<div style="text-align:center">**LESSON 1: INTRODUCTION TO CARTOGRAPHY**</div>

Objectives:

- Understand what cartography is
- Classify types of maps and their uses

A. What is Cartography?

Since the beginning of human history, people have needed to identify their physical surroundings and direction to travel and locate resources—this information needed to pass from generation to generation through language and mapping.

Mapmaking has been found in several artifacts and places such as Mammoth Tusk (25,000 BC), Caves (Lascaux 17,000 BC), Rocks (Abauntx Lamizulo 14,000 BC), Papyrus (Turin 1160), Clay Tablet (Imago Mundi 600 BC), Metal (Hecataeu's 500 BC), parchment (Strabo's 20 BCE), paper and digitally (Emerged in the 1960s). Thus, mapmaking is linked to human history.

Even though the definition of Cartography is associated to the making of maps, there is plenty of ways to define it. Let's look at some examples:

The art and science of graphically representing a geographical area, usually on a flat surface such as a map or chart. It may involve the superimposition of political, cultural, or other nongeographical divisions onto the representation of a geographical area (Encyclopedia Britannica, n.d.).

The International Cartographic Association defines cartography as the discipline dealing with the conception, production, dissemination and study of maps. Cartography is also about representation – the map. This means that cartography is the whole process of mapping (Canadian Cartographic Association, n.d.).

Cartography is the art and science of making maps. To create modern, high-quality cartography requires the use of appropriate technology. This provides efficient processes that

amplify our human creative and expressive skills in order to communicate the essential spatial message (Environmental system Research Institute [ESRI], 2004).

Class Activity: After you have read the above definitions of cartography, create your own definition of cartography and share it with you classmates and professor.

B. Uses of Cartography

Even though the uses of Cartography can be limitless to the imagination of the users and creators, it can be classified by two major groups according to the Intergovernmental Committee on Surveying and Mapping (ICSM, n.d.):

1. Reference/Landscape
2. Thematic maps (provide comments, patters, distributions, or other information using background landscape maps).

1. REFERENCE/LANDSCAPE MAPS

These maps are composed by the elements on the surface such as: land masses, water bodies, roads, parcels, etc. These maps not only show the location of these elements but also the shapes with measurable distances and area according to the defined scale and direction.
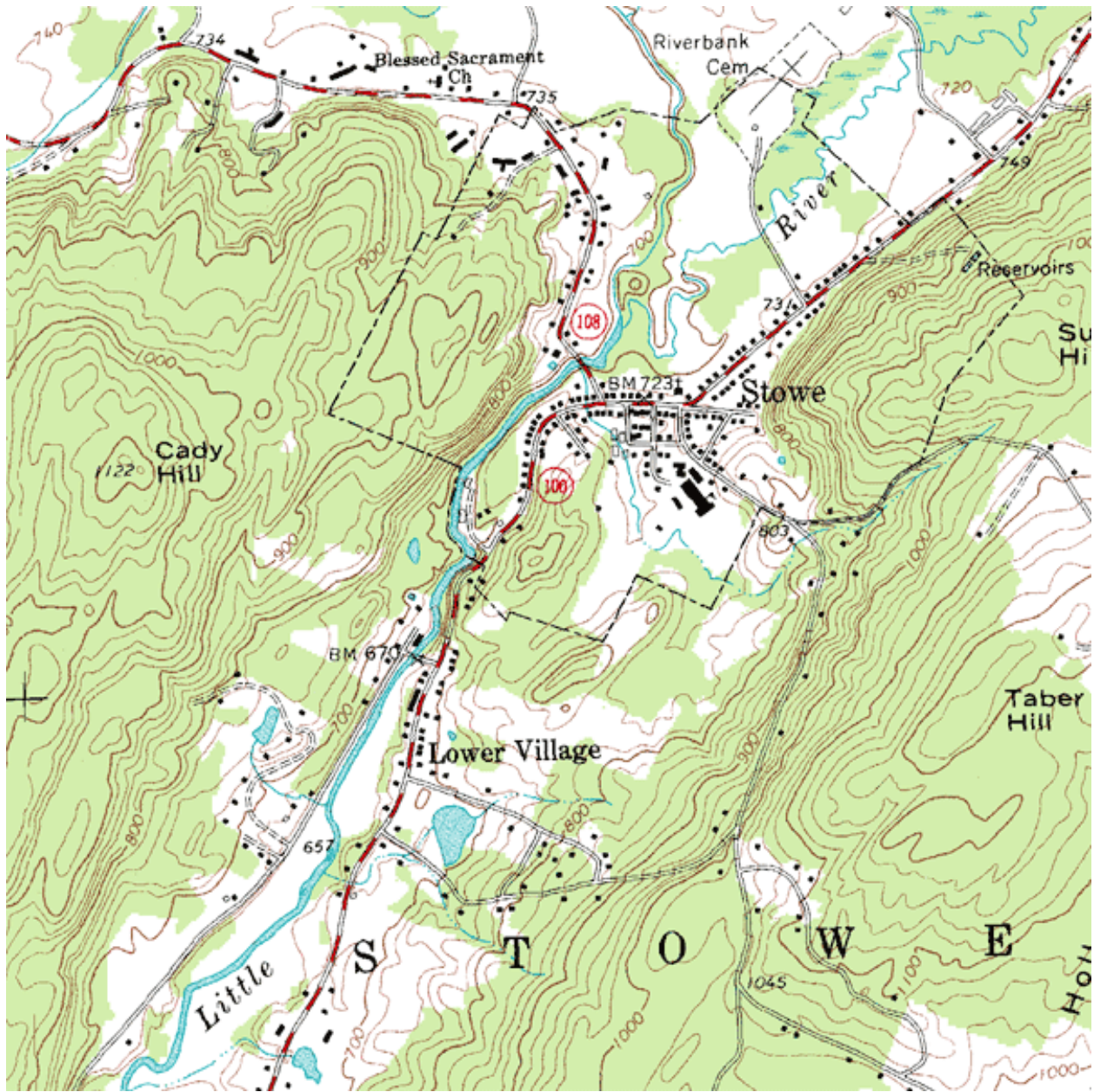
Figure 1 A Topographical Map of a hilly terrain (Stowe, Vermont, USA)
Sample taken from the public domain USGS Digital Raster Graphic file o44072d6.tif for the Stowe, V

2. THEMATIC MAPS

In general, thematic maps are built on top of reference maps to provide location to the users. These provide information about patterns, distributions and other visual elements that allow comparison of values across the areas of interest. Figure 2 show a thematic map the world life expectancy in 2019 by the use of country color coded from purple to red to visually assign a range of life

expectancy. This type of mapping is very commonly used for displaying literacy, resources, health, economy, and many other topics.
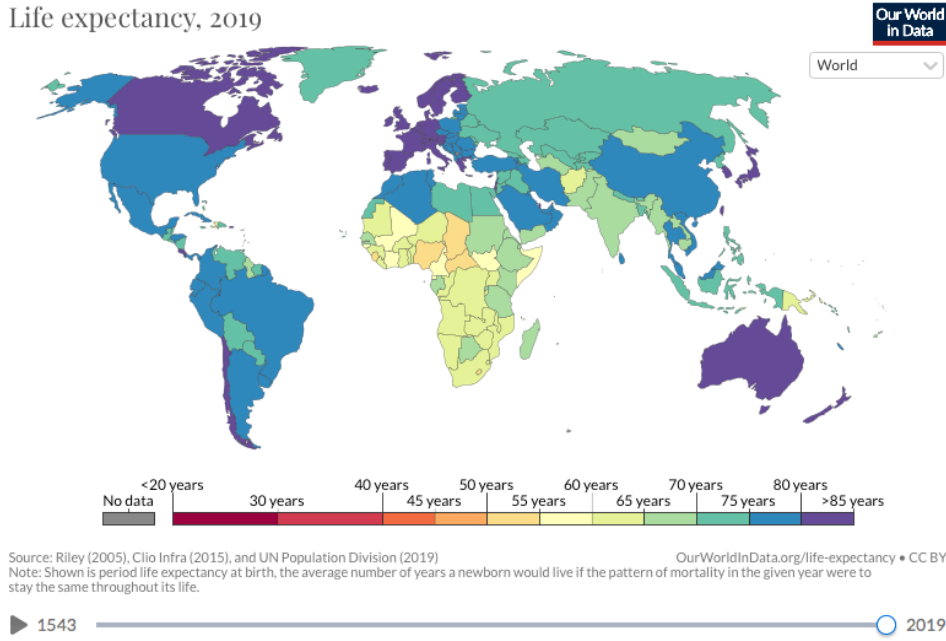

Figure 2 Thematic Map of World Life Expectancy
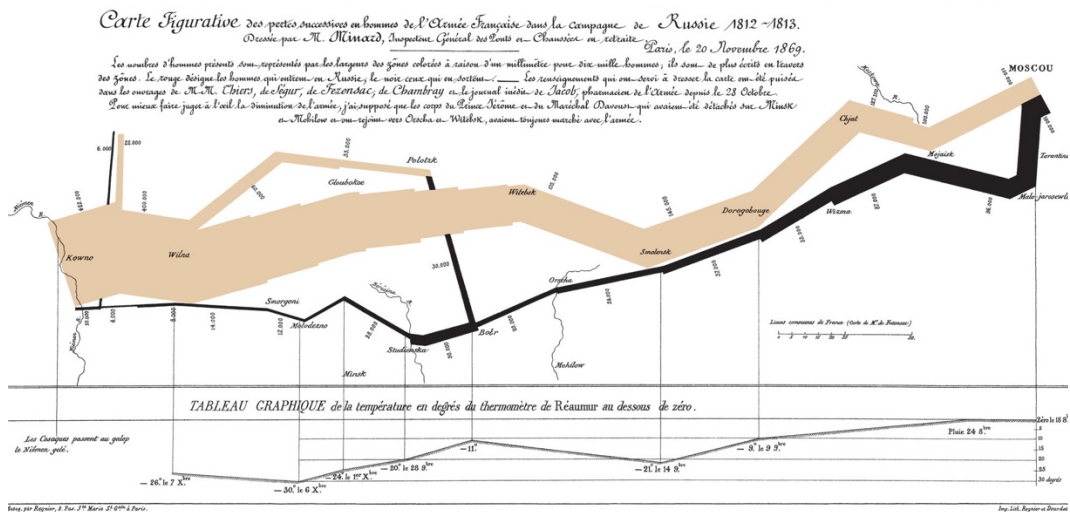Sample taken from https://ourworldindata.org/life-expectancy CC BY

Figure 3 Thematic Map Napoleon's Invasion of Russia 1812-1813 by Charles Joseph Minard. Public Domain.

Carte figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813

Once the main type of map is identified, it is easier to recognize other subcategories such as:

- Navigation (Google maps)
- Routes Flight Connections (https://www.flightconnections.com)
- Cadastral (Real state/property Atlanta-GA https://gis.atlantaga.gov/lotboundary/)
- Health (Covid 19 https://www.covidvisualizer.com)
- Image Maps (Satellites-Google Earth)

Class Activity:

- Using the thematic map in figure 2. What is the life expectancy in Australia?
- List three thematic and three reference maps that you have seen before or used
- Identify how many numbers of total cases of Covid 19 in the United States (https://www.covidvisualizer.com)
- Identify a flight from Atlanta to Orlando and how much the flight costs?

After Class

Search the oldest map you can find of the state you were born.

https://www.oldmapsonline.org/

https://livingatlas.arcgis.com/topoexplorer/index.html

Print a screenshot of the map with its metadata (year, publisher, scale, etc.).

C. Applications

Have you ever used a map?

Everybody has used a map for one reason or another. Print a map you have used in the past and share how this map helped you achieved a task in at least 250 words.

D. Cartography and STEM

Read the following article:

Buchroithner, M. F., & Fernández, P. A. (2011). Cartography in the Context of Sciences: Theoretical and Technological Considerations. *The Cartographic Journal*, *48* (1), 4–10. https://doi.org/10.1179/1743277411Y.0000000003

E. Professional Organizations:

International Cartographic Association (ICA) https://icaci.org

North American Cartographic Information Society (NACIS) https://nacis.org

References

Canadian Cartographic Association. (n.d.). *What is Cartography?*. Retrieved July 26, 2021, from

https://cca-acc.org/resources/what-is-cartography

Encyclopedia Britannica. (n.d.). *Cartography | geography*. Retrieved July 26, 2021, from

https://www.britannica.com/science/cartography

Environmental system Research Institute. (2004). *ESRI® Cartography: Capabilities and Trends*.

ESRI. https://www.esri.com/content/dam/esrisites/sitecore-

archive/Files/Pdfs/library/whitepapers/pdfs/esri-cartography.pdf

Intergovernmental Committee on Surveying and Mapping. (n.d.). *Types of Maps*. Retrieved July 26,

2021, from https://www.icsm.gov.au/education/fundamentals-mapping/types-maps