Typography and Name Placement

(Part 3)

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Introduction

- Throughout the ages, mankind:
  - searched for ways to communicate
  - Then communication was only possible by voice
  - To meet the need to communicate without actually seeing or hearing each other
    - people started to use objects such as *stones*, *shells* or *branches of trees* put together in a specific way
    - when people involved knew its meaning communication was established.
    - The first primitive symbol was born.

Introduction

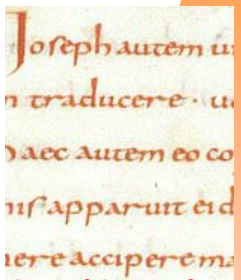
- The Egyptian hieroglyphics, the Chinese and Japanese characters of today are perfect examples of symbols representing a specific meaning or object.
- The combination of them can lead to another meaning.
- Pictorial symbols which are commonly used to symbolise *railway stations, hospitals* are in fact based upon the same principle.
- Another way to communicate with each other was by drawing symbols which were representing human sounds
  - (phonetic type) The Latin alphabet is in fact based upon such symbols and developed from the Roman ages up until now, resulting in literally thousands of different type variations.

Latin Type

History of the Latin Type

- modern Latin alphabet consists of CAPITAL, Lower case and Italic lettering
- CAPITAL script
  - The alphabet as developed by the Romans
  - were composed of CAPITAL lettering only, characterised by a strong horizontal vertical contrast, caused by the Chisel to cut the type into stone.
- UNCIAL script
  - (1000 AD) was characterised by the addition of *ascenders* and *descenders* to the Roman capital script to improve legibility.
  - E.g. ROMAN UNCIAL

Latin Type


Gospel St.Matthew

- Carolingian script
  - (1200 AD) consisted of lower case characters only.
- Italic script
  - Developed approximately 1500AD in response to the need for a *more elegant* letter type.
- Gothic script
  - About 1200AD developed a combination of a more elegant version of the Roman capital script where the Carolingian style and the Uncial script applied to both the capital and the lower case lettering
  - Thus from 1500 AD the Latin alphabet was composed of CAPITAL, Lower case and Italic *characters*.

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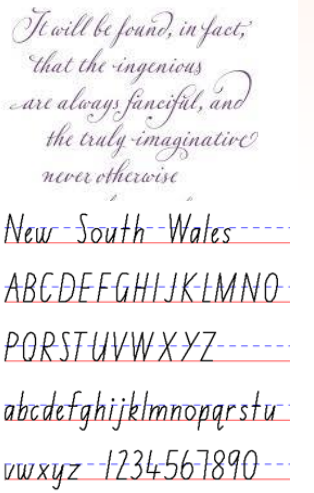
Type Styles

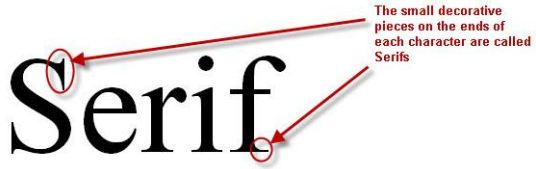
- There are thousands of type variations.
  - Rigid but also fancy lettering is applied in *magazines, paper screen displays* etc.
  - only a limited number of the thousands of type variations are suitable for cartographic purposes.
  - To enable the mapmaker to make an appropriate choice of a letter type it is useful to have some knowledge of the basic forms that are applied in type.

Typographic Designs

- finds its "roots" in the middle ages
  - writing was a profession of religious clerks
  - was done by a hand-cut drawing pens and ink.
    - pens had a flat top causing the characters to have strong horizontal vertical stroke contrast.
    - This basic letter style is called "Old style".
  - Later on, more elegant letter styles developed
    - because the drawing pens got a sharp point.
    - characters had a more fluent change of the contrast between horizontal and vertical direction.
    - This style of lettering is called "New style".

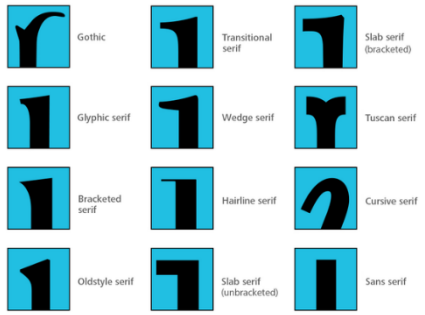


Typographic Designs



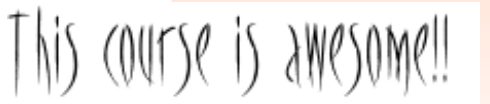
San Serif

- Serif
  - A result of copying the former technique of chiselling characters into stone.
- Invention of printing
  - About 1450AD the printing technique was invented in Europe by a Dutchman (Laurens Jsz. Coster).
  - The first printing letter style were copies of the handwritten letter styles.
- Sans serif
  - At the end of the 18-century a new, rigid letter style developed without serifs and no contrast between horizontal and vertical strokes.
- **ABCDEFGHIJKLM**



Typographic Designs

- Scripts
  - Besides the basic letter styles
    - old style, new style and sans serif a fourth group can be distinguished
    - the script of phantasm letter style characterised by 'fancy' forms.
    - Based on these four basic forms:
      - typographers have developed over the years thousands and thousands of letter types
      - Most of them have been forgotten or are just seldom applied,
      - For cartography only a limited number of letter types are suitable.



Typographic Terminology

- Typography is the art to design and apply type.
  - Typographers are specialised in the design of new type.
  - Software developed for the p.c. to *handle text* has increasing nowadays
  - The graphic capabilities of system software has also widened
  - GIS packages offer an overwhelming range of type faces that can be applied in text, illustrations and maps.
  - Many desktop publications, magazines, reports and maps are samples of bad typography *disturbing the communication process*.

Typographic Terminology

- Type face or font
  - This is a design of a character set that shares a similar appearance using one of the four (4) basic forms of typography.
  - The characteristics include letters, numbers, punctuations, and symbols. On computers 'type face' is also referred to as 'font'.
- Font
  - In many application fields of typography like DPT, the term 'font' is often confused with type face and family.
  - Traditionally the term, 'font' represents a complete set of characters or symbols which share the same style and size.
- Typestyle or type family
  - Typestyle is the visual variation of a basic typeface used to create order.
  - Typestyles are important, especially for mapmakers, as they can be applied to create *emphasis*, *order*, *ranking* etc. in text.

Typographic Terminology

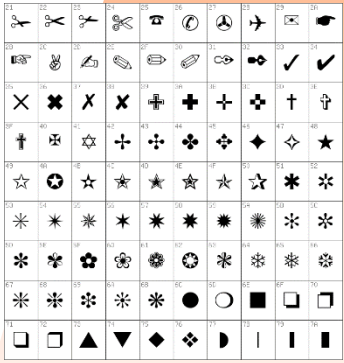
- Type variations
  - The four (4) basic variation of typestyle found in most computer software are:
    - plain upright (also called; Normal, Roman or Medium)
    - bold upright, italic and bold italic
    - other variations are extra light
    - extra bold etc.
  - Some typeface offer only one type style, while other typefaces offer >30 variations
    - For mapmakers the more variations, the better!!
    - Well known lettertypes that offer these variations are:
      - Gillsans
      - Universe
      - Helvelica
      - Times
      - Souvenir

Typographic Terminology

- **Weight**
  - The variations between typestyles like **light**, **medium** and **bold** are also referred to as **weight**
    - Related to the measurement of the stroke width
- **Condensed Vs Expanded**
  - Another *typestyle variation* based upon the **width of the individual character**
    - the character width can be **normal** but also be **condensed** or **expanded**.
    - Text presented in a **condensed** way is made for a feature which should *fit a restricted space*.
    - **Expanded** text is meant for a features of a *larger extent*.
    - **Weight** **upright** and **italic variations** can also be applied in combination with these two type styles.

Typographic Terminology

- Characters
  - Each typeface consists of a character set.
  - A characterset contains only symbols:
    - Carto typeface only contains cartographic symbols
    - ZapfDingbats contains all kinds of symbols that can be used for general use in reports etc.
  - With special software like Altsys Fontographer the user can create own characters or symbols which can be applied to DTP software like any font.

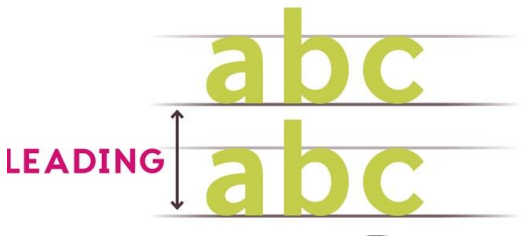


Typographic Terminology

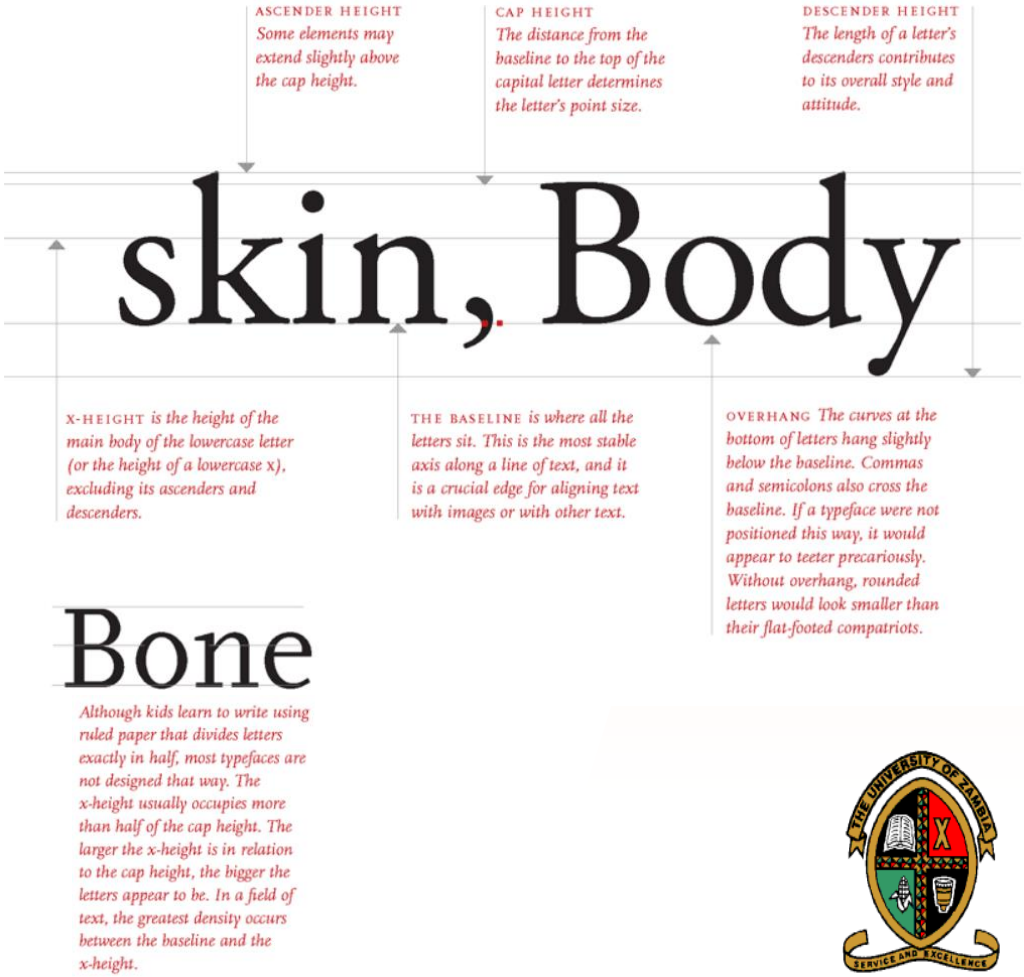
- **Letter (body) size**
  - Normally determined by measuring from the highest ascender to the lowest descender plus an additional white space on descender line.
  - The white space to the descender line is to create space between sentences for legibility purposes.
  - Most DTP and Word Processing software is using this method of height indication.
- **Capital size**
  - Another, less applied method to measuring lettertypes based upon the actual height of the capital letters within a character set. This method is often applied in CAD software.

Typographic Terminology

- "X" height
  - Reference is made to the height of the lower case lettering without ascenders and descenders the so called 'body'.
  - A rare reference for height measurement. However, it is used in cartography to describe distances from point/line features to their names.
- Leading
  - Leading, pronounced as 'leading' is the space between the text line.
  - Originally, this was the space between the lines of types to space them apart
  - In computer terminology this is the space from the baseline to baseline within a block or text.



Typographic Terminology



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Typographic Terminology

- **Baseline**
  - The imaginary horizontal line on which all characters per line rest.
- **Points and mm's**
- In typography, letter size and leading is expressed in points.
  - The point is a measuring unit that refers to a system developed by the French typographer Didot in the 19th century.
  - Didot points
    - One Didot point is approximately 0.37mm.
  - Pica points
    - In the USA another point system was applied based upon 1 (pica) point = 0.35mm
  - The white space to the descender is different for each lettertype.
  - e.g. a 10pt. Univers character is different in the actual size of the character from a 10pt Souvenir character.

Typographic Terminology

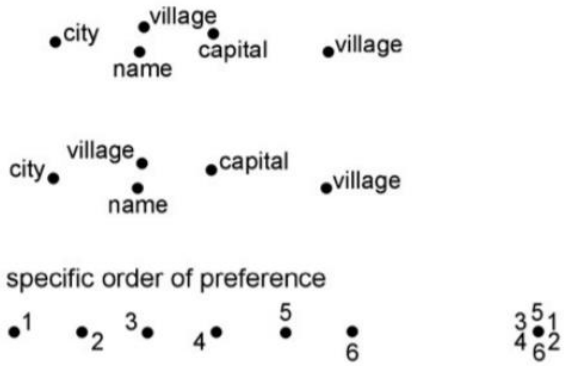
- Letterproof
  - refer first to a letter proof or a print proof from your printer with samples of letter sizes before you make a final lettertype size selection to apply in your map.
  - if a programme has a mm option for size determination, be careful as it usually refers to CAPITAL size though not always
- Typographic computer terminology
  - type managers, type caching
  - downloadable, postscript, bitmaps, vector-, screen-, and printer fonts

Name Placement

- Name placement criteria
  - There should not be any doubt as to which feature a name refers
  - the name should be positioned within the open graphic space surrounding the feature.
  - The position of the name should show a direct relation to the position of the feature
    - Normally, for line and area symbols this does not create a problem but small point symbols do so.
- Positioning of text
  - Three (3) basic methods of text positioning can be applied:
    - based upon a fixed position system
    - Based upon the available open graphic space
    - Based upon a combination of both methods

Name Placement

- Fixed position method
  - to the right and slightly above and below the point feature
  - to the left and slightly above and below the point feature
  - centrally above and below the point feature
    - This method has the advantage that text positioning can be easily programmed and automated
    - However, although there are 6 position variations, text is often positioned at locations where it interrupts line or other point features in a disturbing manner.



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Order of Name Placement

- In general follow the principle of placing names in order of letter sizes and freedom of positioning as follows:
  - Spot heights, benchmarks, trig points, etc.
  - Names of other point symbols (from small to big)
  - Names of natural area symbols (from big to small)
  - Names of administrative areas (from small to big)
  - Contour numbers and non-topographic text
    - placement of non-topographic text may sometimes differ in order of placement especially in thematic maps.
    - In thematic maps text with a categorised function like soil numbers may be placed central in the soil unit areas, thereby disturbing the position of other natural features.
    - For this type of maps, the thematic area text should have a higher priority than the names of other topographic area names.

Order of Name Placement

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Map Layout
(Part 4)

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Map Layout

- The term **Map Layout** refers to the *spatial arrangement of the various map elements* that together make up what is called a **map**.
- What are the **Goals of Map Layout** ?
  - We can identify **five (5) clear goals** which need to be taken into account to create a good map layout:

Clarity

- The information on a map should be presented in a clear and unambiguous manner. Anything that does not enhance the map message should be eliminated.

Order

- Order refers to the logical arrangement of the various map elements such as the legend and title

Map Layout

Visual balance

- Every element of the map has weight. These weights must be distributed properly about the optical centre point slightly above the actual centre, (or the map will appear to be top heavy, weighted to one side or unstable.

Contrast

- Contrast refers to the difference between light and dark, thick and thin, heavy and light. More choices means a higher contrast.
- Little contrast in a map (e.g. using one pen size) will decrease its legibility.

Unity

- Unity refers to the relation between the lettering, the map purpose, the scale, the symbolisation and the reproduction.
- For instance the text has to be legible over any background colour and shading.
- Furthermore unity means the map appears to be a unit, not a series of unrelated bits and pieces.

Map layout process

- The process of making a layout for a specific map involves quite some creativity from the side of cartographer.
- It is not a linear process, e.g. very often the initial layout decisions are changed when a hard copy of the map becomes available.
- The decisions related to the arrangement of the map elements often involves aesthetic choices.
- This is especially the case for one-off maps.
- Map series like topographic maps mostly have a fixed map layout.
- Not all cartographers can deal with these Aesthetic choices.
- An independent good eye assesses the visual impact of the map since no fixed recipes are available.

Preconditions for Map Layout

- The process of map layout can only start after it is clear:
  - What the purpose of the map is
  - who is the map user
  - what is the topic of the map
  - what the scale and the format is
  - How the map will be reproduced

Map Layout Elements

- The main map layout elements are:
- **Map face**
  - This is the surface of the screen or paper which is actually occupied with the mapped information itself.
  - The map face is bordered by the neatline.
- **Neatline**
  - This line limits the mapped information. The word neat is well chosen because all points, line and area symbols of the map face run up to this line and any slight misfit caused, e.g. by printing, will be camouflaged by this line.
- **Outer border**
  - This frame, rectangular or squared, is positioned around the neatline.
  - The space between the neatline and outer boarder line can vary from 0.5 to 2cm.
  - This kind of frame is optional on most maps, however, it is regularly used in topographic map series.
- **Boarder information**
  - This is information like ticks and figures, concerning geographical and rectangular coordinates.
  - It is positioned between the neatline and the outer boarder.

Map Layout Elements

- **North indicator**
  - Map users are accustomed to visualise areas orientated to the north.
  - Not all maps are necessarily orientated to the north, sometimes due to the shape of the mapped area.
  - To make sure the orientation is obtained, a north arrow has to be shown on the map.
- **Marginal information**
  - This is all information to evaluate, interpret and use the map.
  - It is in most cases positioned next to or around the neatline or outer boarder.
  - For topographic maps a comprehensive list of marginal items has been defined by international agreements.

Marginal Information

- **Title**
  - Every map should have a title. it is an important part of the design.
  - In fact the title is the most generalised description of the total content of the map and should therefore be at an eye-catching position.
  - Main Title
    - The main title covers the area being mapped,
  - Sub Title
    - the subtitle explains the theme of the map
    - The text used for the title is the largest on the map.

Marginal Information

Legend

- All maps need a legend or legends.
- It is in the legend that the symbols used in the map are described.
- Legends can, depending on the type and complexity of the map, vary enormously in size.
- It is quite a tradition to place the legend (s) to the left, right or lower margin in the case of frame maps.
- In the case of island maps, the irregular area influences the position of the legend (s).
- The amount of items in the legend must be counted and the necessary amount of space provided in the most appropriate position
- In no way should the legend(s) be positioned horizontally along the top of the map face.

Marginal Information

- **Scale**
  - Since the mapped area is a representation at a reduced scale of (a part of) the earth surface, a graphical and a numerical scale indication has to be shown.
  - In general maps showing quantitative information e.g. population, rainfall, temperature, etc. You need only a statement of scale to let the map user have some idea of the size of the area being mapped.
  - Maps which show qualitative information such as roads, touristic features, geological, geomorphologic, soil, land use, urban maps etc should have a scale line added so that the map user can determine distances directly.
  - The length of a scale bar should not exceed 15cm.
  - Keep it in proportion to the space available and do not over emphasise it to the rest of the marginal information.

Marginal Information

- **Location diagram**
  - The location map should depict an area large enough to the map-reader to recognise a part of the world and see where the mapped area is within that part of the world.
  - Location maps are reduced skeleton maps of a province or country showing the position of the mapped area.
- **Sheet history**
  - This note describes which data are used for compilation and therefore gives the map user an indication about the reliability of the map.
  - The sheet history should include the source data and its date, the map publisher, the date of publishing, projection information etc.

Main Types of Map Layout

- Map layout can be divided into three (3) distinctive types.
  - Frame map
  - Island map
  - Bleeding edge map

- **Frame map**
  - This type of layout has an outer border line around the map face.
  - This outer border line functions to separate clearly the map face from the marginal information.
  - Topographic maps are good examples of frame maps.
  - This type of map is quite traditional and very suitable for map series.

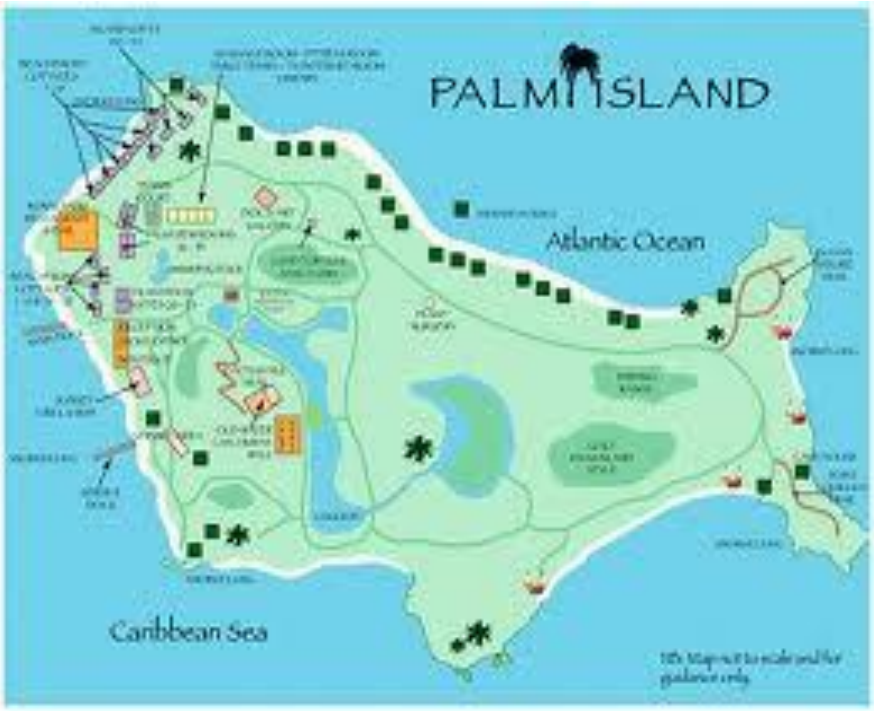
Frame Map

Main Types of Map Layout

- **Island maps**
  - This is less traditional than the frame map.
  - The neatline or boundary of the mapped area functions as the frame.
  - An island map has therefore an irregularly shaped appearance.
  - This type of map is less traditional and allows the cartographer more freedom in designing a suitable layout.

- **Bleeding edge map**
  - This type of map has the information running up to the trimmed extremes of the map.

Island Map



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Bleeding Edge Map

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Map Sheet Orientation

- **Landscape orientated map**
  - In this type of map the orientation of the total map (including marginal information) is such that the height is shorter than the width of the map.
- **Portrait orientated map**
  - In this type of map the orientation of the total map (including marginal information) is such that the height is larger than the width of the map.

What determines a map layout?

- Apart from the presence of the map elements mentioned before, the appearance of the final map is influenced by the content and scale of the map.
- Furthermore conditions like available equipment and marketing considerations can influence the map layout.
- Individual aesthetic choices of a cartographer will give the map its full appearance.
  - **Map purpose/content**
  - For which group of map users is the map designed?
  - How much information has to be given per unit or area of the terrain that will indirectly determine the amount of marginal information?

What determines a map layout?

- **Map scale/accuracy**
  - The map purpose and the density of the map content influences the kind of scale to be chosen.
  - The degree of accuracy is proportional to the scale of the map.
- **Reference system**
  - This information is essential for the reliability of the compiled data on the map.
  - This information is usually placed just outside the neatline (it occupies at least 1 cm around the neatline).

Map Production Constraints

- **Production**
  - The technical capability and facilities available for cartography, reproduction and printing have to be assessed.
    - E.g. There may be no offset printing machine available in the organisation which means that colour printing thousands of maps is not possible.
- **Map user**
  - The requirements of the map user e.g. size of the printed map, density and the amount of information, number of languages used, etc. have to be known.
- **Marketing**
  - A good marketing survey will indicate the number of copies desired and proper price per copy.
  - The results of this marketing survey also indicate the map production method and the use of colour desired.

Aesthetics

- **Fashion**
  - Although not a general rule, trends are noticeable in different periods of time.
  - e.g. ornaments around the mapped area in the Middle Ages or coloured backgrounds around the mapped area nowadays.
- **Taste**
  - Although this is highly personal and depending upon taste, well designed and balanced maps appeal more to the map user than bad designs and poor layout.
  - Marketing plays an important role in this.

- In principle, **map layout** can be divided into **two (2)** groups:
  - **Layout** for individual maps
    - a unique layout is made specially for one particular map.
  - **Layout** of series maps
    - for this type of map a master design is made suitable for the whole series and is known as the '**pilot sheet layout**'.
    - This is done to give the whole map series a uniform appearance.
    - Examples are topographic maps, geological maps, etc.

Visual Balance

- The information covered so far has given you a guide for a so-called 'good map layout'.
- Main type of balances:
  - In **Graphic Design** three (3) ways to balance information can be distinguished:
    - Symmetric balance
    - Informal balance
    - Formal grid based

  - **Symmetric balance**
    - In this kind of balance, the marginal information is positioned in such a way that it is in perfect symmetry with the graphics (map face).
    - The title of the map is positioned above the map face along the central axis
    - The other marginal information is evenly distributed above and below the map face aligned to the sides.

Visual Balance

- **Informal balance**
  - In this case, the shape of the map face determines the position of the marginal information.
  - The creativity of the **cartographer** plays an important role where the marginal information will be positioned.
  - However, it is important that 'optical balance' is achieved.
  - Optical balance means wherever positioned, none of the map elements is emphasised.

- **Formal grid based balance**
  - Although not visible on the final printed version, a grid is used during layout to position all information in a systematic way to obtain a pleasant and well balanced map.

Inset Maps

- An inset map is a small secondary map face which is included in the field of a larger map face.
  - It should not be confused with the main map by providing a clear distinction between the two.
- **Types of inset maps**
  - **Extension inset**
    - If the region being represented extends beyond the size of the main map, an extension inset is provided to show the area falling outside the main map.
    - Its scale must be same as that of the main map
    - Otherwise, the scale must be a multiple of that of the main map
    - Such insets must be placed in the same general direction of the region they represent where possible
    - A location diagram showing relative positions of the areas must be included
    - Its map units must be the same as those of the main map

Inset Maps

- **Detail Inset**
  - If the area being mapped has a variable density of features some crowded parts of the map are enlarged to improve legibility.
  - A detail inset should be positioned near the region they represent.
  - Its scale should be easily comparable with that of the main map.

- **Thematic inset**
  - If a specific theme on the map needs special explanation, an inset representing that special theme is created.
  - E.g. In a land use map there may be need to show a rainfall map as an inset to aid in understanding certain land uses better.

Map Folding Systems

- Some maps such as street maps and tourist maps are designed to be folded for easier handling.
- The fact the a map is folded influences the layout of the map
- Very often, the map has a cover page which is also visible after folding.
- It also has a back page which should also be visible after folding.
- The material on which such maps are printed must have a certain folding resistance to withstand the folding and unfolding when in use.
- Paper sizes normally used are the A-series.