also portrays themes, patterns, or data relating to physical, social, medical, economic, political or any other aspect of a region or location. Examples include maps that show variations of population density, climate data, wealth, voting intentions, or life expectancy with geographical location. These tools have become central to the work of scientists, practitioners, and students in nearly every field, from epidemiology to political science, and are familiar to members of the public as a common means of expressing complicated and multivariate information in easily understood graphical formats. This set of three volumes on Thematic Cartography considers maps as information constructs resulting from a number of successive information transformations and the products of decision stages, integrated into a logical reasoning and the order of those choices. It thereby provides a thorough understanding of the theoretical basis for thematic mapping, as well as the means of applying the various techniques and methodologies in order to create a desired analytical presentation. This third volume is exclusively focused on new approaches in thematic cartography offered by three successive revolutions affecting the discipline: digital, multimedia and Internet phenomena. It discusses transformations related to modern technologies (animation, interactivity, multimedia, etc.) leading to geovisualization and solutions to spatio-temporal data cartography.

History

An important cartographic development preceding thematic mapping was the production of accurate general base maps. Their accuracy improved slowly, and even in the mid-17th century, they were usually of poor quality; but they were good enough to display basic information, allowing the production of the first thematic maps.

One of the earliest thematic maps was one entitled Designatio orbis christiani (1607) by [Jodocus Hondius](https://en.wikipedia.org/wiki/Jodocus_Hondius%22%20%5Co%20%22Jodocus%20Hondius), showing the dispersion of major religions using [map symbols](https://en.wikipedia.org/wiki/Map_symbolization), in the French edition of his Atlas Minor (1607). This was soon followed by a thematic globe (in the form of a six-[gore](https://en.wikipedia.org/wiki/Gore_%28segment%29) map) showing the same subject, using Hondius' symbols, by [Franciscus Haraeus](https://en.wikipedia.org/wiki/Franciscus_Haraeus%22%20%5Co%20%22Franciscus%20Haraeus), entitled Novus typus orbis ipsus globus, ex Analemmate Ptolomaei diductus (1614)

An early contributor to thematic mapping in England was the English astronomer [Edmond Halley](https://en.wikipedia.org/wiki/Edmond_Halley) (1656–1742). His first significant cartographic contribution was a [star chart](https://en.wikipedia.org/wiki/Star_chart) of the constellation of the Southern Hemisphere, made during his stay on [St. Helena](https://en.wikipedia.org/wiki/St._Helena) and published in 1686. In that same year he also published his first [terrestrial map](https://en.wikipedia.org/w/index.php?title=Terrestrial_map&action=edit&redlink=1) in an article about trade winds, and this map is called the first [meteorological chart](https://en.wikipedia.org/wiki/Meteorological_chart). In 1701 he published the "New and Correct Chart Shewing the Variations of the Compass", see first image, the first chart to show lines of equal [magnetic variation](https://en.wikipedia.org/wiki/Magnetic_variation).

Another example of early thematic mapping comes from London physician [John Snow](https://en.wikipedia.org/wiki/John_Snow_%28physician%29). Though disease had been mapped thematically, Snow's cholera map in 1854 is the best-known example of using thematic maps for analysis. Essentially, his technique and methodology anticipated the principles of a geographic information system ([GIS](https://en.wikipedia.org/wiki/GIS)). Starting with an accurate base map of a [London](https://en.wikipedia.org/wiki/London) neighborhood which included streets and [water pump](https://en.wikipedia.org/wiki/Water_pump) locations, Snow mapped out the incidence of [cholera](https://en.wikipedia.org/wiki/Cholera) deaths. The emerging pattern centred around one particular [pump in Broad Street](https://en.wikipedia.org/wiki/Broad_Street_pump). At Snow’s request, the handle of the pump was removed, and new cholera cases ceased almost at once. Further investigation of the area revealed that the Broad Street pump was near a cesspit under the home of the outbreak's first cholera victim.

Another 19th-century example of a thematic map, according to Friendly (2008), was the earliest known [choropleth map](https://en.wikipedia.org/wiki/Choropleth_map%22%20%5Co%20%22Choropleth%20map) in 1826 created by [Charles Dupin](https://en.wikipedia.org/wiki/Charles_Dupin). Based on this work [Louis-Léger Vauthier](https://en.wikipedia.org/wiki/Louis-L%C3%A9ger_Vauthier) (1815–1901) developed the population [contour map](https://en.wikipedia.org/wiki/Contour_map), a map that shows the [population density](https://en.wikipedia.org/wiki/Population_density) of Paris in 1874 by contours or [isolines](https://en.wikipedia.org/wiki/Isolines%22%20%5Co%20%22Isolines).

Uses

Thematic maps serve three primary purposes.

1. They provide specific information about particular locations.

2. They provide general information about spatial patterns.

3. They can be used to compare patterns on two or more maps.