



4.21.02 Design Symbols with Information Value










Introduction

We envision information in order to reason about, communicate, document, and preserve that knowledge – activities nearly carried out on two-dimensional paper or computer screen. Escaping this ‘flatland’ and enriching the density of data displays are the essential tasks of information design – a progress of methods for enhancing density, complexity, dimensionality, and even sometimes beauty. A systematic approach to cartographic design is one of the tools and may prove to be very useful in the process of producing maps.

In GIS, lot of efforts goes to prepare data and make analysis but when it comes to map-making and design of the outcome not so much is done. But data and analyses do not speak for themselves, the result of your work must be designed so it is easy to read and comprehend.

The software provides you with a million opportunities of symbols and colors. However when you try it out you soon realize that you still are the one who will decide how it should look like.

Normally, graphic symbols can be more or less distinctive by manipulating with the following:

-  The Visual Variables
-  Position
-  Form
-  Orientation
-  Color
-  Texture
-  Value
-  Size
-  Checklist for Symbols

The Visual Variables

Seven types of variations are perceivable to the human eye, which graphically present information. These are called visual variables and are used for the construction of symbols. Through variations in the application of visual variables, symbols can become distinctive taking in consideration the three major categories of map symbols namely; point, line, and polygon (area) symbols. These visual variables are: position, form, orientation, color, texture, value, and size.

Position

Refers to X and Y location of the information, which determines its place on the map. This visual variable is always used in combination with one or more of the other visual variables.



Form

Refers to the form of individual elements with which the symbols are constructed.

Orientation

The direction in which symbols are placed. **The attached figures** show the use of this visual variable in the application to point, line, and polygon (area) symbols respectively. For point symbols, depending on the type of symbol used (e.g. square), variation in orientation is limited.

Color

This visual variable is the most powerful and most frequently used. Color can be described according to its three variable characteristics: hue, value and saturation.

Hue is the wavelength of a particular color such as red, orange, yellow, green, brown, blue, violet, etc.

Value is the amount of light reflected by a color; this reflectance value can be compared with the values of a grey scale.

Saturation is the purity or intensity of a color starting from a pure hue; the saturation is changed by adding neutral grey to it.

Texture

The variation in density of the graphic elements under constant value, i.e. with the same overall grey impression. Texture variation is applied to point, line and polygon (area) symbols.

Value

Refers to the values on a grey scale, ranging from the values white to black.

This gives an overall grey impression by using different shades or tones of grey ink or paint. Similar effects can be obtained by using line or dot screens. **Attached figures** illustrate the application of value to point line

Size

Refers to the dimensions of the individual elements with which the symbol is built up. Figures attached illustrate the application of the visual variable size of point, line and polygon (area) symbols.

To appreciate the difference between the size and value, if the dimensions are small such that the first impression is that of grey tone variation, the visual variable value is used. Only when the dimension is large and the eye will catch spontaneously and instantaneously the variations in the individual element sizes, will there be a proper application of the visual variable size.



| | Point | | Line | | Area | |
|------------------|-------|--|------|--|------|--|
| - shape | | | | | | |
| - size | | | | | | |
| - orientation | | | | | | |
| - hue (color) | | | | | | |
| - value (color) | | | | | | |
| - chroma (color) | | | | | | |

Checklist for Symbols

For easy understanding of the (geo)graphic information such as a thematic map, it is important to have a well thought-out strategy. The producer must know that the thematic map might be used together with other layers.



CHECKLIST FOR SYMBOLS



POINT, POLYLINE OR POLYGON OBJECT?



SOCIO-ECONOMIC

DATA IS PREDOMINANTLY POINT OBJECTS.



INFRASTRUCTURE

IS PREDOMINANTLY POLYLINE OBJECTS.



LAND-USE

IS PREDOMINANTLY PRESENTED AS POLYGON OBJECTS.



ENVIRONMENT

IS PREDOMINANTLY PRESENTED AS POLYGON OBJECTS.

DEPENDING ON SCALE OF THE MAP, LAND-USE AND ENVIRONMENT DATA CAN BE REPRESENTED ALSO BY A POINT OBJECT.



SIZE OF THE SYMBOL?



THE MORE 'IMPORTANT' OBJECT THE BIGGER/THICKER POINT/POLYLINE SYMBOL. THE DARKER/BLACKER THE HATCHING OF A POLYGON IS THE MORE IMPORTANCE, HIGHER DENSITY, ETC. IS REFLECTED.

COLOR?



NO COLOR – NO PROBLEM, NOTHING TO OBSERVE.

GREEN COLOR – EVERYTHING IS OK.

RED COLOR – PLEASE OBSERVE, SOMETHING IS WRONG.

BLUE VERSUS RED COLOR = PUBLIC VERSUS PRIVATE/COMMERCIAL ACTIVITIES.

BLUE COLOR FOR WATER RELATED, GREEN COLOR FOR ENVIRONMENT/NATURAL OBJECTS/LAND-USE.

THE BLACK&WHITE COPY?

ALWAYS TEST TO MAKE A B&W COPY TO SEE IF THE IMPRESSION IS STILL THERE. IF NOT MAYBE A SPECIAL B&W VERSION IS NEEDED.



| | Qualitative distinction | Quantitative distinction |
|-----------------------|-----------------------------------------|------------------------------------------------------------|
| Point Symbols | Town Harbour Church Bench-Mark | Large Medium Small |
| Line Symbols | River Road Boundary | Traffic flows Highway Street Path |
| Area Symbols | Grass Desert Census Regions | |
| Volume Symbols | | Population density <p>40 30 20 10 0</p> |

| Viewing Distance | Minimum Font/Symbol Size |
|------------------|--------------------------|
| Size | |
| 50 cm | 0.5 mm |
| 2 m | 1.2 mm |
| 5 m | 3 mm |
| 10 m | 6 mm |
| 15 m | 9 mm |
| 20 m | 12 mm |
| 25 m | 15 mm |
| 30 m | 18 mm |