RPS DEGREE COLLEGE

BALANA (MAHENDERGARH)-123029

Lab Manual

Geography (B.A. 5th Semester)

Department of Geography

Contents

(Distribution Maps and Diagrams (Practical)

Distribution Maps and Diagrams (Practical)

Exercises: - I

Principal of map design and layout:

The term 'map' is used to describe digital or analog (soft- or hardcopy) output from a GIS that shows geographic information using well-established cartographic conventions.

Topographic maps show all natural (rivers, ridges) and man-made (roads, buildings) geographic features on a terrain (i.e., topography). Thematic maps reflect a particular theme, for example political, cultural or agricultural features of an area.

The Map Design Process

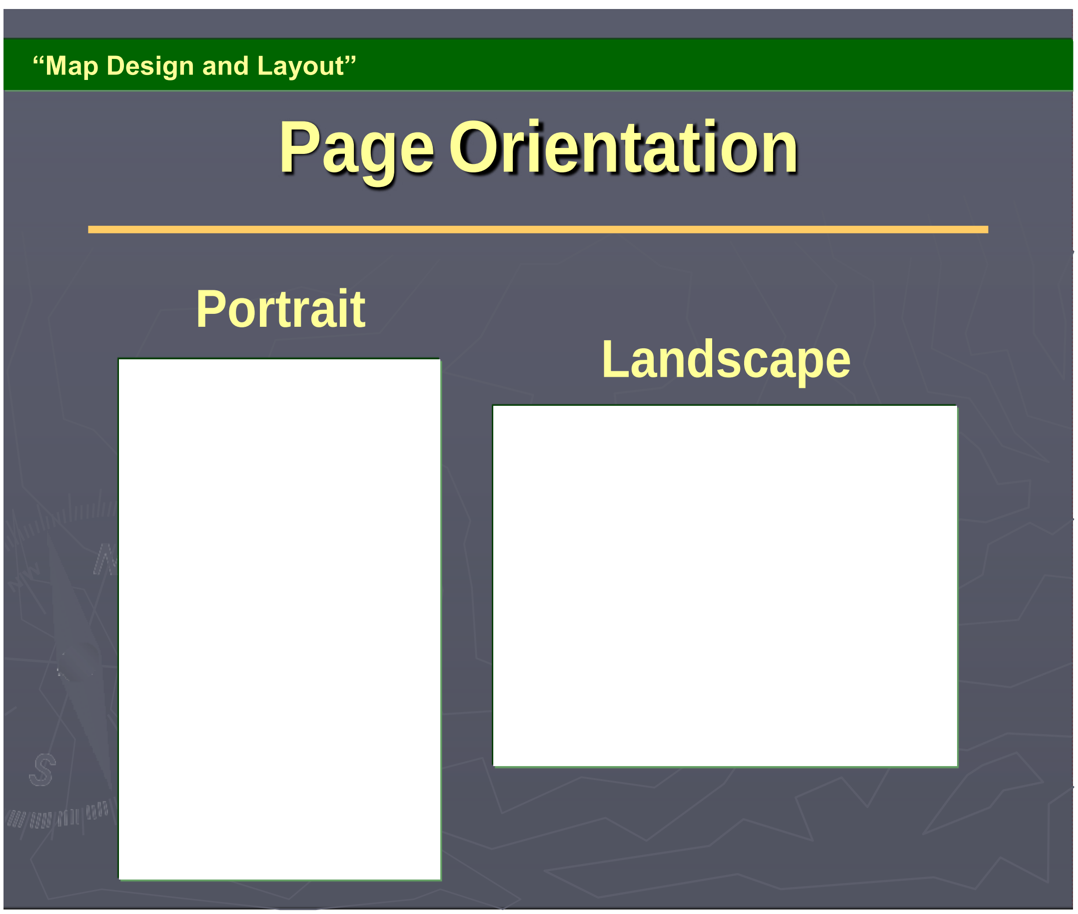
- Choosing a Map Size
- Elements of a map composition
- The Design Filter
- Planar Organization of Visual Elements

Common Mapping Sizes

Letter . . . . 8.5" x 11"
Legal . . . . 8.5" x 14"
Ledger . . . . 11" x 17"
USGS Quad . . . . 24" x 30"
"2x3" . . . . 24" x 36"
"3x4" . . . . 36" x 48"

Standard Media Sizes:

ANSI Size	Inches	
A	8.5 x 11	"Letter"
B	11 x 17	"Tabloid"
C	17 x 22	
D	22 x 34	
E	34 x 44	

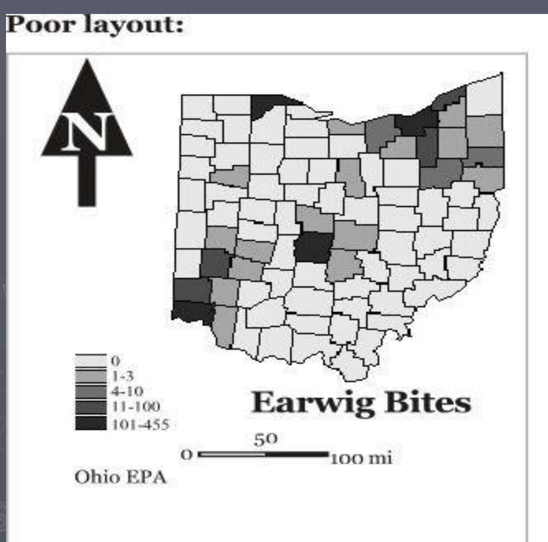


"Map Design and Layout"

Elements of a Map Composition

- Title and Subtitle
- Legend
- Scale Bar
- Inset Map
- Credit Note
- Date
- Logo
- North Arrow
- Mapped and Unmapped Areas
- Borders and Neatlines
- Graticules and Grids
- Map Symbols
- Place Names and Labeling

Map Layout



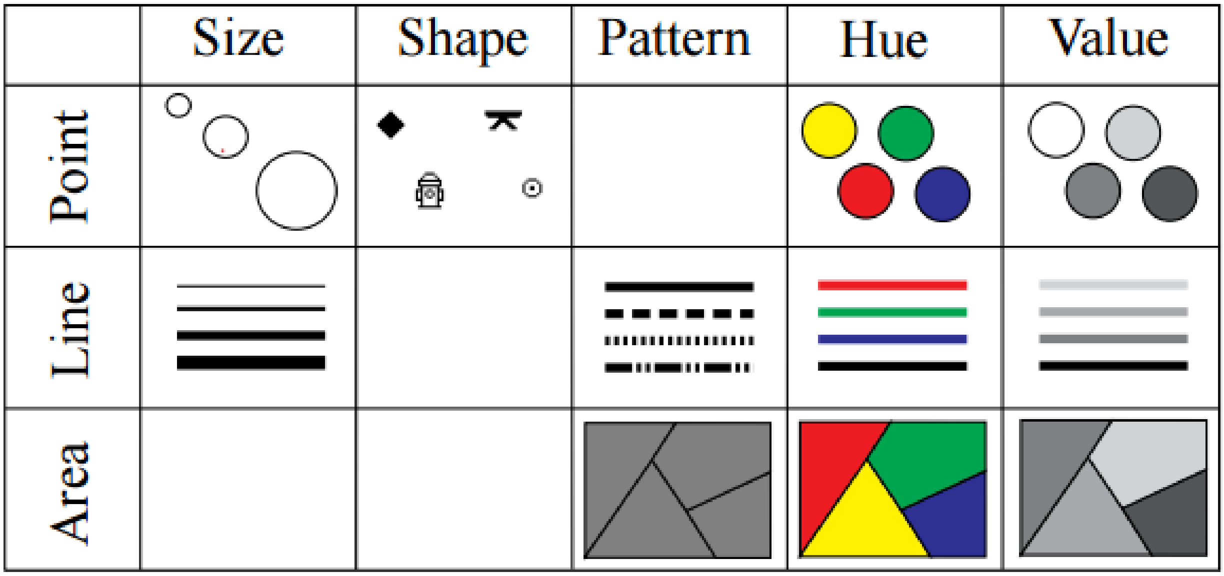
2. Symbolization: point, line and area symbol

Map symbolization is the characters, letters, or similar graphic representations used on a map to indicate an object or characteristic in the real world.

Symbolization

Symbolization is the processing of assigning symbols to represent features. Some symbols are pictorial, and look like the features they represent. For example, on a highway map the symbol for a campground is a tent. Many symbols are abstract, such as a population density map, where colored polygons represent varying concentrations of people.

Many factors must be considered when selecting symbols for a map, such as the scale of the map, the nature of the phenomenon being mapped, the available data, and the display method of the finished product. The following sections explore the symbolization process in greater depth.



3. Mechanics of map construction:

In cartography, technology has continually changed in order to meet the demands of new generations of mapmakers and map users. The first maps were manually constructed with brushes and parchment; therefore, varied in quality and were limited in distribution. The advent of magnetic devices, such as the compass and much later, magnetic storage devices, allowed for the creation of far more accurate maps and the ability to store and manipulate them digitally. Advances in mechanical devices such as the printing press, quadrant and vernier, allowed for the mass production of maps and the ability to make accurate reproductions from more accurate data. Optical technology, such as the telescope, sextant and other devices that use telescopes, allowed for accurate surveying of land and the ability of mapmakers and navigators to find their latitude by measuring angles to the North Star at night or the sun at noon.

Advances in photochemical technology, such as the lithographic and photochemical processes, have allowed for the creation of maps that have fine details, do not distort in shape and resist moisture and wear. This also eliminated the need for engraving, which further shortened the time it takes to make and reproduce maps.

In the 20th century, aerial photography, satellite imagery, and remote sensing provided efficient, precise methods for mapping physical features, such as coastlines, roads, buildings, watersheds, and topography. Advancements in electronic technology ushered in another revolution in cartography. Ready availability of computers and peripherals such as monitors, plotters, printers, scanners (remote and document) and analytic stereo plotters, along with computer programs for visualization, image processing, spatial analysis, and database management, democratized and greatly expanded the making of maps. The ability to superimpose spatially located variables onto existing maps created new uses for maps and new industries to explore and exploit these potentials. See also digital raster graphic.

These days most commercial-quality maps are made using software that falls into one of three main types: CAD, GIS and specialized illustration software. Spatial information can be stored in a database, from which it can be extracted on demand. These tools lead to increasingly dynamic, interactive maps that can be manipulated digitally.

4. Distribution maps:

Distribution maps indicate the distribution of any particular feature in an area. Distribution maps may be qualitative such as those representing vegetation or soil of a region, or quantitative, i.e., it may be representing population. The distribution of population may be shown by dots where each dot may represent a given number of persons. A population map of India may be prepared by a dot method where each dot represents 1 million persons. Likewise, economic data like production of crops, minerals, etc. may be shown by distribution maps. Distributions of continuous variables like temperature, pressure, rainfall, etc. are represented by lines of equal value such as Isotherm, Isobar, and Isohyets respectively. Distribution maps help us to understand the distribution of different elements of he physical and biological environment in an area. From such maps it is pole to infer the relation between climatic conditions, soil type and land us in a region. The study of thematic maps develops an understanding between the regional and periodical changes in a region.

(i) Qualitative distribution maps

- Choroschematic maps
- Chorochromatic maps

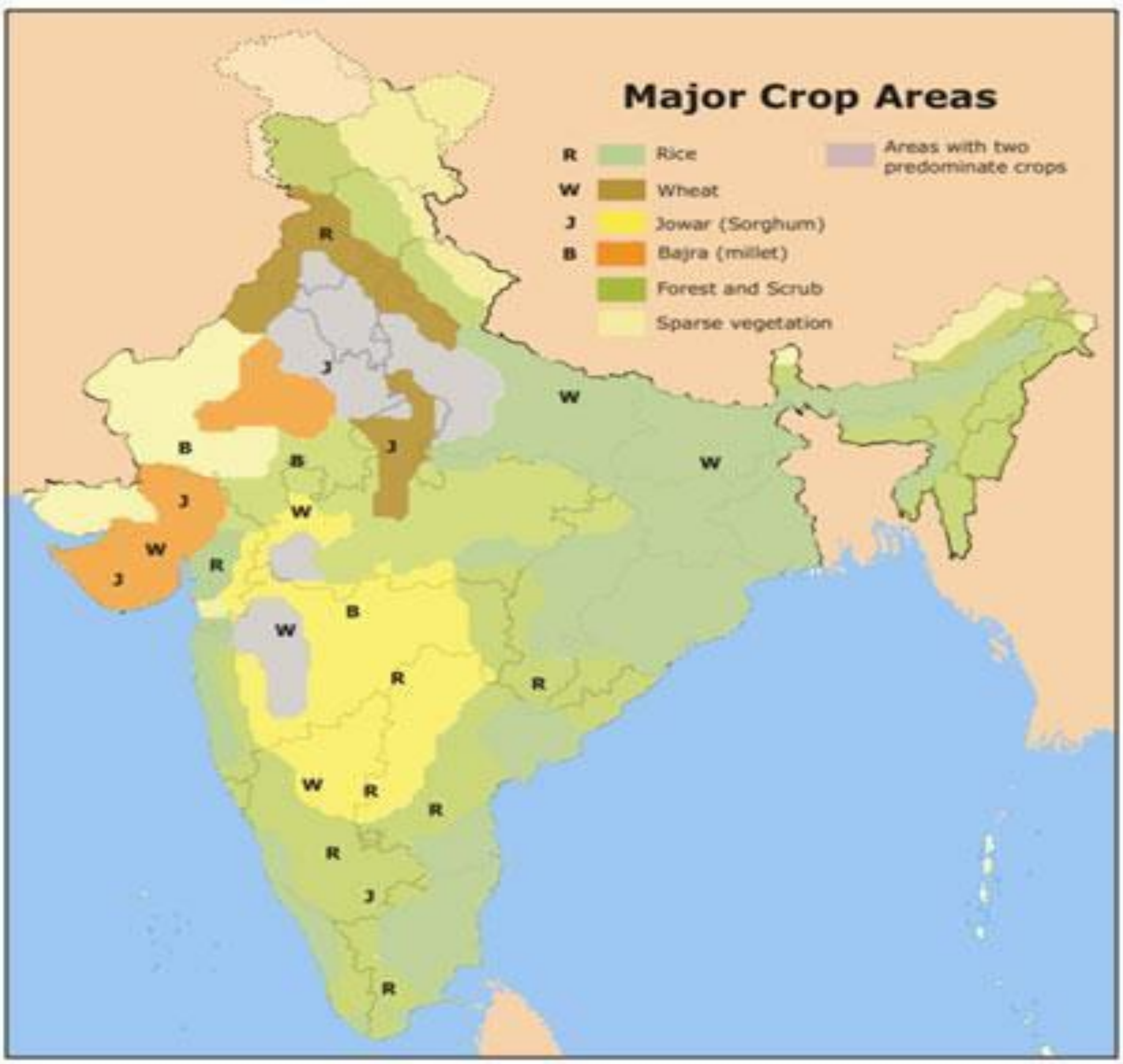
(ii) Quantitative distribution Maps

- Isopleths maps
- Choropleth maps

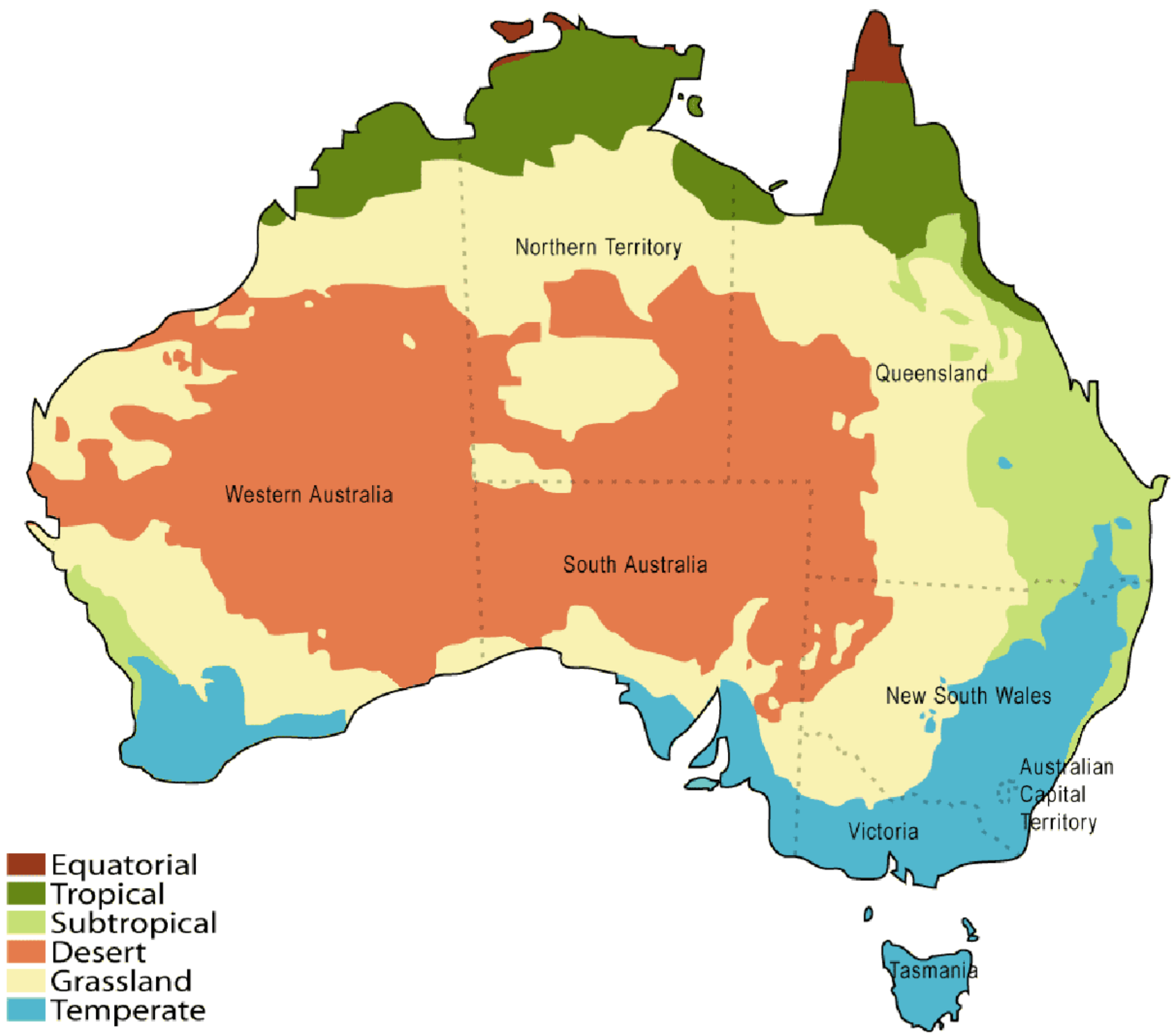
- Dot maps
- Diagrammatic maps

A qualitative map expresses the absence or presence of various features of land, such as vegetation. The opposite of a qualitative map is a quantitative map, which expresses information with numbers, such as elevation in feet.

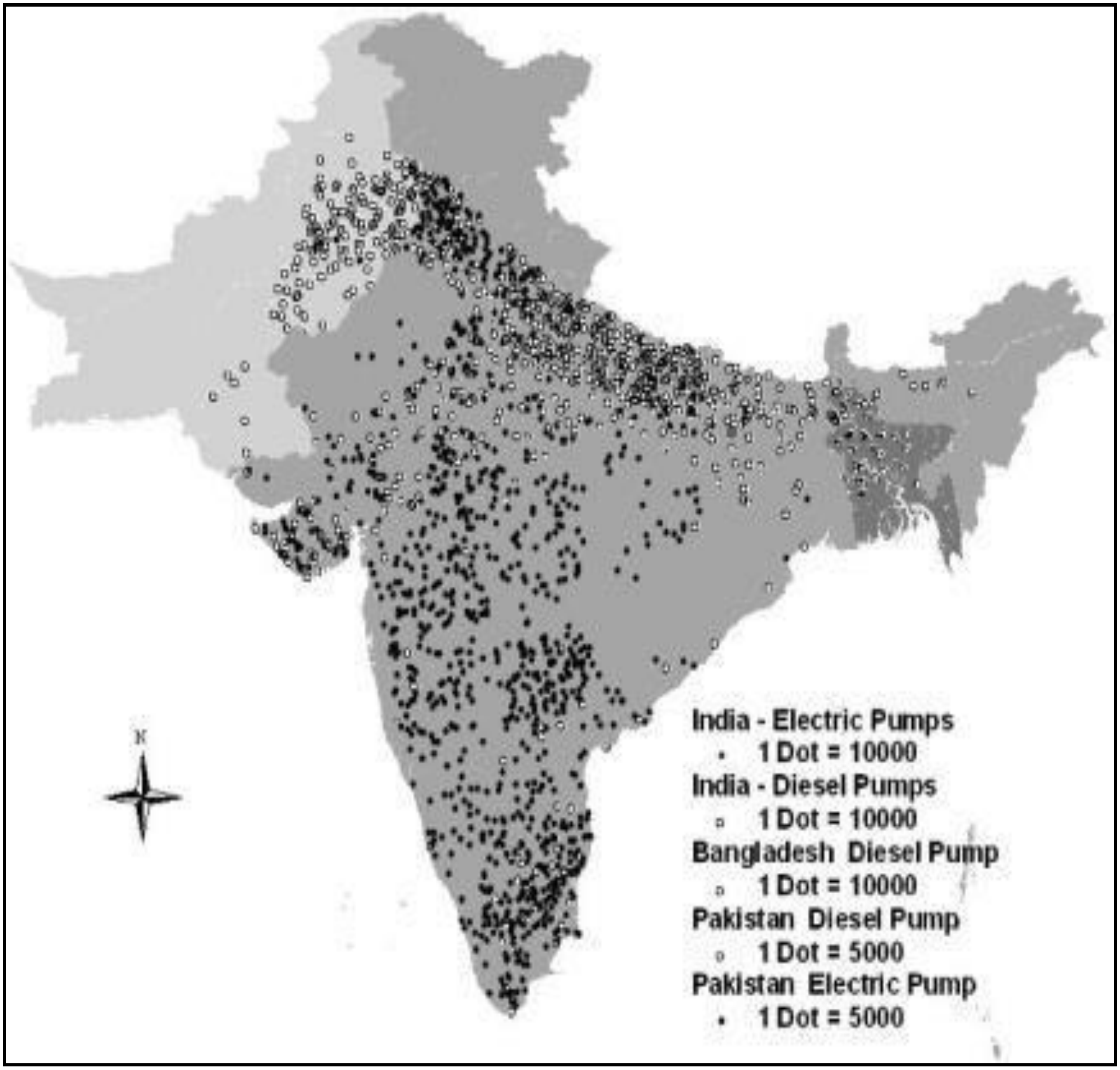
Choroschematic maps



Chorochromatic maps (from Greek for 'area' and 'color; also known as area-class or qualitative area maps) map nominal data using various colors, shades of black and white, or even patterns. Colors are mapped according to data boundaries instead of trying to make locations fit within existing political boundaries. Only nominal data should be graphed, and there can be no indication of data hierarchy or order. [1] Soil maps and biome maps are common examples of chorochromatic maps

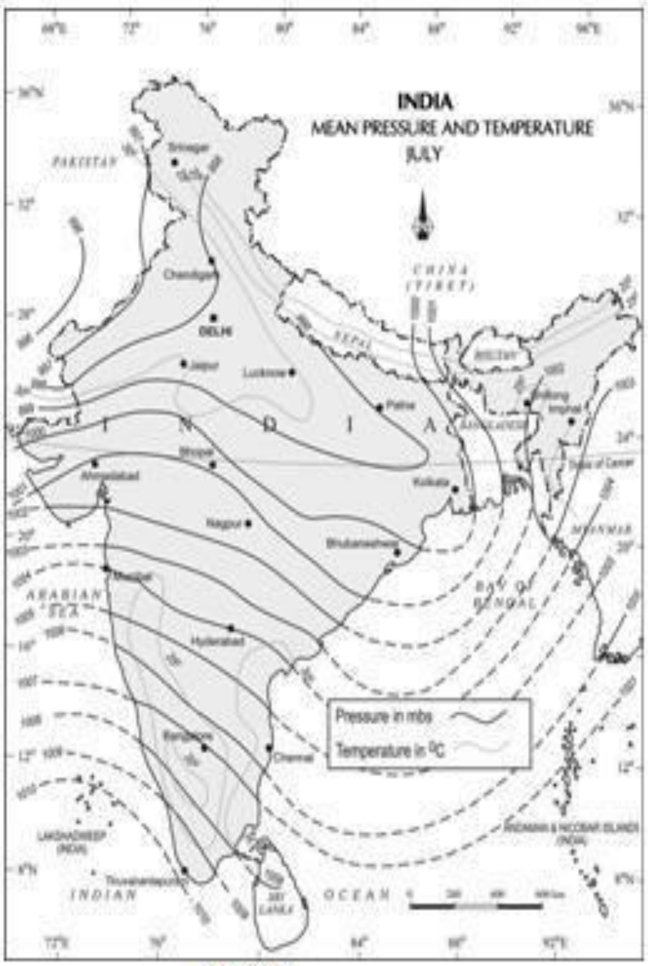


Dot Maps: A map by which distribution of objects is shown by putting dots where each dot refers to a fixed number or quantity is called a dot map. For example the population distribution in a city can be shown using dot maps.

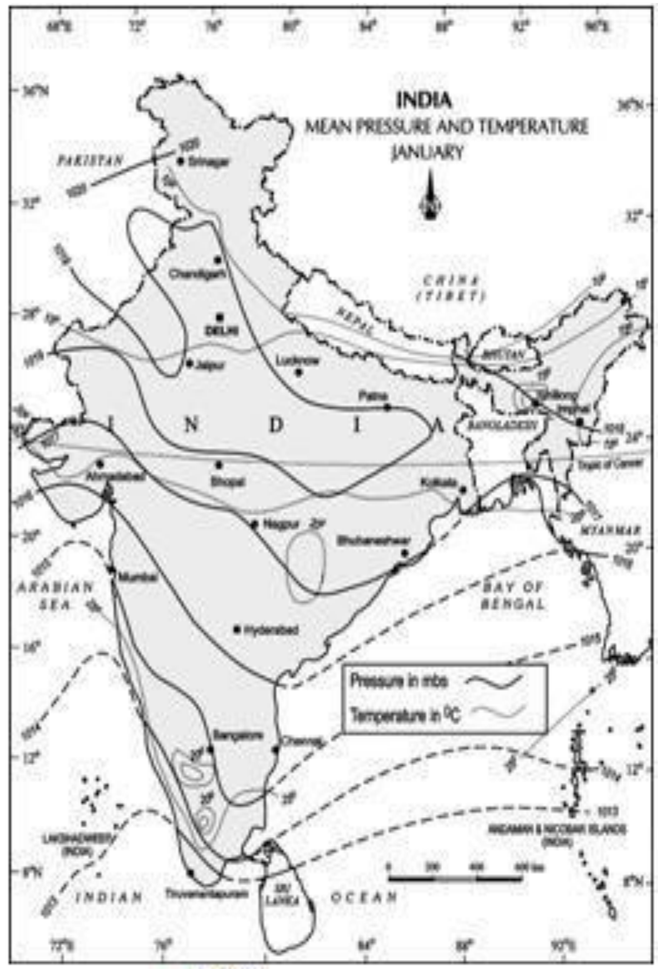


Isopleths maps:

A line on a map connecting places registering the same amount or ratio of some g eographicalor meteorological phenomenon or phenomena Isopleth maps show a range of quantity. They show data as a third dimension on a map, making them good for mapping surface elevations or for weather data. Radar maps, temperature maps and rainfall maps are all isopleth maps. It's also usually having ranges of similar value filled with similar colors or patterns, showing changes over space. The third dimension is shown by a series of lines called isopleths which connect points of equal value.



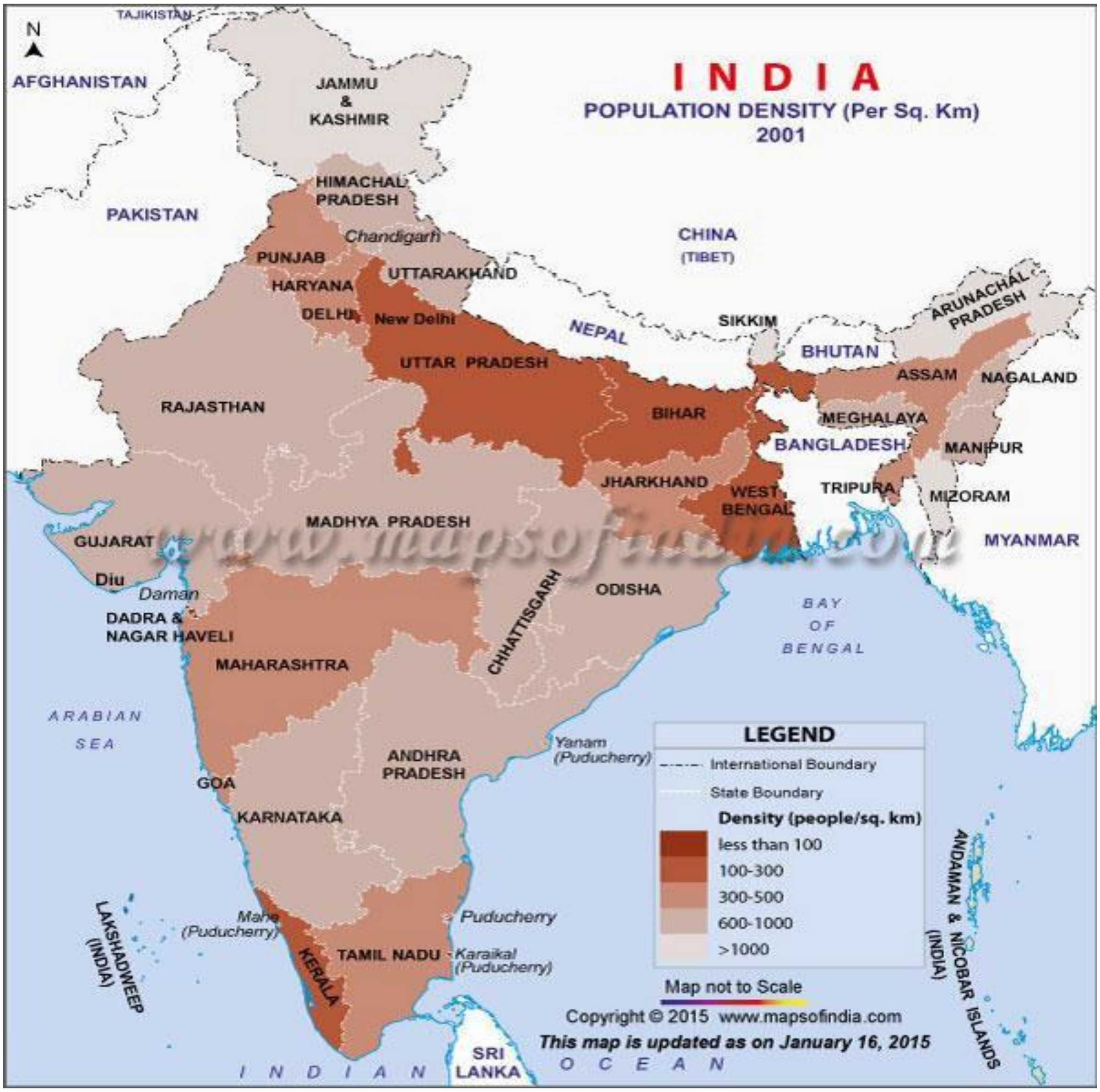
(1)



(2)

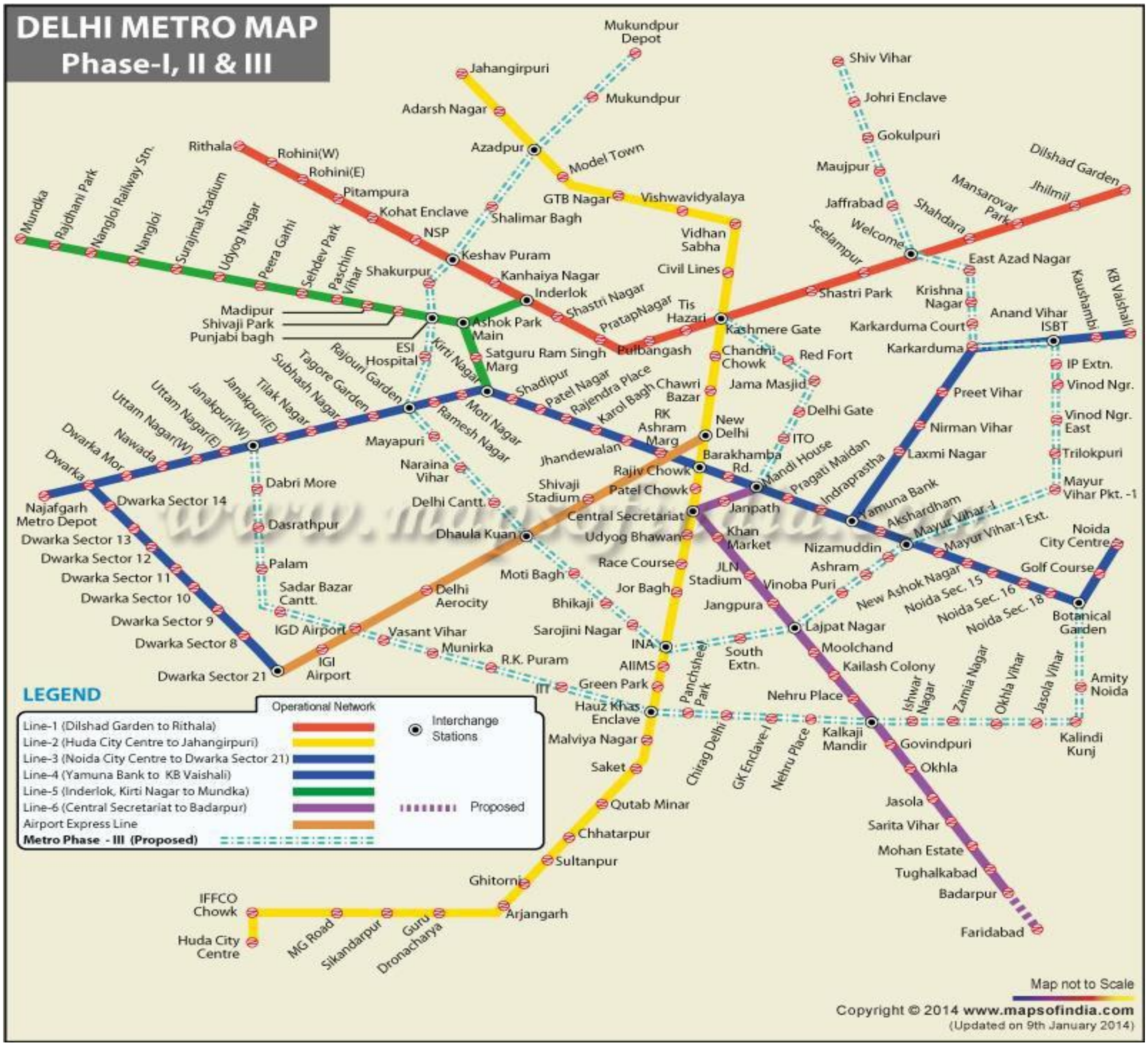
Choropleth maps:

A choropleth map is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map, such as population density or per-capita income. Choropleth maps can also be used to display nominal data such as country names on a world map or most popular car model per region. The choropleth map provides an easy way to visualize how a measurement varies across a geographic area or it shows the level of variability within a region.



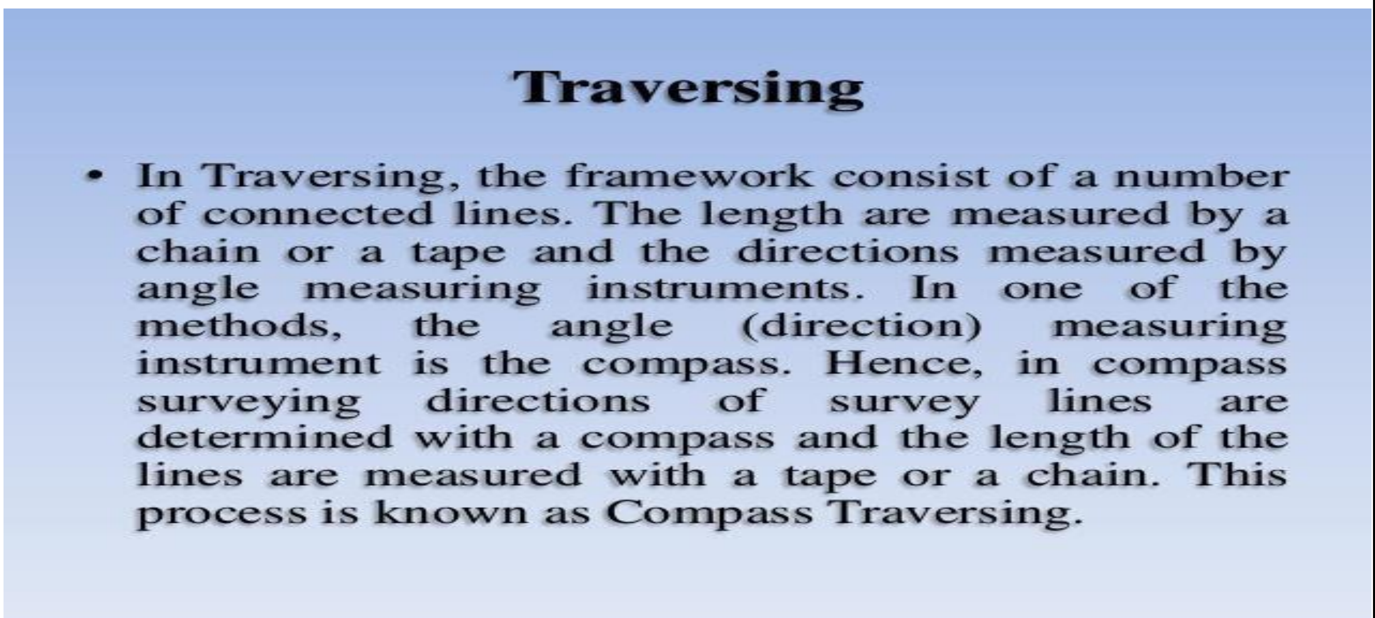
Diagrammatic maps:

A simplified map, usually without a grid. The schematic representation makes it p ossible to form a general idea of thephenomenon or event shown in graphic form on the map and to emphasize its fundamental characteristics. The content of adia grammatic map is strictly limited to elements that are important for an understan ding of the subject. Previously publishedgeographic maps are sometimes used as t he basis for a diagrammatic map; the content of the diagrammatic map is drawno nto them in a generalized, schematic form and made very clear.

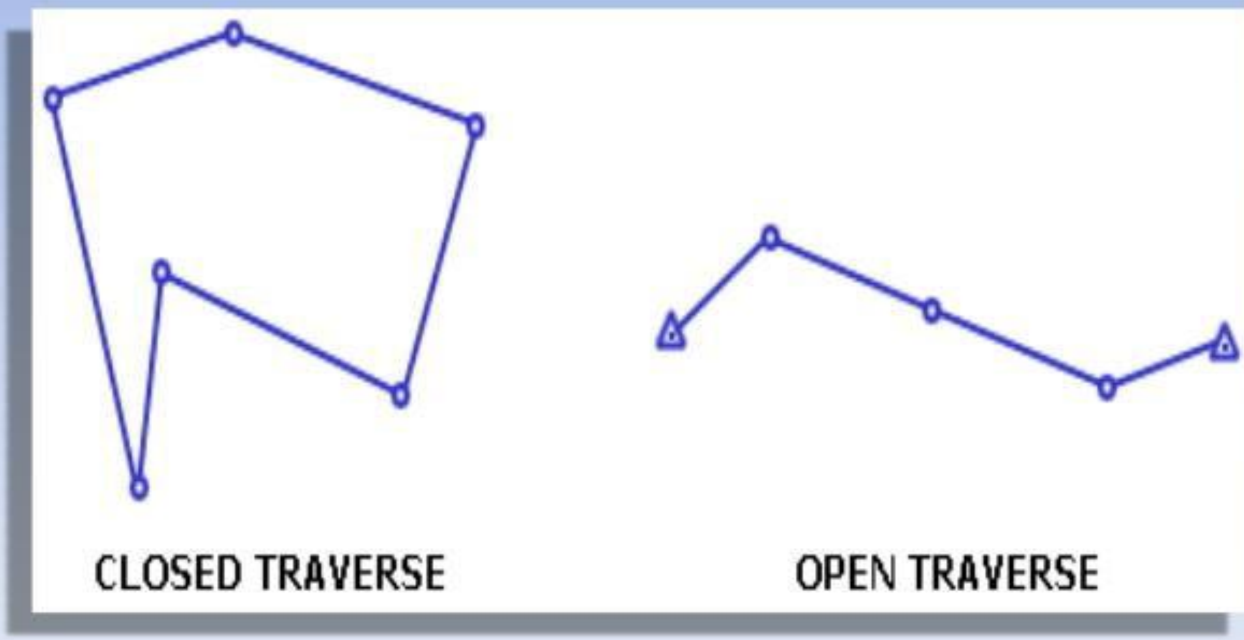


Prismatic Compass Survey:

A prismatic compass is a navigation and surveying instrument which is extensively used for determining course, waypoints (an endpoint of the lcourse) and direction, and for calculating bearings of survey lines and included angles between them.[1] Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass, and the length of the surveying lines are measured with a tape or chain or laser range finder.[2] The compass is generally used to run a traverse line. The compass calculates bearings of lines with respect to magnetic north. The included angles can then be calculated using suitable formulas in case of clockwise and anti-clockwise traverse respectively. For each survey line in the traverse, surveyors take two bearings that is fore bearing and back bearing which should exactly differ by 180° if local attraction is negligible. The name *Prismatic compass* is given to it because it essentially consists of a prism which is used for taking observations more accurately.



Traversing



Types and Uses of Compass

- **Compass:** A compass is a small instrument essentially Consisting of magnetic needle, a graduated circle, and a line of sight. The compass can not measure angle between two lines directly but can measure angle of a line with reference to magnetic meridian at the instrument station point is called magnetic bearing of a line. The angle between two lines is then calculated by getting bearing of these two lines.
- There are two forms of compass available:
- **The Prismatic Compass**
- **The Surveyor's Compass**

Compass Surveying

The Prismatic Compass

The prismatic compass is a magnetic compass which consists of the following parts.

Cylindrical Metal Box

Cylindrical metal box is having diameter of 8 to 12 cm. It protects the compass and forms entire casing or body of the compass. It protects compass from dust, rain etc.

The Prismatic Compass

Pivot

- Pivot is provided at the centre of the compass and supports freely suspended magnetic needle over it.

Lifting Pin and Lifting Lever

- A lifting pin is provided just below the sight vane. When the sight vane is folded, it presses the lifting pin. The lifting pin with the help of lifting lever then lifts the magnetic needle out of pivot point to prevent damage to pivot head.

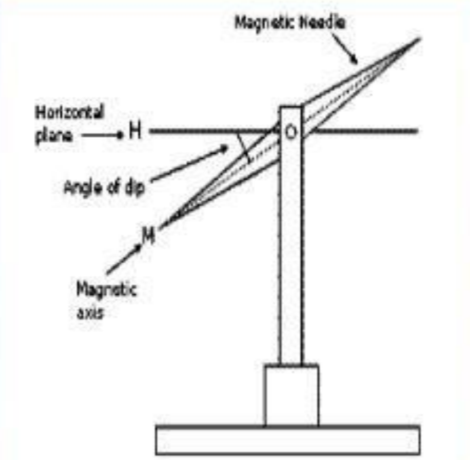
Spring Brake or Brake Pin

- To damp the oscillation of the needle before taking a reading and to bring it to rest quickly, the light spring brake attached to the inside of the box is brought in contact with edge of the ring by gently pressing inward the brake pin.

The Prismatic Compass

- **Magnetic Needle:** Magnetic needle is the heart of the instrument. This needle measures angles of a line from magnetic meridian a the needle always remains pointed towards north and south pole at the two ends of the needle when freely suspended on any support.

- **Graduated Circle or Ring:** This is an aluminium graduated ring marked with 0^0 to 360^0 to measure all possible bearings of lines, and attached with the magnetic needle. The ring is graduated to half a degree.



The angle HOM betv een the horizontal plane HO and the axis of freely suspended magnetic needle MO is Angle of Dip or Inclination

Temporary Adjustment of a Prismatic Compass

- The following procedure should be adopted after the prismatic compass on the tripod for measuring the bearing of a line:

Centering

Centering is the operation in which compass is kept exactly over the station from where the bearing is to be determined. The centering is checked by dropping a small pebble from the underside of the compass. If the pebble falls on the top of the peg then the centering I correct, if not then the centering is corrected by adjustment the legs of the tripod.

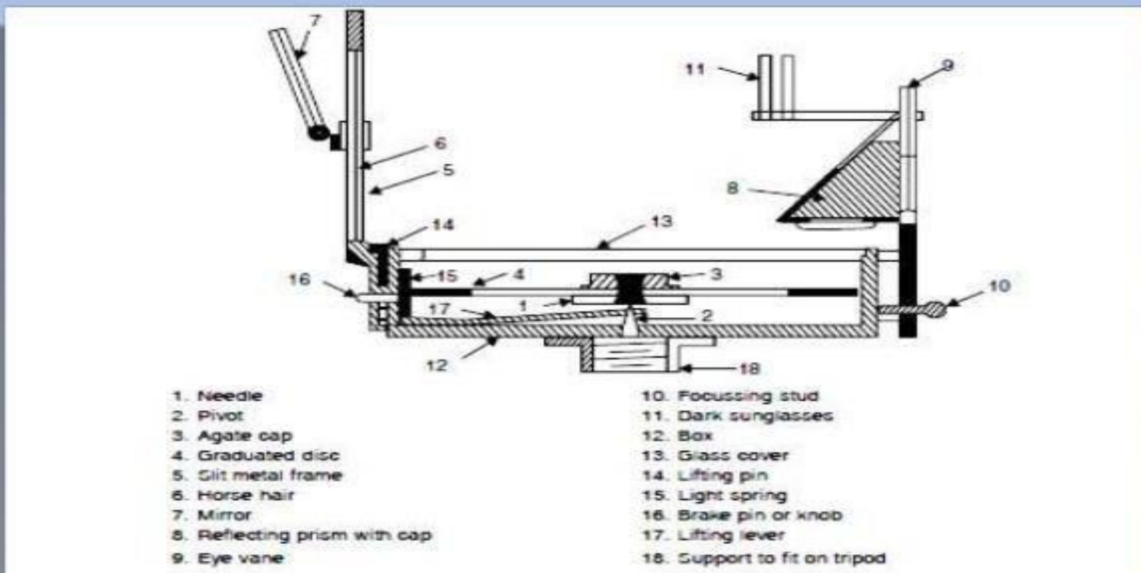
Levelling

Levelling of the compass is done with the aim to freely swing the graduated circular ring of the prismatic compass. The ball and socket arrangement on the tripod will help to achieve a proper lever of the compass. This can be checked by rolling round pencil on glass cover.

Focusing

The prism is moved up or down in its slide till the graduations on the aluminium ring are seen clear, sharp and perfect focus. The position of the prism will depend upon the vision of the observer.

The Prismatic Compass



The Surveyor's Compass

Working of Surveyor's Compass:

- **Centering**
- **Levelling**
- **Observing the Bearing of a Line**
- First two operations are similar to that of prismatic compass but the method of taking observation differs from that.
- Observing the bearing of a line. In this type of compass, the reading is taken from the top of glass and under the tip of north end of the magnetic needle directly. No prism is provided here.

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Lab Manual

Geography (B.A. 6th Semester)

Department of Geography

Contents

(Introduction to Remote Sensing and Field Survey Report)

Exercises: - I

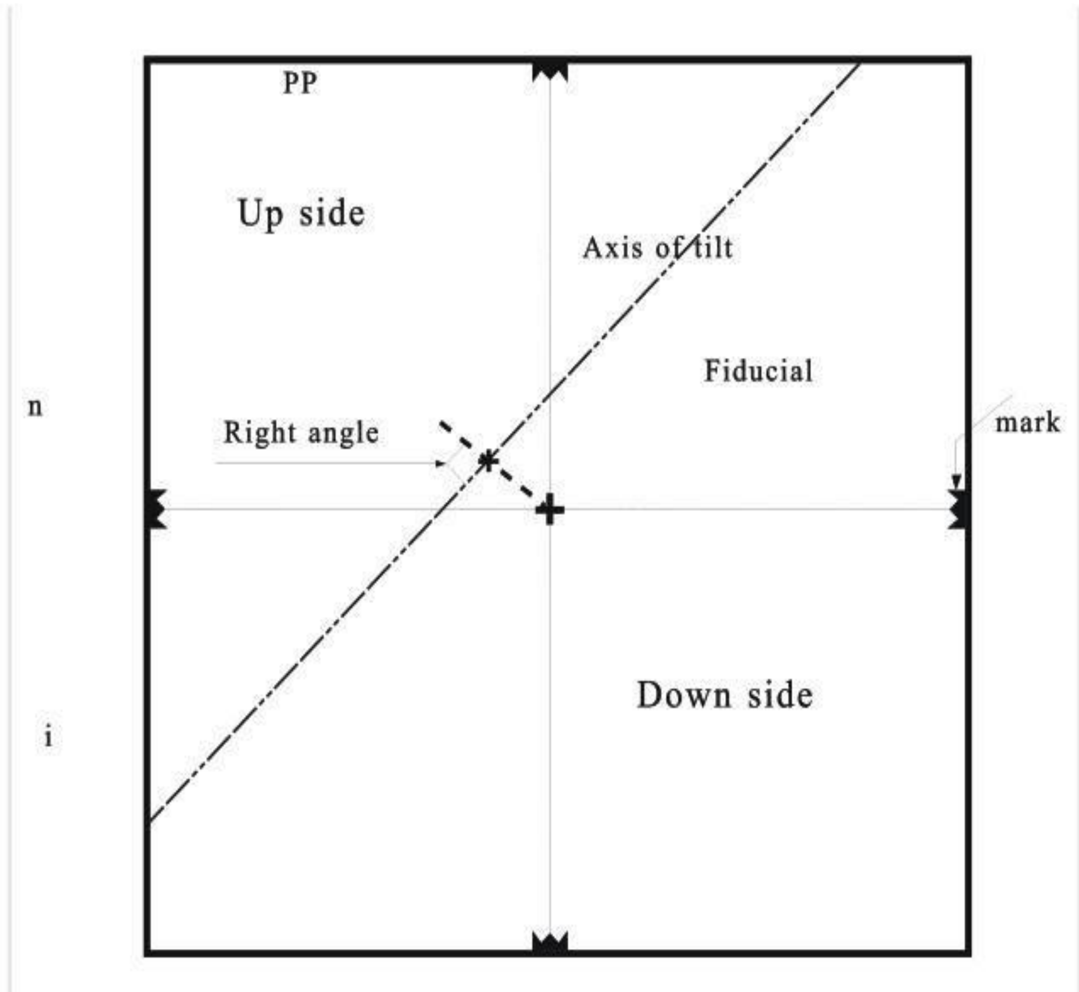
Demarcation of Principal Point, Conjugate Principal point and Flight line on Aerial Photographs:

Considering that most aerial photographs are not perfectly vertical, there are three different photo centers: the principal point, the nadir, and the isocenter. Each one of these centers plays a specific role and is of great importance to the photogrammetrist because different types of distortion and displacement radiate from each of these points. Theoretically, if an aerial photograph is perfectly vertical, the three centers coincide at one point (i.e., the principal point), which is the geometric center of the photograph defined by the intersection of lines drawn between opposite *fiducial marks* (figure 6.6).

The principal point is the optical or geometric center of the photograph. It is the image of the intersection between the projection of the optical axis (i.e., the perpendicular to the center of the lens) and the ground (figure 6.6). The principal point is assumed to coincide with the intersection of the x and y axes. We can locate the principal point (PP) on a single photo by the intersection of lines drawn between opposite side or corner *fiducial marks*.

When marking up vertical aerial photographs, it is convenient to mark the PP by pricking through the surface of the photo using a *pin*, then draw a small circle (about 3-mm diameter) around the pin-point with a faint red ink pen. This PP is then transferred stereoscopically onto the adjacent (left and right) photographs of the same flight line by pricking through its transferred positions and marking them with a circle of identical diameter. These transferred points are called *transferred principal points* or *conjugate principal points* (CPP). The line segment joining the principal points and the conjugate principal points constitute the *flight line* of the aircraft, also called *base line* or *air base*. The air base is important as it is used for lining up a photograph to adjacent photographs on the same flight line to correctly see in stereoscopy, determine height and difference in elevation of objects precisely perform photogrammetric measurements, and to prepare maps. Because of distortions and image displacement (discussed later in this chapter), the distance between the PP and the CPP of the adjacent photograph will often be different Diagram of a tilted photograph illustrating the

location of the principal point (*PP*), the nadir (*n*), the isocenter (*i*), the axis of tilt, and the direction of tilt (*up* and *down* sides).



Exercises: - II

Determination of scale on an aerial Photograph:

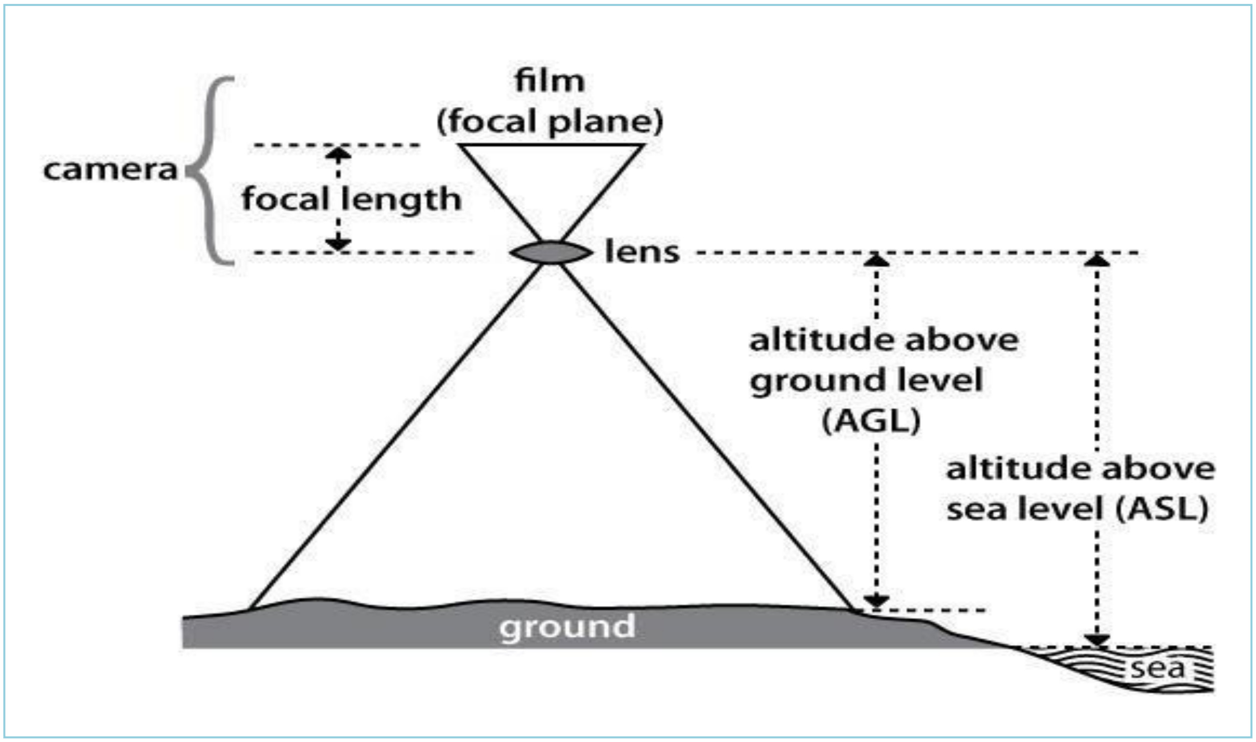
Scale: the ratio of the distance between two points on a photo to the actual distance between the same two points on the ground (i.e. 1 unit on the photo equals "x" units on the ground). If a 1 km stretch of highway covers 4 cm on an air photo, the scale is calculated as follows:

$$\frac{\text{PHOTO DISTANCE}}{\text{GROUND DISTANCE}} = \frac{4\text{ cm}}{1\text{ km}} = \frac{4\text{ cm}}{100\,000\text{ cm}} = \frac{1}{25\,000} \quad \text{SCALE: } 1/25\,000$$

Another method used to determine the scale of a photo is to find the ratio between the camera's focal length and the plane's altitude above the ground being

$$\frac{\text{FOCAL LENGTH}}{\text{ALTITUDE (AGL)}} = \frac{152\text{ mm}}{7\,600\text{ m}} = \frac{152\text{ mm}}{7\,600\,000\text{ mm}} = \frac{1}{50\,000} \quad \text{SCALE: } 1/50\,000$$

photographed. If a camera's focal length is 152 mm, and the plane's altitude Above Ground Level (AGL) is 7 600 m, using the same equation as above, the scale would be:



Scale may be expressed three ways:

- Unit Equivalent
- Representative Fraction
- Ratio

A photographic scale of 1 millimetre on the photograph represents 25 metres on the ground would be expressed as follows:

- Unit Equivalent - 1 mm = 25 m
- Representative Fraction - 1/25 000
- Ratio - 1:25 000

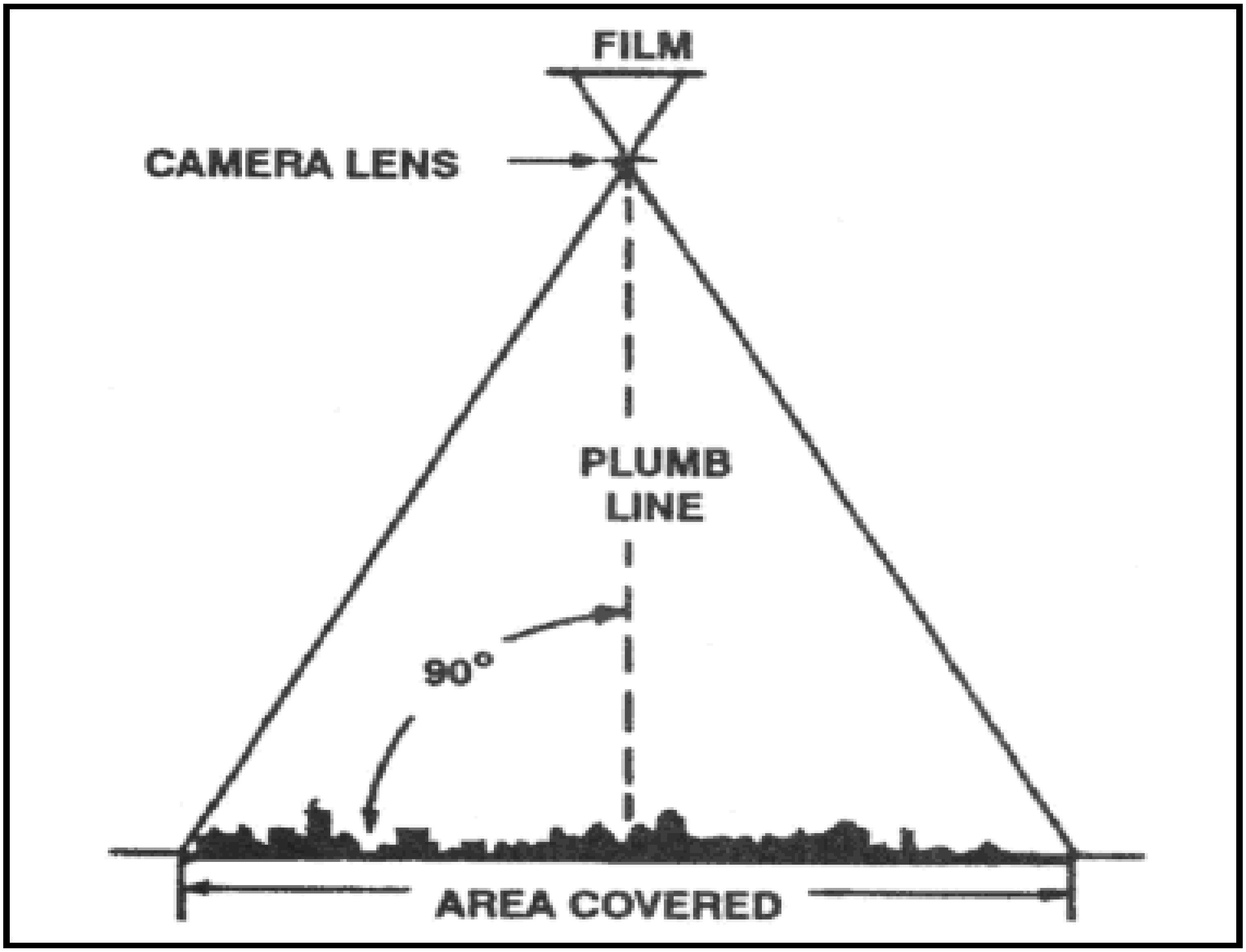
Two terms that are normally mentioned when discussing scale are:

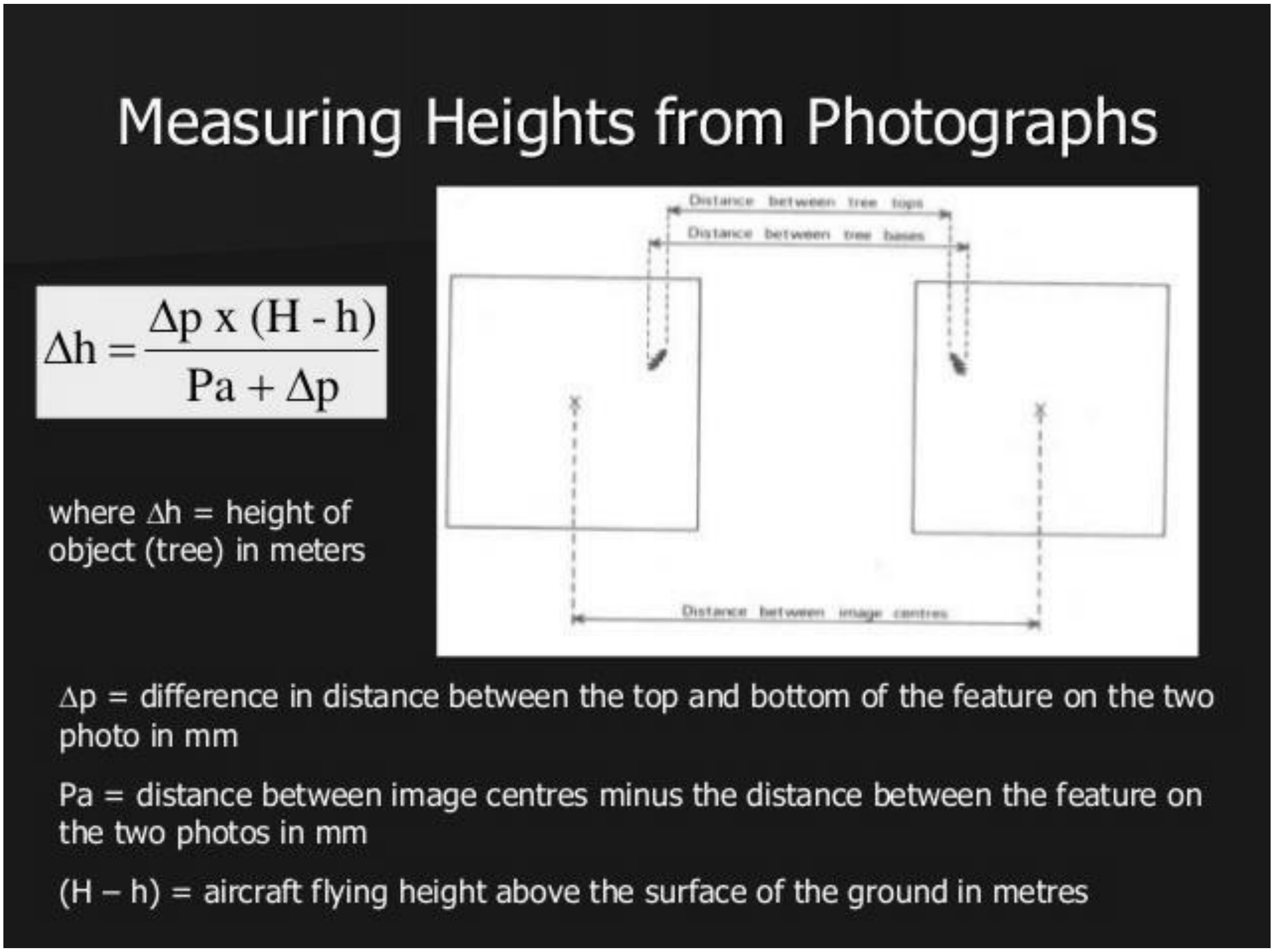
Large Scale - Larger-scale photos (e.g. 1:25 000) cover small areas in greater detail. A large scale photo simply means that ground features are at a larger, more detailed size. The area of ground coverage that is seen on the photo is less than at smaller scales.

Small Scale - Smaller-scale photos (e.g. 1:50 000) cover large areas in less detail. A small scale photo simply means that ground features are at a smaller, less detailed size. The area of ground coverage that is seen on the photo is greater than at larger scales.

The National Air Photo Library has a variety of photographic scales available, such as 1:3 000 (large scale) of selected areas, and 1:50 000 (small scale).

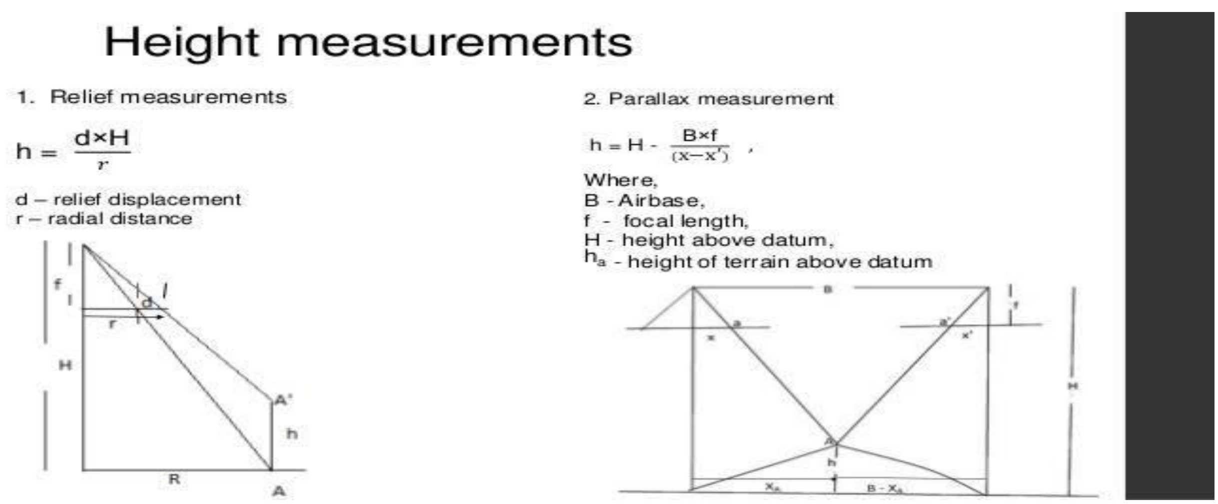
Measurement of height of an object on single vertical aerial photograph





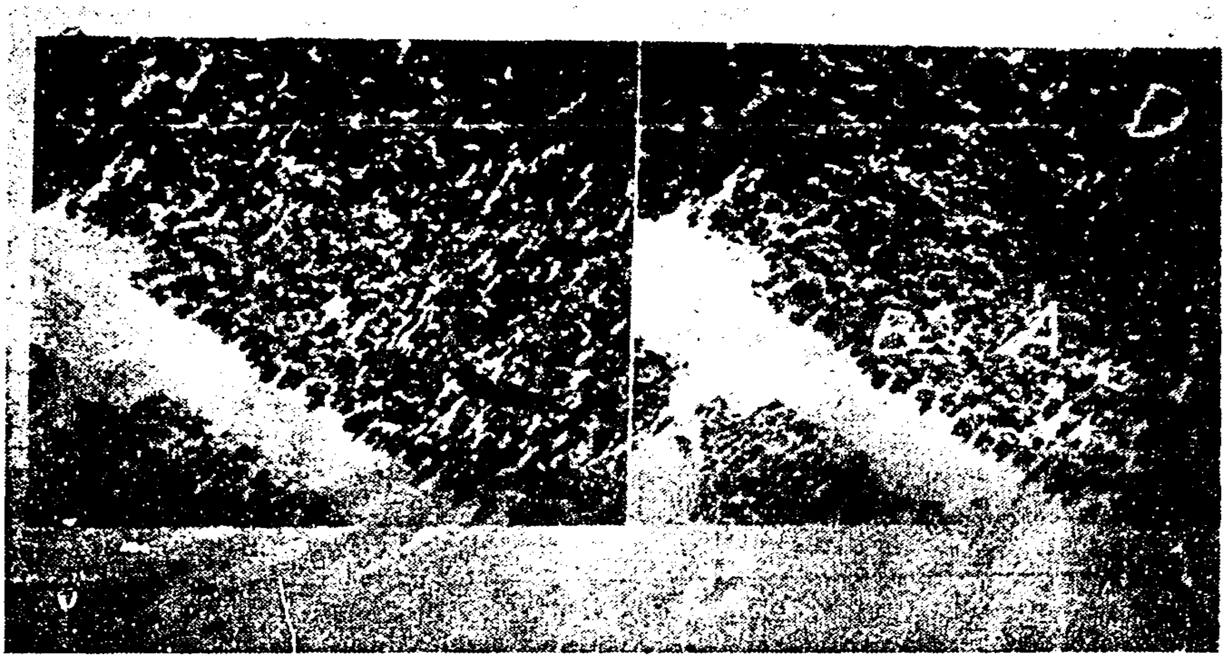
Parallax bar measurement and Height determination:

Parallax bar is also termed as stereo meter. It is used to measure the difference of parallax between any two points more accurately and precisely. It consists of a pa ir of glass graticules, one is on left side and another to a rigid bar such that lower s urface of each graticule is in contact with one of the pair of stereophotographs. A



small opaque circular dot is marked at the center of each glass graticules.

Preparation of stereogram, stereo triplet and mosaic from aerial photograph:



—*Stereogram showing difference in tone on aerial photograph.*

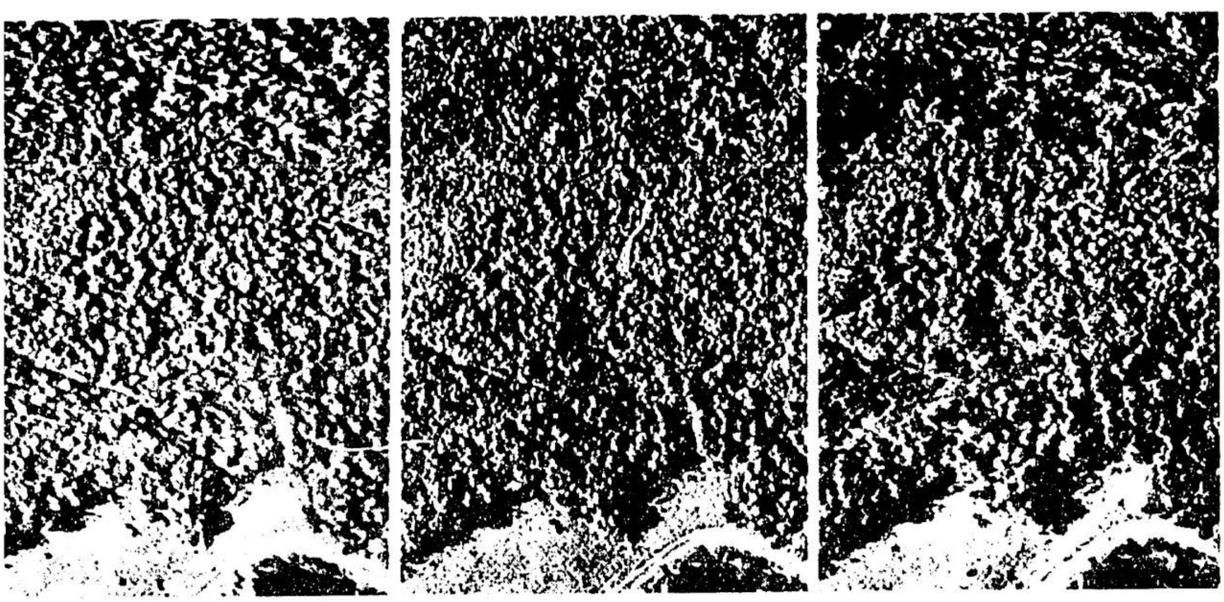
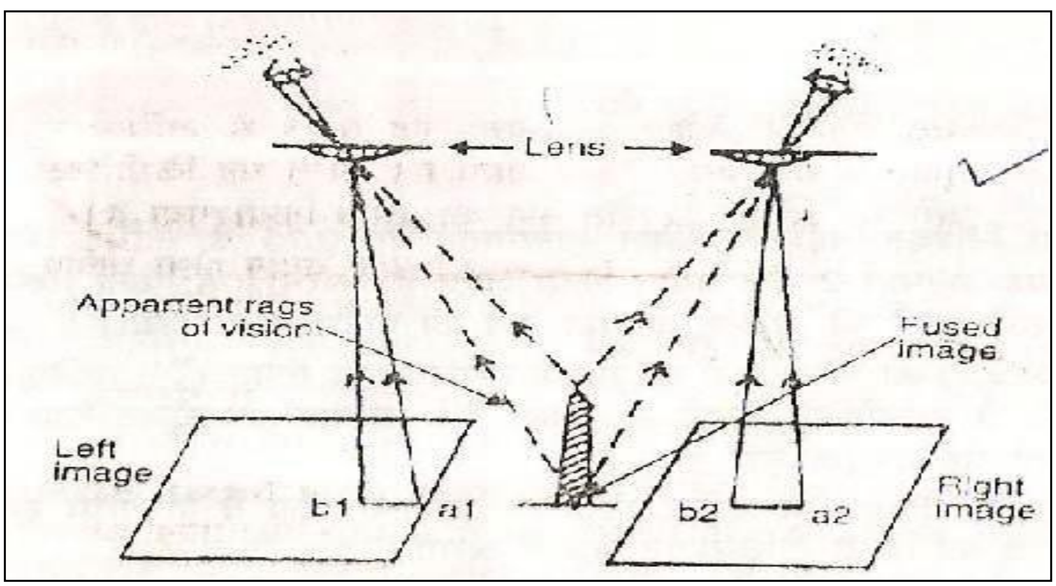


Fig. 12—*Stereo-triplet showing the effect of light on crown appearance.*

Exercises: - III

Stereo Vision Test: Orientation of stereo model under Mirror Stereoscope:-

The word "stereo" comes from the Greek word "stereos" which means firm or solid. With stereo vision you see an object as solid in three spatial dimensions--width, height and depth--or x, y and z. It is the added perception of the depth dimension that makes stereo vision so rich and special. Stereo vision--or stereoscopic vision --probably evolved as a means of survival. With stereo vision, we can see where objects are in relation to our own bodies with much greater precision--especially when those objects are moving toward or away from us in the depth dimension. We can see a little bit around solid objects without moving our heads and we can even perceive and measure "empty" space with our eyes and brains. Stereoscopic vision is also called space vision or plastic vision, is a characteristic, possessed by most persons of normal vision and is important for ability to conceive objects in three dimensional effects and to judge distances. Stereoscopic vision is the basic prerequisite for photogrammetry and photo interpretation. Stereoscopy is defined as the science or art which deals with stereoscopic or other three dimensional effects and methods by which these effects are produced. The close objects are larger, brighter, and more detailed than distant object, and that the close object obstructs the view of distant object. Monocular vision means seeing with one eye. Binocular vision means using both eyes simultaneously. The degree of depth perception is called as “Stereoscopic



acuity." Normal Stereoscopic acuity is possible when images on retina have certain characteristics. Two eyes must see two images, which are only slightly different in angle of view, orientation, colour, brightness, shape and size. (Figure: 1) Human eyes, fixed on same object provide two points of observation which are required for parallax. A finger held with the arm stretched and alternately viewed with left and right eye appears to move sideways. Thus movement or displacement is the horizontal parallax. (**Figure 1:** Stereoscopic Vision)

Types of stereoscope:-

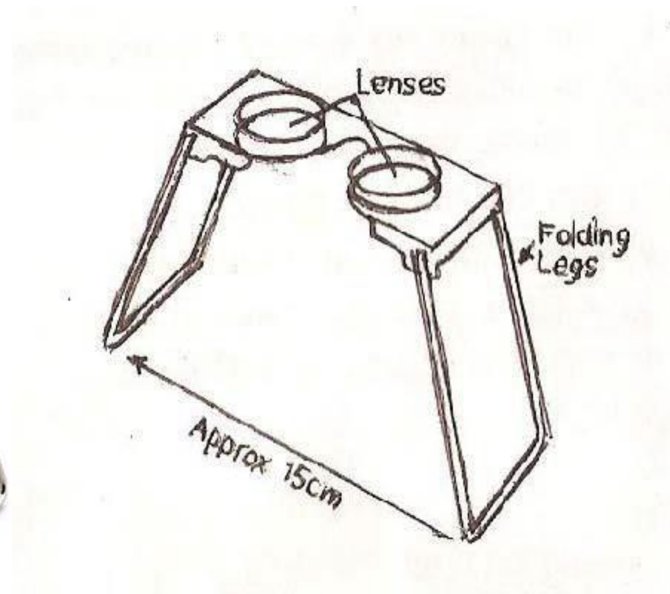
The function of a stereoscope is to deflect normally converging lines of sight, so that each eye views a different image. Instruments in use to-day for three dimensional study of aerial photographs are of two types i.e. Lens Stereoscope and reflecting or mirror stereoscope. Two types of stereoscope;

1. Lens stereoscope

2. Mirror stereoscope

1. Lens Stereoscope: Lens Stereoscope is also called as pocket stereoscope because of its size and easy transportability. Eye base was fixed. Lens is used in pocket stereoscope is Plano-convex lens. Pair of magnifying lenses are used to keep eyes working independently and there line parallel. The height of pocket stereoscope is 10 centimeters. It has Plano convex lenses with upper side flat and focal length 100mm.**(Figure:2)** Since, normal viewing distances is 250mm, a view at 100mm, under pocket stereoscope gives 2.5 times magnification. The distances between two lenses is either fixed at 65mm which is the average eye base or are adjustable to distance between users' eyes. Distance between legs of the stereoscope and focal length of lenses are so adjusted that the images are located at the focal planes of lenses. Lens stereoscopes are handy, cheap and are good for study of small format aerial photographs. Larger photo sizes, need folding while viewing. However, they have limited magnification afford limited illumination because of limited distance between observer and photos and afford small viewing field because image points in a stereo pair have to be kept apart by distance equal to eye base.

(Fig: Lens or Pocket Stereoscope)



2. Mirror Stereoscope: - Mirror Stereoscope is also called as reflecting stereoscope. It provides view of entire overlap by an arrangement of prisms and mirrors with increased distance to about 15 to 20cms. In addition, binoculars, attached with the mirror stereoscope, provide 3X to 8X magnification. The mirror stereoscopes are most widely used in photo interpretation and in photo measurements, in combination with parallaxbar. Mirror stereoscopes can be used for larger format sizes of aerial photographs because the visual base in this is enlarged by double reflections.

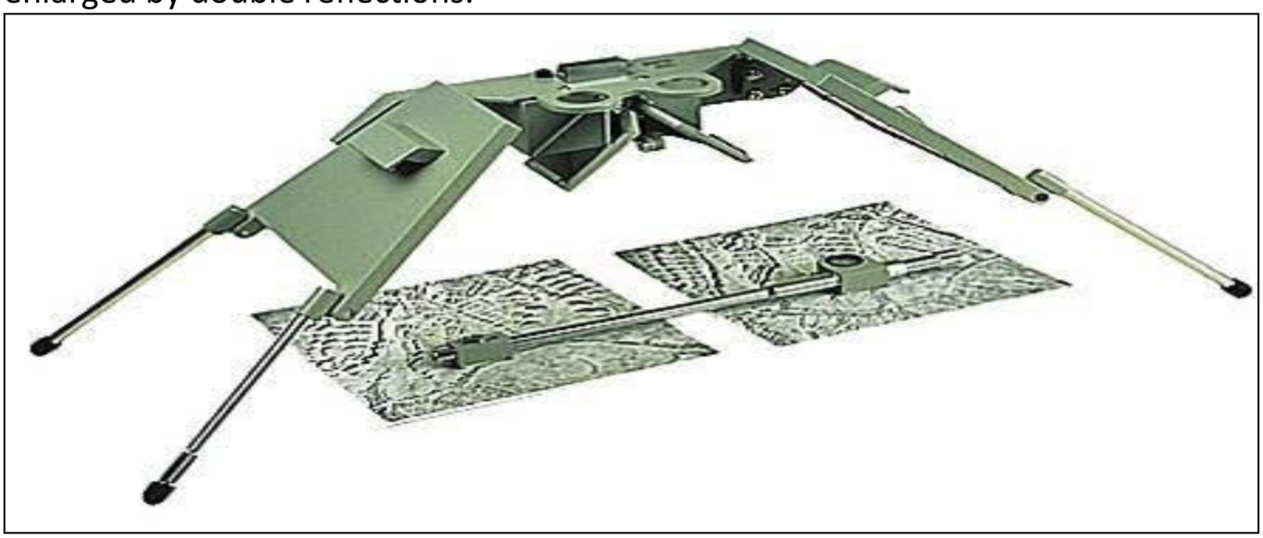


Fig: Mirror Stereoscope

Experiment _IV

Interpretation of Aerial photographs: Identification, mapping and interpretation of Natural and Cultural features:

Photographic interpretation is “the act of examining photographic images for the purpose of identifying objects and judging their significance” (Colwell, 1997). This mainly refers to its usage in military aerial reconnaissance using photographs taken from reconnaissance aircraft. Principles of image interpretation have been developed empirically for more than 150 years. The most basic of these principles are the elements of image interpretation. They are: location, size, shape, shadow, tone/color, texture, pattern, height/depth and site/situation/association. These are routinely used when interpreting an aerial photo or analyzing a photo-like image. A well-trained image interpreter uses many of these elements during their analysis without really thinking about them. However, a beginner may not only have to force themselves to consciously evaluate an unknown object with respect to these elements, but also analyze its significance in relation to the other objects or phenomena in the photo or image:

Elements of interpretation

The following are elements of aerial photographic and satellite image interpretation.

Location

There are two primary methods to obtain precise location in the form of coordinates. 1) survey in the field using traditional surveying techniques or global positioning system instruments, or 2) collect remotely sensed data of the object, rectify the image and then extract the desired coordinate information. Most scientists who choose option 1 now use relatively inexpensive GPS instruments in the field to obtain the desired location of an object. If option 2 is chosen, most aircraft used to collect the remotely sensed data have a GPS receiver.

Size

The size of an object is one of the most distinguishing characteristics and one of the more important elements of interpretation. Most commonly, length, width and perimeter are measured. To be able to do this successfully, it is necessary to know the scale of the photo. Measuring the size of an unknown object allows the interpreter to rule out possible alternatives. It has proved to be helpful to measure the size of a few well-known objects to give a comparison to the unknown-object. For example, field dimensions of major sports like soccer, football, and baseball are standard throughout the world. If objects like this are visible in the image, it is possible to determine the size of the unknown object by simply comparing the two.

Shape

There is an infinite number of uniquely shaped natural and man-made objects in the world. A few examples of shape are the triangular shape of modern jet aircraft and the shape of a common single-family dwelling. Humans have modified the landscape in very interesting ways that has given shape to many objects, but nature also shapes the landscape in its own ways. In general, straight, recti-linear features in the environment are of human origin. Nature produces more subtle shapes.

Shadow

Virtually all remotely sensed data is collected within 2 hours of solar noon to avoid extended shadows in the image or photo. This is because shadows can obscure other objects that could otherwise be identified. On the other hand, the shadow cast by an object may be key to the identity of another object. Take for example the Washington Monument in Washington D.C. While viewing this from above it can be difficult to discern the shape of the monument, but with a shadow cast, this process becomes much easier. It is good practice to orient the photos so that the shadows are falling towards the interpreter. A pseudoscopic illusion can be produced if the shadow is oriented away from the observer. This happens when low points appear high and high points appear low.

Tone and color

Real-world materials like vegetation, water and bare soil reflect different proportions of energy in the blue, green, red, and infrared portions of the electro-magnetic spectrum. An interpreter can document the amount of energy reflected from each at specific wavelengths to create a spectral signature. These signatures can help to understand why certain objects appear as they do on black and white or color imagery. These shades of gray are referred to as tone. The darker an object appears, the less light it reflects. Color imagery is often preferred because, as opposed to shades of gray, humans can detect thousands of different colors. Color aids in the process of photo interpretation.

Texture

This is defined as the “characteristic placement and arrangement of repetitions of tone or color in an image.” Adjectives often used to describe texture are smooth (uniform, homogeneous), intermediate, and rough (coarse, heterogeneous). It is important to remember that texture is a product of scale. On a large scale depiction, objects could appear to have an intermediate texture. But, as the scale becomes smaller, the texture could appear to be more uniform, or smooth. A few examples of texture could be the “smoothness” of a paved road, or the “coarseness” a pine forest.

Pattern

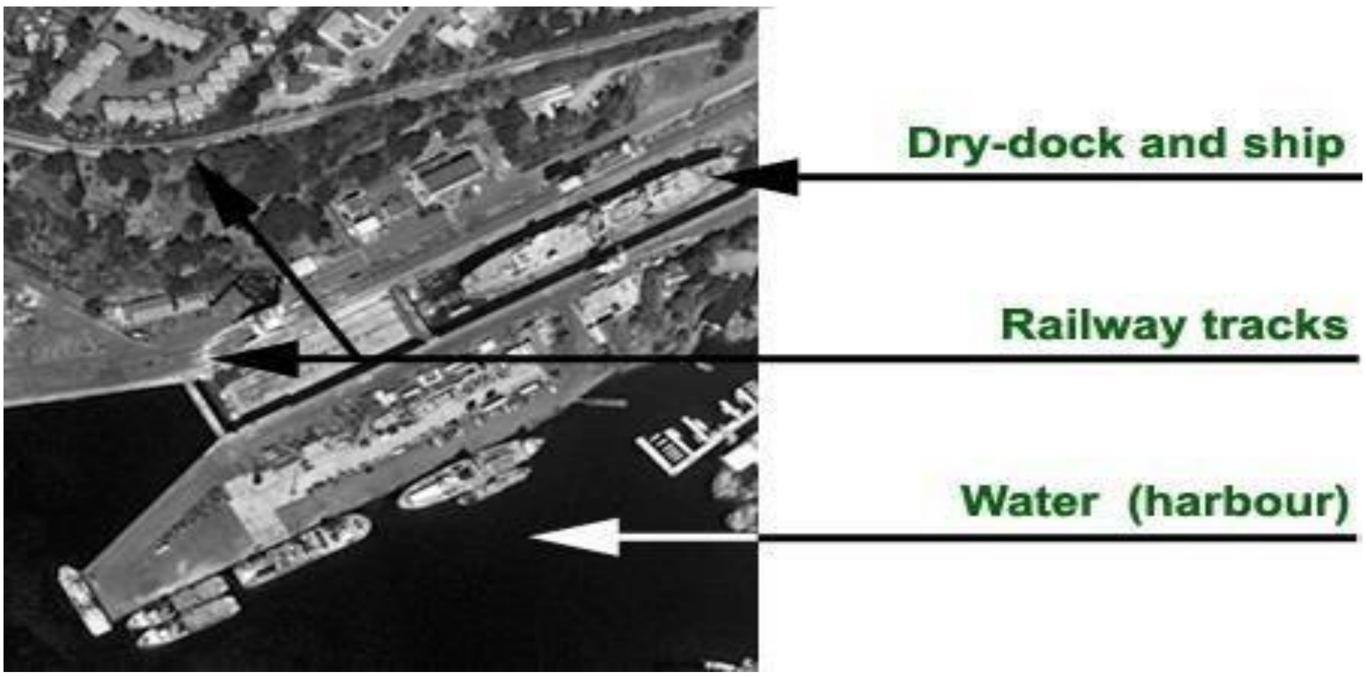
Pattern is the spatial arrangement of objects in the landscape. The objects may be arranged randomly or systematically. They can be natural, as with a drainage pattern of a river, or man-made, as with the squares formed from the United States Public Land Survey System. Typical adjectives used in describing pattern are: random, systematic, circular, oval, linear, rectangular, and curvilinear to name a few.

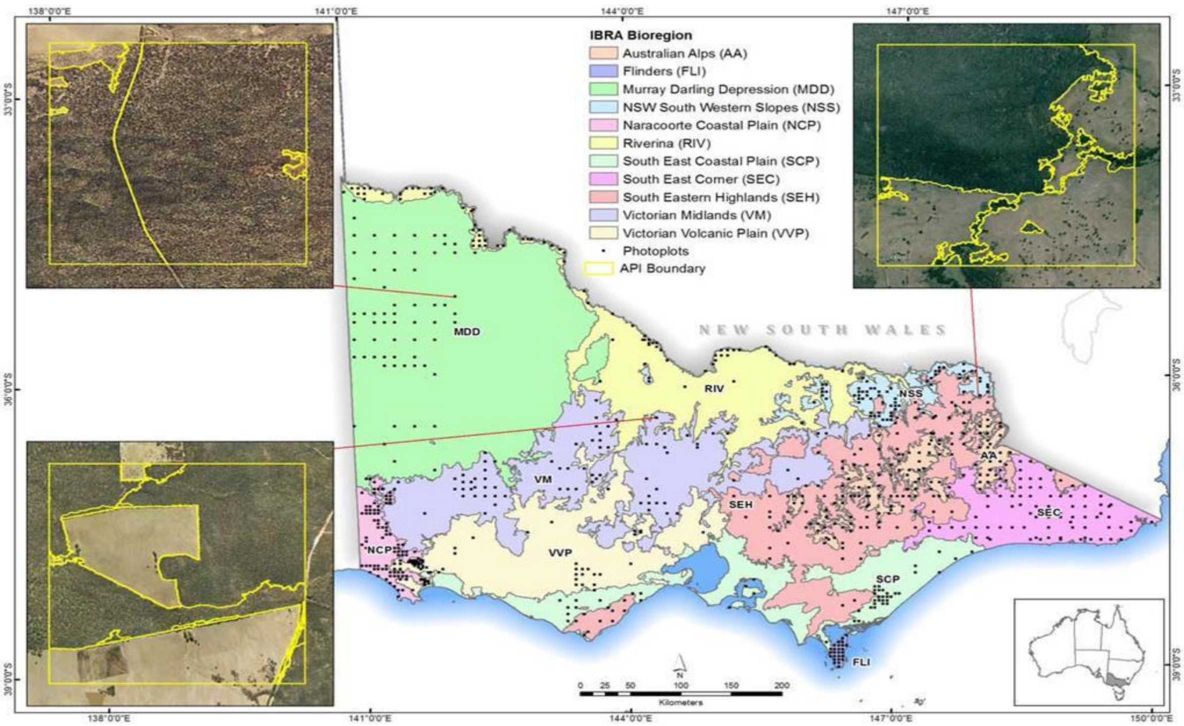
Height and depth]

Height and depth, also known as “elevation” and “bathymetry”, is one of the most diagnostic elements of image interpretation. This is because any object, such as a building or electric pole that rises above the local landscape will exhibit some sort of radial relief. Also, objects that exhibit this relief will cast a shadow that can also provide information as to its height or elevation. A good example of this would be buildings of any major city.

Site/situation/association

Site has unique physical characteristics which might include elevation, slope, and type of surface cover (e.g., grass, forest, water, bare soil). Site can also have socioeconomic characteristics such as the value of land or the closeness to water. Situation refers to how the objects in the photo or image are organized and “situated” in respect to each other. Most power plants have materials and building associated in a fairly predictable manner. Association refers to the fact that when you find a certain activity within a photo or image, you usually encounter related or “associated” features or activities. Site, situation, and association are rarely used independent of each other when analyzing an image. An example of this would be a large shopping mall. Usually there are multiple large buildings, massive parking lots, and it is usually located near a major road or intersection.




IBRA Bioregion
Australian Alps (AA)
Flinders (FLI)
Murray Darling Depression (MDD)
NSW South Western Slopes (NSS)
Naracoorte Coastal Plain (NCP)
Riverina (RIV)
South East Coastal Plain (SCP)
South East Corner (SEC)
South Eastern Highlands (SEH)
Victorian Midlands (VM)
Victorian Volcanic Plain (VVP)
Photoplots
API Boundary
NEW SOUTH WALES
MDD
RIV
NSS
AA
VM
SEH
SEC
NCP
VVP
SCP
FLI
138°0'0"E
141°0'0"E
144°0'0"E
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