

# FORESTS IN THE LANDSCAPE

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## SYNOPSIS

*Indigenous or exotic forest contributes very largely to the appearance of about one-fifth of New Zealand's surface area. The sources of visual impacts in forestry are analysed, and attention is drawn to aspects which are important in areas markedly exposed to public view and usage. The implications of accepting public use and visual amenity as factors for consideration in multiple-use forestry are examined and discussed.*

## INTRODUCTION

As an item in the landscape scene, forests may be observed from a multiplicity of viewpoints. The economist, forester, ecologist, conservator, recreationist, and landscape architect will all see different things in the same forest landscape. These different responses emanate, fundamentally, from the attitude of the observer. As his attitude changes, so does the response to what is seen. The fact that the response of one observer, oriented to one attitude, may be mutually exclusive to the response originating in a different attitude, does not negate the validity of these different responses.

The problem comes when the relative merits of these responses have to be evaluated, prior to an integration aiming at the best of all worlds. Even the choice of the standpoint from which these merits are to be evaluated involves the acceptance of an attitude, which influences the result of the integration. Therefore it behoves the specialist involved in a multiple-use study — which modern forestry demands — to state his specialist aims and attitudes first, knowing full well that their interpretation will vary with the reader, and their acceptance upon the prevailing attitude overall.

## SOURCES OF LANDSCAPE IMPACT

The visual character of any landscape depends upon three basic features:

- (1) The land contours, the relative scale of their variations, and the position of the observer within them.
- (2) The land-use pattern and, through it, the type and pattern of vegetation and intervening open space.
- (3) The prevailing colours of the landscape, whether man-made, or due to the basic geology, soil and vegetation.

The variations in these three fundamentals control the psychological response of man to what he sees, whether these

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changes occur when moving from district to district, or happen on the same piece of ground after a radical change in the land-use pattern.

Although there are wide differences of opinion upon what constitutes "good landscape" there is no doubt that certain principles do prevail, since similar situations evoke similar responses from different individuals. Primarily it is the degree of contrast or unity, and of general congruity, which affects the response to a visual scene, considered as a visual scene alone.

The basic origin of topographical variation, one of our three primary sources of visual character, is the geological structure of the area, and the effects of climate, vegetation and time upon it. The scale of these topographical variations naturally differs from district to district, and as a result the scale of any introduced contrast or unity must vary with the district too, if our desirable aim of visual congruity is to be achieved. Therefore, if we consider forests only as an element in the visual landscape, it will be appreciated that a scale of planting suited to one district would not necessarily be suitable to another, if visual congruity is desirable.

Perhaps I could illustrate this point by referring to the area around Lake Taupo. The plateau from Waitahanui southwards is fundamentally large-scale rolling country, where large-scale planting is perfectly in accord with the landscape. If, for reasons of visual amenity, it is desirable to introduce a degree of contrast and relief, then any open space or change of species provided to achieve this should also be relatively large-scale, and not small-scale, out of character with the district.

But the area around Motuoapa, near the mouth of the Waimarino River, is of much smaller-scale landscape, containing numerous hillocks and knolls which, visually, are quite important. The visual character of this area, as a result, is totally distinct from that of the plateau. But if the same approach to planting were to be made here as on the plateau, this distinctive character would be lost. To maintain this character, a much smaller scale of planting is desirable, having small-scale contrasts of species, or of trees and open space. Accentuation of this small-scale character creates a distinctive district environment, completely in accord with the underlying landscape, but a pleasing contrast to the area further north, rightly handled with blanket planting.

It follows from this discussion that my philosophy as a landscape architect would be to seek the development of a landscape within its existing framework. In other words, what we see upon the ground, ideally speaking, should be a response to the basic features which exist within the landscape — what could be called, in its very widest sense, the "site ecology". This would apply as well to the other considerations affecting visual character which I mentioned — land-use pattern, and landscape colour. The use of natural boundaries, determined from site studies of all types, enables the landscape scene to be a response to the natural environment, and the visual result to be as much part of the ecological response as is the

natural community. Crowe (1966), Hackett (1966) and Miles (1967) discuss these matters in greater detail for readers who wish to pursue them.

I am fully aware that these concepts are ideals, but, even though they would be watered down in practice, owing to greater concern for other, more practical, factors, it is the adherence to them which would ensure landscape unity and congruity in the eye of the beholder, and the perpetuation or creation of local distinctiveness as opposed to an all-pervading sameness.

In fact, it is not too greatly divorced from practical application; concern for the basic ecology is part of the forester's own approach, selecting species for sites and in many other ways. However, this analogy is rather narrow, for the ecological analysis can also serve as a method for predetermining the health and stability of the whole landscape, or the forest within it. The landscape is a close-knit community, with many inter-relations of plants, animals and insects to one another and their habitat.

In large-scale afforestation the temptation to ignore small variations in the site can be well understood. Nevertheless, it is the recognition and utilization of these areas which offers us the opportunity to obtain landscape variations or to encourage a wider range of wildlife. The economics of simplicity will mitigate against these considerations, but there are occasions when this concern must be overridden, if we are to be concerned with forests *as landscape*.

## VISUAL SIGNIFICANCE AND FORESTRY

In New Zealand's conditions of low population density, the fact that the visual character of almost 25% of our land area is due to its being covered with forest is less important than the relationship of this land area to the traveller, on main trunk roads and the like. The significant area is that portion which is seen or used by the ordinary public, and it is here that attention to the landscape should be concentrated.

It was pointed out in the last section that the extent of visual impact depends on the basic topography, and the viewpoint of the observer within that topography. It is because of this ever-varying controller that satisfactory rules of thumb cannot be developed to meet all situations. Ideally each case should be thought out from first principles. In my own studies in the Lake Taupo area, I found that some acreages tentatively earmarked for amenity purposes can be reduced, with no detriment to the environment, whilst in others the boundary line, when considered from a number of viewpoints, needs amendment if it is to be visually effective.

Another example could be the N.Z. Forest Service Timber Sales Manual. The instruction here is that strips of forest, 10 chains in width, should be excluded from felling where aesthetic values require it. The basis of this is that strips of native forest less than 10 chains wide tend to deteriorate because of exposure. But this blanket instruction could be

quite inadequate — or even wasteful of resources — as it stands. Topographical considerations may demand vastly more native forest to be left if this is to be meaningful, and not just a visual nonsense. On the other hand, if this extra is simply impossible at the required scale, then a total change of scene — ignoring the standard 10 chains reserve — may be the best solution to the problem. The real answer lies in assessment of the problem in its context, and from the standpoint of the basic principles of aesthetic values.

Visually significant areas include the obvious ones such as access routes, picnic and camp sites where provided, ridge-lines, and lookout points, but also include transition areas between one type of environment and another — forestry and agriculture, and along stream sides, where people are likely to be attracted because of the contrast itself. Forest planting is equally as important as felling in its impact upon the visual scene, from both the aspect of the detailed internal view as well as the distant scene. One's thinking must be projected to the future, to the landscape which is going to result from your planting. The extent of shut-off, due to planting at ridge-lines and existing view points, should be as clearly foreseen as is the potential for making new landscape which is being presented, or the opportunity for selecting potential recreational-use areas for the future.

As has been stressed, the physical area involved in making provision for amenity considerations rests fundamentally on the basic topography. Areas seen only from the flat — either within forest, or as an edge effect — can be quite small in extent, for visual or physical penetration is quite slight. But where topography makes views from a distance the norm, then far more area and much more consideration of the implications are involved.

## PLANTING SHAPES

Perhaps the first of these considerations is the importance of the shape of planted areas, whether this comes from the juxtaposition of species having different visual effects, or from the boundaries to forest planting itself. In so far as this is a visual impact of increasing significance, from planting to felling, it is a matter equally as worthy of visual control, as is the introduction of industry into a residential area. When one considers that standards of appearance are slowly, but constantly rising, the visual standards currently accepted overseas in forest planting should not be decried out-of-hand as impractical for New Zealand.

From the landscape point of view, planting shapes should, ideally, conform with the basic topography, rather than contradict it. Planting in this way can actually enhance land form, and so provide an unexpected interest. But planting seen from a distance which bears no relation to the underlying shape can be a foreign element in the landscape, regarded in all truthfulness as a piece of green sticking plaster on the

hills. Sensitivity to the topography, or geology, or soils, reflected in the planting, is not only more acceptable visually but may be justifiable on a basis of species selection for growth rate. The relatively steep-sided valleys, containing streams on the south side of Lake Taupo can, in fact, be given dramatic visual emphasis by planting them for autumn colour, right up to the level of the plateau, where the change of species would be acceptable visually as well as economically. This, moreover, is equally acceptable within the context of "scale" in the landscape, which was discussed previously.

However, external planting shapes are commonly controlled by the boundary lines of the block of land to be planted, so that its visual impact is normally the resultant of legal edges, rather than topographic or edaphic edges!

In an ideal environment, the landscape aspect should be considered when negotiating the transfer of land for planting. In visually significant areas mutual adjustment of boundaries with neighbours, to "fit" the planting to the landscape, could be worth investigation. Even where this is not done, a harsh planting shape, due to the boundary line, may be subdued by planting beyond it, with the adjacent owner's consent, or alternatively, by not planting full to the boundary along the total length. Areas not planted with main crop obviously cannot be left unplanted but if the area and the subsidiary planting are chosen with care and sympathy, they can provide an alternative habitat for wildlife, as well as visual adjustment. Variation in wildlife population is as much a desirable feature in the landscape as is relief from visual monotony, or from harsh and foreign shapes.

Equally part of these considerations is the visual effects resulting from choice of species, for species change can create shapes in the landscape equally as effectively as do edge effects. However, the sensitivity of the average observer is far less marked in New Zealand than in Europe, and this, as well as economic factors, mean that we are unlikely to meet the public reactions seen in Britain. There, the choice of conifers for planting in beauty spots has sparked off many major rows, some with considerable consequences, as for example, the Lake District Afforestation Agreements of 1936 and 1955.

To my mind, there are many conscientious — but misguided — attempts to "pretty-up" the boundaries of a plantation under the impression that it is more visually acceptable as a result. A straightforward block of conifers is far more honest and acceptable, in my view, than the falseness of one under pseudo-disguise, with a single row of silver birch around its flanks. When something should be done is when the size of the block creates monotony, or where its placement in the landscape produces foreign shapes. Then, attention to species change may be desirable. When this happens the job should be done thoroughly or left alone. Good landscape is *not* created on a straight road through radiata forest by equally straight rows of silver birch, or — even worse — by some basically horticultural tree, completely out of character with the area.

## VISUAL AMELIORATION

Parallelism of a straight road with straight edges of planting, at a uniform layback, may be economic and convenient, but it is the fundamental cause of visual monotony of many highways and of accidents as a result. Where road alignment is fixed, methods of combating the parallelism by variation of verge width — modulated, where feasible, in sympathy with the land form — or of tree form, by a change of species or age, are the major methods available.

However, the extent of this change must be in scale with the speed of the travellers to be visually effective (Crowe, 1960). A mere 5 second visual variation to the driver travelling at 60 mph requires 440 ft on the ground to accomplish it. It is appreciated that "patch-planting" to achieve this result will not be particularly favoured, but there are few other answers which are feasible.

Where a road responding to the basic landscape undulations has adjacent planting, the problem is much less, for occasional tree plantings at strategic points, suitably contrasting in form, shape, texture or colour with the basic forestry, may give all the variety needed. Attention to views and other features of the basic landscape, as suggested by Miles (1967), are fundamental, of course.

Where a more positive planting needs to be carried out, in selected areas of high visual quality, then it must be in scale with the speed of the traveller, the total area and the landscape, if an air of fussy pretentiousness is to be avoided. Again, the clue to *what* could be done should be sought in the basic landscape, and the species, or species mixture chosen should reflect the minor differences in site character. It is possible, by accentuating minor differences in this way, to create a positive character in what could have been featureless landscape, and even to upgrade the environment physically as well as visually. Areas requiring soil stabilization, for example, in the midst of otherwise stable land — erosion gulleys, etc. — should exploit the distinctive visual effects of the stabilizing species as well as its physical abilities.

## FORESTRY AS A VISUAL AND RECREATIONAL RESOURCE

So far my discussion has been along the lines of the normal concept of forestry in New Zealand — a vast crop growing on large areas of land. Much of what I have had to say will have its critics, orientated to questions of economics and simplicity of approach. But, in the words of the FDC Working Party No. 4 — "Only an excessively land-rich country can afford to practice single-purpose forestry indefinitely, setting aside large areas of land solely for timber production or watershed protection, or scenery preservation or recreation or wildlife conservation." We have to practise the integration of all these things, and as my ideals will be expected to bend, so should those of others.



It must be realized clearly that forestry is not only an industry, but it is a major constituent of the scenery, and as such, has the ability to attract people who come for recreation, in its widest sense of physical and mental relaxation. The weight which is given to this demand in New Zealand has yet to be firmly established and conditions here are such that to quote overseas figures is somewhat irrelevant. Nevertheless, my own studies demonstrate very clearly an almost logarithmic increase of interest in outdoor recreation throughout the world in the last 25 years. Just two, albeit atypical, examples will suffice: The U.S. Forest Service are budgeting for a \$50 million increase in expenditure on recreation development, including 28,000 new campgrounds between 1962 and 1972; the Canadian Forest Service spends 10% of its total budget on recreational services (both sources, Kilpatrick, 1962).

The real problem is to carry out the various integrations in such a way that the maximum benefit overall is obtained. This obviously has to be tackled through the concept of multiple use, which is the accommodation of a maximum of other compatible uses with the highest single-benefit use of land. The implication is obvious, that not all users are considered equally in management, and one use must be the primary one. As I see it, this also must imply some degree of classification, so that a variation is accepted in the primary use for different areas. I have already mentioned those areas where, in my view, the primary objective should be scenic or recreational usage. These areas — woodland edges, boundaries between two visually distinct areas, roads, pathways, ridge-lines, viewpoints, riverside areas, and areas seen from many viewpoints, etc. — need not be large in total extent, but they are areas where the visual and environmental aspects of both planting *and* felling have to be considered fully if forestry is to be considered an asset, and not a blot upon the landscape. The implication of reduced productivity standards in these areas, where production is not the primary objective, must also be accepted. The figure of 75% productivity, suggested for those areas earmarked for amenity in the Taupo district, in my view is a very acceptable one, which does not put amenity considerations at a disadvantage from the start.

The question can also be tackled in another way, as exemplified by the Dutch State Forest Service (Kloet, 1965). The sites selected for recreation zoning at the planning stage are normally within areas of poorer quality for silviculture, either due to local topography — which can make a site more desirable for recreation — or due to lower quality growing conditions. There is a latitude, an elasticity, in forestry as an industry, which allows small areas to be put to one side, or planted with presently unproductive species, for the benefit of the landscape as a whole. Whether the industry itself is willing to accept wholeheartedly the concepts and techniques of landscape planning in large-scale operations is, however, a vastly different matter.

Where the concepts do appear to be acceptable is in the operation involving mixed land use. In this matter the Landscape Section of the Dutch State Forest Service, under R. J. Bentham (1962) has led the world. Certainly, under the vast pressures on the Dutch landscape, it is a matter of either controls or anarchy. However, there is a 250 year tradition of careful integration of forestry and agricultural activities in Europe, of balance between planted and unplanted areas, and few have sought to apply these lessons to the New Zealand environment, with its single-minded approach. It is certainly the need for land which has forced the co-operation between the U.K. Forestry Commission and Ministry of Agriculture, in integrating new forests with sheep farming, even though the developments do combine practical requirements with visual considerations. But the greater the pressure upon our land for living and recreation, the more willing people will be to consider the whole countryside as visual landscape and worthy of concern for this end. The current use of forest parks in New Zealand as a slightly lower level national park is, of course, a major step in this direction.

People have to be controlled in their use of forest areas, and it is here where detailed design can play its part, equally as much as legislation and fences.

Through the agency of footpath systems, concentration of facilities, and similar methods, the Dutch State Forest Service concentrate the use of their forest areas to certain limited regions (Kloet, 1965). Studies by Mutch (1968), conducted in a series of forest parks in Britain, disclosed the fact that the most frequently demanded facilities are not necessarily the most expensive to provide. However, the lessons of over-use, now so glaringly obvious in many U.S. Forest Service visitor areas, should not be forgotten, and this goes back right to the choice of a suitable area, having also a suitable soil.

One of the joys of New Zealand, which at the same time is one of its tragedies, is the speed of growth, particularly of exotic species. The *continuity* of landscape, through its trees, is not part of the thinking of the average man. Trees are a crop of a man's lifetime; they come and go; what is not right now can be right next time. But the *attitude* which speed of growth creates is, in fact, a dangerous one for landscape appearance, however valuable it may be for the national purse. What I would like to do, however, is to suggest a long-term concept — the deliberate use of slow-growing species, specifically for visual purposes, not cropping, in areas of special scenic significance, as a visual investment for the future. Then perhaps we can regard trees and forests as a continuing element in the landscape, and upgrade our attitude to landscape appearance as a whole.

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