MAP DESIGN

PRINCIPLE OF MAP DESIGN

- **Among the various aspects of cartography, Map design and Map layout is far the most crucial and complex processes.**

- **There is too much of information which can be depicted on maps, but to depict them all with clarity, simplicity, Accuracy and artistic touch is not easy job.**

- **Like an artist, a map maker has to follow certain principles of visual but unlike an artist**

- **A cartographer does not have a complete freedom with representation techniques and media.**

Mapmakers should follow certain Principles

A cartographer can show his artistic talents within the framework of two types of constraints.

1. **Cartographic traditions and conventions and**
2. **The basic requirements of maps them selves.**

A map is designed to serve certain utilitarian purposes. Its aesthetic value is only incidental to its utilitarian value.

- **To function within the frame work of the user requirements.**
- **To produce a good map, it is not only enough to represent components clearly, simply and aesthetically**

Map consists of several components or map elements;

- **Each symbol on a map is a component in itself.**
- **The individual components get their meaning only with reference to the map as a whole.**

Map design involves the development of this integrated plan and style of the map,

- **Its components and layout involves the arrangement of these individual map components on the paper.**

- **The entire symbol present in the map itself map component**

To prepare a balanced map and to make certain component of it's visually more significant, we have to have the understanding of

1. **Theory of visual perception**

2. **Techniques of making things visually significant**

3. **Limitations with Cartographers functions**

Theory of Visual Perception

Perception means the awareness of objects in the environment.

This awareness means through sensations like sight, sound and taste etc.

Then Perception means is an interaction between the perceiver and the objects perceived

Example:

Sunlight falling on a grass, we see grass to be green because it absorbs all the light except green light.

The most recent theory about visual perception is in reality a transition and that various shapes, colour etc. It says that

1. **Total environment in which the objects lies enters into perception as active participant**
2. **The object, (if removed from the given environment, loses its whole meaning).**

A line, one of the simplest elements of a map for example can be manipulated to produce different perceptions.

Example:

- **A horizontal line produces the perception of line direction**
- **A vertical line tends to produce more tension and excitement than a horizontal line.**
- **A diagonal line produces discomfort to the observer's eyes because it lacks balance**

Association of symbols with various types of line produces different perceptions.

Example:

Bending man is shown above diagonal he appears picking up something from the ground.

But if he placed beneath the diagonal he appears under the weight of space.

Making symbols visually significant

We can classify the design of maps in three phases

1. **DIFFUSION PHASE**
2. **DIFFERENTIATION PHASE**
3. **INTEGRATION PHASE**

DIFFUSION PHASE

During this phase, only the visual outline of the map is seen by the map reader.

Whether it is a reference map or thematic map visual outline gives an idea about the map.

Fundamental elements of visual outline

1. **The Place**
2. **The data**
3. **The position of data in the area**
4. **The relative position of various symbols**

If the objective is to emphasized the specific region and particular area specific and should be made distinct by using contrasting colours or shades.

DIFFERENTIATION PHASE

In this phase of visual communication to the map readers, Eyes are set upon knowing the further details of data shown on the map.

But the data representation should be

1. **Correct**
2. **Represented effectively, clearly and legibly**

3. **presentation of symbols**
4. **Size and shape**
5. **color and shade**
6. **Pattern**

Example: Varying thickness of lines and some line symbols

Presentation of symbols

To make clear and legible symbols used must be differentiated from each others and all lines must be drawn clearly sharply and uniformly.

Size and Shapes:

The size or width of the symbols used in the map should be larger and visible to map reader

Colour and Shades

Colour is the most important single medium in map design; it should be better contrast in symbols and also should be more informative in a map without making it congested.

Patterns:

Patterns are also the means which help us in differentiating various phenomena represented on a map.

Patterns can be used in the place of colours and Patterns can be arranged by varying arrangement line and dots or both are surely unlimited.

From the visual point of view dot patterns are better than the line patterns.

INTEGRATION PHASE

The final phase of perceptual development or observation of a map occurs when various articulated elements of a map are composed into a coherent whole.

A well integrated map will give sufficient material or information to understand the purpose of the map and it will give simple without ornate artistry so that attention of map reader will not diffuse.

To determine the map is balanced or not, we should view it with respect to visual centre which is little above the actual centre of the Map.

CONSTRAINTS IN MAP DESIGN

We have already noted that it is not like artist work, we have certain constrains

constrains can be classified as

1. **Cartographic restrictions**
2. **Technical restrictions**
3. **Resource restrictions**

CARTOGRAPHIC RESTRICTIONS

All conventions internationalized,

Standard colours and symbols should be followed for map making

TECHNICAL RESTRICTIONS

1. **Publishers specifications**
2. **Data, Scales and Projections:**
3. **Reproductions processes**

RESOURCE RESTRICTIONS

Availability and non availability of suitable materials for map production

SYMBOLIZATION

Every component of the map is with symbols. Map itself nothing but a symbol.

Symbolization and arrangements of symbol in a map is important.

Most purposes symbols can be classified into 3 classes

1. **Point symbols**
2. **Line symbols**
3. **Area symbols**

POINT SYMBOLS

Are those which give a location of an object or

Used for qualitative and quantitative representation

Quantitative point symbols may be used to indicate

1. **the presence**
2. **the length**
3. **the size**
4. **the volume**

LINE SYMBOL

Like point symbols the line symbols are also qualitative and quantitative representation of data.

Example. Streams, roads and coastlines etc.

AREA SYMBOL

Area symbols also qualitative and quantitative representation of data

Example: swamps, forests, deserts and soil map etc.

FORMAT OF MAP

All maps must shows few following common components

1. **Title**
2. **direction**
3. **scale**
4. **source**
5. **some insets and**
6. **main map (representation)**

Example;

Legend of a map should be placed in a corner within the neat line, every symbol and abbreviations used in a map should be explained in the map.

COMPILING MAPS FROM OTHER MAPS

Map is the one of the most information sources of cartographic information.

Each maps produced by cartographers is always a new product and incorporate new data.

But most thematic maps use data already incorporated in other maps.

All maps must have certain ingredients like outline, relative location and important local and important natural and cultural details which can be had from topographical maps.

I.e. Base Map preparation.

Map compilation form other maps, we have to face two problems

1. **Reduction and Enlargement**
2. **Generalization**

ENLARGEMENT AND REDUCTION OF MAPS

Four methods as follows…..

1. Geometrical method
2. Mechanical method
3. Projection method
4. Photographic method

GEOMETRICAL METHOD

Geometrical method is based on the principle of similar triangles and squares. The principle of similar triangles is used in the enlargement or reduction of relatively narrow areas, and the principle of similar squares in those of larger areas. Both the methods are very cumbersome and time consuming.