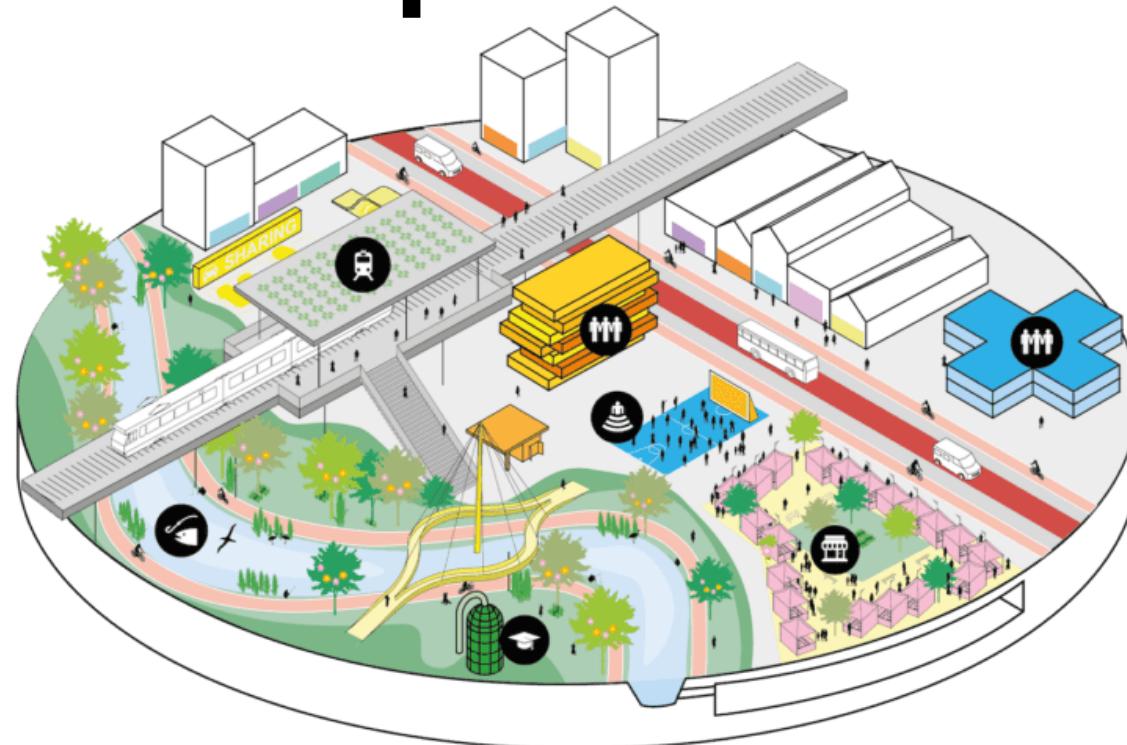




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# ARC 258

# Landscape Architecture



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# WHY ARE YOU TAKING THIS COURSE?

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- Differentiate between landscape, landscaping and landscape architecture.
- Define the role of landscape architects in the design of the built environment.
- Understand the history of landscape architecture.
- Identify some of the key design elements and principles in landscape architecture.
- Identify some of the common planting materials used in the development of a landscape design.



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# Landscape Architecture

## UNIT TWO

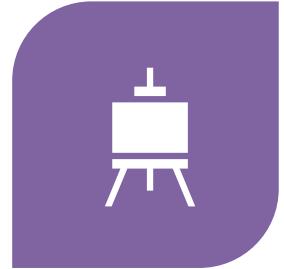
# Elements of Landscape Design Process



As practical as it is, planting design is more of an art.



The "art" is always changing as the plants grow, environmental conditions change, and as people use the space.



Having determined what functions are necessary the designer's next task is to apply the principles of planting design in artistic competition and to furnish a design in real forms that can be sensed, felt and seen.

For this reason, landscape designers use a design process that systematically considers all aspects of the land, the environment, the growing plants, and the needs of the user to ensure a visually pleasing, functional, and ecologically healthy design.

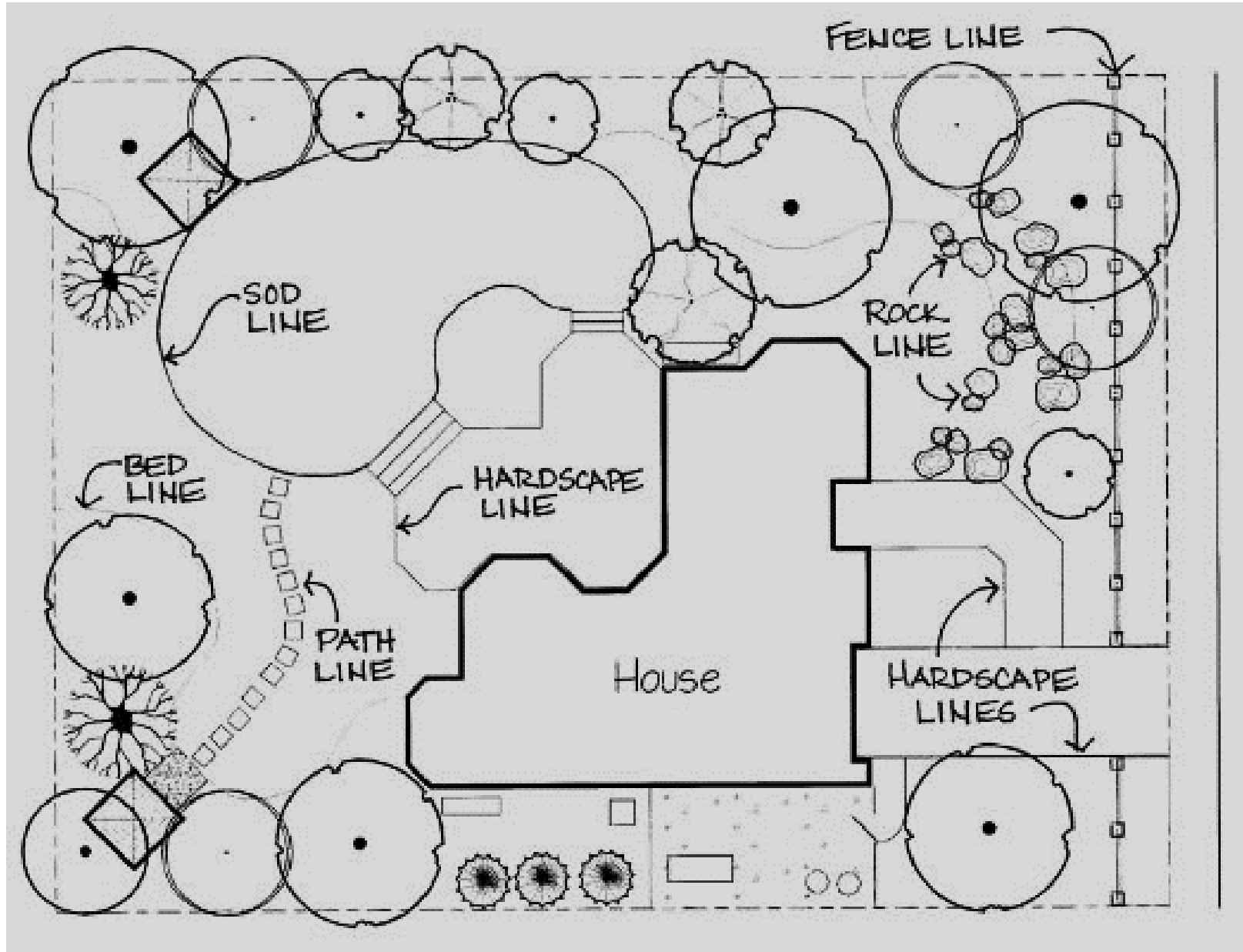
# Elements of Landscape Design Process

- The design process begins by determining the needs and desires of the user and the conditions of the site.
- The designer then organises the plants and hardscape materials, which are collectively referred to as the features.
- The features can be physically described by the visual qualities of **line**, **form**, **texture**, **colour**, and **visual weight**—the elements of design.

# Line

- Landscape designers use lines to create patterns, develop spaces, create forms, control movement, establish dominance, and create a cohesive theme in a landscape.
- Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature.
- It is used to create an infinite variety of shapes and forms, and they control movement of the eye and the body.
- Lines can have one or more characteristics, such as those described below, but they typically serve different purposes.

# Line



# Line

- Lines are introduced into a landscape by using contrasting plant material and by forming patterns with similar plant materials. Pattern is line organized in a repetitive sequence.
- In curvilinear design, lines should be dramatic, done with a sense of flamboyancy and be very expressive in their shape.
- Curvilinear, meandering lines suggest a naturalistic look that invites the user to casually stroll through and experience the landscape.
- Linear lines such as those found in a straight hedge or the edges of paving materials suggest quick, direct movement.

# Line



## Curvilinear Lines

# Line



## Curvilinear Lines

# Line



© J and S Scapes

## Linear Lines

# Line



## Linear Lines

# Line

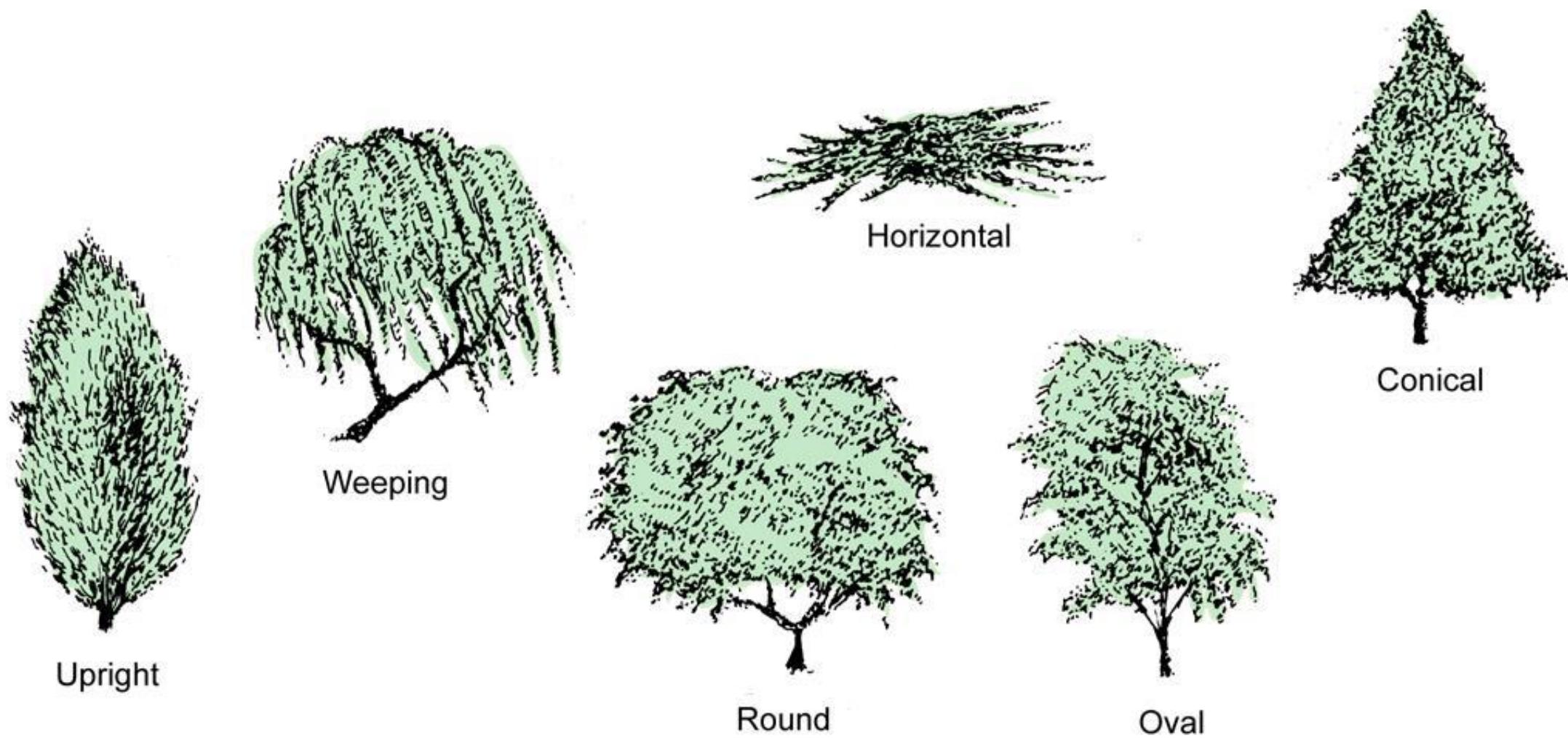


**Linear/Curvilinear Lines**

## Form

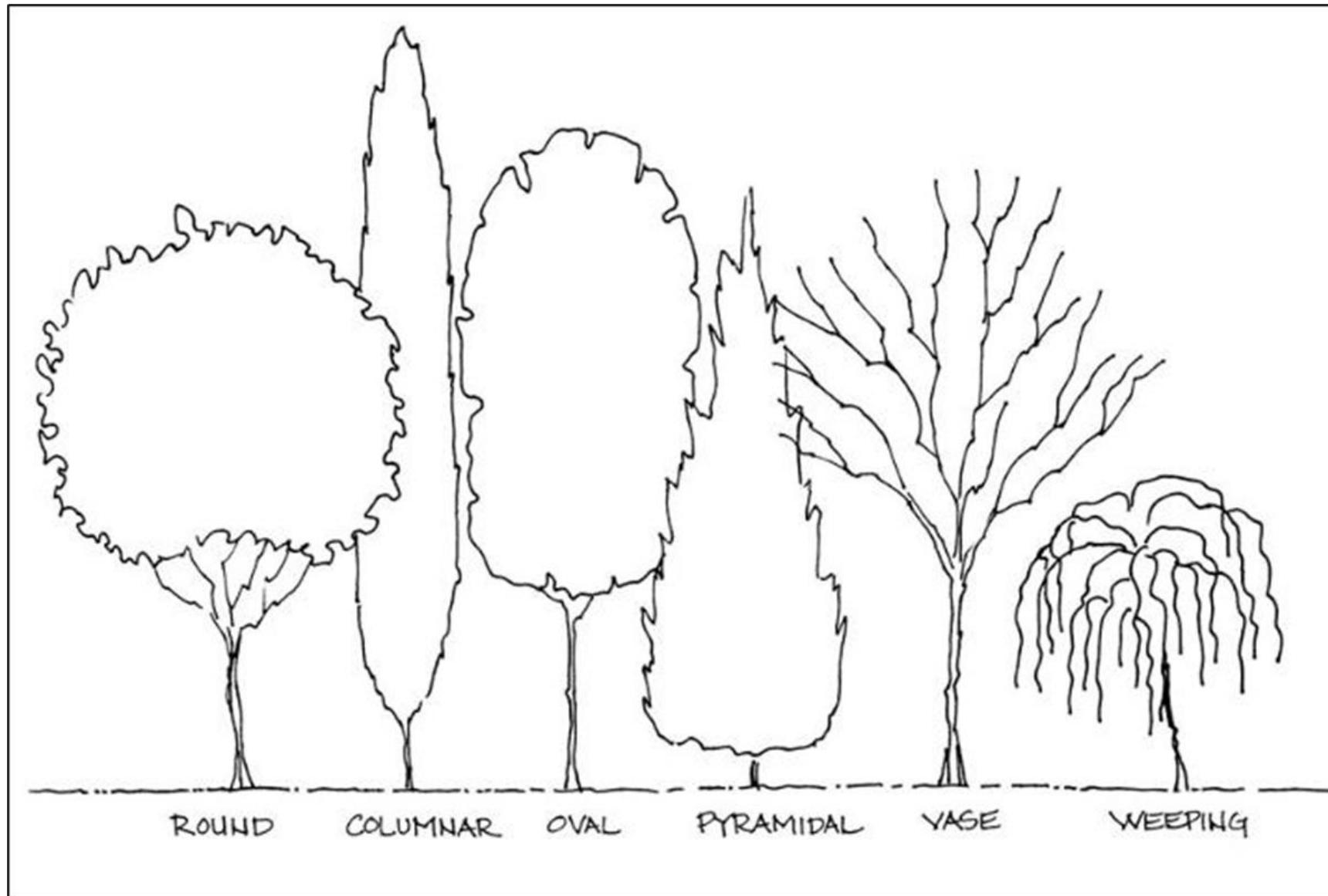
- Often times it is the matured silhouette of the plant that people are concerned with but its intermediate shape should be considered particularly when a plant develops slowly.
- Form is an obvious physical property of any plant.
- Form indicates the shape of a plant and the structure of its branching pattern.
- Tree forms are defined by branching pattern, while shrub forms are determined by growth pattern.

# Form



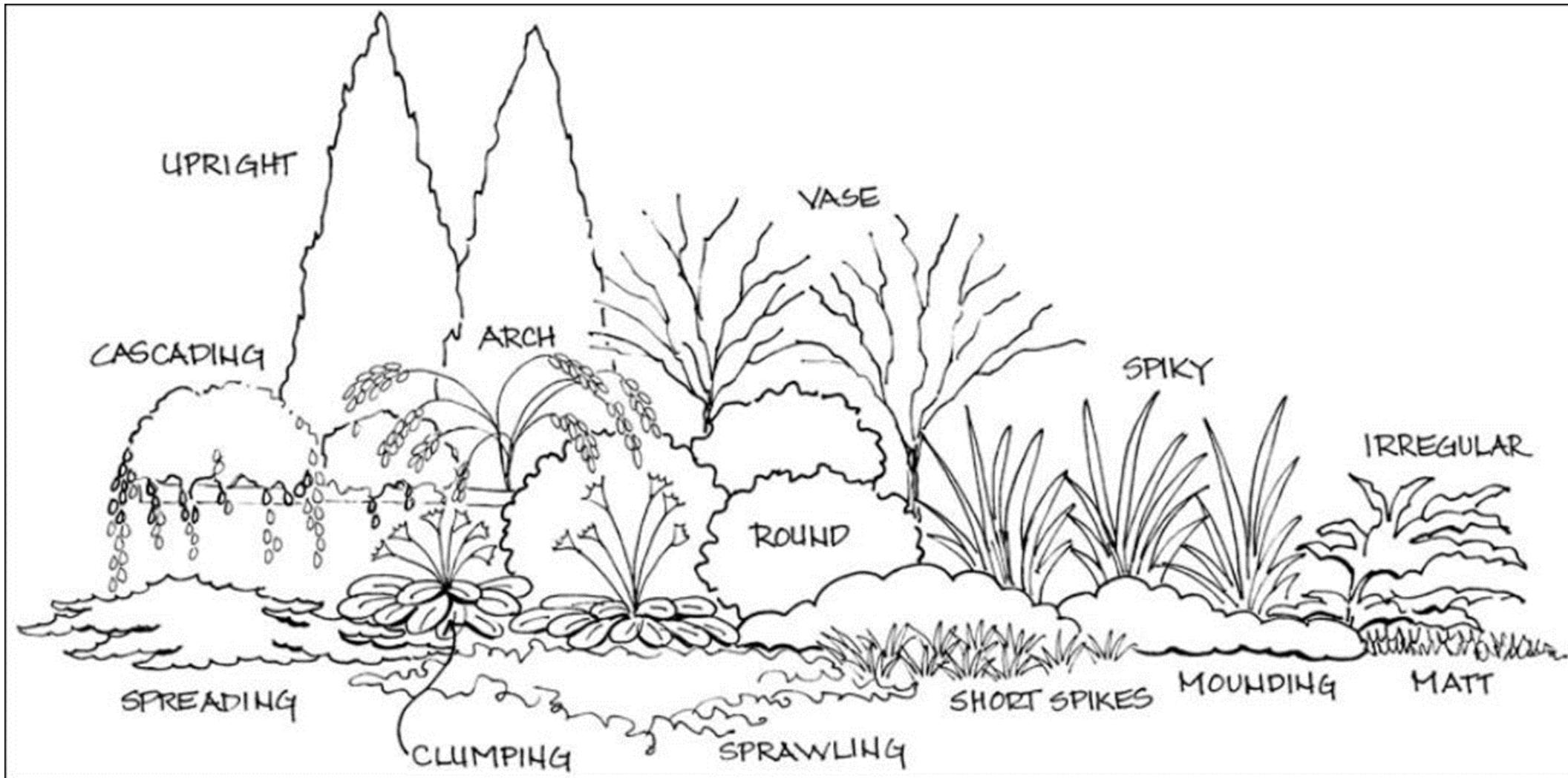
## Tree Forms

# Form



## Tree Forms

# Form



## Shrub and Groundcover Forms

## Form

- Most deciduous trees have a rounded form. A conical form is characteristic of many evergreen trees.
- Most deciduous shrubs forms are rounded and evergreen shrubs have more of a horizontal form than vertical shapes.
- Use vertical forms for strong accents and for adding height. Horizontal or spreading forms add visual width to tall structures.
- Weeping, drooping or pendulous forms can also be used to create softer lines or as interesting accents in the garden.

# Form

- Different tree forms are used for visual appeal, but the form is also important for function.
- Creating a shady area in the garden requires a round or oval tree, while a screen usually requires a more columnar or pyramidal form, and a weeping tree form makes a good focal point.
- When horizontal forms are placed together as is the case in the hedge, the individual vertical forms take on a horizontal profile.

## Form

- Every plant has a distinct growth-habit, a unique mass and volume which develops and changes as the plant matures. These shapes, whether pyramidal, weeping, columnar, spreading, or round, divide and define the spaces in the garden.
- Some forms are more dramatic than others and so attract attention.
- The siting of a specific plant may block a view, or open a sight-line, or alter the view depending on the maturity and growth-habit of the plant-open or compact, herbaceous, evergreen or deciduous.

# Texture

- The coarseness or smoothness of the leaf, bark, and foliage of plants and trees and of buildings, patios, and walkways define texture in landscape design.
- Texture is associated with the senses of touch and sight. Referring to the physical surface of plants (smooth, rough, shiny, or dull), texture is tactile.
- Texture is used to provide variety, interest, and contrast.
- Stems, leaves and buds are the physical features that determine the texture of a plant.

# Texture

- Textures ranging from fine through medium to coarse are visible because of the size and shape of these features and the way light and shadow play on them.
- Larger features usually create an effect of coarseness while thin features represent a fine texture.
- Texture is relative. It must be seen as a comparison. Texture is analyzed by comparison between objects, by association of these objects with each other, and by distance.

# Texture



Fine Texture



Coarse Texture/ Fine Texture



Coarse Texture

# Texture

- Rough, coarse textures tend to create an informal mood and are visually dominant.
- Fine, smooth textures are associated with formal, elegant, subdued moods and are visually more passive.
- In terms of the overall planting plan, texture must balance in relationship to the axis. Weight on one side should equal the mass on the other side of the axis.
- Texture in the landscape depends upon the distance from which the plant is viewed by the observer.

# Texture

- Plant characteristics that create coarse texture include:
  - large leaves
  - leaves with very irregular edges
  - leaves with deep veins
  - variegated colors
  - thick twigs and branches
  - leaves and twigs with spines or thorns
  - bold, thick, and/or irregular forms
- Hardscape with coarse texture includes rough-cut stone, rough-finished brick, and unfinished wood with knots.

# Texture

- Plant characteristics that create fine texture include;
  - small foliage
  - thin and strappy leaves (grasses)
  - tall and thin stems
  - tiny and dense twigs
  - small branches
  - long stems (vines) and
  - small delicate flowers
- Hardscape with fine texture includes smooth stone, wood or ceramic pots, and glass ornaments.
- Smooth water, such as that found in a reflecting pool, or water with a very fine spray is considered fine textured.



## Texture

# Colour

- Colour in plant material and hardscape adds interest and variety to the landscape.
- Colour is found in the flowers, foliage, bark, and fruit of plants. Foliage typically provides the overall background colour for flower colours.
- Colour is also found in buildings, rocks, pavers, wood, and furniture.
- Most colours in natural materials, such as stone and wood, are typically muted and tend to be variations of brown, tan, and pale yellow.

# Colour

- Colour can also be used to **capture attention** and **direct views**. Focal points can be created with bright colours.
- Colours have properties that can affect emotions, spatial perception, light quality, balance, and emphasis.
- Colour is also affected by light quality, which changes with the time of day and time of year.
- Colour schemes in the garden can change with the seasons.
- The basic colour schemes are **monochromatic**, **analogous**, and **complementary**.

# Colour

- Colours are warm or cool depending on their intensity or value.
- Warm colours are those ranging from yellow through orange to red and colours ranging from green, blue, violet and white are cool colours.
- Warm colours are bright, inviting and lively whilst cool colours are restful, receding and not as conspicuous.

# Colour

- Warm colours are bright, inviting and lively while cool colours are restful, receding and not as conspicuous.
- Cool colours tend to be calming and should be used in areas for relaxation and serenity.
- Cool colours tend to recede and are perceived as being farther away, making a space feel larger.



# Colour Theory



## Cool Colours

**Green, Blue, Purple**

- Less conspicuous
- Restful
- Recede
- Suggest distance
- Low scale

## Warm Colours

**Red, Yellow, Orange**

- Conspicuous
- Cheerful
- Stimulating
- Come forward
- High Scale

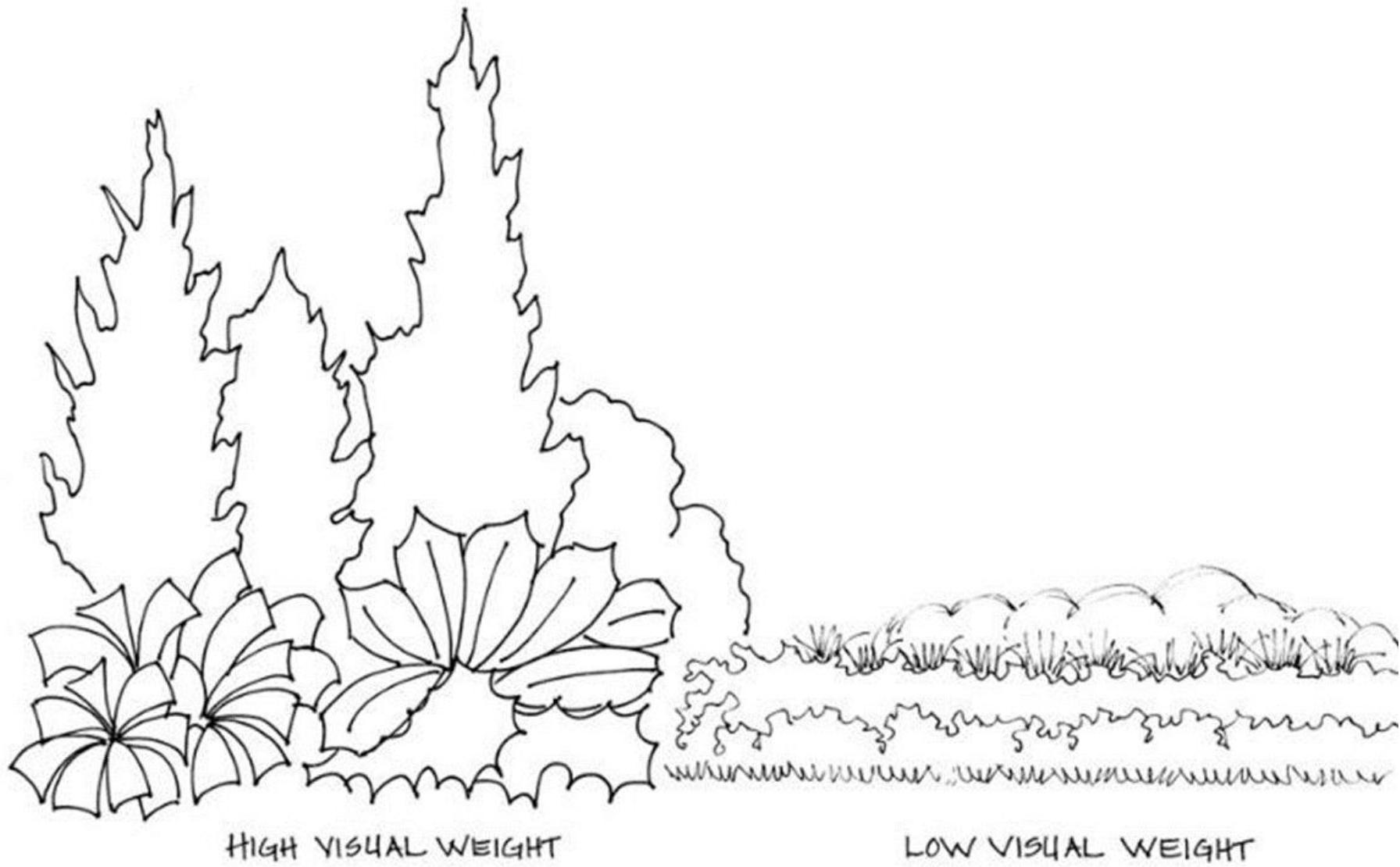
# Visual Weight

- Certain features of landscape materials have more importance in the composition based on mass and contrast.
- A composition where all features have high visual weight often looks chaotic.
- Low visual weight features provide a resting place for the eye in a landscape design.

# Visual Weight

- High visual weight usually comes from a group of plants upright or unusual forms, large size, bright colours, bold texture, and diagonal lines.
- Low visual weight is found in low horizontal lines, prostrate or low forms, fine texture, and subdued or dull colours

# Visual Weight



# Visual Weight



# Visual Weight



## Principles of Design

- The principles of design are the fundamental concepts of composition — **simplicity, variety, focalisation/emphasis, balance, sequence, rhythm, proportion/scale, and unity.**
- They serve as guidelines to arrange or organise the landscape features to create an aesthetically pleasing or beautiful landscape.
- **Unity** in landscape design looks at the **harmonious combination of various parts or elements** to create a **feeling of oneness.**
- Landscape is made up of problem-solving units in different locations on a property and a good landscape design combines all these into a unified composition.

# Principles of Design

- **Unity is the master principle** in a landscape that successfully combines all other principles through;
- **Simplicity**
- **Variety**
- **Focalisation/Emphasis**
- **Balance**
- **Sequence**
- **Proportion/Scale**
- **Rhythm**
- These are applied to the physical characteristics of form, texture and colour to archive a harmonious design.

# Simplicity

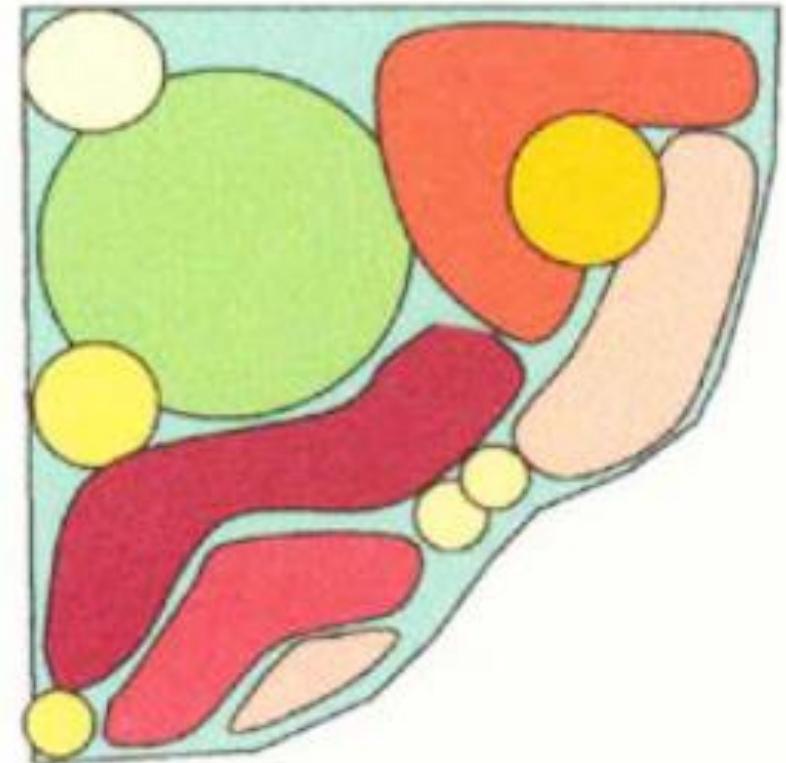
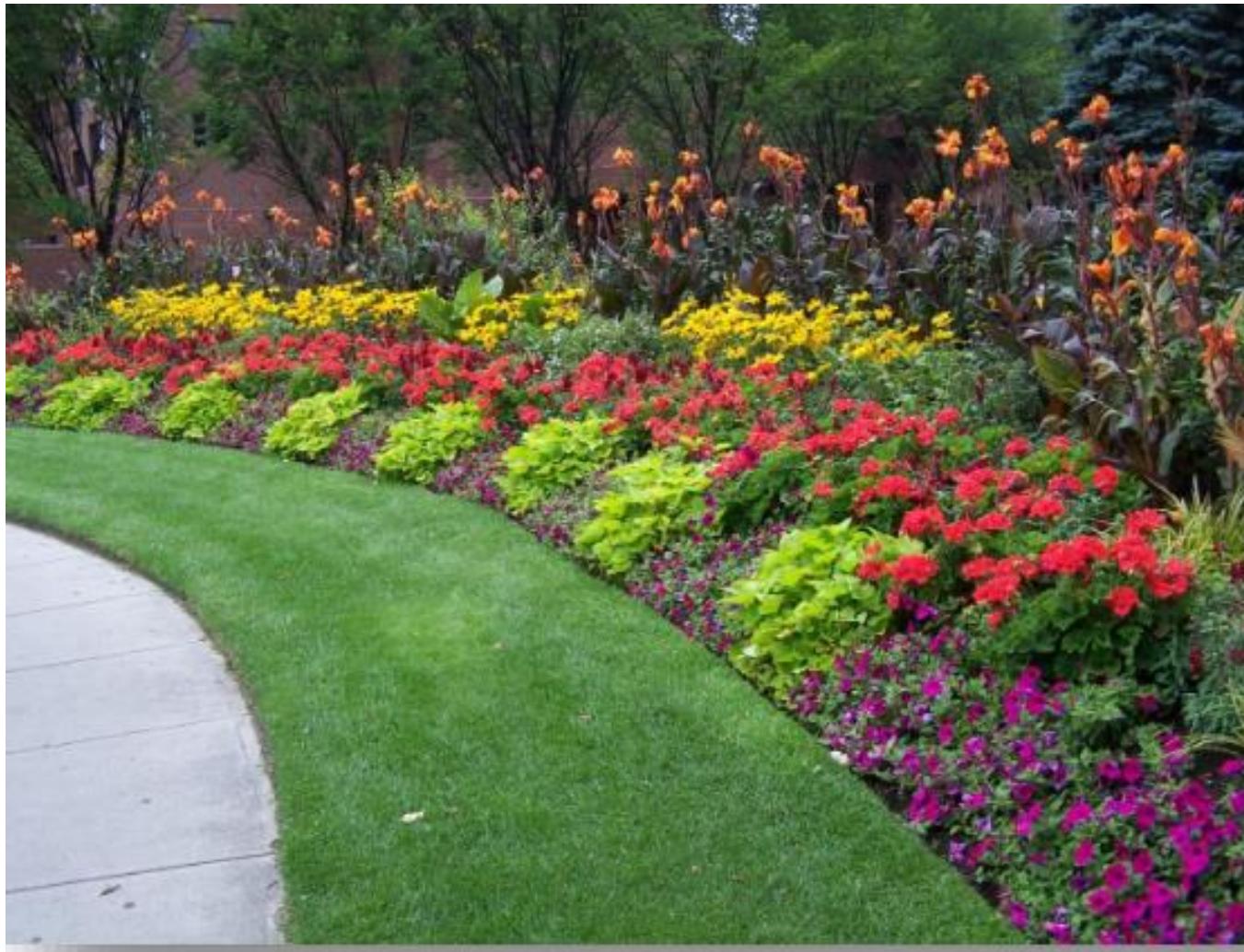
- Simplicity breeds elegance.
- Simple line forms and functional designs are always more interesting than complex hard to digest designs that do not allow proper focus of attention.
- Simplicity does not mean a dull design though it means a subtle combination of ingredients to create appeal while serving a functional need.
- The most important factor in creating simplicity in design is repetition.

# Simplicity

- Repetition is the continuing thread in a garden and is generally defined as duplication.
- When any design element is repeated the mind is better able to understand the composition as a whole and so a sense of order is introduced.
- It helps establish and add order and unity to a design.
- Repetition provides a common feature throughout the design that pulls the design together.



Simplicity is the essence of design.  
Simplicity can be achieved by elimination of unnecessary detail.



Avoid zipper plantings as it lacks simplicity or variety.

# Variety

- Variety is used to control repetition and spark a viewer's interest.
- It can also be applied to form, colour and texture.
- Variety adds spice and allows a designer to control the mood of the planting design.
- Careful balance between repetition and variety is essential.
- Whilst too much repetition causes monotony, too much variety can result in confusion.
- Contrast is found between different plant forms, strikingly different qualities of line, texture and colour.



Variety



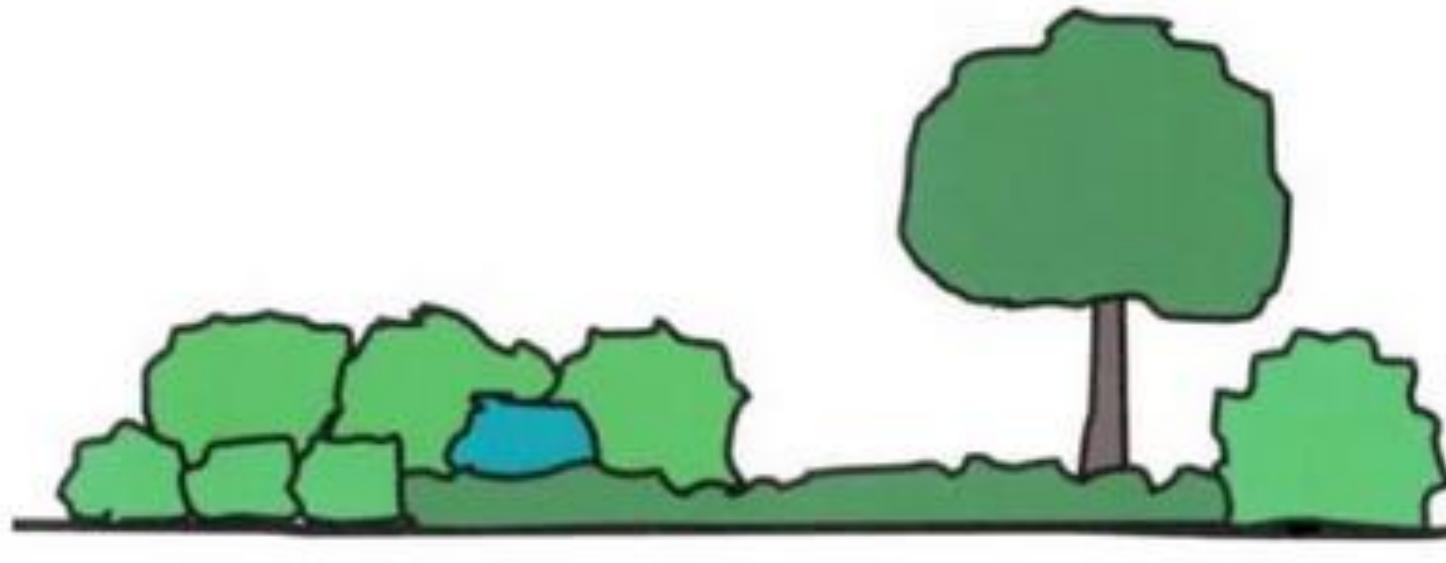
Variety



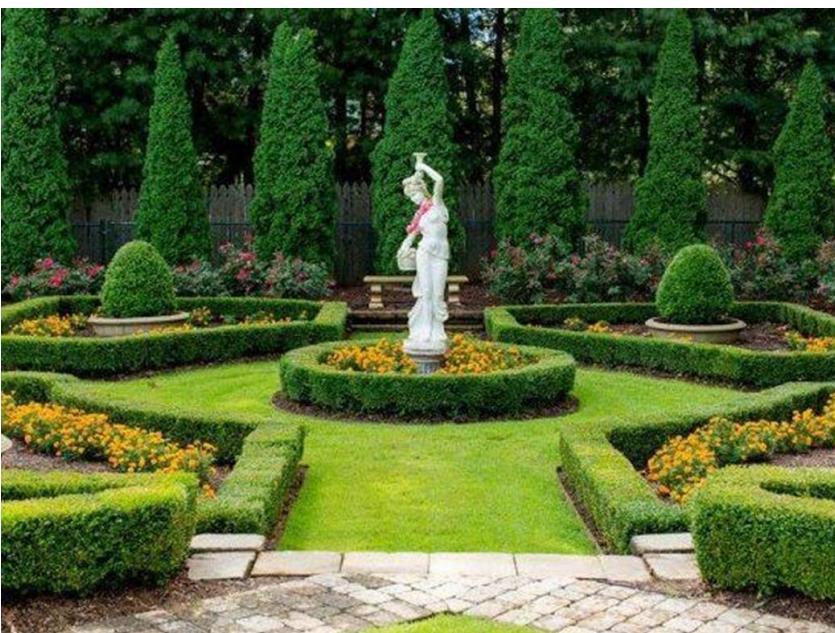
Variety

# Emphasis

- It is a means of drawing attention to important features while allowing less important features to take a subordinate role.
- They are often accomplished by the use of outstanding plants or features that offer strong variety in colour, texture and form.
- Emphasis requires variety because that which is to do the emphasising must draw and hold the viewers' attention longer than anything surrounding it.



- Emphasis is achieved with the tree being dominant and the shrubs grouping being subordinate.

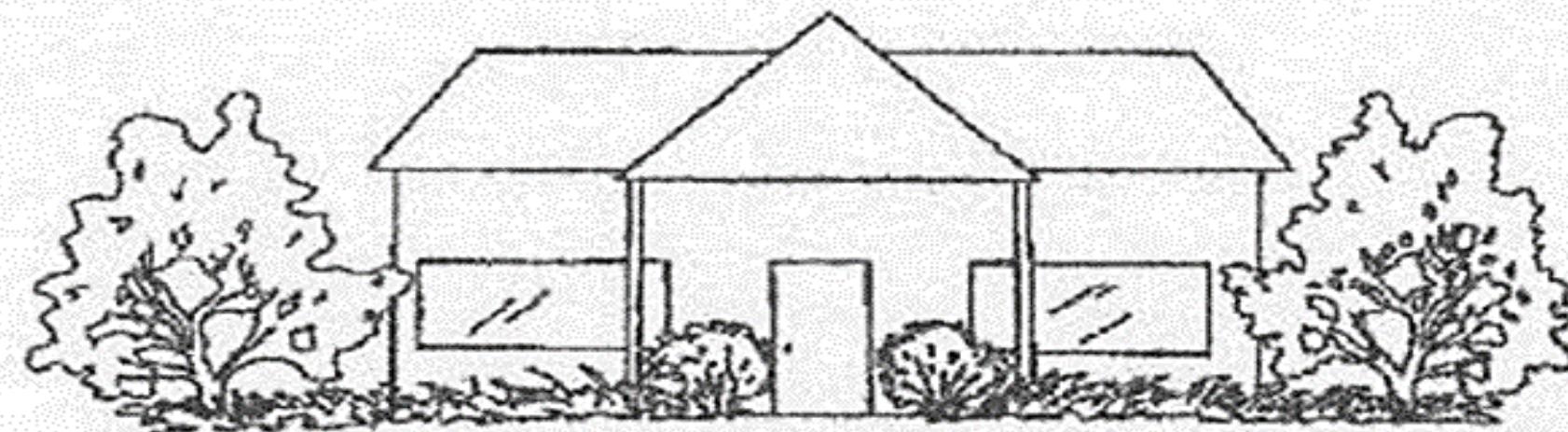


Emphasis



## **Balance:**

- Balance in design refers to the equilibrium or equality of visual attraction.
- Balance is the design principle that creates a layout that is visually pleasing.
- Balance can be **symmetrical** or **asymmetrical**.
- Symmetrical balances are achieved by using the same plant or the same features on both sides of an axis.
- Asymmetrical balance uses different forms, colours, and textures to obtain balance of visual attraction.



SYMMETRICAL BALANCE



ASYMMETRICAL BALANCE



## Symmetrical Balance Around An Axis



## Asymmetrical Balance Around An Axis



## Symmetric Garden





## Asymmetric Garden



# Sequence

- Sequence creates visual movement in landscape design.
- Sequence can be created by the gradual progression of form, texture, size and colour giving movement or life.
- It can also be created by combining each of these.
- It is applied to avoid radical or abrupt changes landscape design.



An orderly, sequential arrangement of size, form, texture, and colour.

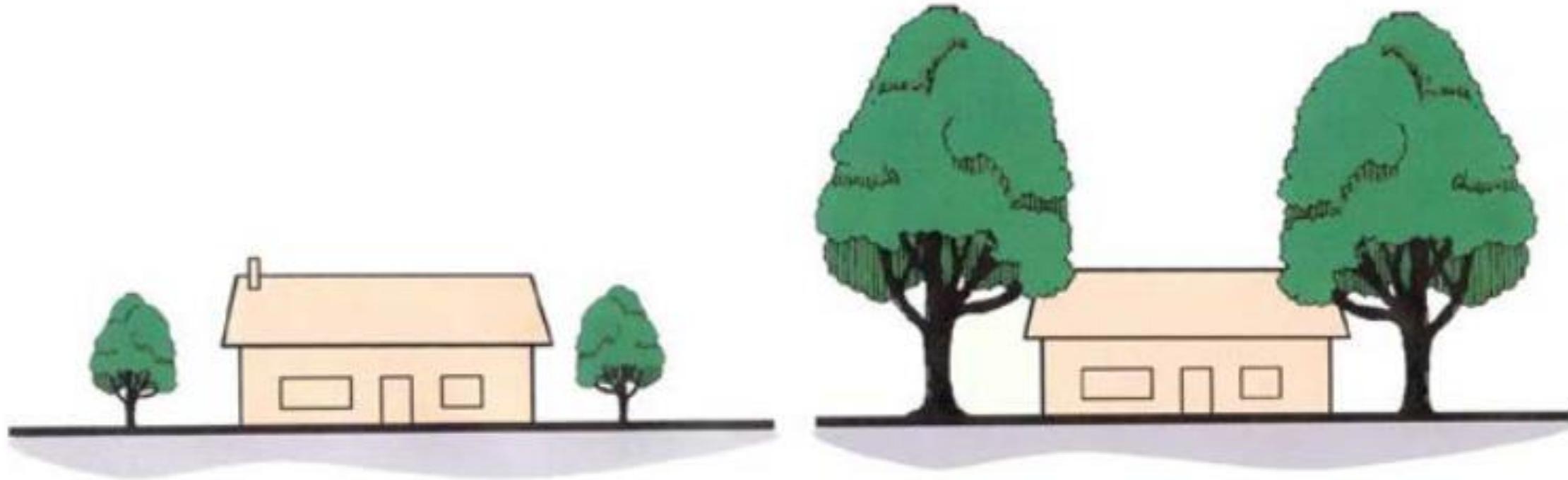


An orderly, sequential arrangement of form, size, texture, and colour.

# Scale

- It refers to the size of an object or objects in relation to the surroundings.
- A landscape plan is always drafted a prescribed scale.
- 
- There majorly two types of scale namely **absolute scale** and **relative scale**.
- Absolute scale relates the comparative value of landscape elements to a fixed structure. For example, 1:250cm means 1cm on paper and 250cm on the ground

## Absolute Scale

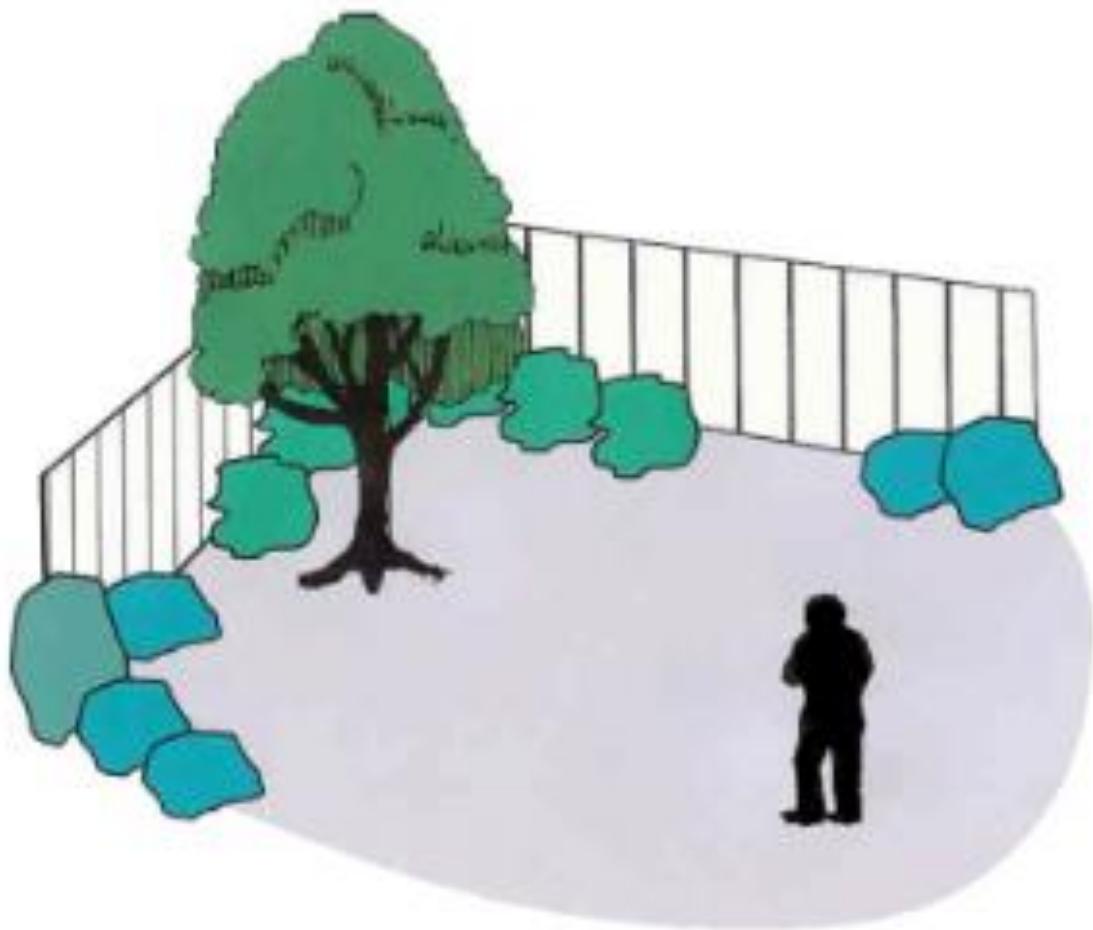


In absolute scale, the small trees on the left drawing give the feeling that the house is large. On the right drawing, the large trees give the feeling that the house is small. However, both houses are of the same size.

## Scale

- Then we have the relative scale which might be thought of as proportional instead of being determined by absolute measure.
- Relative is a feeling about the way one unit relates to another in size.
- The scale of a design will depend on the area, a large area implies a large scale and vice versa.
- Being emotionally charged, relative scale can create feelings of action or relaxation.

# Relative Scale



Relative scale compares the size or "value" of the landscape elements. Perception of tree size is based on the relative size of the person.

## Relative Scale

- High scale promotes action. It is used around large buildings and in large spaces to fill the space.
- Use of high scale in small spaces makes the space feel smaller.
- Low scale is relaxing and calming.
- It is used in the home landscape to give a feeling of peace and relaxation.



## High Scale

A high scale concept has been used around the fountain area in the garden with the brightly colored flowers. The action feeling of high scale helps move people through.



## Low Scale

In this private garden the low scale creates a relaxing, renewing atmosphere.



Scale



# Rhythm

- When something in the landscape is repeated with a standard interval, a rhythm is established.
- In landscape design, the interval is usually space.
- Tools like colour schemes, line and form can be repeated to attain rhythm in landscape design.
- Plants, groups of plants, lamp posts, benches or other structures can be repeated within the design to create this rhythm.

# Rhythm

- Rhythm is achieved when the elements of a design create a feeling of motion which leads the viewer's eye through or even beyond the designed area.
- Rhythm gives a landscape design a feeling of natural movement through the use of natural elements and careful repetition.
- Rhythm reduces confusion in the design.







## Unity

- The principle of unity is easily measured if the other landscape principles have been properly executed throughout the landscape.
- Unity is the emotional and visual reaction to the overall structure and organisation of the design elements.
- Unity in design simply means all the separate parts of the landscape work together to create a great total design.
- A design lacking unity appears disorderly and haphazard.
- Colours, shapes, sizes, textures and other features work together to create a unified space.

# Unity

- Patterns and colours are often repeated.
- Lighting, special features, bed shapes and hardscapes such as walk ways all need to work together to create a pleasing look and a unified landscape.
- Too many components and materials and the complex use of the elements create competitiveness and a lack of integration within a design.
- To establish unity in a design, simplify diversity and reduce the number of differences between the components in the landscape.



**Unity in a Design**



**Unity in a Design**

# Principles of Design

A carefully planned landscape design that places special attention on the many aspects of effective landscaping will ensure beauty, enjoyment, and an overall improvement to the appearance and value of the property.

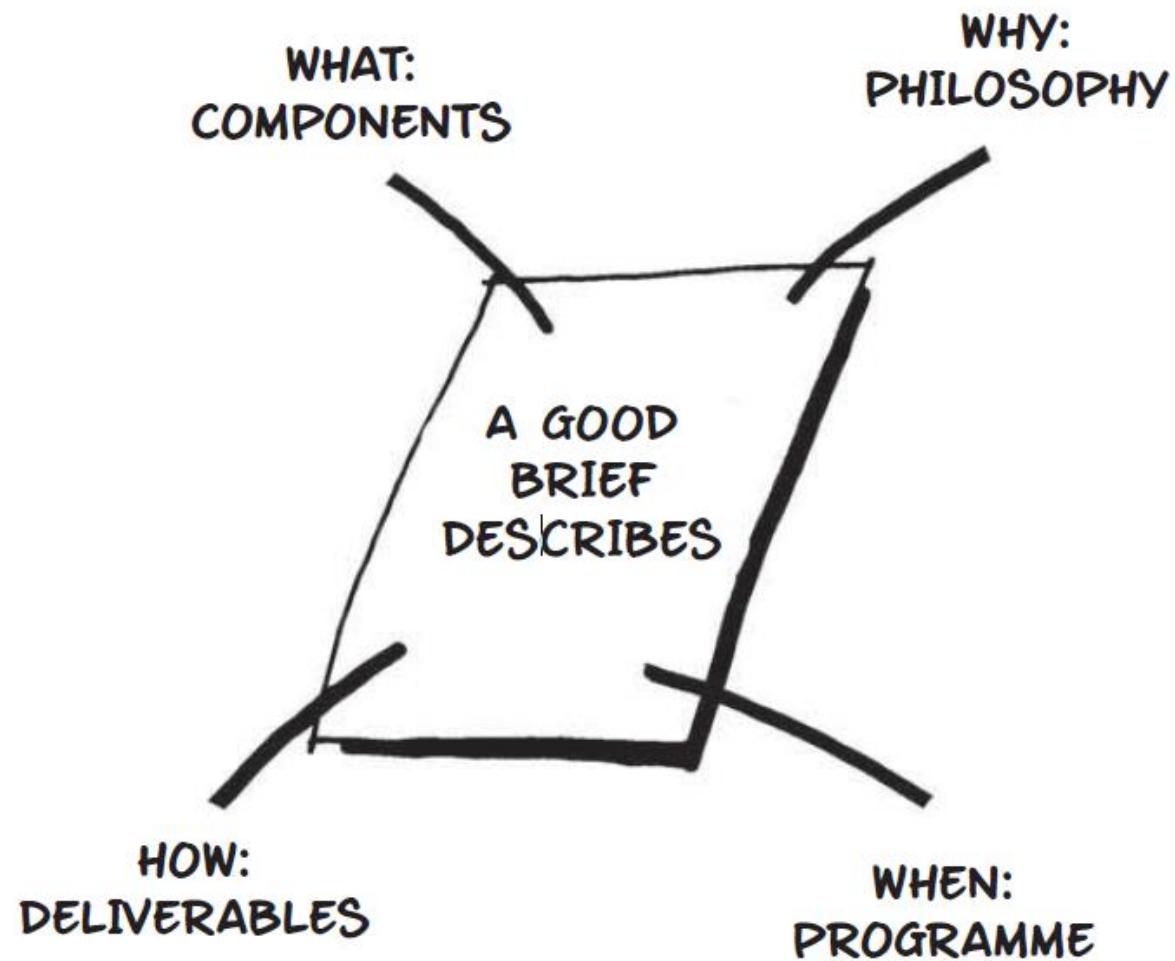
## **DESIGN PROCEDURE**

- This is the sequence of steps that a landscape architect undertakes when responding to a commission or project.
- These steps taken by the landscape architect could be logical, sometimes more intuitive and sometimes pragmatic.
- The sequence includes such things as design methods, skills and inspiration, which together form a focused programme of action.

## Inception/Primary Brief Stage

- The client is met for the first time and the meeting is held on site or otherwise.
- The objective of this stage is to establish information about the client's overall requirements.
- This allows feasibility of the project to be assessed.
- Secondly, it sets a broad framework within which the landscape architect, other professionals and consultants are to work.

# Inception/Primary Brief Stage



## Feasibility Stage

- This is when the landscape architect studies/surveys and analyses the site in relation to the project and the client's requirements.
- Data must be collected from the site by observation, photographs, measurements *et cetera* and ascertain constraints imposed on the site as well as potentials that the site has.

# **CONDUCTING LANDSCAPE SURVEY**

- This involves assessment of facts and forces which together form the landscape. In conducting a landscape survey, the following should be considered.
  - **Physical Survey (Physical Features on Site )**
  - **Social Survey**
  - **Visual Survey**
  - **Capital Investment**
  - **Availability of Water**
  - **Natural Characteristics of the Site**

## A. Physical Survey (Physical Features on Site)

1. Topography
2. Vegetation and Ecology
3. Climatic Factors
4. Utilities and Services
5. Soil Type and pH
6. Circulation
7. Microclimate

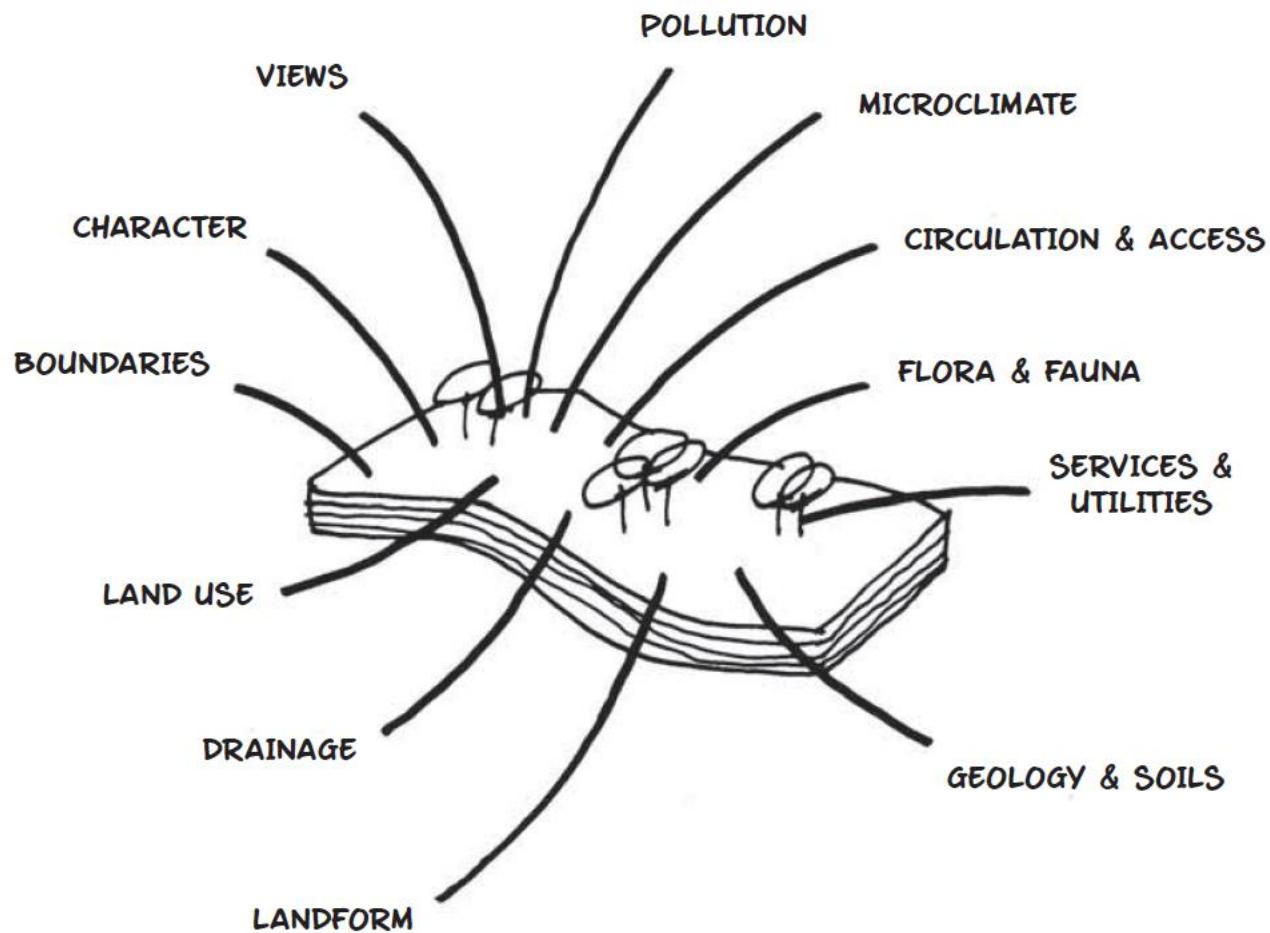
## B. Social Survey

1. Built-Up Areas Near-By
2. Special Landscape Areas Nearby
3. Type of Structure And Users

## C. Visual Survey

1. Views towards the site
2. Views away from the site

These may be **GOOD** (to be preserved and enhanced) or **BAD** (to be screened or eliminated).



## **Other Factors Which Should Also Be Considered Are:**

D. Capital Investment

E. Availability of Water

F. Natural Characteristics of the Site

## SITE ANALYSIS

- Once survey is completed, the landscape architect has to carry out analysis of all data and information gathered from the site.
- It is important to find out which of the features on the site are assets – to be preserved – and which are defects or liabilities to be worked on or eliminated.

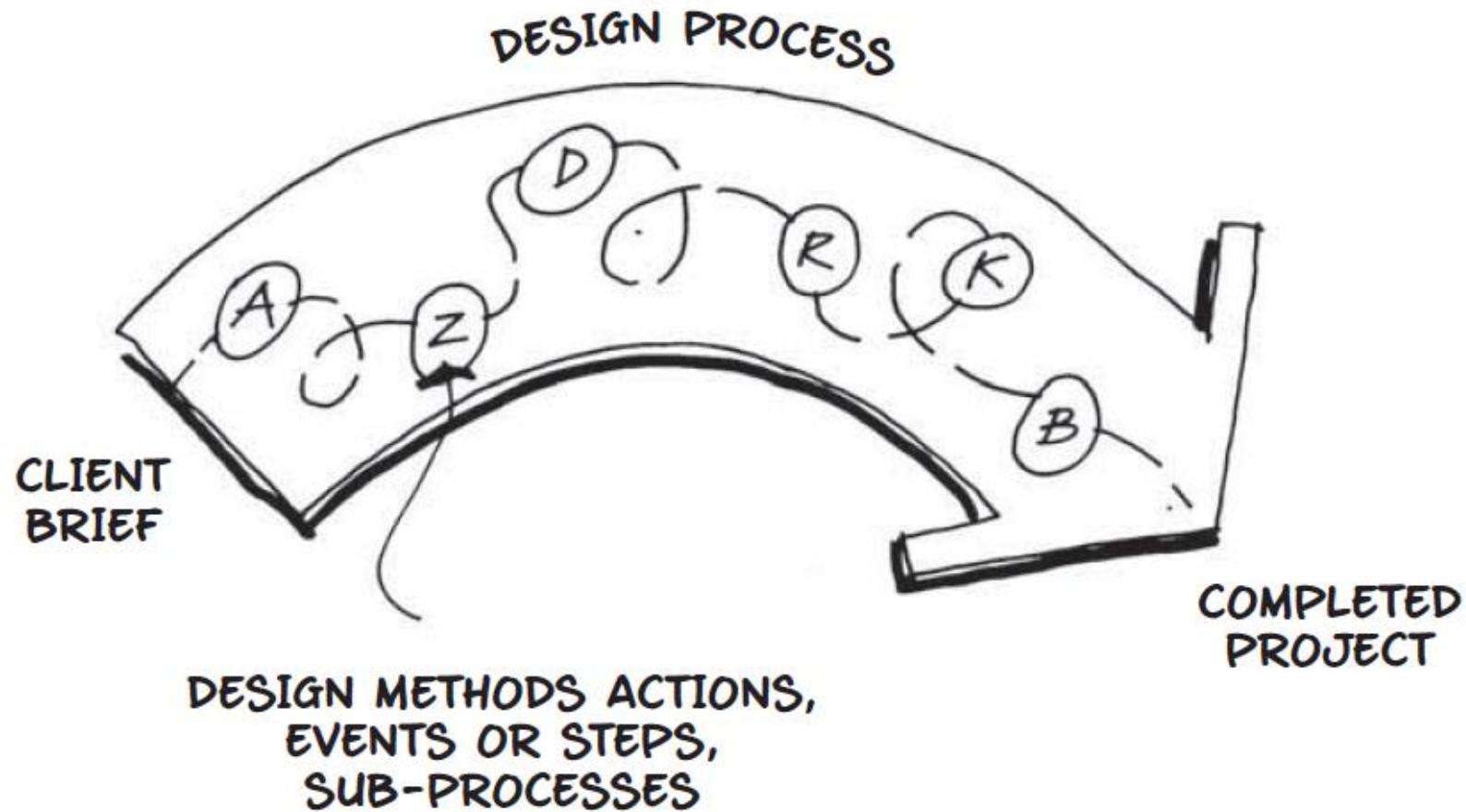
## SITE ANALYSIS

- Landscape architecture is nothing without knowledge of site.
- It is vital to visit, to breathe in and understand a site, take time, sleep on site if you can, live on the site, and certainly experience it at different times of the day.
- Without an adequate understanding of the site, one may proceed with a design that ultimately proves unworkable or extremely expensive to implement.

## **Secondary Brief Stage**

- At this stage, the initial brief given by the client on his expectation is updated.
- This update is based on the client's reaction to the feasibility report and by receipts on more precise information or user requirements as has been collated on site during the feasibility study.

# DESIGN PROCEDURE



## Design Stage

- Here a definite scheme begins to take form even though in broad pattern only.
- The site appraisal or analysis would have revealed certain areas of the site which are suitable because of levels, microclimate, allocation, functions, et cetera for certain purposes or uses.

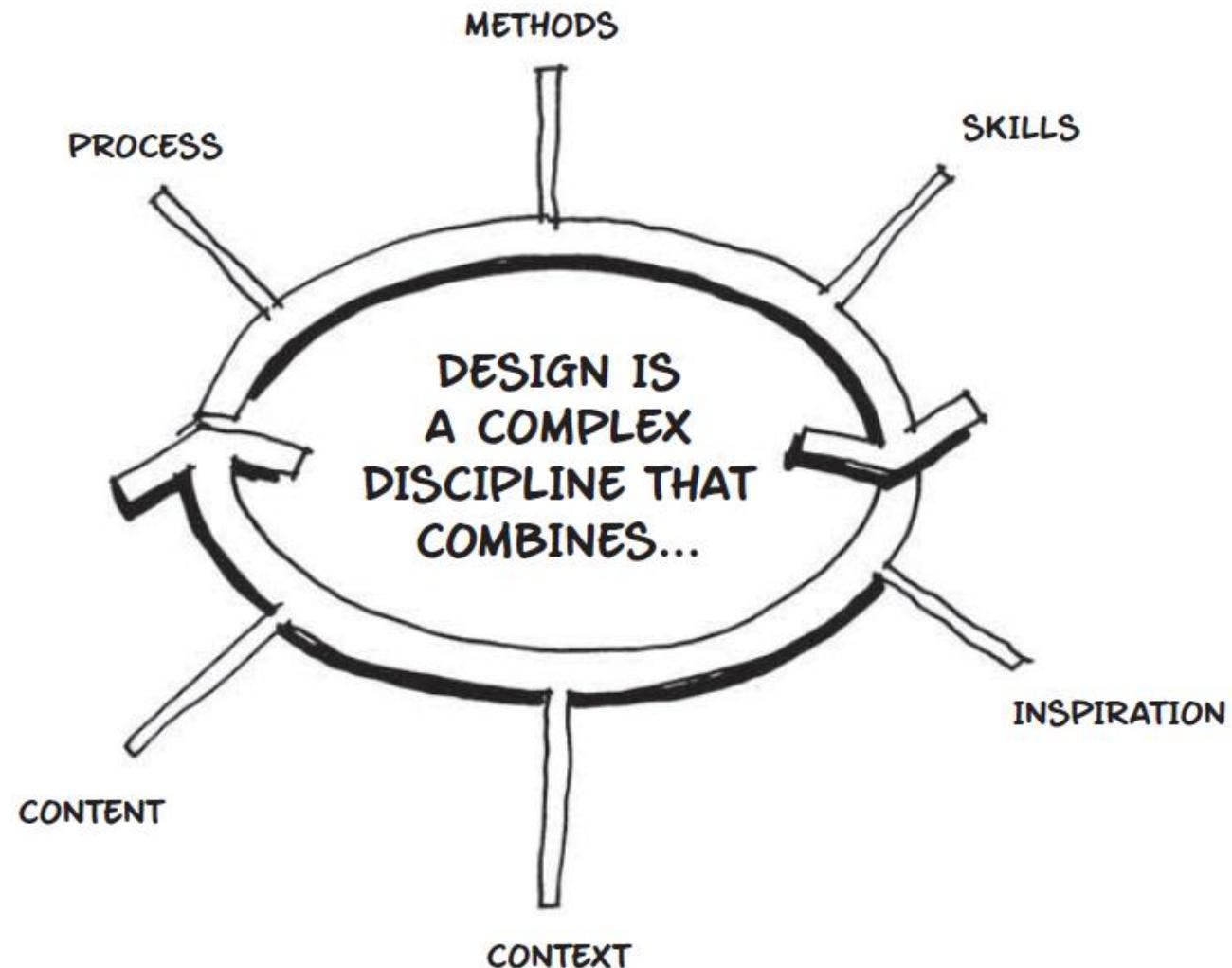
## Design Stage

- The landscape architect has an idea as to what is really expected of the landscape work to be done.
- The design stages therefore comes in two phases: **Sketch Design and Detailed Design Stage.**

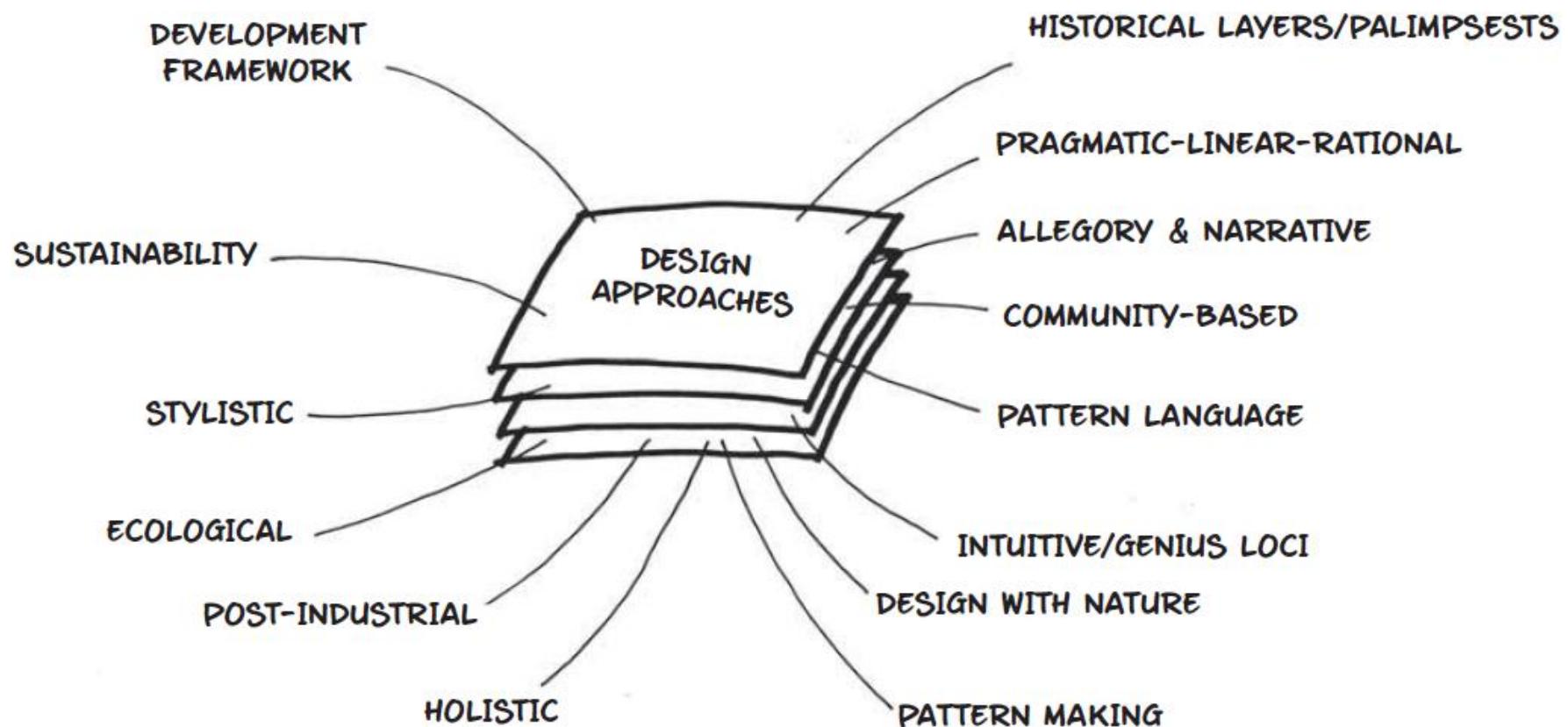
## Sketch Design Stage

- All proposals or ideas are put together on plan to show the ideas to be implemented.
- Measurements are not really required or used at this level of design as only design ideas are put together.
- Clients can be made to see what the design ideas look like in plan and alterations made thereafter.

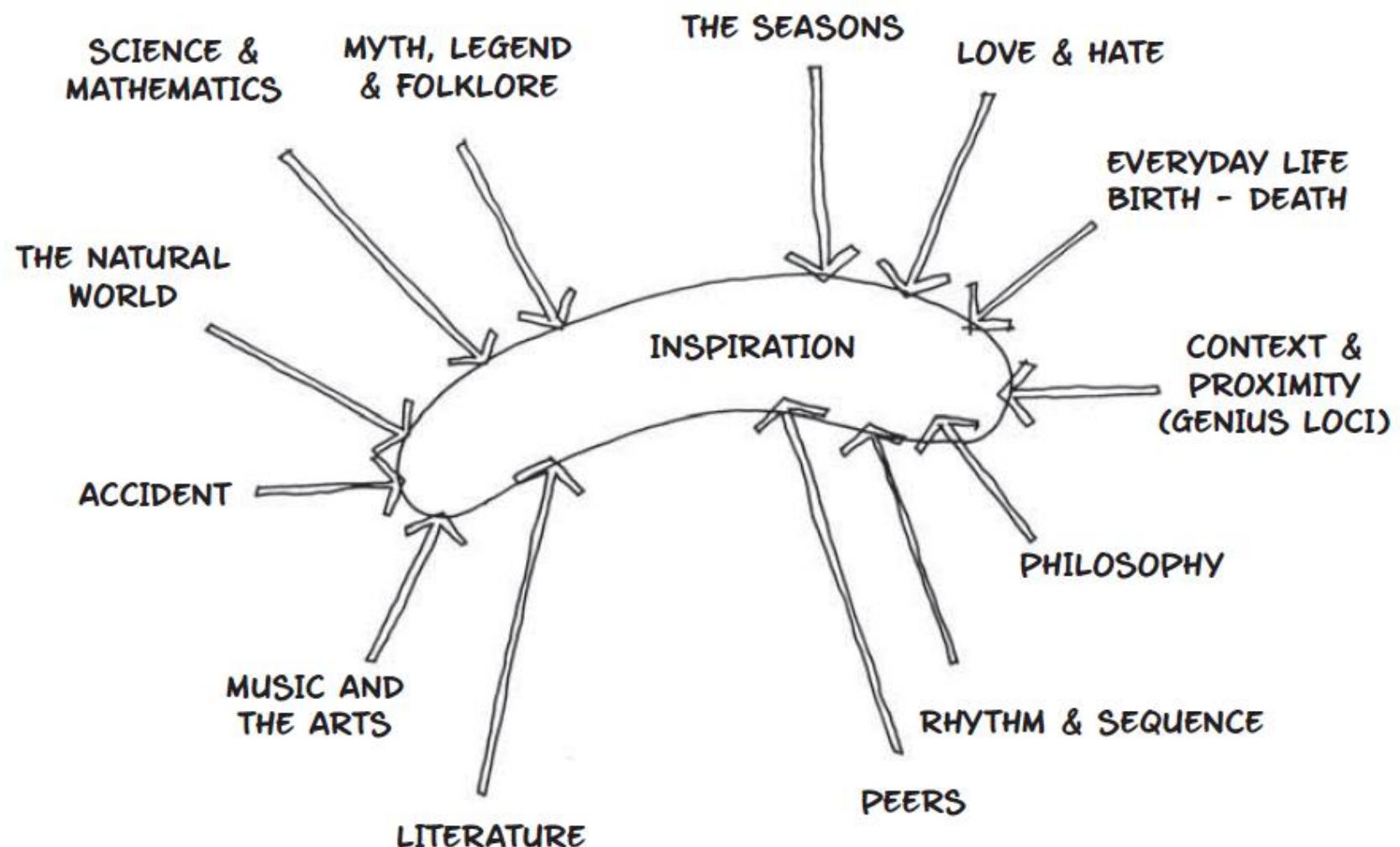
# Design Stage



# Design Stage



# Design Stage



## Detailed Design Stage

- The detailed design stage deals with the preparation of working drawings and planting plans for detailed design which would be used for implementation.
- For detailed design and construction, this should include much details, such as dimension based on site measurements.
- Considerations should be given to canopy spread of trees, planting distances, and height of plants.

## Detailed Design Stage

- Distances from buildings, fence walls, underground cables, sewage lines, communication lines and others should all be taken into consideration.
- This is ensure the detailed design developed is devoid of problems during implementation.

# **THE CLIENT**

- It is the body that has the authority to approve expenditure on projects (because it's his job), the form that the project should take, its timing and the who pays for the overall project.
- **The Individual or Private Client**
- **Developer Client**
- **Cooperate Client**
- **Public Client**

## TYPE OF CLIENTS AND RESPONSE TO CLIENTS

- Different response is needed for service to each type of client depending on the nature of commission and the type of work required.
- **Private clients-** This is a person who wishes to have a small landscape work or gardens done for him. This may include private individuals or groups.
- Their services come with minimum of letters/correspondences and other paper works.

- They expect detail explanation of schemes and of the plant material to be used.
- **Developer Clients**- They commission work concerning industrial, commercial, recreational, housing projects/schemes that are being worked on. E.g. Regimmanuel Gray Ltd, Manet Housing Lts, Trassaco Company, Consar Ltd, et cetera.
- **Cooperative clients**- This is a committee or board of an organization which finds itself handling land and physical property issues for the organisation.

- They exist in the bigger institutions. E.g. Estate offices in Organisation or Co-operations, KNUST Development Office and others.
- **Public Client-** This group acts at every level through central and local bodies requiring landscape treatment or development for public schools, government hospitals, public parks, new towns et cetera. E.g. Metropolitan Authorities, District Assemblies, Ministries and so on.

- They often ask for more written materials, drawings and regular reports.
- They seldom require detailed explanation of projects once the basic design has been agreed on.

# **SPECIFICATIONS AND BILL OF QUANTITIES (BOQ)**

- BOQ is a document prepared for a client by a consultant, usually a Quantity Surveyor.
- It provides project specific measured quantities of items of work identified and cost of work.
- All projects including minor contracts should have a bill of quantities and especially if the contract is put to tender as this ensures that all contractors tender on equal basis.

# Specifications and Bill of Quantities (BOQ)

- This simplifies and makes the pricing of variation during the course of the contract.
- For varying contract, a quantity surveyor could be engaged to help in the preparation of the bill and to give a full service from preliminary cost plan to settlement of final account.
- All materials to be used (and if possible the appropriate suppliers) should also be written down on the bill.

# Specifications and Bill of Quantities (BOQ)

- Materials should include detailed description of each item (soil, chemicals, plants etc.) and all other supplies which are needed for that particular landscape project.
- This section of the bill must clarify the degree of maintenance to be included as part of the contract showing that work is expected in this respect both during the contract and after practical completion during the defects liability period to final hand over.
- The maintenance period may vary depending on the time of year the contract is done.

# Specifications and Bill of Quantities (BOQ)

- A defects liability period is a set period of time after a (landscape) construction project has been completed during which a contractor has the right to return to the site to remedy defects. Normally the set period is about 12months.
- Every bill of quantity should have a schedule of rate for materials and labour.
- This however will depend a lot on the contractor doing the work. He may decide to charge rates by days' work done or per day work done or rates per specific area worked on.



# Format for Bill of Quantities (BOQ) for Mrs. Key's Apartment

## PROFORMA INVOICE

<u>S/N</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>RATE GH₵</u>	<u>AMOUNT GH₵</u>
	<b>Brief: Landscape Installation for Mrs. Key's Apartment</b>			<u>GH₵</u>	<u>GH₵</u>
<b>A</b>	<b>Ground Preparation</b>			-	-
A1	Clear site of all debris, dig out and level space to required depth	m <sup>2</sup>	531.425	2.00	1,062.85
A2	Black soil (5m <sup>3</sup> single axle tipper truck)	Trip	18	900.00	16,200.00
A3	Manure (5m <sup>3</sup> single axle tipper truck)	Trip	6	600.00	3,600.00
	<b>Sub total A</b>				<b>20,862.85</b>
<b>B</b>	<b>Infront of the house</b>				
	<b>Window Planter</b>				
B1	Dwarf Ixora (Red/Yellow) hedge 7.8m	Sapling	26	5.00	130.00
B2	Sansevieria	Sapling	46	4.50	207.00
	<b>Sub total B</b>				<b>337.00</b>
<b>C</b>	<b>Main Compound</b>				
C1	Zoysia grass	Bag	55	35.00	1,925.00
C2	Murraya hedge 37m	Sapling	123	5.00	615.00
	<b>Sub total C</b>				<b>2,540.00</b>
<b>D</b>	<b>Right hand side of the house (beside the security room)- planter 2</b>				
D1	Yellow Duranta hedge 71.5m	Sapling	238	5.00	1,190.00
D2	Polyalthia tree	Sapling	49	15.00	735.00
	<b>Sub total D</b>				<b>1,925.00</b>

S/N	DESCRIPTION	UNIT	QUANTITY	RATE GH₵	AMOUNT GH₵
<b>E</b>	<b>Outside Boundary Wall Planter (Both Sides)</b>				
E1	Zoysia grass	Bag	15	35.00	525.00
E2	Bottle Palm	Sapling	6	250.00	1,500.00
E3	Thuja tree	Sapling	4	150.00	600.00
	<b>Sub total E</b>				<b>2,625.00</b>
<b>F</b>	<b>Labour and Professional fee, etc.</b>				
F1	Setting and planting out of palms and trees	#	59	15.00	885.00
F2	Setting and planting out of shrubs	#	433	2.00	866.00
F3	Spreading of topsoil and backfilling holes for grassing, hedge and tree planting	Trip	18	120.00	2,160.00
F4	Sprigging of Zoysia grass	Bag	70	15.00	1,050.00
	<b>Sub total F</b>				<b>4,961.00</b>
<b>G</b>	Post-establishment Maintenance (Commences after installation)	Months	3	500.00	1,500.00
	Transportation	Trip	7	120.00	840.00
	<b>Sub total G</b>				<b>2,340.00</b>
	<b>Sub total TCC (Total Cost of Construction)</b>				<b>35,591.45</b>
	Professional fee (10% of TCC)				<b>3,559.14</b>
	Contingency (2% of TCC)				<b>711.83</b>
	<b>VAT (18.5%)</b>				<b>6,584.42</b>
	<b>GRAND TOTAL</b>				<b>50,005.99</b>
	<b>AMOUNT IN WORDS: Fifty Thousand and Five Cedis, Ninety-nine Pesewas</b>				

- Number of trips of soil required for a project site = Volume of Soil ÷ Volume of Tipper Truck
- Volume of soil required for grassing = Area for grassing x Depth of soil spread
- Volume of soil required for a trench for hedges = Total length of trench x Width of Trench x Depth of trench
- Volume of soil required for a hole for a tree =  $\pi r^2 h \times$  number of holes dug on site (where r is the half the width of the hole and h is the depth of the hole  $\pi$  is 3.14)
- Min/Max depth of spread of soil for grassing = 0.10m or 0.15m

- One jute bag (25kg) of grass e.g., Zoysia covers up to 5m<sup>2</sup> area, other grass types covers up to 8m<sup>2</sup> (e.g., Love grass, Paspalum grass and Bermuda grass, St. Augustine's grass and Axonopus grass)
- General ratio for soil amendment is = 3:1 (3 parts Topsoil to 1 part Manure)
- Spacing required for smaller shrubs for hedge = 0.30m (depends on design)
- Spacing required for larger shrubs for hedge = 0.45m to 0.50m (depends on design) Hole dimension for trees = 0.6mW x 0.90mD (W-width/ D-depth)

- Spacing required for smaller trees to use as a screen = 1.2m to 1.8m
- Spacing required for palms or small to medium size trees = 5.0m to 7.0m (depends on design)
- Spacing for larger trees used on site can be beyond 20m due to canopy spread
- Trench dimension for hedges =  $0.45mW \times 0.45mD$  (up to  $0.6mD$ )
- Hole dimension for trees =  $0.6mW \times 0.90mD$  ( $W$ -width/  $D$ -depth)

NB: The intended design for a particular site can sometimes alter the above dimension and specifications. These are however general guidelines.

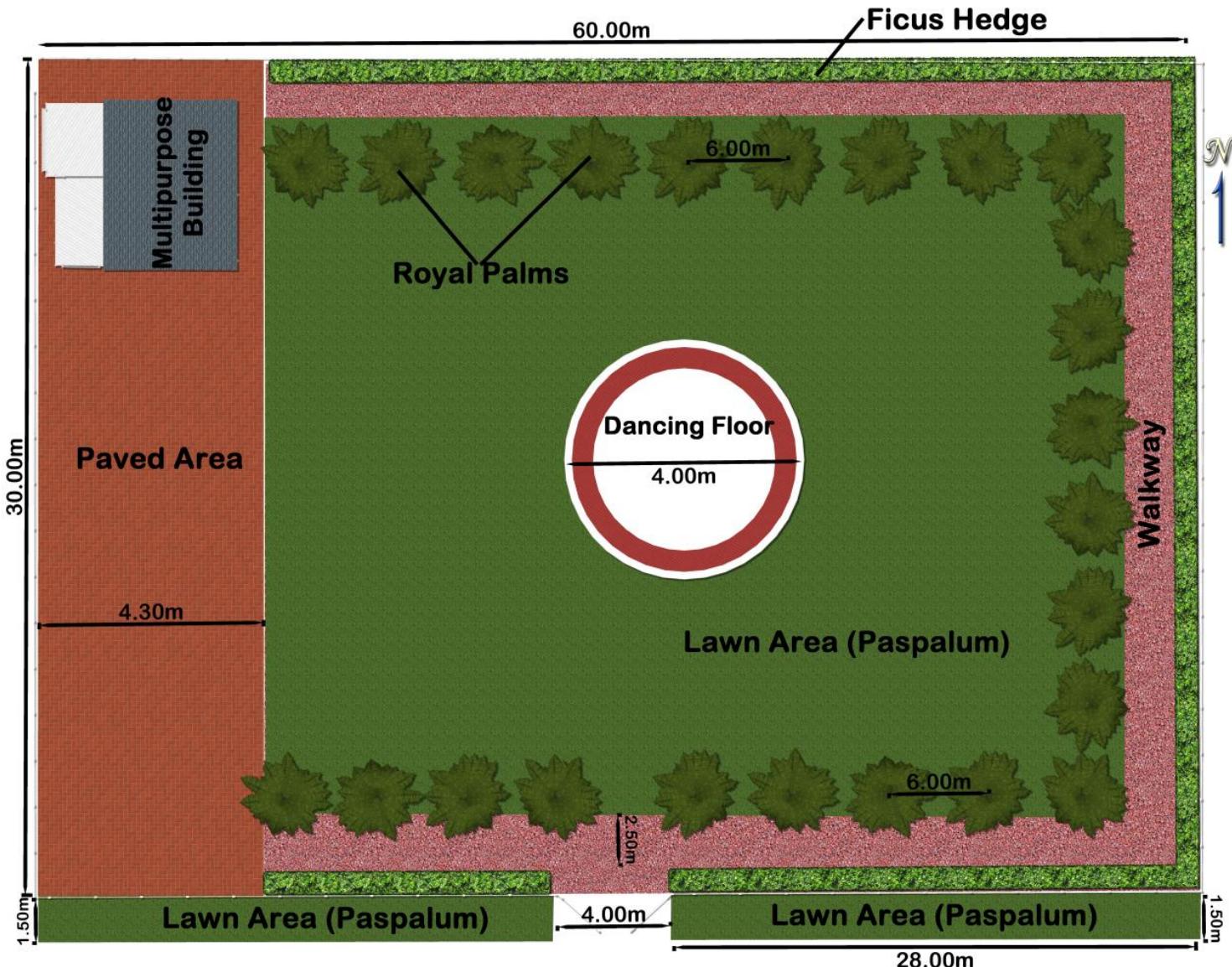
## CASE STUDY

A client has requested that you implement a proposed landscape design for her event centre. The event centre is located at Kotei and the proposed site has construction site debris and uneven terrain. The standard amendment of the topsoil with manure must be carried out on site for all plantings.

Assumptions:

- i. Depth of spread of black soil = 12cm
- ii. Spacing for shrubs planted on site should be 25cm

- iii. Spacing for palms = 600cm.
- iv. Trench for dimension for hedge = W - 55cm and D - 50cm
- v. Hole dimension for palms = D - 90cm and W - 60cm
- vi. Truck = 8m<sup>3</sup>
- vii. 25kg bag of grass = 10m<sup>2</sup> area
- viii. Soil amendment = 3:1



Proposed Event Centre Landscape Design

# THANK YOU