

# **COMPONENT OF MAP**

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## COMPONENT OF MAP

### 1.1. Introduction:

GIS support a range of output forms, including charts, graphs and histograms; tables; and many others. Three general types of information can be included in digital maps:

1. Geographic information provides the position and shapes of specific geographic features.
2. Attribute information, provides additional non-graphic information about each feature.
3. Display information, describes how the features will appear on the screen.

Some digital maps do not contain all these three types of information. For example, raster maps do not include attribute information, and many vector data sources do not include display information.

### 1.2. Map types:

In practice, there are two types of maps: topographic or reference maps and thematic map.

#### 8.2.1 Reference or topographic maps

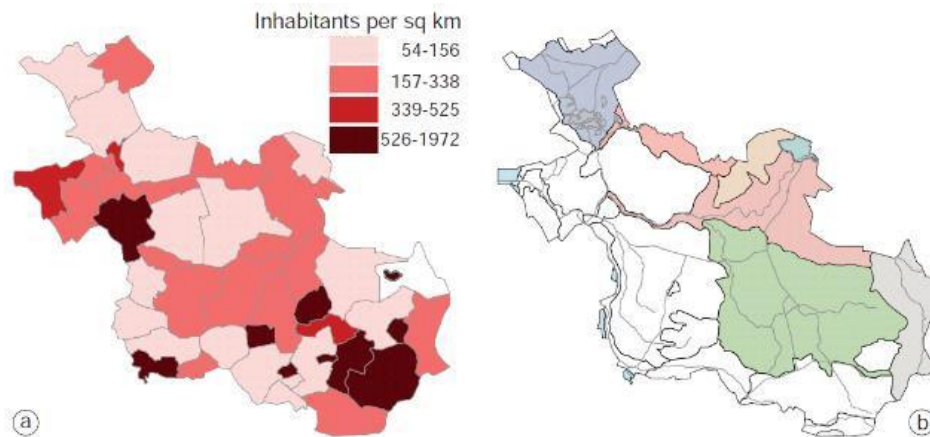
Topographic maps are multipurpose maps. These maps are a reference tools, showing the outlines of selected natural and man-made features of the Earth, often acts as a frame for other information. The amount of topographic information required depends on the map themes.



#### 1.2.2. Thematic map:

Thematic maps used to portray qualitative and quantitative distribution of particular themes. These maps are tools to communicate geographical concepts such as the distribution of population densities, climate, land use, roads, etc. An area class map showing zones of constant attributes, such as vegetation, soil type, or forest species. Thematic maps also contain information found in a Topographic map to provide a geographic reference to the theme

represented. The left thematic maps: (a) socio- economic thematic map, showing population density (higher densities in darker tints); (b) physical thematic map, showing watershed areas



### 1.3. Map and layout design

The two key concepts in map and layout design are affective and substantive.

#### 1.3.1. Affective design:

- ✓ What is the look 'or feel 'of the map?

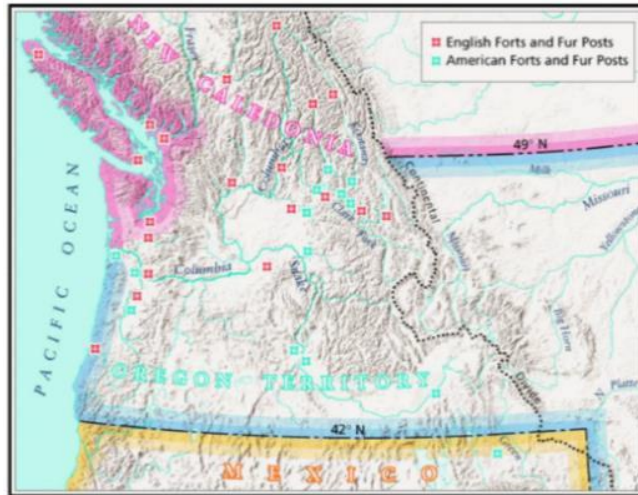
Affective design relates to the map document as a whole. You might consider this the more —artistical set of decisions you make. In the example shown here, the affective design is to create a historic-looking map.

#### 1.3.2. Substantive design:

- ✓ What is shown on the map and for what purpose?
- ✓ What is the substance of the map or layout?

Substantive design relates to choices you make about what is shown on the map. The colors you use, font types, symbology, and the actual content of the information shown on the map. In this example, font types and borderlines are specific substantive design choices used to support the affective design. The following are map design considerations:

- ✓ What is the map about?
- ✓ Who is the map for?
- ✓ How will the map be used?
- ✓ Are there technical limits?

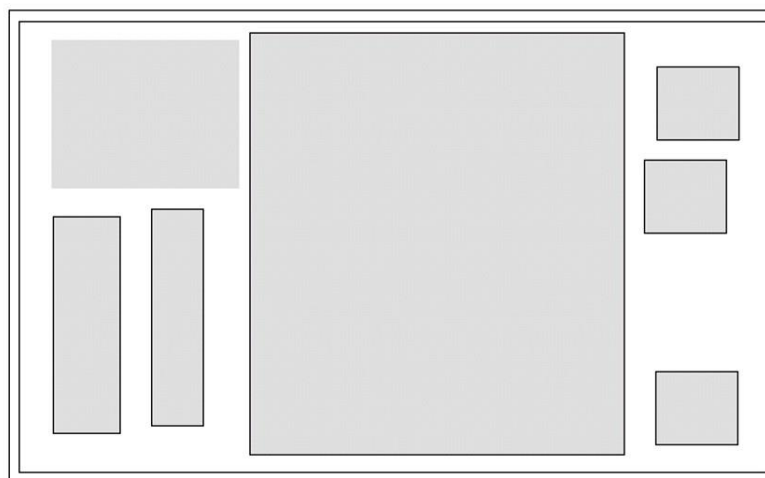


Although they are more focused on map design, the four points noted above are important, as they are part of creating a good map layout. Some basic examples of these considerations are:

- ✓ Map content may be thematic, reference, or schematic;
- ✓ The map audience may be very general or specifically technical;
- ✓ The map may be used inside a moving vehicle or on the internet;
- ✓ The printer device may not have the same color range as your computer monitor.
- ✓ Maps originally created for print will appear very different if used on-screen.

#### 1. 4. Layout design:

The technical aspects of putting your decisions into practice is part of your substantive design. The first set of layout parameters to define is that which divides and allocates your page space. The choice to arrange the various elements of your layout will have important influence on the success or failure of what the map is trying to communicate.



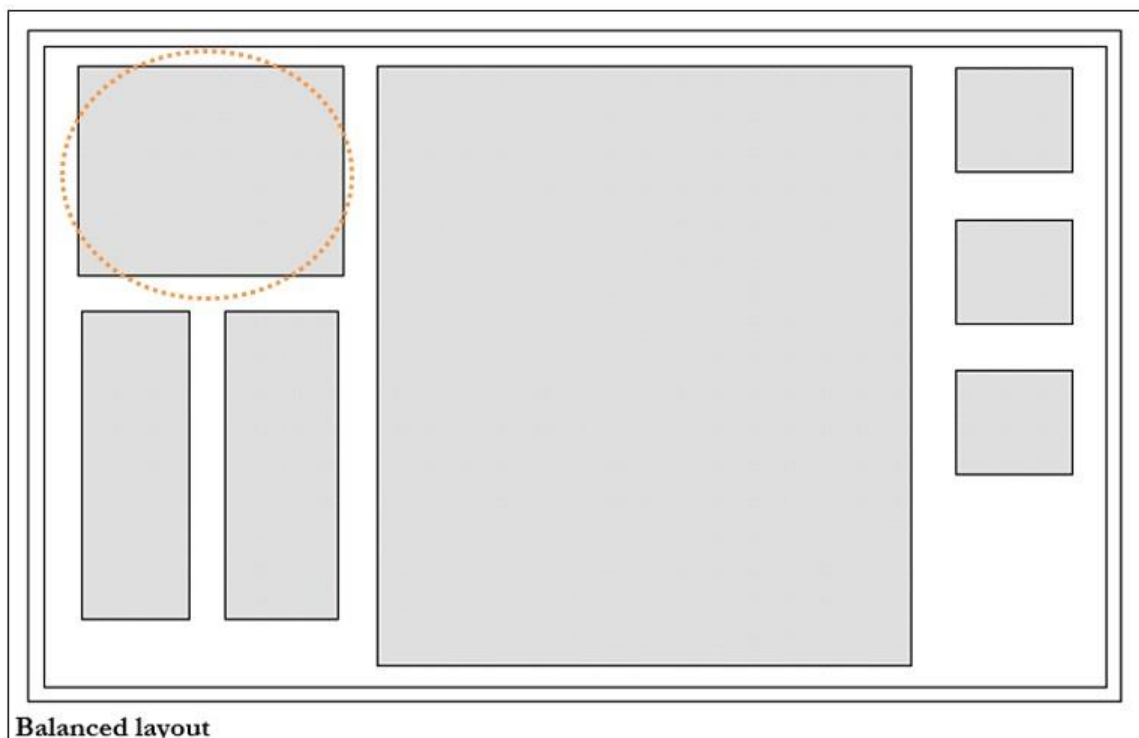
Unbalanced layout

❖ **Margins:**

margins may be part of technical considerations, as different printers have different page-print limits. White space - in this example, the white space between the three boxes on the right side may suggest that something is missing.

❖ **Bounding boxes:**

bounding boxes can make a substantial difference in how an object appears on your layout. Without a bounding box, the map body may appear to float in space. Note the example of the box at the top left corner.



❖ **Alignment:**

in the example above, the unaligned elements help to illustrate the concept that the layout feels unstable. Your map-readers will notice even small differences. Notice how simple changes in alignment improve the layout. The margins are more consistent, and thus easier to read. The box at the top left is considerably more visible with a bounding box. The alignment gives the layout more stability.

## 1.5. Map contents or components:

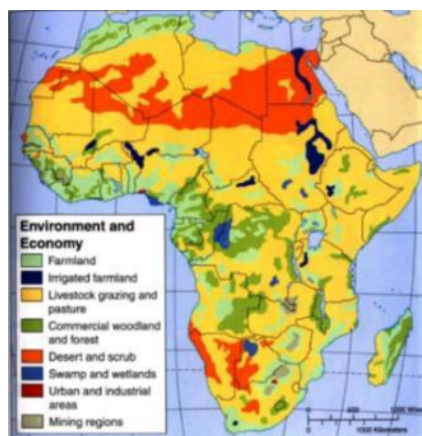
Marginalia, map surrounds, and map elements are technical details. It includes title, legend, scale, and directional indicator. North arrows, scale bars, scale text, and legends are related to the data in data frames. These components support the overall message of the map, but should not be included automatically. All maps should have a title.

### 1.5.1. Title:

Title is the most important element of the map for acquiring information efficiently. The title identifies the map area and the type of map. Titles may appear at the top of the map, but not always.

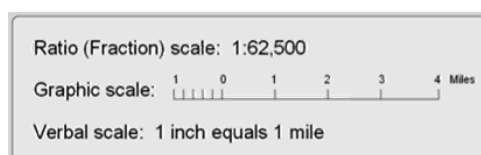
### 1.5.2. Legend

Another important feature on a map is the legend or map key. Information needed to read a map is found in the map legend. Most maps use symbols or colours to represent different geographic features. On map here (right), different colours shown in the legend represent areas of specific types of land use in Africa.



### 1.5.3. Scale

You must provide a scale unless the audience is intimately familiar with the geographic area or distance is of no importance. Scales should not contain the word —Scale|. There are verbal, numeric (1:24,000), and graphic scales, but graphic scales are preferred because they maintain their relative size when maps are shrunken or enlarged.

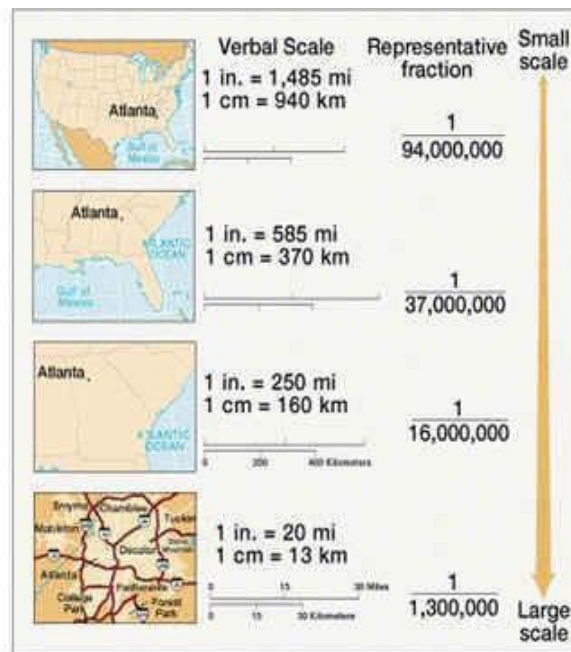


## Large scale vs. small scale

- ❖ Small scale = large area
- ❖ Small scale = large denominator
  - ✓ 1 : 1,000,000
- ❖ Large scale = small area
- ❖ Large scale = small denominator
  - ✓ 1 : 24,000

## Scale and generalization

- ✓ Smaller scale means fewer features
- ✓ Smaller scale means smoother features
- ✓ Smaller scale means combining features
- ✓ Smaller scale means displacing features

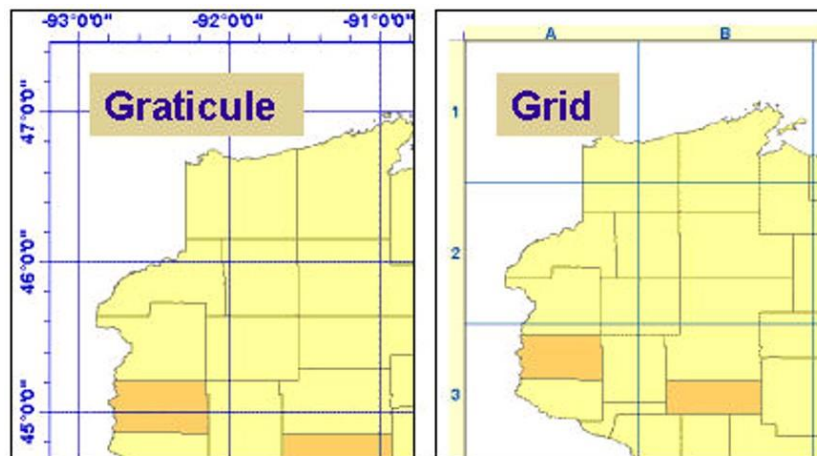


### 1.5.4. North arrow/ direction indicator:

Another common map element is a directional indicator. A directional indicator on a map helps determine the orientation of the map. A north arrow element maintains a connection to a data frame. When that data frame is rotated, the north arrow element will rotate with it. Other maps indicate direction by using a compass rose, with arrows pointing to all four cardinal directions.

### 1.5.5. Grids and graticules:

The row and column labels of a reference grid identify locations listed in a map index. Grids used to display measured locations using projected coordinates on the map. Graticules are lines showing parallels of latitude and meridians of longitude for the earth. Graticules used to show location in geographic coordinates (degrees of latitude and longitude). It is also possible to combine grids and graticules to display multiple coordinate systems on the same map. For example, you might want to use a measured grid to place UTM grids and state plane grids.



The map on the left includes a graticule to allow readers to locate features by their latitude and longitude coordinates. The map on the right uses a simple reference grid to help readers find map features.

### 1.5.6. Map frame/layouts:

Map frames allow you to choose a Border, Background, and Drop Shadow for the element. You can use frames to set map elements apart from other elements or from the background of the map. You can also use frames to visually link map elements to other parts of the map by using similar frames for related elements.

A layout is a collection of map elements laid out and organized on a page. Layout view is where you add map surrounds, frames, graticules, and other final additions to a map. What you see on the layout is what you get if you print or export the map to the same page size.



## 1.6. Printing/ exporting maps:

Map files can be very large and temporarily consume large amounts of disk space while printing. In addition, the page dimensions of your map layout may exceed the size of your printer paper. An important initial step will be to reference your large format printer in ArcGIS.

To print a map:

- ✓ Setting up map printing for plotters (large format printers)
- ✓ Setting the page size of your map layout
- ✓ Selecting a printer engine - windows default printer engine - your first choice for printing.
- ✓ Using Output Image Quality (OIQ) to control print quality and speed - if the OIQ ratio is set to 1:2, and the output resolution is set to 300dpi, the raster content output will be at about 150 dpi.
- ✓ Using the tiling options for map printing - for a layout larger than the printer's paper settings.

Once you have created your map, you have a number of choices to export a map. You can export maps to several standard file formats. PDF and Scalable Vector Graphics (SVG) are vector export formats, since they can contain a mixture of vector and raster data. BMP, JPEG, PNG, TIFF, and GIF are image export formats.