



A Manual for Forest Landscape Management

Chapter 1

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Feelings for the visual beauty of the mountains, lakes, coasts and forests of Tasmania are a common bond among people fortunate enough to visit or live in these areas. Their spontaneous appreciation of the landscape fosters a strong concern for its protection.



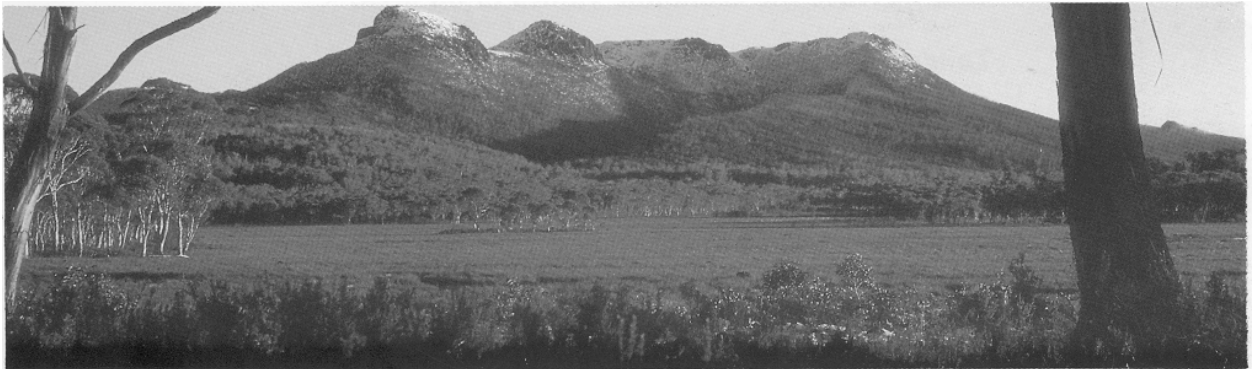
LANDSCAPE AWARENESS

1

As a land manager, you are accustomed to measuring some forest values in terms of economics, utility or ecology. A stand of timber or an area of land is worth so many dollars; clearfelling or roadworks have measurable effects on watershed values and on ecological values. But not all values can be as easily assessed: for example, the visual values of a forest cannot be calculated in dollars and cents of timber, or clarity and purity of water supply, or extent of ecologically affected area and loss of habitat.

An art dealer can put a price on a painting. ..but what price can you put on the two views below?

Given the choice of having one of these views outside our sitting room window, most of us would opt for the first. But invited to explain in concrete terms why we prefer one to the other -why we value one more highly than the other -we start searching desperately for adjectives or, worse, say that we know what we like, and why we like it isn't important.



None of this would matter very much if we weren't responsible for, among other things, evaluating and conserving the aesthetics of a landscape. Fortunately, we do not have to rely on either adjectives or our personal tastes; the principles by which we can judge the aesthetic values of a landscape have been clearly defined.

These principles, which evolved from the traditional premises of landscape art, have been supported by recent studies of how people perceive landscapes and how they value each part of a particular scene). The United States Forest Service and the Forests Commission of Victoria have given us a specific terminology and a clear structure for understanding and explaining the aesthetic values of the landscape,^{1,2}

The goal of this chapter is not simply to introduce you to these principles -for you will already have learned most of them unconsciously -but to identify and label them so that you can apply them consciously.

Just as the ecological consequences of ploughing downhill on a steep slope can be predicted, so the visual consequences of building a road from point A to point B can be predicted. Knowing the consequences, we can look for alternatives -if the road were to go from A to C and B and still achieve its purpose, how would the visual values be affected? Armed with the principles outlined in this chapter, you can make recommendations that preserve or enhance values with the same certainty that you can make recommendations that increase the economic values of an area.

Landscape has been defined as:

[Land that] is described or seen in terms of its physiographic" and environmental characteristics. Landscape varies according to these characteristics and according to the historical impact of man on it. Landscape is a reflection of dynamic, natural and social systems.³

Landscape refers here to the visual sense or the look of the land. Throughout, the manual, landscape is considered as a "visual resource" that can be considered along with other, more tangible, resources such as water, minerals and forests.

[* Physiography is a systematic description of the physical nature of objects of physical geography.]



Basic Concepts

Three concepts are valuable in understanding our visual reactions to broadly natural landscape. Although they operate simultaneously / they are best explained separately.

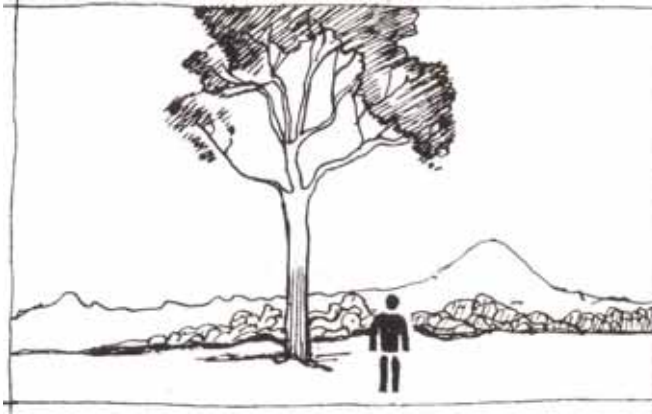
- *Characteristic landscape* – Landscape has an identifiable visual character, which may be described in terms of the composition of any segment of the landscape viewed at one time.
- *Landscape variety* – A landscape rich in natural visual variety tends to be more appealing than an unvarying landscape.
- *Alterations* – It is desirable to preserve the visual character of a landscape; therefore introduced, culturally imposed alterations in the landscape should be designed to borrow from the visual character of the surrounding landscape.

Characteristic landscape

When you view a broadly natural landscape, you become aware that it has an individual character. This character is the overall impression created by the unique combination of visual features in the landscape. It is created by, amongst other things, the configuration of the land, the pattern and colours of the vegetation, soil and rock outcrops, and the scale of the individual parts of the landscape. Once the overall character of a landscape has been described, the extent, form and pattern of forestry operations that would be most harmonious in that landscape can be defined.

Compositional type

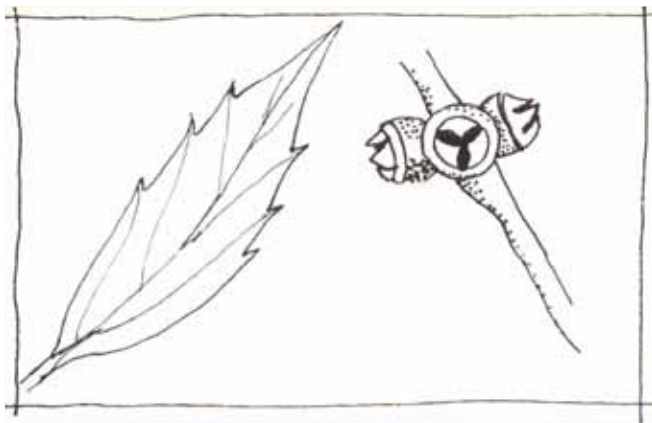
Although each landscape has distinctive characteristics that make it unique, all landscapes can be broadly categorised into "compositional types". These are dependent upon the observer's location in the landscape, the viewing conditions, and the scale and form of the viewed landscape. Seven compositional types are referred to in describing the character of a particular landscape.



- **Feature** One or more feature objects in a scene stand out from their surroundings. A snow-capped mountain or a lone tree dominating the scene may provide a "feature" landscape.



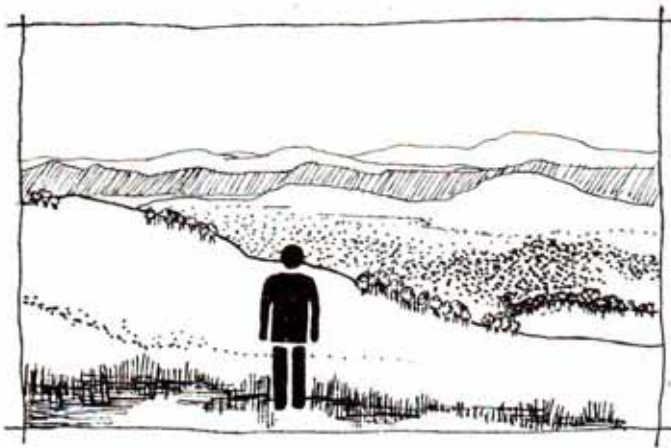
- **Enclosed** A space or opening is enclosed by continuous groupings of objects. A paddock or lake surrounded by "walls" of trees is an enclosed landscape.



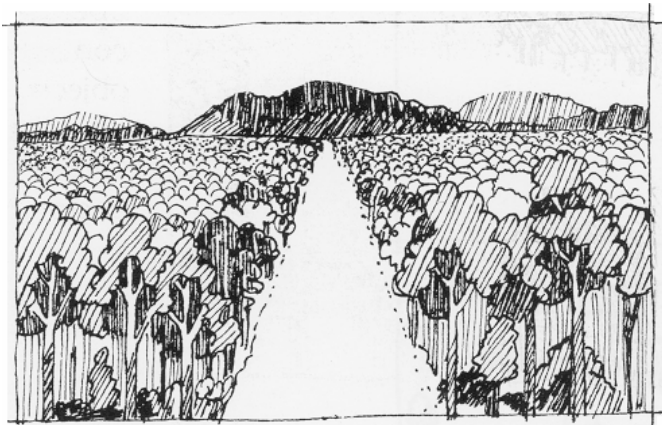
- **Detailed** Small objects in the immediate foreground provided the character of the landscape. Such detailed viewing requires the observer to walk slowly or stand still.



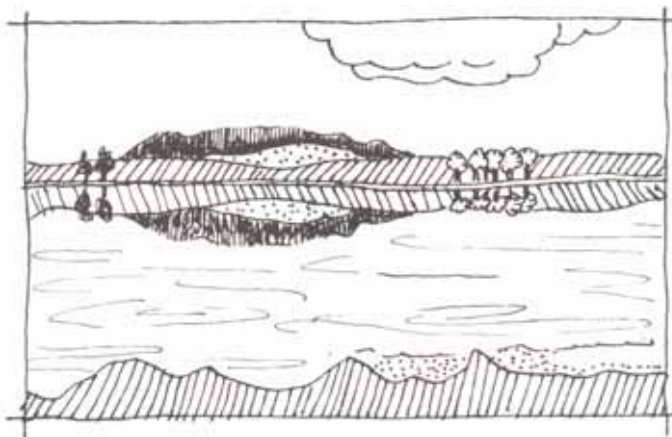
- **Canopied** Trees overhanging a roadway, or other objects that form a ceiling, create a "canopy", restricting the viewer's field of vision. Such small or "micro" landscapes are more readily experienced on foot or at low car speeds.



- **Panoramic** With wide, sweeping views of the landscape there is little sense of boundary or restriction. Foreground or middleground objects do not block the view of the background. Typically, this compositional type has views to a large area or a 'macro' landscape.



- **Focal** The observer's eye is drawn towards an end-point in the distance where landforms, trees or waterways converge. River gorges and roads through forests are often viewed in this manner. A feature hill at the end point of convergence emphasises the focal landscape.

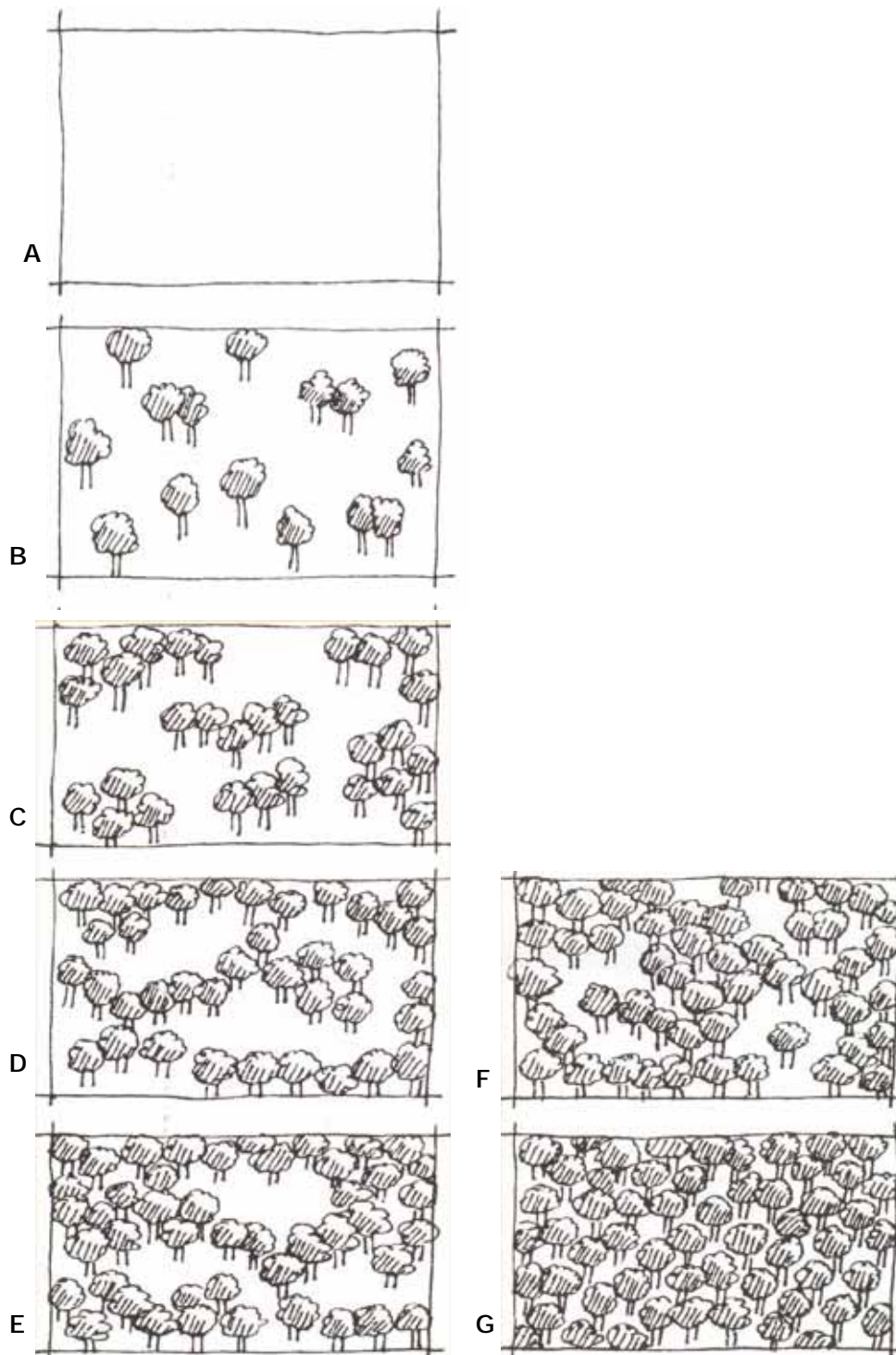


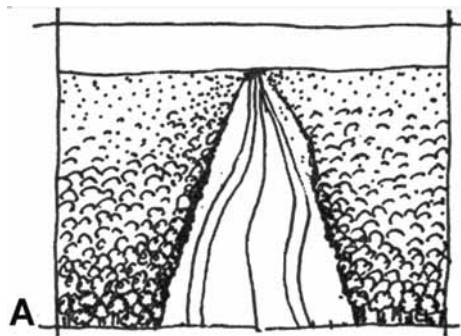
- **Ephemeral** A transitory change in nature gives the landscape a different appearance. The change may be in the light (shadows, direction of lighting, reflections in water), in the weather (clouds, fog, snow, sunsets), in the normal placement of objects, (after floods or high winds), or even in sightings and signs of animals (tracks, nests, webs).

Landscape variety

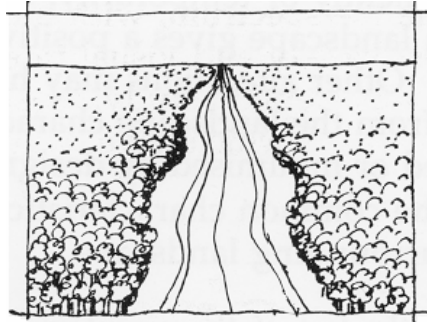
Variety or patterned variations in a landscape are generally considered desirable, while uniformity is generally deemed monotonous. But there are many gradations between the two extremes of a featureless grassland plain and a dense forest (neither of which offers variety).

The sketches below illustrate the spectrum, with the central three sketches offering the greatest variety and visual interest. When these sketches were used in a perception study, most people expressed a preference for C and E, which have a roughly 40 to 60% ratio of trees to space.

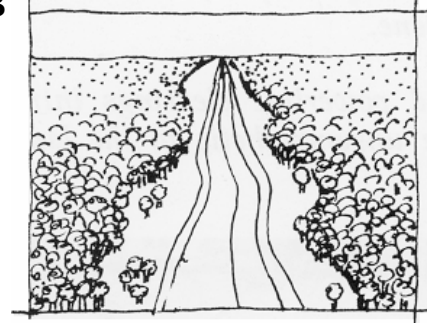




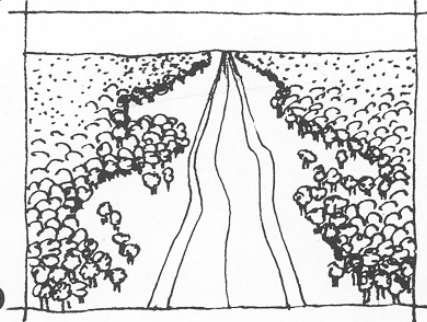
A



B

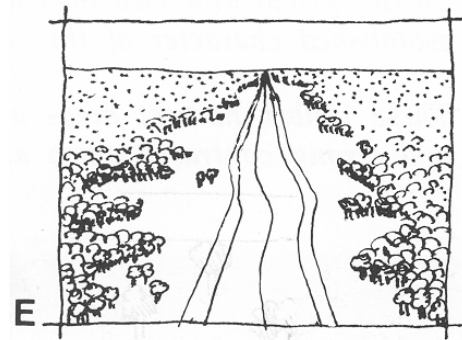


C

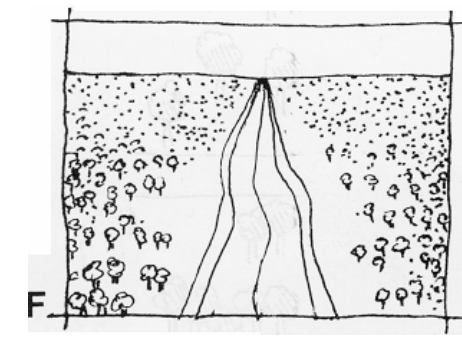


D

Travellers along a highway are affected not only by the aesthetic characteristics of individual sections, but also by the total effect of each section viewed in sequence. Here again the intermediate sketches C and D illustrate the most desirable degrees of variety. However, if the travel route is long, a combination of characteristics (such as D, A and F) may result in greater variety for the whole experience. To avoid monotony, types A and F should only be used for small portions of roadway.



E



F

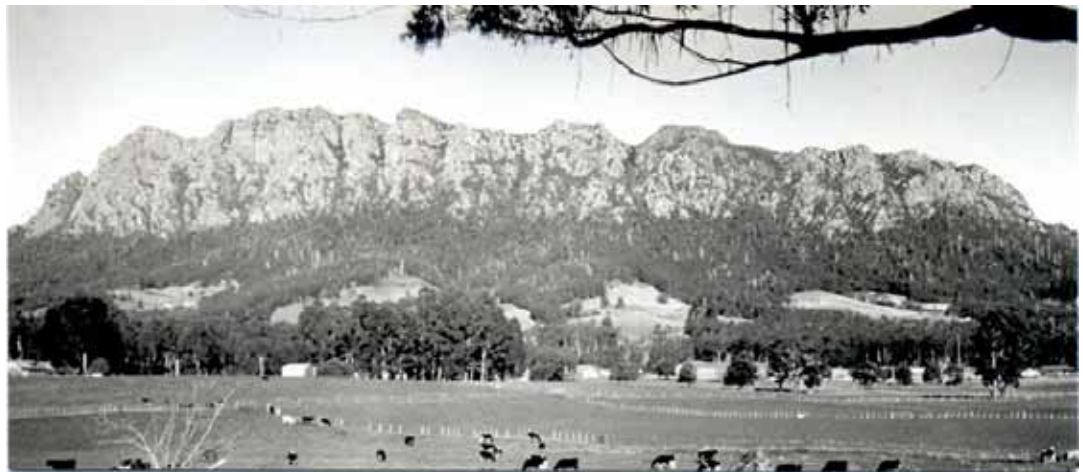
This highway offers visual variety for the traveller.



Alterations to the characteristic landscape

As a general rule, the established character of a landscape should be retained as far as possible. The landscape will often be visually altered when natural resources (e.g. minerals, wood, water) or cultural resources (e.g., roads, dams, towns, agriculture) are required by society. The associated visual changes to the landscape will necessarily alter the characteristics of the landscape to a lesser or greater degree, either permanently or temporarily. An alteration that adds visual variety to a landscape gives a positive visual emphasis to that landscape. Other alterations may have a negative impact where they deviate from the landscape character. Negative impacts can often be avoided or minimised by designing the alteration to borrow from the common characteristics of form, line, colour and texture in the surrounding landscape.

Small agricultural clearings at the foot of the mountain blend well with the established character of this scene.



These timber harvest areas' and the powerline clearings introduce harsh lines and strong contrast, which are unsympathetic to the landscape character.



Conceptual Framework for Analysing Landscapes

Tourists and recreators enjoy and appreciate the forests of Tasmania for their broad aesthetic values, including the interpretation of the flora and fauna, as well as for the less definable benefits gained by simply experiencing nature at close quarters. Of all the sensory impressions the visitor to the forest receives, the visual is probably the strongest and most enduring.

The viewer's first experience of any forest scene will be emotional and subjective. But as the viewer continues to observe, his or her understanding of the forest will grow as more details are seen and appreciated.

The land manager who is charged with planning operations has the same simple experience in the forest, but this is insufficient to give insights into the likely visual impact of proposed operations. Even lengthy periods of viewing will not be of great value unless the planner is armed with a conceptual framework for analysing the landscape. Such a framework is introduced here, along with some useful terminology. These aspects describe the:

- **Dominance elements** inherent in the landscape
- **Design principles** that directly influence how a landscape is viewed
- **Variable factors** affecting the viewing situation and conditions

(Figure 1. shows integration of these aspects in a theoretical framework of viewer's perception of the landscape)

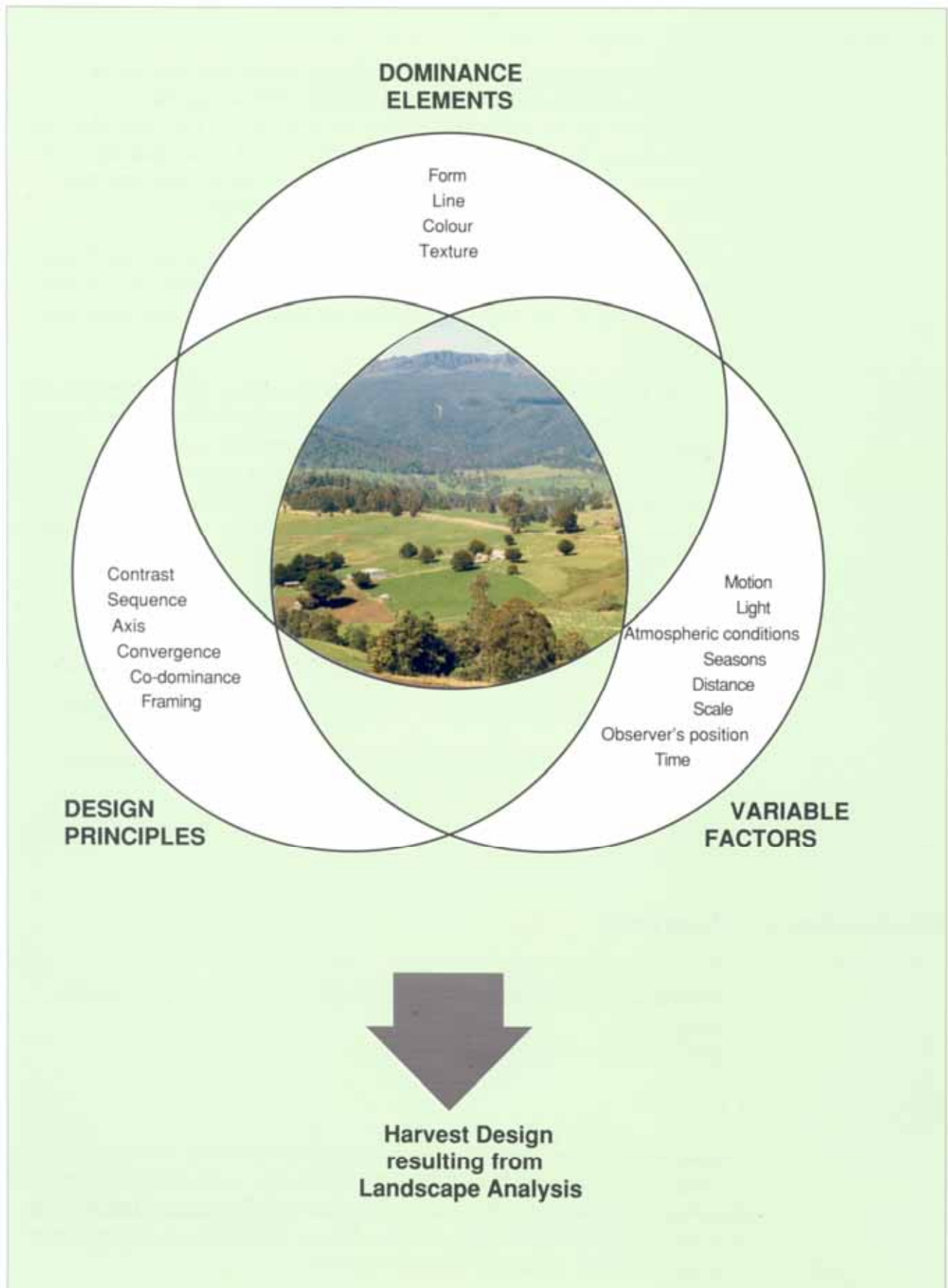
Dominance elements

Four elements compete for visual dominance in any landscape:

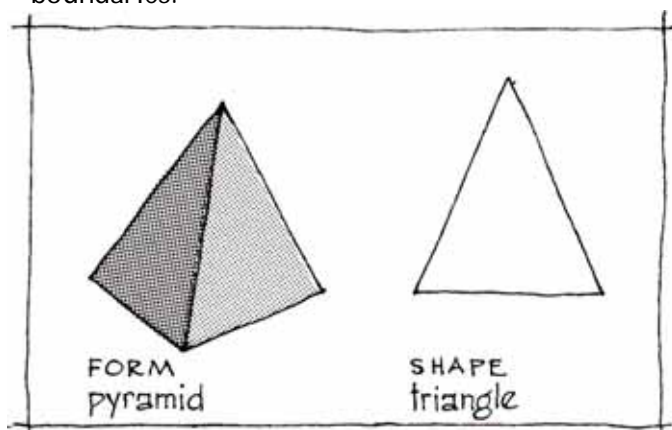
- form
- line
- colour
- texture

These elements are usually present in all landscapes, but the degree to which they dominate a particular landscape will vary widely. The dominance elements are used to describe and evaluate landscapes and proposed alterations in terms of their basic visual ingredients and the relative strength of each element.

Figure 1. Conceptual framework for the landscape



- **A Line** is a series of points in close sequence. A form seen in silhouette is defined by lines, although the line can be considered separately from the form. Lines are also defined by the intersection of two planes, such as the adjoining faces of a mountain meeting at a ridge. In the landscape, lines are created by ridgelines, timberlines, shorelines, power lines, and so on. They are also found in tree trunks, roads, rivers and vegetative boundaries.



Form seen as a pyramid, while one side appears as a triangle

- **Form** is the mass of an object (or of a number of objects that appear unified). If seen in only two dimensions, we call it "shape". However, most landscape objects are seen as three-dimensional forms, especially when seen by an observer from more than one viewpoint.



Line is seen here in the skyline, road line and numerous rock-lines

- **Colour** makes it possible to differentiate between objects with a similar form, line and texture. Distant colours are often muted by a bluish haze caused by dust and moisture in the air. Colours in the foreground are stronger and more dominant. This colour variation is especially obvious when the same object is viewed from different distances.

(see photos on following page)



The seasonal colour of this forest on flowering wattle makes a strong pattern against the surrounding eucalypt canopy

- **Texture** refers to the visual structure of the surface of the landscape. It ranges from fine and smooth in the background to coarse and rough when in the foreground.

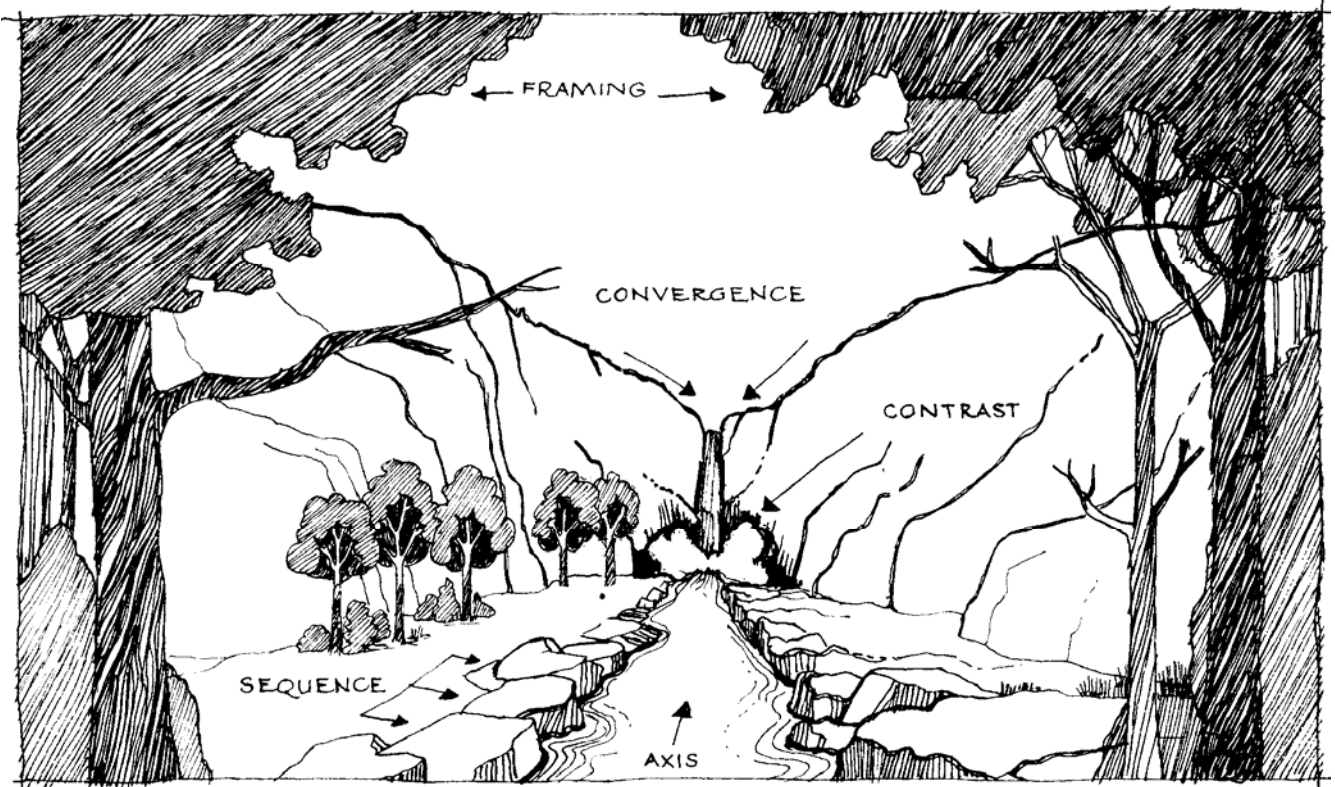


The coarse texture of the foreground stags and forest canopy is smoothed to a fine texture in the distant landscape

Design principles

The design principles affect the visual dominance of the form, line, colour and texture in a landscape. They may act independently, or interact to determine the overall visual composition of each landscape scene. The principles are:

- contrast
- sequence
- axis
- convergence
- co-dominance
- framing



• **Contrast** This is the primary factor controlling whether alterations or additions become apparent in the landscape. If they do not create visual contrast, they are simply not seen; if they create a strong contrast, they become immediately apparent to all viewers. Two possibilities stem from this:

Firstly, with landscape that is high in visual variety (resulting from the visual interaction of vegetative pattern, landforms and waterforms), alterations can be designed to give continuity to the line, form, colour and texture of the characteristic landscape. This will minimise visual contrasts, and changes will blend with their surroundings.



Landscape with high visual variety where changes are more easily visually absorbed

At the other extreme, landscapes with low natural visual variety are highly susceptible to the visual impact of alterations. Newly cleared coupes, for example, create differences in colour and texture that contrast strongly with the surrounding landscape. The most effective way to limit visual impact when a landscape has low visual variety is to gradually but deliberately introduce new lines, form, colour and texture into the landscape over several stages.



Landscape with low visual variety where recent coupes are strongly visible

• **Sequence** Sequential repetitions of texture, line, form or colour in a landscape draw a viewer's attention from one point to another, towards a focal point in the distance. A good example in nature is a river valley seen leading away from the viewer: from the watercourse in the immediate foreground, the viewer's eye is drawn to the middleground and finally the background.



This line sequence, with sections of the river appearing intermittently, is emphasized by the valley walls leading the eye down from both sides. The sequence leads the eye to the distant point, thus intensifying its visual dominance and lessening that of others.

- **Axis** An axis is a straight line that strongly and forcefully catches and directs the viewer's eye. It sometimes frames a distant object. It occurs occasionally in nature, such as where a long, straight section of a river draws the eye to a distant point. As the area where the axis ends is highlighted, a forest manager should give it special attention.



An axis is often created by roads, rivers, transmission line clearings and plantation grid rows.

- **Convergence** Although related to axial viewing and framing, this principle differs in that it results from the convergence of lines in the landscape, generally arranged in triangular configurations. A typical example is of sloping ridgelines descending from both sides of a mountain intersecting with a river valley floor.



The viewer's attention is drawn to the point of intersection. This point is therefore a sensitive area in the landscape, requiring specific management attention.

- **Co-dominance** When two or more features in a landscape are nearly identical, they compete for dominance. Unlike the other principles, co-dominance is a "negative" aspect, as the competition among features distracts and confuses the viewer.



The existing two clearings at the right compete visually. The effect would however be more distracting if they had very similar size and shape. Further clearings should maintain the characteristic flow down the slopes but vary in position and scale.

- **Framing** “Walls” of trees, cliffs or hills in the immediate foreground frame and give boundaries to the view. As with *Axis* and *Sequence*, the eye is led to focus on an area. Though framing does not create a long, straight, defined viewing line, it is typically simply formed by “walls” and a “floor”, framing an area in the distance.



This principle is often used by photographers to accentuate a feature in the landscape

Variable factors

Eight factors affect how the dominance elements are seen:

- motion
- light
- atmospheric conditions
- season
- distance
- scale
- observer position
- time

These factors also help identify the most critical place or time at which to judge the impact of a proposed alteration. In analysing the influence of the variable factors on visual dominance, it is important to select the viewing conditions that most strongly reveal the contrasts in the landscape. The most successful design solutions minimise the negative impacts of alterations even when seen under the most sensitive conditions.

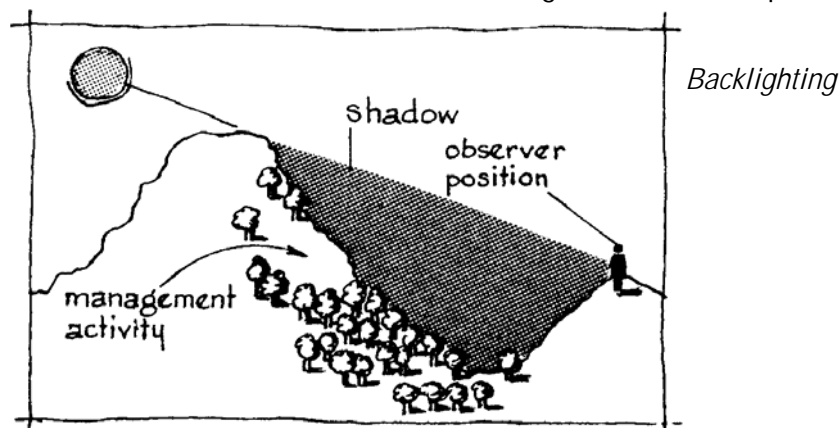
- **Motion** can be the most powerful source of visual dominance. The tumbling waters of a cascade or the dancing flames of a campfire offer a fascinating variety of natural motion. Clouds, rain and lightning add motion to the outdoor scene. The human eye can detect motion at astonishing distances and also at the extremities of peripheral vision, where little else is noticed.



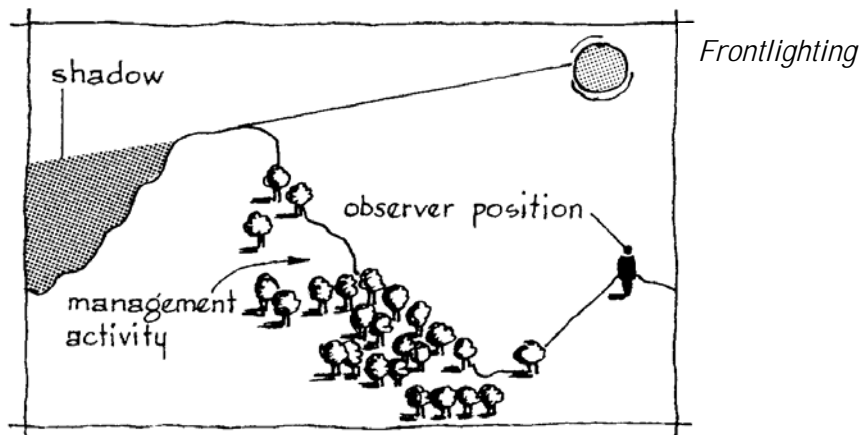
Motion in a landscape attracts and holds the observer's attention, and can sometimes distract it from management activities

- **Light** The visual impact of proposed and existing landscape objects varies with the way they are lit. The intensity and direction of light on the landscape changes during the day and throughout the year as the sun's position changes relative to the land surfaces. Sunlight striking the land surface at different angles changes the degree of visual dominance of the elements in a landscape. Three lighting directions should be considered: *backlighting*, *frontlighting* and *sidelighting*.

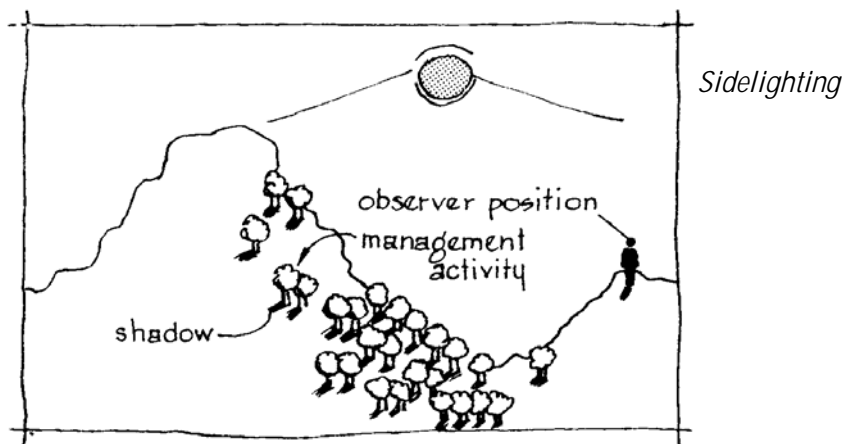
— *Backlighting*, which usually occurs in the early morning or late evening. *Do not evaluate landscape elements in backlight.* As the sun is in the observer's eyes, details are obscured, and the top and outside edges are emphasised. This reduces the visibility of natural variations and introduced changes in the landscape.



— **Frontlighting**, from sunlight coming from behind the observer's back. The landscape is flooded with a strong light, objects become flattened and two-dimensional, textures disappear and colours fade. The effect is to reduce the full visual impact of an activity.



— **Sidelighting**, which often occurs before mid-morning and after mid-afternoon. Light comes low from the observer's side, causing long shadows, which can make additions or changes to the landscape appear smaller. However, shadows can create a dominant line effect not apparent before, which gives the activity added depth and strength. It is therefore usually best to evaluate visual impacts when the landscape is side lit.



- **Atmospheric conditions** The atmosphere and weather strongly affect how the dominance elements are seen. The visual strength of form, line, colour and texture is lessened by clouds, fog, haze, rain, snow, hail, and wind motion. Often the main feature is hidden and the subdued contrast of alterations. Do not evaluate a landscape during these conditions. Skies in Tasmania are more often clear in summer and autumn.



Fog and cloud hide the logging areas and powerline, which are seen clearly on a fine day.



- **Season** The seasons of the year can provide unusual effects for evaluating management practices. For example, flowering wattles and other spring colours can increase the visual prominence of forms in the landscape, while snowfalls in high-altitude areas strengthen contrasts between cleared and forested areas. Choose such sensitive times of the year to evaluate visual aspects of landscape and proposed changes.



A light snowfall accentuates the contrast between forested and cleared areas

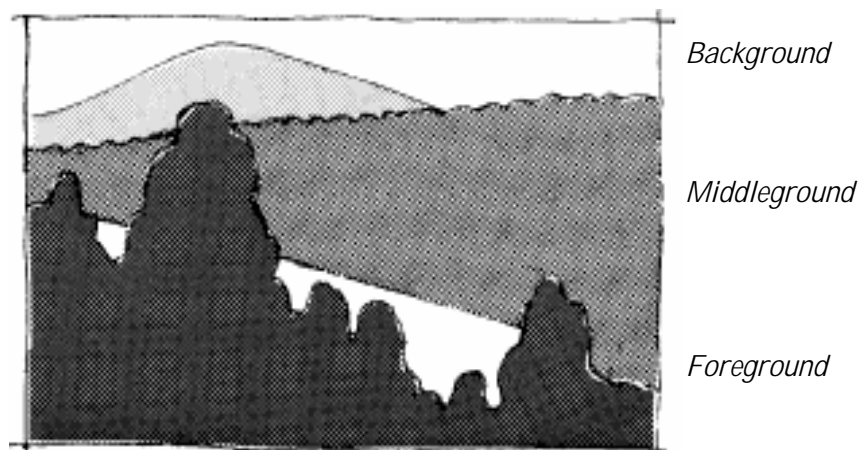
- **Distance** can affect our perception of the landscape. As distances increase, colours tend to become muted and textural variations in the landscape become less obvious. The same object viewed from increasingly greater distances will occupy a progressively smaller portion of the observer's field of vision. The distance at which an object can no longer be identified depends not only on its size but also on how strongly it contrasts with its surroundings.

The landscape can be viewed and described in terms of three distance zones:

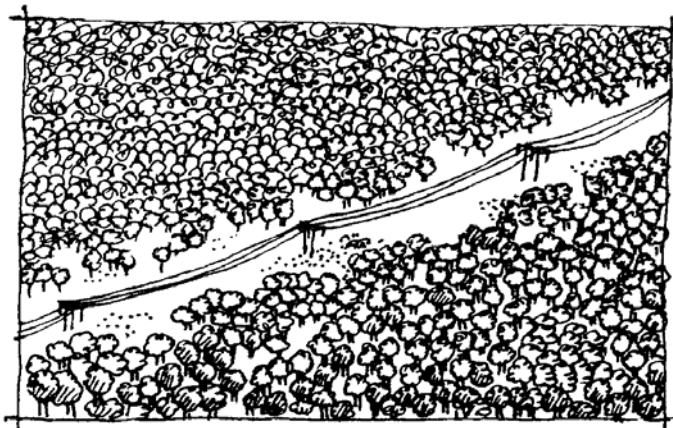
— **Foreground**, between about 0 and 1 km. Colour and textural details of leaf patterns and boughs of trees are visible in the foreground.

— **Middleground**, usually 1 to 5 or 6 km. The canopy of the forest appears as a strong textural surface on the landform.

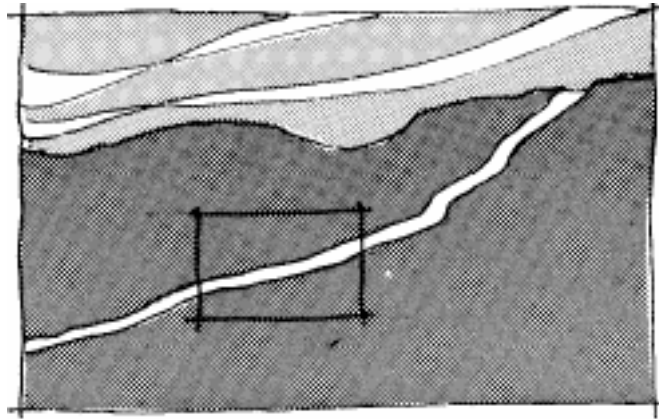
— **Background**, generally from 6 km to infinity. Textural aspects are usually weak, with forms and lines becoming most important.



As the observer travels to or away from the scene, the background will become middleground or foreground, and vice versa.



When this powerline corridor is seen from a few hundred metres away, the varied texture and shape of the irregular clearing and "feathered" edge provide visually acceptable variety.

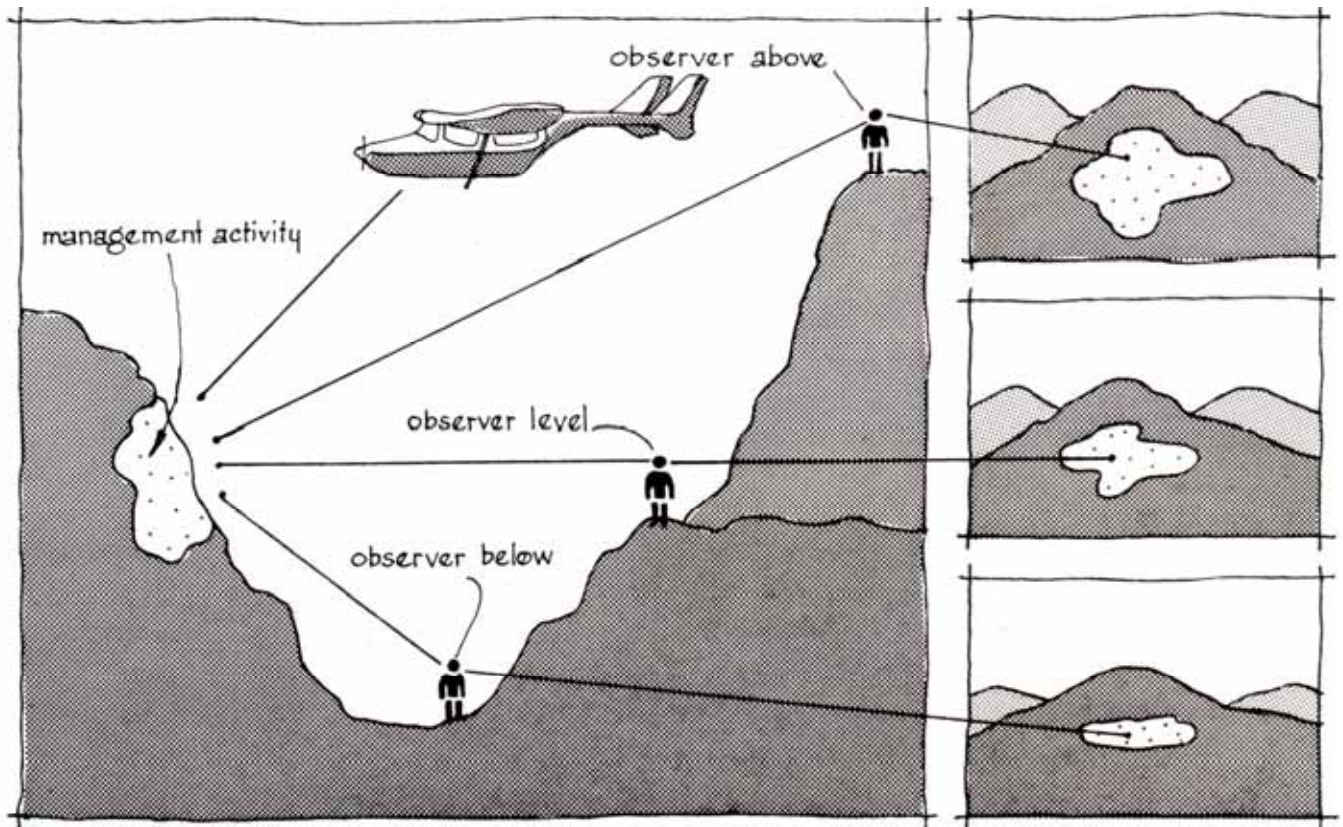


When the same corridor is seen from several kilometres away, the line of the corridor relative to the rest of the landscape is quite different. What before was visually acceptable variety now becomes a monotonous high contrast against a landscape of a different colour, texture and form

The relationship between a management activity and the characteristic landscape must therefore be evaluated from foreground, middleground and background distances.

• **Observer position** This is the elevation of the observer relative to the object viewed. There are three important observer positions to consider:

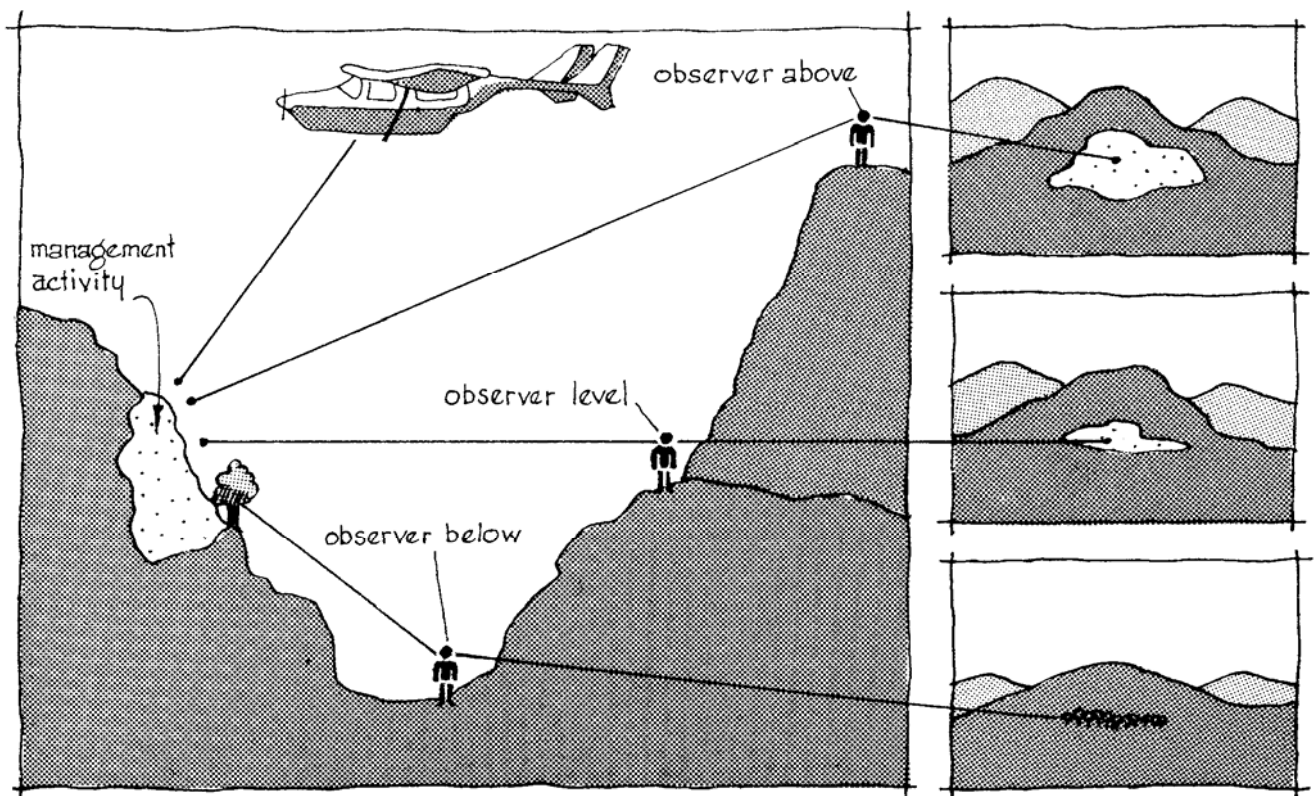
- *observer above*
- *observer level*
- *observer below*



The apparent size of a management activity depends on the angle between the viewer's line of sight and the slope being viewed. As this angle nears 90° (as for the "observer above") the activity appears larger and the contrast between it and its surroundings becomes more marked. The observer's position relative to the activity is therefore critical.

Management activities that alter a landscape can easily be screened from observers in some positions, but less easily for others. The sketch below shows the effect of retaining a strip of tall trees at the base of a timber harvesting operation: much of the activity is screened from the "observer below", so the activity appears smaller than it does to an observer on the same level as the activity. The trees screen very little of the activity from the view of the "observer above".

Screening effects of retained tall trees



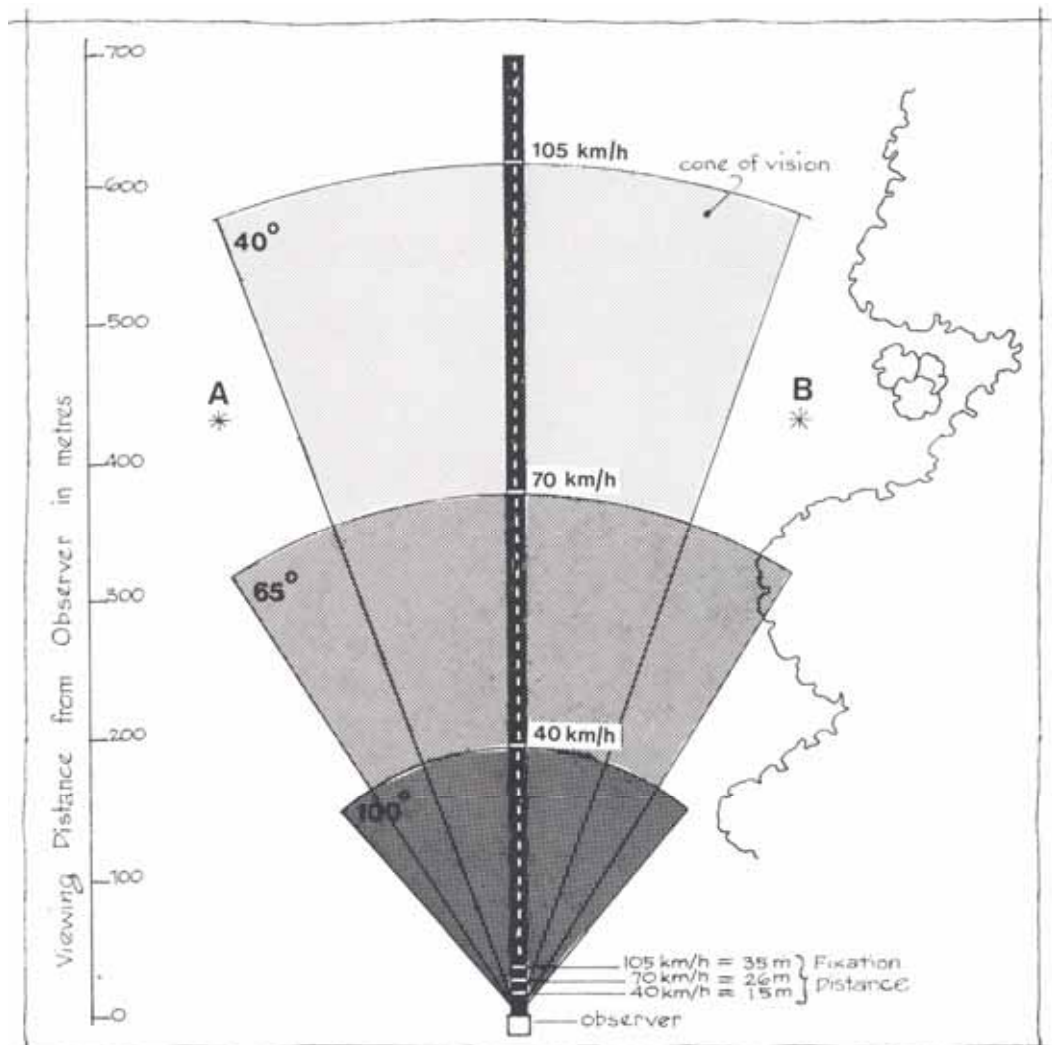
- **Scale** This is the size of a part relative to the whole. The scale of an object varies with the viewer's distance from it and with the actual size of an object in relation to its surroundings. The first of these aspects is effectively explained in the "distance" concept described earlier. With the second, the scale of an introduced change should be related to existing changes or natural patterns seen in a landscape. Use these as a guide wherever possible, so that changes will be more visually compatible with the characteristic landscape.

- **Time** The longer that observers view a landscape, the greater their appreciation of its visual characteristics, and the greater their awareness of any alterations to that landscape.

If visitors spend five minutes or more at any viewpoint, they recognise not only major contrasts in the scene but also secondary or more subtle contrasts. As time increases, lighting and other variables may change, adding gradually to the viewer's perception of a landscape.

A landscape viewed in glimpses from a moving vehicle will not be seen in detail: only the most dominant forms, lines, colours and textures will be perceived. As speed increases, foreground detail blurs and vanishes, and the observer can see only distant objects with any clarity.

An object at point A or B will be seen in some detail by a driver travelling at less than 70 km/h, but be barely recognised by a driver travelling at more than 100 km/h. The minimum distance that the driver can focus upon depends on travel speed; this is called "fixation distance".





References

- (1) United States Department of Agriculture, Forest Service (1974) "National Forest Landscape Management", Vol. 1. Agriculture Handbook 434, Washington, D.C.
- (2) Williamson, D. N. and Chalmers, J. (1982) Perceptions of Forest Scenic Quality in Northeast Victoria. Forests Commission of Victoria, Melbourne.
- (3) Williamson, D. N. (1979) "Scenic perceptions for Australian landscapes". Landscape Australia, 2 (April): 94-101.
- (4) Laurie, M. (1975) An Introduction to Landscape Architecture. Elsevier, New York.

