2.0 VISUAL LANDSCAPE DESIGN CONCEPTS AND PRINCIPLES

In Section One the definition of landscape and the appropriate aesthetic result towards which forest operations should aim were discussed. Before considering the operations themselves we need to look at the landscape in which they are to take place and be able to describe it in terms that can be easily understood. It is important to be able to describe the kind of aesthetic qualities found in specific landscapes, particularly those which can be generally described as 'wild' or 'natural'.

When we talk about 'natural' and 'wild' visual qualities what exactly do we mean? How are we to know if a proposed design fulfils these aesthetic requirements? What we need are some principles which can define these aspects in an objective and rational way. We ought to be able to take them seriously and avoid falling back on clichés like 'beauty is in the eye of the beholder'. Assertions in the form of 'I like' or 'I do not like' neither identify problems nor suggest solutions and bring an end to constructive discussion. Without a common language we can go no further. What we need is an aesthetic vocabulary which allows two or more people to discuss and evaluate what they see, or a proposed design and to consider its pros and cons in a rational and informed way. We then have the tools necessary to reach broad agreements on a proposed course of action involving aesthetics.

![Image of two cartoon characters discussing landscape design]

For those who wish to deal with the generally most important principles and avoid too much detail at this stage, concentrate on:

SHAPE, VISUAL FORCE, UNITY, DIVERSITY, GENIUS LOCI and SCALE.

The next section presents in condensed form this design vocabulary. Readers will recognize a number of principles from the 1981 Forest Landscape Handbook. They have been extended and are organized a little differently. For a full account of the principles see Bell, 1993, Elements of Visual Design in the Landscape, E & FN Spon, London.

The presentation of the principles follows a 3-tier structure: 1. the basic elements from which all landscapes are composed; 2. the variable elements and 3. the organization of basic elements into different patterns. It is the combination of these three components that describes the appearance of an existing landscape or produces a visual design or a new pattern.

- A good visual design is one where the chosen variables and modes of organization are positive and harmonious.

- A bad visual design is where they are negative and disharmonious, irrespective of personal taste or preference.
BASIC ELEMENTS

POINT  ●
LINE    —
PLANE   

SOLID VOLUME  ▲
OPEN VOLUME   △

VARIABLE ELEMENTS

NUMBER   ●●●
POSITION ——
DIRECTION  ❋
ORIENTATION  N
SIZE     ●●●●
SHAPE (form) □
INTERVAL |   |   |   |

TEXTURE  □□□
DENSITY  ●●●
COLOUR  ●●●
TIME    ●●●
LIGHT   ▲
VISUAL FORCE  ●

ORGANIZATION

OBJECTIVES:

Unity    □□
Diversity □□□□
Genius Loci □□

CUES:      

Nearness  ●●●
Enclosure  □□
Interlock  □□□□
Continuity □□
Similarity □□□□
Figure & Ground □□□

STRUCTURAL ELEMENTS:

Balance □□
Tension □□
Rhythm □□□□
Proportion □□□□
Scale □□

ORDERING:

Axis  □□□□
Symmetry  □□
Hierarchy □□□□
Datum □□
Transition □□□□

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2.1 BASIC ELEMENTS

POINT

A point marks a position in space and can be represented by a small object or the shape of something. Examples include single trees in open spaces. Objects breaking the line of the distant horizon, focal points where the eye is led to concentrate on a particular spot.

A tree in a prairie is a point in the landscape.

LINE

A line is formed when a point is extended in one dimension. Lines can be real such as a road line, a stream or the skyline; they can be implied or imaginary, for example, when several objects in a row suggest a line. The landscape contains both natural and man-made lines. Invisible ones, such as ownership boundaries, can affect the landscape.

This powerline makes an obvious line through the landscape as seen from the air, Prince George Forest Region.

Natural line of a glacial river forming a braided pattern, Austria.
PLANE

If a line is extended into two dimensions a plane is formed. Planes can be flat or curved, real or implied. The surface of a lake, the side of a mountain or a field are natural planes while walls, flat roofs or parking lots are man-made examples.

![Flat, simple, geometric planes.](image)

![Curved and twisted planes.](image)

A natural plane: the perfectly still, reflective water surface of a lake, Lake District, England.

VOLUME

Two dimensional planes can be extended into three dimensional volumes. They can occur as one of two types:

Solid volumes are masses in space such as a building or a mountain, a rock or a large tree bole.

![Geometric solid volumes: typical Euclidean forms.](image)

![Irregular solid volumes: soft and rounded, hard and angular.](image)

This conical volcano is a solid volume rising out of the surrounding landscape. Mount Edziza, British Columbia.
Open volumes are spaces enclosed in some way such as the inside of a room, under the forest canopy, in a canyon or ravine.

In this scene all the basic elements are in combination: the points of the picnic table (relatively small scale in the view); lines of vertical tree trunks and the path; the plane of the meadow area in the foreground and the vertical face of the forest edge; the solid volume of the landform and tree masses; the open volume of the space enclosed by landform and the shadow opening in the bushes to the right of the forest picnic table. Big Four, Mt Baker Snoqualmie National Forest, Washington USA.

COMBINATIONS OF ELEMENTS

Usually, landscapes consist of a number of basic elements. Sometimes these change, for example, with viewer distance: a forest edge may imply a solid volume of forest; the edge itself a plane defined by the closely spaced trees. Closer views may reveal the trees as a series of lines. Nearer they stand out as individual solid volumes within the open volume of the canopy. This helps us to understand the structure of the landscape at varying scales.
2.2 VARIABLE ELEMENTS

The basic elements described previously can be seen in relation to light, colour, time and movement. There are a limited but fundamental number of ways of varying them:

Number, position, direction, orientation, size, shape (form), interval, texture, density, colour, time, light, visual force.

NUMBER

Elements can exist as single units or as one of a number. The greater the number the more complex the result. Each exists in a visual relationship to another. Part of the landscape, eg a forest, may be itself composed of a number of elements - stands of different species, individual trees. The effect of increasing number may result in practical complications when resolving a design. For example, a small number of clear cuts may be relatively easy to accommodate, but with subsequent harvesting passes the cumulative effects of increasing numbers begins to have a large impact.

One element, and a number of elements: a pattern starts to form and interaction occur.

One clear cut is relatively easy to locate in a landscape, even if its shape is a problem. Prince Rupert Forest Region.

A great number of clear cuts: the sheer accumulation of them is a problem as they start to interact with one another. Shuswap Lake, Kamloops Forest Region.
POSITION

Elements in space can occupy three primary positions, horizontal, vertical and diagonal. Each of these can have powerful connotations. For example, horizontal forms seem to be stable while diagonal ones may appear more dynamic. The position of elements in the landscape has to be seen relative to other components and to the background landscape. Often a low position down in the landscape will seem less dominant than one higher up. This might apply to a clear cut, a road or a quarry. The position of the observer in the landscape is also part of the equation (see scale).

Some basic positions:

vertical - perpendicular to the horizon,

horizontal - parallel with the horizon,

diagonal - between vertical and horizontal, unstable.

Identical elements in relation to one another:

parallel,

down to end,

crossed.

Trees occupying all the major positions - vertical, horizontal, diagonal.

This powerline corridor is positioned vertically in the landform and looks very uncomfortable. Near Castlegar, Nelson Forest Region.
DIRECTION

The way elements are positioned in a landscape may impart a certain sense of direction. The curving shape of a road or path may lead the eye in a particular way; the shape of a clear cut may point in a direction which may conflict with the way the landform directs the eye (see visual force, tension). There are certain inherent directions evident in the landscape such as the prevailing wind sculpting the trees at the edge of the forest. These may influence management activities if there is a physical effect such as possible wind throw.

There are a number of different directions which can be expressed by elements: up and across:

- bottom left to top right,
- outwards,
- in and downwards,
- round and out,
- falling downwards; from side to side,
- round and round a central point,
- outwards from a centre.

This boardwalk imparts a sense of direction which leads the eye into the landscape. Vancouver Island, Vancouver Forest Region.

At Midway B.C. the trees only grow on north facing slopes. South facing slopes remain grasslands. This gives a directional grain to the landscape (see orientation).
ORIENTATION (Aspect)

Orientation is a combination of position with a specific direction. This can be according to the compass (orientation means ‘facing east’) relative to another element, often the ground plane or horizon, or relative to the viewer. How the landform is orientated relative to the sun can give a distinct pattern to the landscape and affect how it develops or is managed, for example, dry south facing versus moister north facing slopes. This can be seen in the different densities of forest stands in different locations. Shelter and exposure are similar factors.

Settlement is orientated to get the best sunlight in this mountainous landscape. Dolomites, Italy.

SIZE

In this case it is the dimension of elements that counts. Large, tall or deep objects are very impressive, partly because of their size relative to the human figure. A high mountain, a deep canyon or a large old-growth tree will impress us. We feel dwarfed by them. This aspect of the size of trees should not be overlooked. The loss of big trees to logging means that the second growth forest is less impressive, though it is also connected to the age of the biggest trees compared with the human life-span (see time, continuity). People flock to the redwoods or Cathedral Grove on Vancouver Island because of the size of the trees.

We are impressed by large physical size in landform. Mount Robson.

Three examples of typical size contrasts: long/short, wide/narrow, and large/small.
SHAPE (Form)

This is one of the more important variables. Lines and planes can exhibit a wide variety of shapes. (Form is the term usually applied to the shape of volumes). Shape is a powerful variable because we are able to detect shapes on very slight evidence. This sets up perceived patterns which are subsequently very hard to avoid. It is normal to distinguish between geometric, regular shapes such as squares, triangles, circles and natural, irregular or organic shapes. The former tend to be associated with man-made patterns partly because this type of simple Euclidean geometry is hard to find in nature. The latter kinds are infinitely more varied and complex. They are more often characterised by a lack of regularity. When we see geometric shapes in the landscape such as rectangular fields, square clear cuts, or circular irrigation patterns, we automatically associate them with the man-made. This can conflict with natural shapes and cause visual tension (see tension). Thus compatibility of shapes is important for a harmonious design. Landforms vary in their shape a great deal. The interaction of a planar shape, for example a clear cut on a landform, requires a lot of attention to make it compatible when seen from different viewpoints.

Examples of geometric planar shapes: regular and irregular.

A rectangular geometric shape of a clear cut imposed on natural landform. The incompatibility of the square shape on the landform causes the intrusiveness. Skeena River, Prince Rupert Forest Region.
Natural, organic shapes in the landscape - aspen and rocks in the forest. McBride, Prince George Forest Region.

A landform of rugged, broken shapes reflected in the forest pattern. Skeena River, Prince Rupert Forest Region.

A landscape of smooth, rounded shapes. Nootka Island, Vancouver Forest Region.

Irregular, organic and anthropomorphic planar shapes.
INTERVAL

The spacing between elements can be as important as their shape or size. Intervals can vary between regular, when the same interval is repeated, and a wide range of irregular, variable or random intervals. Equal, regular intervals tend to induce formal effects, usually associated with the man-made, while more varied intervals are found in nature, for example the regular spacing of trees in a plantation compared with those in a natural forest. The regular spacing between clear cuts defined by the minimum width of a leave strip can produce the same unnatural result, especially if the clear cuts are the same size as each other.

Interval can be expressed in different ways: elements spaced at regular intervals.

irregular intervals.

large element - small interval.

small element - large interval.

Regular intervals between strip fellings on the mountainside. Austria.

The fairly regular interval between these clear cuts suggest formality. Mt Hood National Forest, Oregon, USA.
TEXTURE

Texture is related to interval but much more concerned with surface detail and overall pattern. Textures are relative and their degree of coarseness or fineness depends on the size and interval between the elements which compose the texture. The perception of texture may also vary over distances. In the forest, the textures can relate to the spacing of the trees - the wider the spacing the coarser the texture and vice versa. Silvicultural systems such as selective cutting will produce different textures - the heavier the cut, the coarser the texture. Seen from greater distances, it may be the pattern of different stands and ages that gives a texture or grain to the landscape. In a forest of mainly one species, textural variation provides one of the chief means of introducing diversity.

An important aspect of texture is its effect on the ability of the landscape to accommodate change. In even, fine textured areas change such as felling stands out in strong contrast (see Figure & Ground) while in landscapes of coarser, more varied texture such features blend much more easily. This characteristic is referred to as Visual Absorption Capability (VAC) and is an important aspect of the visual landscape inventory phase (see Introduction).

This landscape is one of fine, even texture. The foreground is slightly coarser due to the variation in size and spacing of the trees and their closeness to the observer. The evenness of the texture gives the area a low visual absorption capability (VAC). Vancouver Island, Vancouver Forest Region.

Replanted areas have a fine texture. After felling landform texture also shows which may usually be hidden beneath the canopy. Vancouver Island, Vancouver Forest Region.
Coarser textures occur here as a result of rocks and patchier vegetation, thus giving a much higher VAC. Shuswap Lake, Kamloops Forest Region.

The repetition of clear cut units begins to create a coarse texture or grain in the landscape. Once a landscape has been affected its VAC increases so that further changes are visually easier to accommodate up to the limits of the VQO. Vancouver Forest Region.

DENSITY

Also related to interval and texture, density refers to the number of units of an element within a given area such as on the surface of a plane. Density may vary across a pattern. Areas of greater density tend to have greater visual weight. Typical density variations can often be seen at the junctions or margins between one vegetation type and another – especially at the tree line or where a forest gives way to a bog or wetland. Edges in nature tend not to be hard and well defined but graded (see Transition). One of the reasons clear cuts stand out is because of the distinctiveness of their edges. A density gradient would emulate natural margins and harmonize the result.
A pattern of density related to landform - denser forest patches on hummocks of drier ground, sparser areas in the wetter boggy hollows.

A variable density pattern where the rocky soil prevents tree growth. Quebec.

The forest gradually gives way to bog and the density of trees reduces. Vancouver Forest Region.

Some examples of density patterns; density increases towards the centre of the diagram as the interval between the lines decreases, the second pattern is denser towards the middle with decreasing interval, while in the third density increases towards the edges.
COLOUR

This is another important variable and one that has received much attention. It is useful to be able to describe colour, what its properties are and some of the visual effects it can produce. The principal way to describe colour is to start with the primaries: red, green and blue being light primaries; magenta, cyan and yellow pigment primaries. Any two of these are mixed to give secondaries while a primary mixed with a secondary gives a tertiary colour. The well known rainbow of colour caused by splitting light into a spectrum can be used to organise colours, often into a circle where their various properties can be observed. Colours next to one another in the circle are known as ‘similar’ colours, e.g. the greens, the reds and oranges and the blues and they naturally work well together. Colours opposite to each other across the circle are complimentary - red and green, blue and orange, for example. These also harmonise and often produce more dynamic results than similar colours. Similar colours are commonly found in nature - the ranges of greens in a forest, for example. Complimentary colours also occur - red and gold autumn leaves against bluish greens of evergreen conifers, perhaps.

As well as the colour circle, other arrangements are possible. The Munsell system is one such in which colours are broken down by hue (red, blue, green), saturation or chroma (the strength of the colour) and value (its lightness or darkness) to give a 3-variable analysis. In nature most colours tend to be of lower saturation, except for individual flowers.

Different landscapes typically have a range of colours associated with them depending on the rock, soil type and vegetation. Extensive, unbroken forest such as along the coast of Vancouver Island tend to be a mass of green, varied only slightly where there is a greater density of one species, such as cedar, over another. Conversely, the dry interior of the Province is much more varied, with drier, open forests, grasses, pine and rocks showing through in places. Different tree species vary too, for example 'yellow belly' Ponderosa pine compared with dark lodgepole pine. Those landscapes with components of birch and aspen are varied further. Where there is colour variation it is easier to accommodate some change. Contrasting colours - snow on clear cuts, soil exposed on borrow pits and road sides - in the very even coloured landscapes are particularly difficult to accommodate (they have a low 'visual absorption capability').
The ground vegetation gives this landscape more colour variety when seen with the trees. Salmon Arm, Kamloops Forest Region.

The colours of this landscape are almost entirely dictated by the greens of the vegetation. Nootka Island, Vancouver Forest Region.

TIME

All landscapes change over time. We mark time in relation to various natural cycles and to the human lifespan. Important aspects of time are:

- **Time of day.** The change from dawn to dusk and the accompanying variation of light, temperature, weather and mood.

- **Seasons.** This is particularly significant in the natural world. Fall colours, growth of plants, life cycles of birds and insects are significant markers of time. The changing appearance of the landscape during snowy conditions is visually one of the most important seasonal changes where forest activities are concerned, for example clear cut units stand out much more than in the summer months.
Life cycles. Time can be measured in a long time sequence of birth, growth, decay, death. Such cycles may be longer than the human life span. The 300-year return period for a stand replacement fire, for example, may mean that several generations take the 'unchanging' forest scene for granted. If a catastrophic event natural or otherwise takes place such change can be traumatic. Equally, rapid change by human activity such as logging which occurs at a faster rate than natural change can be viewed negatively. (See Continuity).

Viewing duration. Time is also manifest in movement and the speed of motion. We perceive a landscape differently at slow speeds (walking) than at fast speeds (car or train). We cannot register details so well when travelling fast while overall spatial changes are less well observed at walking pace (see Section 4.5).

In the summer the clear cuts are less obvious because of the lower colour contrast. Mount Hood National Forest, Oregon, USA.

Time is measured by growth and decay.

In the winter, snow on the ground causes the clear cuts to stand out more strongly. It is also the season of most visitors to this viewpoint. Mt Hood National Forest, Oregon, USA.

Time can be registered visually by the waxing and waning of the moon.
LIGHT

We need light in order to see the landscape. The amount, quality and direction of light have a major effect on our perception of the landscape. Natural sunlight contains the complete range of visible wavelengths. Ambient light is the general, all pervasive outdoor light present even in the cloudiest skies. It casts no shadows. Direct sunlight is brighter, it creates shadows which give depth to 3-D objects. Light quality depends on the strength of the light determined by the angle of the sun in the sky, the amount of water vapour in the atmosphere which filters out some wavelengths and diffuses the light, and the degree of smog or pollution present.

Lighting direction is particularly important in viewing the landscape. In side lit conditions the scene is illuminated from one side relative to the viewer position. Shadows cast emphasize the relief of the landform while the lit areas show detail. When a landscape is back lit, the viewer is looking into the sun and therefore onto the shady side of the landform. Skylines are prominent but the rest of the landscape is dull and detail is lost. Back lit slopes may be cooler and moister which may alter their character compared with front lit landscapes (see orientation). Front lighting occurs when the sun is behind the viewer shining straight on to the landscape. Landform appears flattened owing to the lack of shadow so that colour and texture become more dominant variables. We can also be emotionally affected by certain lighting conditions such as a rainbow or a sunset.
A back lit landscape where the foreground detail is lost and our attention is drawn to the skyline. Robson Valley, Prince George Forest Region.

A front lit landscape where the detail of colour and texture but not landform shows up. Idaho, USA.

Dramatic lighting effects which may draw attention from problems in the landscape. Scotland.