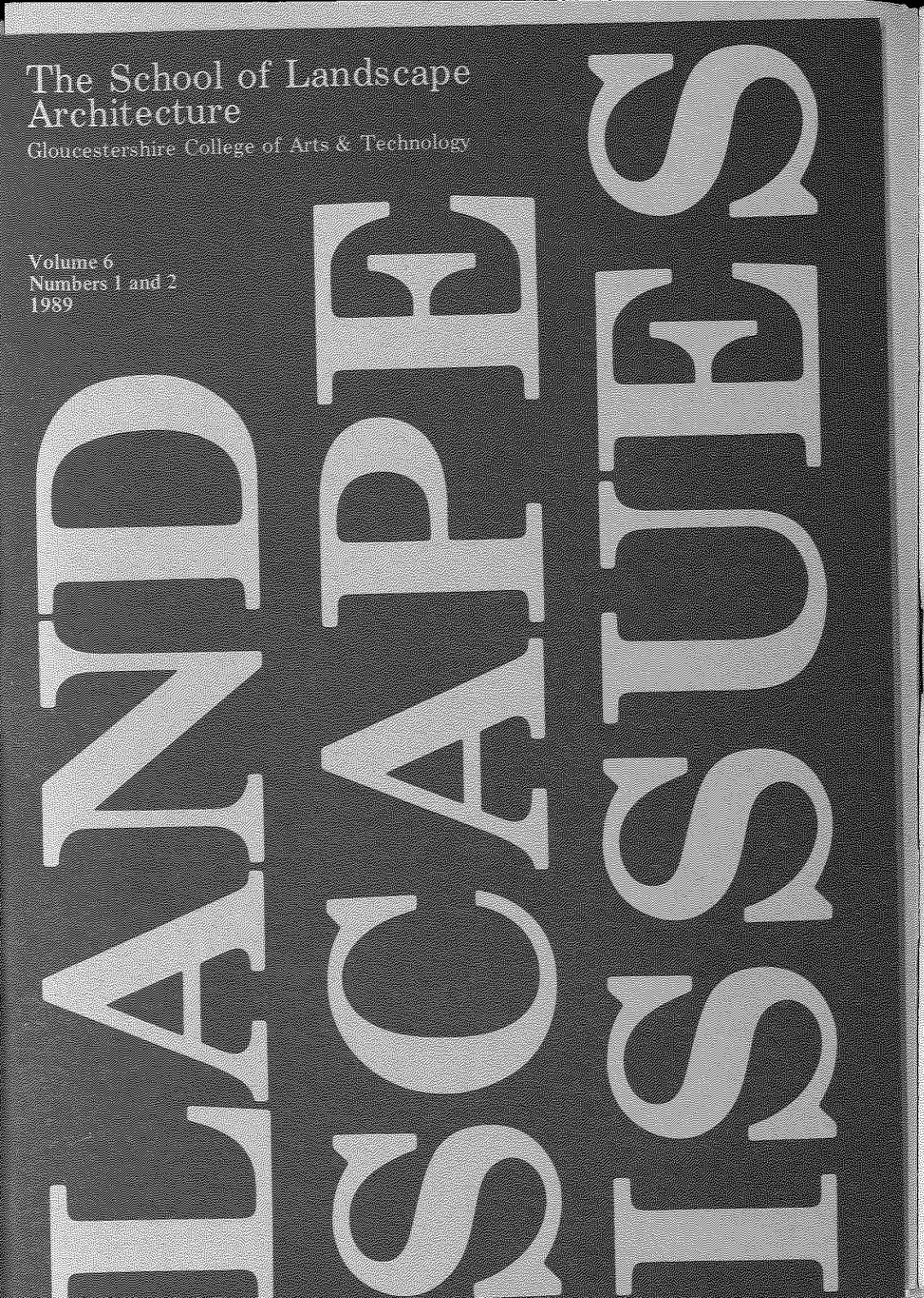

LANDSCAPE ISSUES

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Sub-editing : *Will Cretney, Michael Ivory*
Cover design : *Jill Steeves-Booker*
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School of Landscape Architecture,
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SCALING DOWN THE PROBLEM

FOR MOST LANDSCAPE ARCHITECTS, modelling a design suggests presenting a client with some form of preview of a proposed scheme. The word model here refers to a physical, scaled and usually static representation of the site and its features. Other types of model do exist of course — conceptual, stylised, computer, dynamic — each unique and offering a distinct view of reality. For the purposes of this short note, however, the term will be restricted to the tangible, three-dimensional model constructed from a range of materials: card, balsa, polystyrene, styrofoam, plaster, plasticene, sand, clay.

Making models from the final drawings of a scheme is a time-consuming operation. It is work which these days tends to be contracted to professional model-building companies. Such additional expense can be justified when the product plays a part in positively influencing a selection committee where many designs are in competition. Otherwise, as a three-dimensional visualisation, it serves to complement design drawings presented in plan, and for many designers it can confirm their mental pictures of the proposed design and surrounding features.

There is however some reluctance to commit energy, time and money into these promotional models and even our own landscape students need more than gentle encouragement to consider the advantages of models for presentation purposes, unless of course their production is specified in the project brief.

Less elaborate scale models which are more quickly constructed can, however, play a significant role in the process of design decision-making. These so-called 'experimental' or 'preliminary' models can be used to check, correct, compare and test different design solutions. The value of these working aids for those landscape architects who do not possess a well-developed

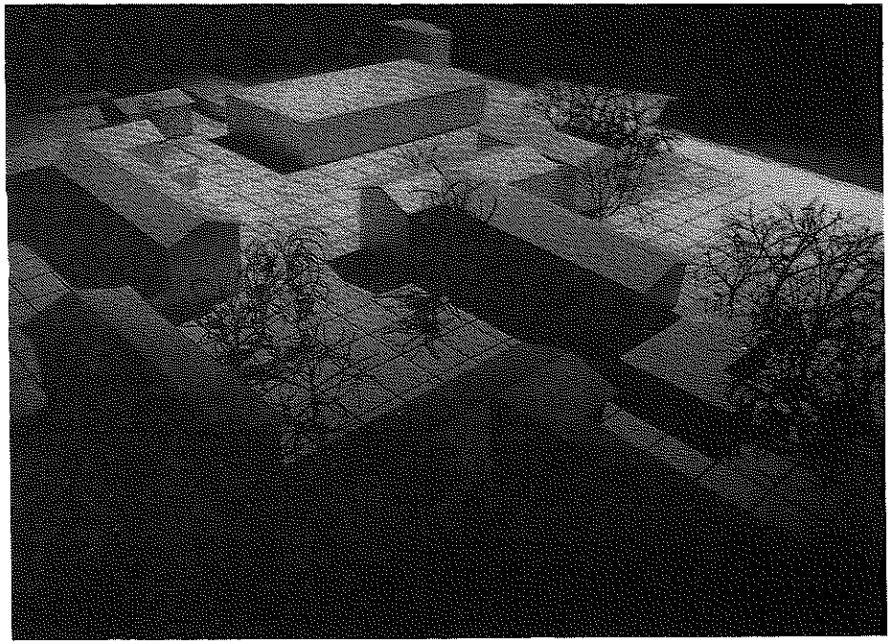


Fig. 1 Design of the space between buildings on a college campus. Shadow modelling.

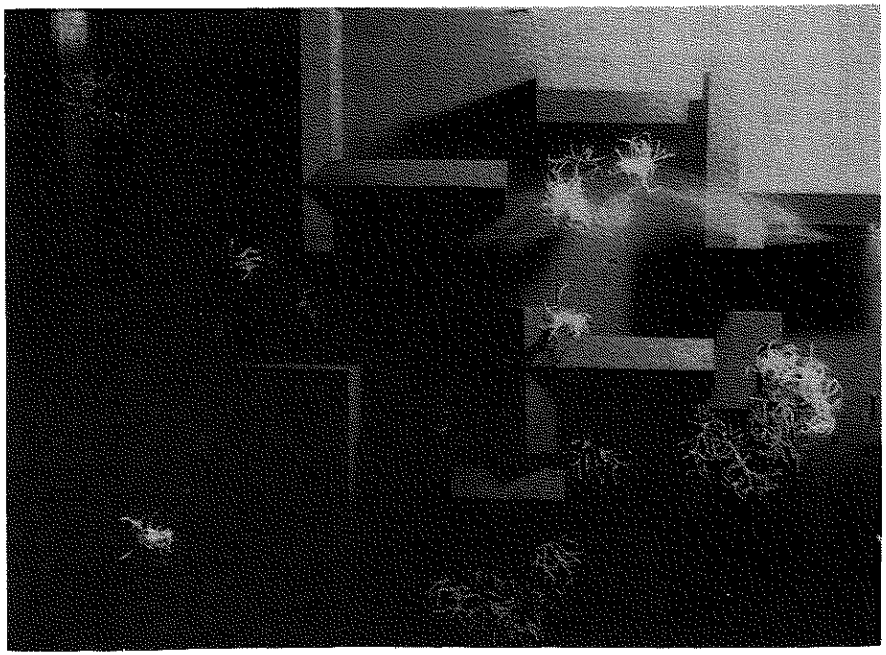


Fig. 2 Wind effects, shelter and turbulence modelling.

capacity for spatial visualization cannot be under-estimated. They can even reveal interesting effects which were not anticipated at a conceptual level.

A range of modelling techniques is taught in the School of Landscape Architecture in Gloucester, usually in the context of resolving design decisions. Experimental models need to be flexible and simple to build, often using recycled materials. Take for example a small tray filled with sand or clay which can be fashioned to represent existing land forms then manually modified to test cut and fill earthworks. Basic geometric blocks describing buildings can be mounted on a heliodon and shadows can be predicted (Fig. 1). Turbulence effects can be filmed and studied by positioning a site model in a wind tunnel (Fig. 2). At a larger scale, the environmental impact of a new scheme can be presented within a regional context (Fig. 3). More detailed constructions can be investigated using a modelscope connected to a video camera (Fig. 4). The modelscope permits a dynamic visual perception of the design as one moves through it. According to Tom Porter, the modelscope married to a camera makes "possible the viewing of proposed changes to the environment from the viewpoint of the designer, user and consumer,...design alternatives [can be considered] quickly and inexpensively and...it will become useful for more research into environmental issues of perception".

The process of landscape designing is one of proposing, testing, refining and re-testing. Mostly this is done in plan, on paper. Since the current economic paradigm is one of of efficiency in business and rapid delivery of service, there has been considerable promotion by many (including me) of the greater use of electronic technologies in the design fields (CAD), but this should not be at the expense of those well-tried and tested techniques of a more practical kind. Likewise, for landscape architects in training, there is much value in experimental research and heuristic learning. In the long-running landscape education debate of breadth versus depth, can we ensure a rightful place in the curriculum for those activities that do not possess academic "attainment targets" but are vital for a balanced and thorough design education?

Fig. 3 Environmental impact assessment. Upland quarry reclamation.

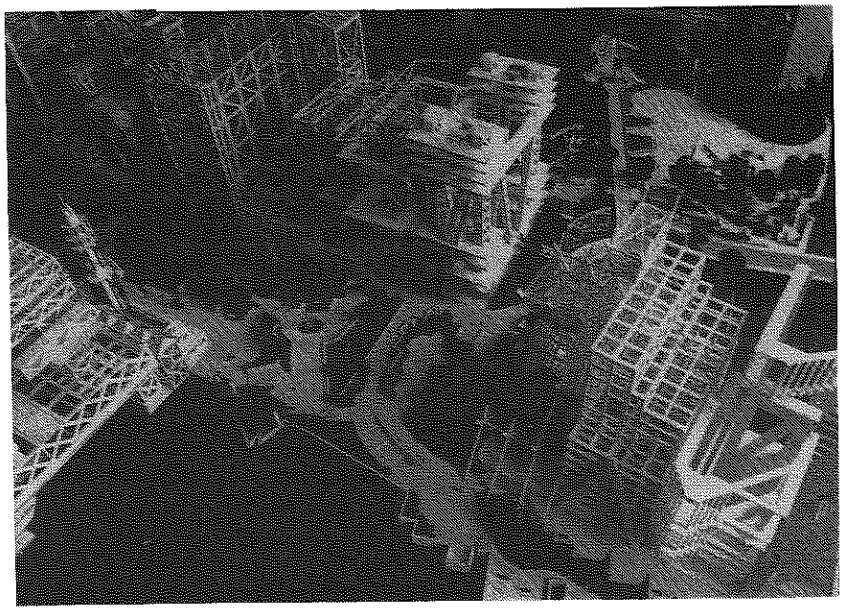


Fig. 4 Urban design. A group park and megastructure for the City of London.

FAREWELL TO GLOSCAT

FROM APRIL 1st 1990 the higher education section of the Gloucestershire College of Arts and Technology (GlosCAT) will merge with the College of St Paul and St Mary in Cheltenham to form the Cheltenham and Gloucester College of Higher Education (CGCHE). Under the new academic structure the School of Landscape Architecture will be part of the Faculty of Environment and Leisure and relocation to Francis Close Hall campus in Cheltenham is planned for September 1990. Consequently this issue of Landscape Issues will be the last to be published under the auspices of the Gloucestershire County Council.

This is an opportune moment, therefore, to reflect briefly on the past achievements of the School's association with the LEA. Established in 1961, it attained Landscape Institute recognition in 1974, CNAA status in 1980 and honours degree status in 1984. The existing courses are in a healthy state and continue to be successful in terms of recruitment, validation and student employment.

It is also a critical moment to consider the future directions of the School during the next phase of development in the context of the new college. It is essential that landscape architecture education in Cheltenham continues to expand and develop in relation to both the changing environmental demands of the 1990s and the current educational initiatives concerning greater student access and choice in the PCFC sector. At the same time it will need the resources and commitment to innovate at all levels: teaching, research and consultancy. Having been identified in the Strategy Plan for the College, along with countryside planning, geography and geology, as an area of 'high quality' development, landscape architecture is well placed to rise to the challenge, building on its established international links and its new associations with related subjects in the nascent college, and in the process it will surely continue to invigorate the world of landscape education.

VERTICAL LANDSCAPING

Angus Ferguson

INTRODUCTION

THE CITY IS AN ECOSYSTEM in which "its functions become horizontally and vertically integrated to form one overall system, a 'New Babylon'" (Friedberg, 1984).

A study of facade planting consists not only of the possibilities of vegetation being grown against walls but also the even more unusual notion of planting becoming free-standing walls. Clearly it is necessary to explore the realms of bio-engineering in order to propose a domain constructed and sustained by living vegetation. This technique owes much to applications derived from natural examples, such as vegetation clinging to vertical rock faces, and this article will argue the benefits of adapting natural plant forms and processes to the urban environment. The study will focus on the urban environment since it is here that space is at a premium: a planted wall may result in an enormous area of functioning foliage at a time when the equivalent area on the ground is not available or is usually occupied by buildings.

HISTORICAL CONTEXT

In Assyria and Babylon, terraced gardens on sub-structures, known as "Hanging Gardens", were common in the sixth and seventh centuries BC. Later, in Rome and Pompeii elaborate roof gardens were constructed for both villas and tenements, and in a military context the earth-stabilising properties of plants were often applied to fortress walls.

In the colder climate of Northern Europe, dwellings were insulated with a protective layer of grass on roofs. In Iceland, for example, whole areas of housing were thus

Angus Ferguson is a recent graduate and diplomate of the School of Landscape Architecture in GlosCAT, and currently works for MWT Landscapes of Bath.

treated resulting in a sympathetic blending into the landscape. In Norway nomadic tribes habitually erected wooden shelters enveloped in layers of turf and grass for winter quarters and even today farmhouses can be found with meadow-like coatings on their roofs.

In England, records show that in the late 16th century, Hordeum murinum (Wall Barley) ".... groweth upon mud walls and stony places by the wayes sides" (Gerald, 1597), and William Curtis in his 'Flora Londinensis' of 1777 described several plants growing on walls including several stone crops and Cymbealaria muralis (Ivy-leaved toadflax).

In the first quarter of the 20th century many eminent architects, Wright, Gropius, le Corbusier, Van de Rohe, were using vegetation in and on their architecture, albeit for aesthetic reasons only. Ferri designed a skyscraper for Madison Square, New York, in the form of a stylized mountain landscape with vegetation and waterfalls. Ungers used vegetation as a living part of his buildings while Kroll allowed his Alma Metro Station design in Brussels to develop a rough landscape to "disguise the hand of the architect".

The more functional use of plants has developed more recently as in the 1979 design by the architect Glensmall and the landscape architect Hamilton for a building claiming to be based on ecological principles. It made extensive use of plants to improve the local environment and as biological solutions to domestic problems.

ADVANTAGES

The benefits derived from giving buildings a green cladding can be discussed under several main categories: environmental, energy conserving, structural, psychological, aesthetic and educational.

A major environmental problem of cities is the lack of oxygen and the over-production of carbon dioxide. Rudoph Doernach, in his article on the use of 'biotectural' systems (1979) claims that Stuttgart has an oxygen deficiency of up to 50%, Paris of up to 85% and New York 90%. Carbonic acid, formed by the solution of carbon dioxide in rainwater, is responsible for the chemical weathering of much ancient stone work on buildings, and a range of other atmospheric pollutants, both gases and dust, often make life unbearable for the city dwellers.

The presence of vegetation in such environments can play an important role. Firstly it produces the greatest proportion of atmospheric oxygen as a result of photosynthesis, and simultaneously it absorbs carbon dioxide through the stomata in the leaves. Vegetation can also filter pollutants from air which passes across it, those with coarse or hairy foliage being able to trap most dust particles. Some gases, however, which are intercepted such as sulphur dioxide cause great damage to the plant in the process, and clearly deciduous species are at a distinct advantage since pollution-laden leaves are shed annually.

Another environmental characteristic of cities is the low humidity level compared with rural areas. This is because concrete and glass surfaces are designed to carry all precipitation into the nearest drainage network as quickly as possible. Reduced humidity can also be a consequence of the higher temperatures experienced in built up areas: the so-called 'heat island' effect. If cities were greener, then precipitation would be intercepted reducing runoff and the increased transpiration from plants would raise humidity levels. The comparatively dark colour of foliage absorbs more solar radiation than the lighter shades of concrete and mirrored glass; hence heat is stored rather than reflected and the ambient temperature is lower.

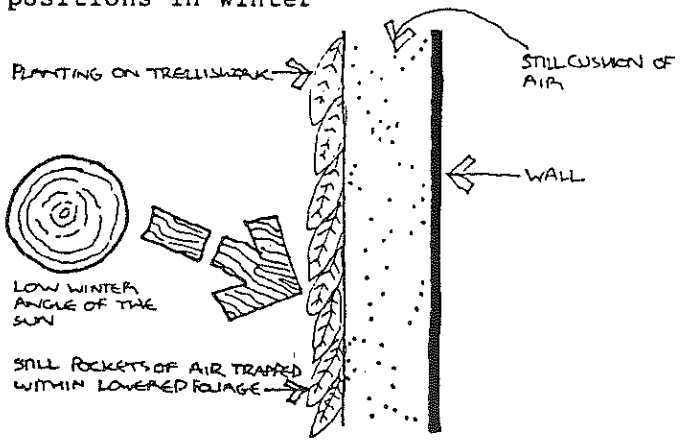
Large urban areas tend to experience stronger localised winds than rural areas. Here, wind velocity is often dissipated by vegetation while buildings, because of their relatively smooth exteriors, do not substantially reduce wind speed. Some early research in Vienna revealed that when deciduous trees were in leaf, urban wind speeds dropped by twenty to thirty per cent.

Vegetation also has an influence on energy conservation. During cold winter months, wall plants can offer useful thermal protection. In the first instance, this is done by the presence of near stationary pockets of air between the planting and the wall and within the planting itself. One could compare these insulating properties to the wearing of a string vest.

In winter the leaves of evergreen climbers lower their inclination on account of the low hydrostatic pressure in addition to the lower angle of the sun (Fig. 1). The plant is no longer transpiring so greatly in the low winter temperatures and therefore the turgidity of the foliage is reduced causing the leaves to lie relatively flatly against each other, trapping air and providing an

insulating layer. Overlapping foliage also prevents rainfall penetration to the wall thus avoiding further heat loss.

Fig. 1 Leaf positions in winter



(Source: Doernach, 1979)

Computations undertaken by John Willoughby, GlosCAT energy conservation officer, reveal that significant energy savings could be made on poorly insulated walls by adding a veneer of planting. Little saving would be made on buildings already well insulated, for example with brick cavity walls.

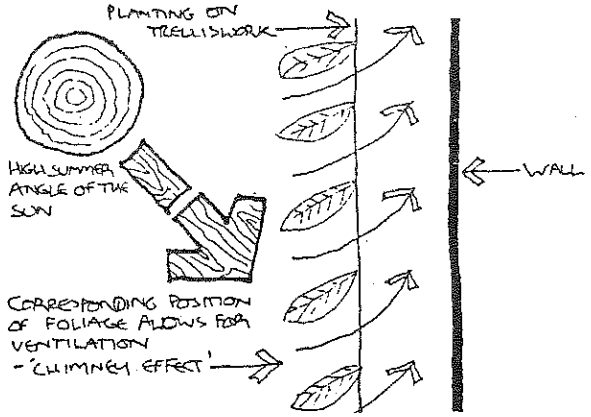
As regards the value of vegetation in hot climates, buildings can benefit from the regulatory effect of deciduous species towards solar radiation. In summer they will tend to keep sunlight off for the most part, whilst in winter, after defoliation, they allow it to penetrate unhindered.

Apart from keeping a building cooler, vegetation reduces the radiation strain on the building's external surfaces. More equable temperatures in the shaded part of a building can achieve a lessening of the external cooling load and therefore a reduction of thermic tensions within the structure. Because the leaf is a living solar collector, it naturally orientates itself to the diurnal and annual paths of the sun. Thus in summer the leaf is raised to correspond with the high angle of the sun (Fig 2).

Recent studies by Parker (1987) have established the cooling effects of shrubs planted immediately adjacent to walls. Results show that during periods for sunlight,

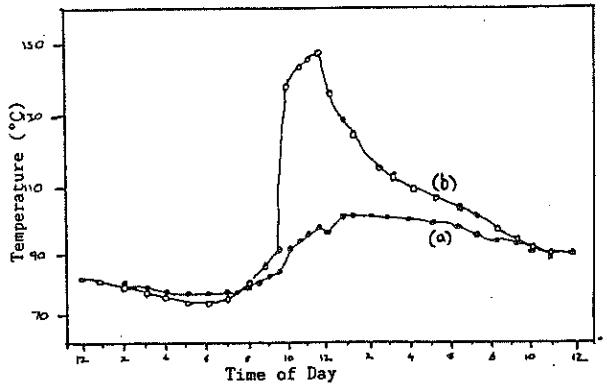
the temperature of the shaded walls were between 5° and 14° C cooler than the uncovered equivalent (Fig. 3).

Fig. 2 Leaf positions in summer



(Source: Doernach, 1979)

Fig. 3 Surface temperature of an east wall with (a) and without (b) shading from a single shrub.



(Source: Parker, 1987)

The structural benefits of vertical planting have already been mentioned earlier in the protection afforded against certain stone weathering gases. In addition, if water infiltrates building materials other processes can cause a gradual decay in the fabric. Freezing of water results in a 10% volume increase, and if this process occurs within stone, brick or mortar then cracking or exfoliation often follows. Vegetation appropriately planted, as we have seen, can limit this problem.

Climbing plants can, theoretically, offer structural support to the building. The network of clinging pads and shoots of plants such as Hedera helix (Common ivy) has been suggested as being a valuable protection against traffic vibration and ground tremors. Unfortunately, there is insufficient research to substantiate this theory.

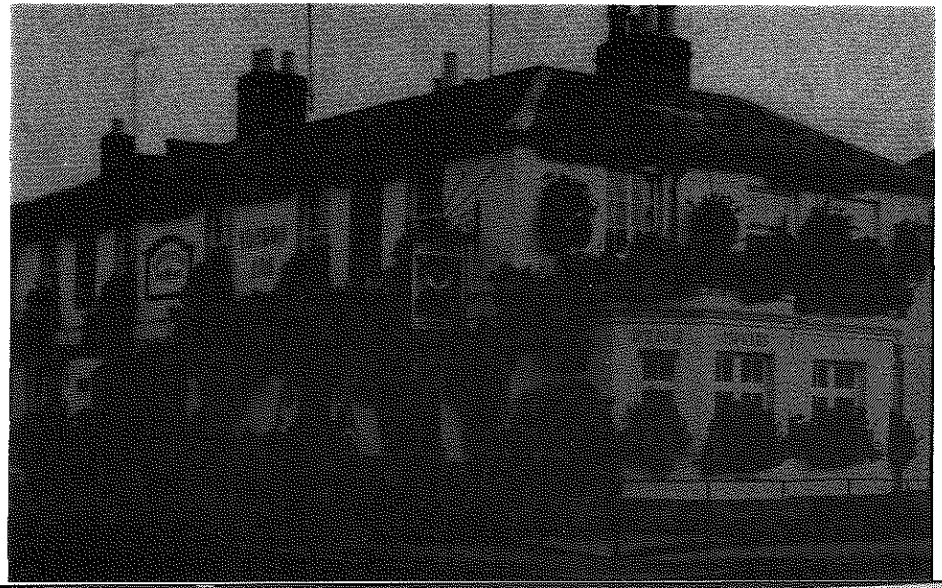
> "Living plants refresh the spirit and generate joie de vivre ... the absence of green causes depression and results in stress and mental illness" (Doernach, 1979).

Clearly there are psychological benefits to be gained from improved aesthetics. Studies by Jurgen Bortz and other eminent psychologists have shown how important the decoration and intricacy of building facades are in determining how much people would like to live there.

'Modern' facades evoke feelings of severity, plainness, boredom, unfriendliness, inexpressiveness, dullness and sobriety. On the other hand, adjectives found to describe the older style of building facades would include: natural, meaningful, pleasant, artistic, playful, personal, friendly (Krampen, 1979).

Aesthetically, otherwise drab concrete buildings have been greatly enhanced by the addition of planting, which can reduce austerity and punctuate a visual excitement to the overall structure (fig. 4).

Fig. 4 Hanging baskets add a decorative element to an otherwise undistinctive pub in Cheltenham



There are educational benefits as well. Vegetation within town and city boundaries provides a valuable teaching resource.

> "We must recognise that 85% of our population are urban dwellers who usually have no direct contact and little opportunity for contact with either 'raw nature' which most of us consider so refreshing, or decent living conditions which most of us take for granted" (Spray, 1981).

It can be assumed that the process of adding vertical planting along with a general policy of 'greening up' our urban areas would provide the facility from which people could be taught about such varied topics as plant reproduction, building insulation and air purification. Planting on walls is also a valuable habitat for certain forms of wildlife. No species is exclusive to walls but in this country there can be found molluscs, woodlice, spiders, bees, wasps, butterflies, swifts, stock doves, starlings, shrews and voles actually in, on or beneath a vegetable facade.

In addition, since agricultural and farming techniques have been becoming more intensive in character, the built up areas will have a considerably more important role to play in environmental protection, nature conservation and recreation provision (Spray,1987).

DISADVANTAGES

The case against facade planting rests on potential damage to buildings, on problems of plant establishment and maintenance, on security factors, and on ethical restraints and public attitudes.

Building damage

The Ancient Monuments Society and the British and Scottish Building Research Advisory Services take a dim view of climbing plants, and ivy in particular. They recommend that ivy should not be allowed to grow on walls where root penetration can occur. They state that plant suckers and tendrils can contribute to the decay of mortar through the secretion of acid substances, but that the real threat is mechanical:

> "Rapid growth with filaments intruding into joints and core work can convert substantial masonry into an unstable mass of loose stone and decomposed mortar" (DAMBH, 1977).

Damage to the wall can come not only from the plants but also from the fauna they support. This involves the burrowing of ants and solitary bees and the corrosive processes of animal extreta.

Establishment problems

The effects of the urban atmosphere on plant material were first observed last century when Nylander in 1866 noted the lack of lichens in the Luxembourg Gardens of Paris. Lichens and mosses are the most sensitive of wall plants to pollution but higher plant forms though varying in their tolerance can equally be affected by such atmospheric components as sulphur dioxide, fluorides, ozone, and chlorine components. Clearly careful selection is needed when designing for certain city conditions, and where salt is used to clear roads of snow in colder climates halophytic species should be chosen.

Vertical walls store extremely small amounts of precipitation. For creepers and climbing plants the hazard is not crucial, but for species growing within or upon a substrate framework drought conditions can be experienced, particularly on south-facing orientations, or on high exposed locations. Xerophytic plants, e.g. Sedum sp., are possibly best suited for these sites.

Some north-facing streets lined with tall buildings may experience little or no sunlight for the greater part of the year. Here shade-tolerant sciophytes such as Hedera canariensis (African ivy) and Hedera colchica (Persian ivy) could be used. Conversely, on south-facing areas of reflective steel or glass very high light levels can be experienced and sun-loving heliophytes such as Wisteria sinensis(Chinese wisteria) would be extremely well suited.

Maintenance presents a problem when the plants are established. On an annual basis this would constitute clipping, pruning and the addition of fertilizers and pesticides. On a less frequent basis supporting frameworks, where used, would need repair and replacement. In addition to implementation problems, particularly on high buildings where window cleaning platforms could be used, a high labour cost is incurred.

Security factors

Whilst the Fire Research Station in Hertfordshire does not have evidence to support wall plants being a fire risk (indeed, on the contrary climbers can offer evacuation routes), it is widely felt that such plants serve as an invitation to would-be burglars. Extra security, eg window locks, are not beyond consideration.

Ethical restraints

> "Where there is beautiful, architectural proportion and enriched detail, it is obvious that it would be most unwise to let it be overrun with coarse or common creepers. In this case there should be just enough to clothe sufficiently, while none of the beauty of the building is unduly hidden". (Jekyll, 1901).

The question of the relationship of vegetation to architecture is quite complex and a design solution can be very personalised. Plant freedom or restraint depends often on an aesthetic opinion of the architect, or the landscape architect or the general public. Recent debate has tended to denigrate the featureless tower block architecture, and the architectural profession has become somewhat polarised in its view.

Each specific situation will require specific solutions. Careful analysis and evaluation are clearly necessary before decisions are taken. Public prejudices against climbing plants may have to be overcome.

An interesting test case of Kassel in West Germany is worth describing. In 1983 a campaign to promote the use of climbing plants particularly to cover the city's more 'ugly' buildings was undertaken. The scheme's administrators found that home owners initially resisted the initiative, fearing that these 'aggressive' creepers would destroy walls and rendering, create dampness and provide cover for vermin and burglars. An 'untidy' appearance and exfoliation in autumn were also felt to be undesirable.

On average it took between 3 to 5 years before most prejudices were overcome. The best means of encouraging acceptability were, it was found, firstly, to show the public examples of good facade planting elsewhere in the vicinity, secondly to offer specialist advice; thirdly

to combine the project with a more general programme of environmental landscaping and fourthly to urge the residents to help in the planting and maintenance. This latter sense of cooperation and community interest succeeded in generating a sense of pride and responsibility in their own cityscape.

Clearly, these ideas and concepts can be adapted internationally. Success of this type of scheme can be measured not only by the amount of planting visible within a city, but also from peoples'growing appreciation of nature which results in the widespread care of urban 'naturalised' areas.

VERTICAL LANDSCAPING: TECHNICAL DETAILS

The following section is intended to offer specific information concerning the characteristics and uses of plants in vertical design applications. It deals with climbing, clinging, twining and rambling species, wall fruits and shrubs, climbing roses and mosses and ferns. In addition some bioengineering techniques relating to vertical and tilting walls and wall containers are discussed.

Climbing Plants

The large surface area of foliage presented by a mature climber allows it to function effectively as a 'green lung'. Deciduous climbers are more tolerant of pollution than evergreen, but it is important to remember that underlying architectural details may be revealed during the winter months.

Annual or herbaceous climbers are useful if that visual appeal is to be changed each year but they do not have the height advantage and require an annual stripping and replanting. Climbing plants in addition provide an excellent habitat for fauna.

Clinging Species

Species such as the commonly-used Hedera helix (Common ivy) and Parthenocissus tricuspidata 'Veitchii' (Virginia creeper), for example, are able to cling on to walls with the help of adventitious roots or adhesive pads. Thus supporting structures may well be unnecessary. However the surface of the wall should be secure enough so as to prevent the roots and suckers penetrating the wall as some damage can be caused from this. Where the wall is too smooth for the plants to cling by their own means,

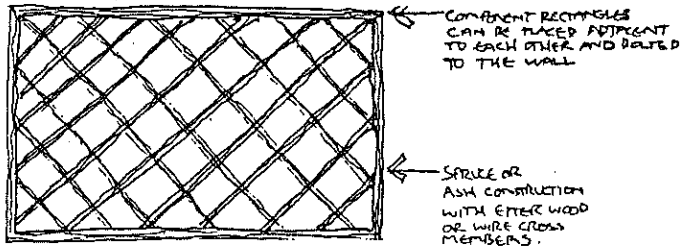
then wires can be attached to the wall as has been used on this species of vine.

Twining Species

Examples such as Humulus lupulus (Common hop), Lonicera periclymenum and Polygonum balschuanicum support themselves by the whole shoot winding spirally upwards. Branching does not often occur and the species require thin steel wires, roughened plastic lines or timber battens to grow up. The hop fields of Kent illustrate the use of wire to support the planting.

Vitis and Clematis species climb with the help of modified leaves or shoots. They require a good network of wire for example to cling on to. A timber frame with crosswires or steel mesh, as is shown (figure 5) would be sufficient to allow the plants to spread and cover a wide area.

Fig. 5 Suitable trellis for vitis and clematis



(Source: Bartholomai, 1984)

Rambling Species

These are not strictly climbing plants. Their long shoots become entwined with each other or with those of other plants to form vertically orientated bushes. To achieve cover of a vertical facade, wide meshed grid structures are necessary. Species such as Jasminum nudiflorum (Winter jasmine), varieties of climbing roses and brambles have to be tied up and trained. As such they can require considerable maintenance.

Wall Fruits

These are not as effective insulators as climbers but they do have other benefits such as the provision of food. They can, depending on how they are grown, have great visual interest forming strange shapes as can be seen in espalier forms. However, they do require support.

Climbing Roses

These do require a supportive network and some varieties will require more maintenance than others. Plants of the 'rambler' variety require less than most and they can grow to an enormous size. When in flower, they can be extremely attractive and they may even have insulatory uses, eg Rosa Alberic Barbier, Rosa Albertine, etc.

Wall Shrubs

Wall shrubs can provide very attractive flowering displays and can act as effective insulators against heat. They are however not as effective as climbers in keeping a building warm. Some varieties, such as Magnolia grandiflora, will take up more space width-wise than its equivalent height in climbers. They provide excellent habitats for fauna, eg Ceanothus sp.

Plants with their Roots in the Wall

Plants such as mosses, ferns and small angiosperms can, where there is a secure foothold for their roots, be grown directly onto the wall. As such they could provide little in the way of insulation but could contribute greatly to the aesthetic and environmental benefits.

These plants could be grown in a much denser and possibly more effective way on a vertical substrate layer supported by the wall. This combined with the density of cover and the thickness of the substrate would give a far greater insulating effect. It would also cover the building facade from view. Irrigation would be necessary for this type of planting.

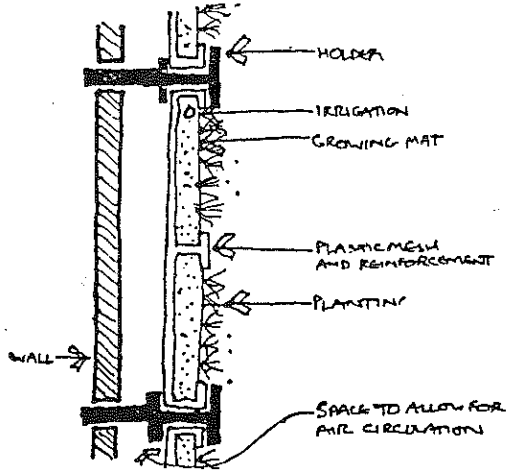
Planting grown from a 90° 'Artificial' Substrate

Since the relatively recent idea of lightweight, low cost roofplanting has been explored, using growth, filter mats and substrates in the form of a sandwich, it has been conceived that the whole idea could be tilted through ninety degrees to cover the facades of buildings. The inventors call it 'green tile' and it is composed of a layered structure of waterproof membrane, a moisture capillary layer and vegetation (Fig. 6).

It has been found that modified polypropylene is a suitable material for frameworking slabs, tiles or carpet-like elements; it is capable of absorbing temperature stresses. It is hoped that a controlled

water supply combined with the capillary characteristics of the matrix and further genetic alteration of plants will make the whole system much more viable. Until then, the only option for non-climbing species of wall plants is to plant them straight into the joints and crevices of walls.

Fig. 6 Detail of 'green tile' structure



(Source: Sitta, 1983)

Planting Straight onto the Wall

Gertrude Jekyll recommends knocking holes in the joints of sturdy walls with a hammer and chisel and then placing a mixture of seed and loamy earth into the hole, sealing it with a stone or cement.

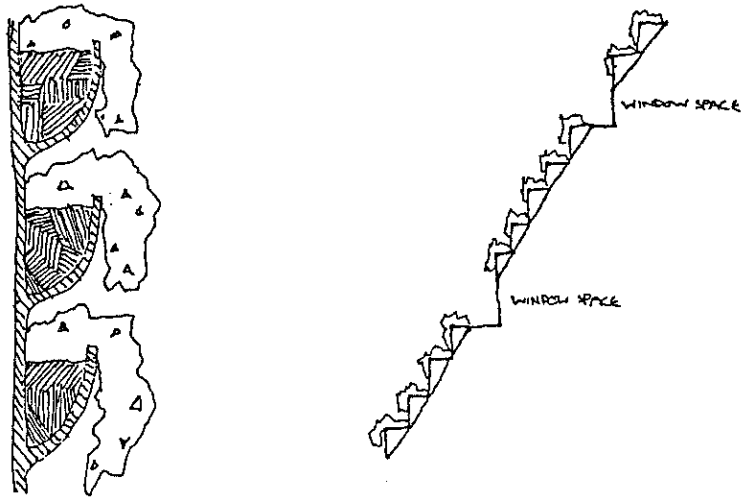
Sometimes plants will colonise a well-weathered wall themselves particularly where there has been a build-up of soil particles and where lime is used in the mortar. The wall is usually colonised by mosses which in turn are succeeded by ferns and then annuals. Plant colonisation is further accelerated by the fact that once plants are established on a wall, humus will start to build up and the developing foliage will help trap air-borne soil particles. However, this form of planting can only be applied to walls with crevices, cracks and a certain degree of porosity. It is certainly not practical or desirable to go over a whole wall with a hammer, chisel and bag of seed.

One solution could be the adaptation of hydraulic seeding processes whereby a homogenous slurry of peat or wood pulp, water, seed, fertilizer and thixotropic gel are sprayed onto disused quarry faces in order to establish a vegetative coating which would stabilize and camouflage the bare rock.

One other option to growing plants straight on to a facade comes from Paul Ritter (1980). He has devised what he calls a 'bio-wall' made from 'sculp-crete' as is shown in Fig. 7.

Fig. 7 Vertical wall formed from plant-filled containers

Fig. 8 An inclined wall with plants



(Source: Ritter, 1980)

The Use of Containers in Wall Planting

Hanging baskets and window boxes can be an attractive attribute to any building. The use of hanging baskets on any large scale can, for the most part, be prohibitive simply from the fact that they are difficult and time consuming to maintain. However, why not take the window box idea a step or two further? (O'Kane, 1985).

The idea of walls acting as plant containers came about as a result for the need for effective noise barriers at the edges of roads. Concrete gave the structure its height, support and noise dissipation; planting made the wall visually appealing. This form of wall has been adapted into one of plant-filled containers sustained by an irrigation pipe running along the top (Fig. 8).

Instead of building containers into architecture as has been accustomed, why not build the walls of a building as containers? This could be done on a stacked basis at forty five degrees, rather like a pyramid, or vertically as shown. Irrigation, if necessary could be provided by means of a trickling pipe running along the rows of containers or compartments. The overall effect could be quite dramatic with even small trees being grown in the containers. The containers themselves could be manufactured from stone, concrete, fibre-glass, plastic or terra-cotta with holes to allow for drainage. The effect produced can be quite dramatic (Fig. 9).

Fig. 9 Unterbilk, West Germany

Conclusion

In an age of increasing environmental awareness and concern, brought about by the realization that natural resources are not limitless and that a healthy environment results in a healthy population, the need to put back some of the areas of greenery, that have been taken away for housing and roads, becomes more of a necessity.

Using the technology that surrounds us today, it is possible to increase the relationship between the hard elements of a city and those of naturally 'healing' plant species such as creepers and climbers. Modern concrete, glass and steel walls depart from the basic visual and structural principles of brick equivalents which, on weathering, entice several plant species to naturally colonise them. New technology is required to help plants establish on other types of man-made cliffs.

More recent research has shown that facade planting does not live up to all the benefits that have been suggested. Planting cannot compete as successfully on insulation grounds with some of the man-made equivalents, for instance. It can also be expensive to implement. However, planting has some major advantages over its equivalent inanimate competitors. It can improve the environment around buildings, it can protect them from rain and thermal stress, It can improve the visual appeal of a building and 'soften' its often hard exterior qualities. It can provide, simultaneously, a source of play and learning and finally it can improve human health and well-being.

> "The same influence of vegetation in softening the aspect of rugged architecture may be seen wherever there are old buildings; its presence investing the ancient structures with a whole new range of qualities that excite the keenness interest in cultivated minds. For who can see the splendid work of human design and skill shown in grand rough-hewn masonry, absolutely adapted to its own work, and yet, from its complete sympathy with surrounding nature, seeming to grow spontaneously out of the rocky gorge; who can see this, made all the more perfect by the lovely work of God in the dainty fern fronds of the Maidenhair, without a thrill of humble admiration and thankfulness?" (Jekyll 1901).

This article is an edited version of the unpublished degree dissertation by the author submitted in 1988 and currently held in the GlosCAT library.

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LANDSCAPES ON PLUTO: IMPROVING COMPUTER-AIDED VISUALIZATION

Robert Moore

Abstract

WHILE THE LANDSCAPE ARCHITECTURAL profession has for some time recognised the importance of computer technology particularly in the field of design (CAD), its 'genuine' application has been restricted, on the one hand, by a shortage of appropriate software and, on the other, by a widespread hostility to the 'artificiality' of computer graphics when attempting visualizations of landscapes complete with plants. The advent of reasonably-priced colour processors, such as the Pluto controller, has allowed the development of programs that produce images more acceptable to the landscape designer. This article describes briefly the nature of landscape design and discusses the part terrain modelling and perspective drawing plays in the design process. There then follows an evaluation of the methods by which computers depict living plant material. The article concludes with a description of a system that tries to reproduce more closely the type of graphics generally expected or sought by landscape architects.

Landscape architecture and cartography

The changes that a landscape architect proposes for an area are usually of a kind that result in some if not a radical reorganisation of the features present on that site. Because of this fundamental concern with the spatial implications in such site planning the landscape architect has traditionally worked from a map base: a topographic map showing the existing landform, vegetation and artefacts informs him of the essential character of the place; to understand better the underlying patterns of, say, soil conditions or pedestrian flows, analyses

Robert Moore teaches earth sciences in the School of Landscape Architecture in GlosCAT and is researching computer applications for landscape architecture.

are frequently displayed in cartographic form; initial sketch proposals for the design are usually built up, modified, developed and refined two-dimensionally on the drawing board; and the final design drawings are generally prepared as plans at scales greater than 1:500 illustrating in sufficient detail the key components of the design.

Of course the landscape is not flat and the craft of the landscape architect is to design in three-, and often four-, dimensions. An accurate visualization of the form of the site and the disposition of its features is paramount in ensuring a satisfactory design on aesthetic and on functional grounds. This would mean both a synoptic view of the whole site and perhaps a series of more limited scenes ideally observed from places where people are likely to be present. With reference to the fourth dimension, one of the distinctive characteristics of a landscape architect is his ability to design with plants, which are dynamic elements in the landscape. He must predetermine and make full use of seasonal variations and, in longer term, future growth patterns of the plants used in the design.

The landscape architect relies upon perspective drawings and cross-sections to illustrate anticipated views of the proposed designs. Accurately drawn these can be time-consuming to produce. As sketches drawn free-hand, they may evoke the desired atmosphere or feelings of the design but may be sadly lacking in verisimilitude: artistic licence condones imprecise locations and scales.

The acceptance of the computer with graphic capabilities into landscape architectural practices has permitted greater precision and efficiency (and consequently more complex options) in the drawing of perspectives. For designers, computers have also improved their access to information, particularly in the fields of geographic information systems and satellite image processing. But, as stated earlier, landscape architects are principally designers who communicate graphically. To date not many computer-generated landscape images have impressed these professionals: in an artistic sense the pictures are "naive" and bear the imprint of machine limitations.

Landscape visualization

Despite some initial resistance in the landscape design profession to the innovations offered by graphic computers, many landscape practices now enjoy the

capabilities of micro-computers particularly in the field or terrain modelling. Such landscape visualization is vital both to the designer and to the client. For the designer a three-dimensional data base can be transformed into rapidly-drawn perspective views generated from any angle. For the client colour-enhanced images are better able to communicate the design's visual and spatial implications.

Terrain modelling is possible in a range of different guises from the simple vector (or wire-line) surfaces displayed as rectangular or triangular matrices, to sophisticated colour perspectives generated from complex hidden-line and hill-shading algorithms. Realistic perspective effects created by tonal gradation may be surrendered in order to accelerate the output of more views or more variations in the design. "Reconnaissance" perspectives are useful in design decision-making, and they are easily produced. Refined and artistically enhanced they can be included with the set of drawings finally submitted to the client, but these take a little longer to plot.

While terrain modelling has reached a high level of accuracy and presentation, the computer generation and depiction of plants has been in the majority of cases, except in the most expensive computer systems, so far unsuccessful from an artistic and graphical point of view. It is not hard to imagine the reasons for this state of affairs. Trees and shrubs, and vegetation generally, are highly complicated forms requiring massive amounts of computer storage if realism is to be duplicated on screen, contrasted, say, with the relative simplicity of geometric building forms in architectural visualization systems.

At a basic level trees have been reproduced as simple geometric forms, circles or spheres with thin cylinders as trunks, or as a pattern of branches rotated through 360 degrees to give wire-line tree skeletons. Some very acceptable images are possible in vector form and in addition they are capable of being manipulated in three-dimensional space (fig 1). When images are drawn on colour, so-called raster devices more impressive effects are possible: shapes can be flood-filled in subtle green hues, textured patterns can be applied and a naturalistic, organic quality to the vegetation, more in sympathy with traditional landscape sketches, can be the result (fig 2).

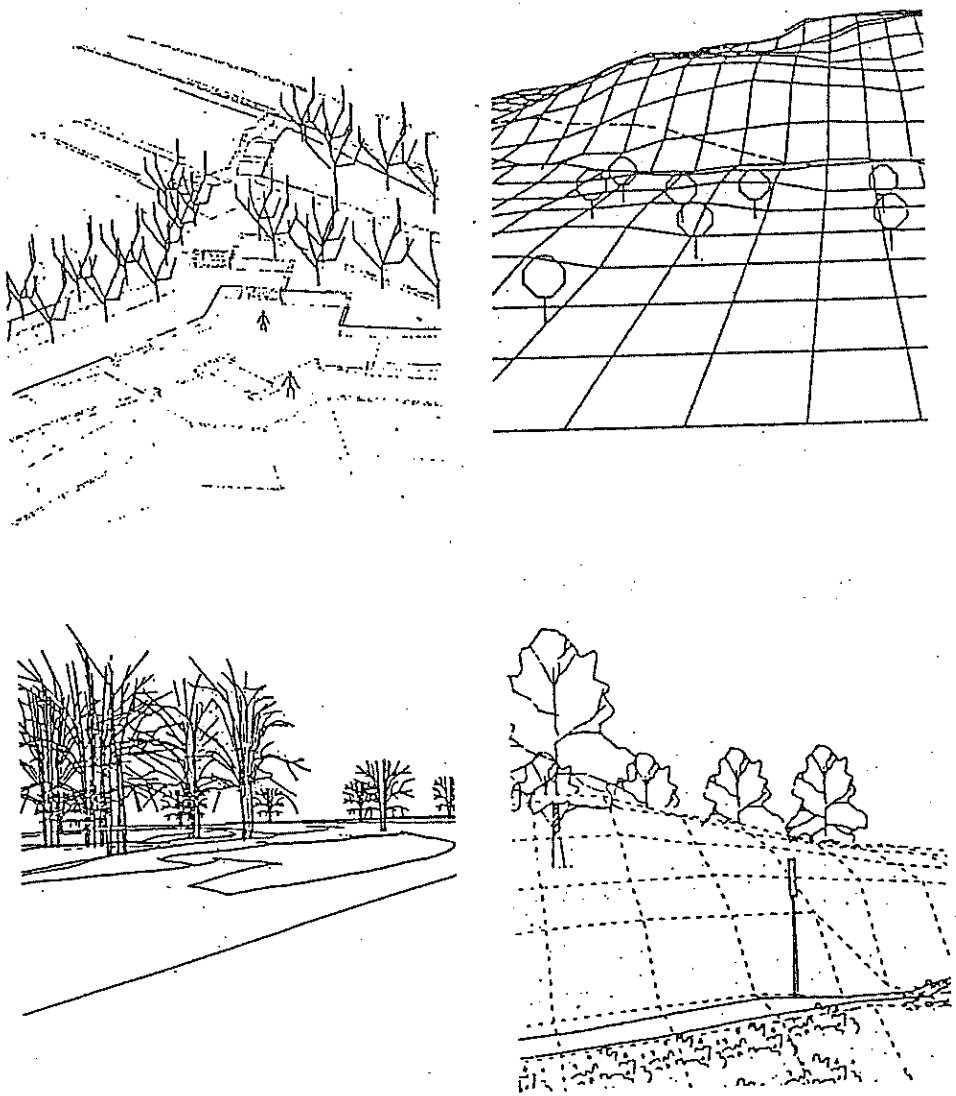

Fig. 1 Computer drawings of trees: simple vector forms

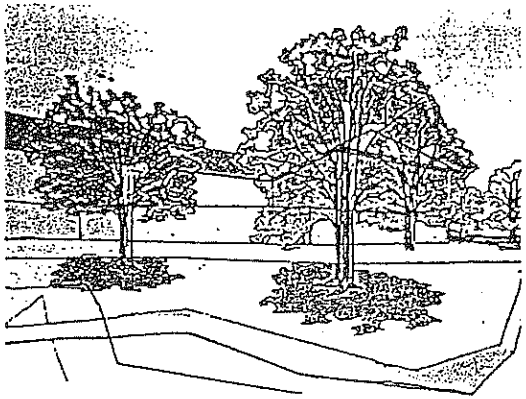

Fig. 2 Computer drawings of trees: colour enhanced and shaded

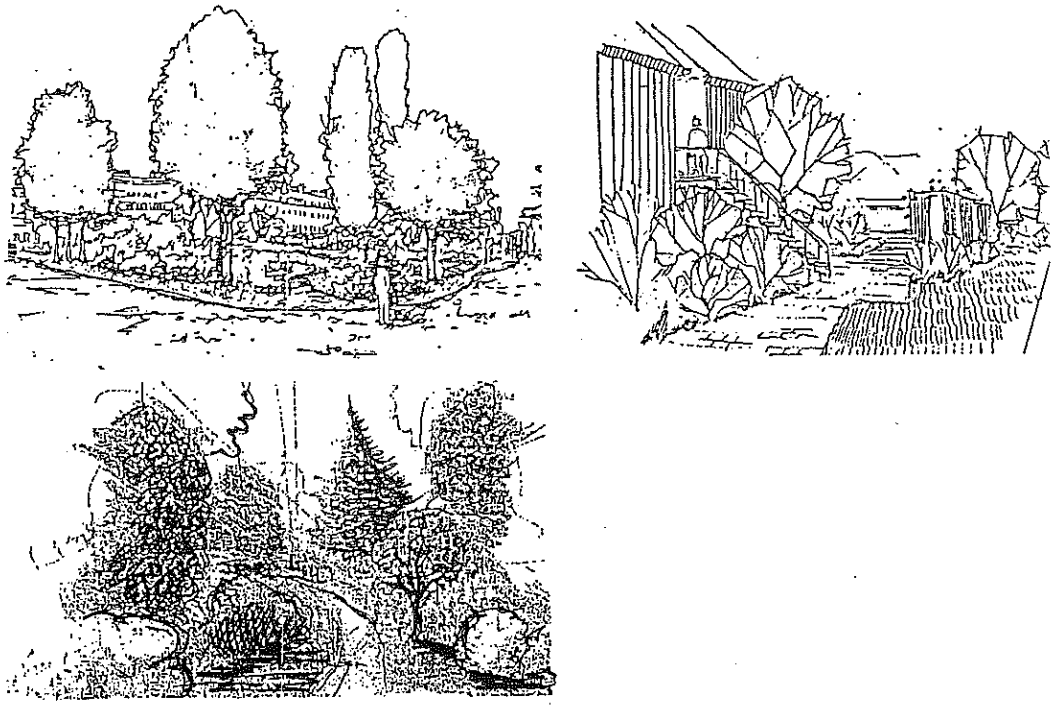

Fig. 3 Tree drawing styles: geometric, structural and impressionistic

The marrying of video and computer technologies is the latest in the line of techniques capable of aiding environmental design. Here, frame-grabbed images of actual trees taken from video-tape or photographic sources can be used in standard computer paint-box systems as symbols that can be scaled and electronically pasted onto landscape perspectives.

Plants in landscape perspectives

Three-dimensional modelling of landform and plants for landscape architectural applications requires three important conditions to be met: first, the computer must generate the perspective at a speed and/or of a cartographical quality which the designer cannot match by conventional methods; second, the perspective must permit the correct location and scaling of the plants; and third, the graphic representation of the plants must satisfy the designer's criteria and the purpose of the picture: stylised plant forms may be chosen in favour of realistic images in order to convey a particular aesthetic effect or atmosphere in the design by emphasising particular visual elements in the plants rather than committing the design to recognisable species.

Computer programs that require perspectives to be built by the successive and often tedious digitising of features have not been readily accepted by landscape architects. Indeed such user-hostility of some graphic systems has been a major cause in the slow uptake of computer techniques in the visual design professions. With the emergence, however, of more powerful yet relatively inexpensive computers coupled with suitable software for interactive three-dimensional modelling, more and more designers are being converted to work practices fully supported by computer-aided design systems.

In a typical landscape architectural application the user works from a map of the site. A position chosen by a cursor or a mouse is converted to Cartesian co-ordinates, the z or height value being read from the digital terrain model. A feature, for example a tree, is selected and given a size. The computer-held model of the tree is then scaled appropriately, it is allocated to the predetermined co-ordinates and finally drawn onto the landscape view by means of a perspective drawing algorithm or a transformation matrix.

This is a relatively simple operation at a basic level. Complications occur, however, when the removal of hidden lines or facets is requested. Clearly more processing is essential and each time a new tree is added the scene has to be redrawn.

Moving now to the graphic depiction of trees, landscape designers generally adopt some method of stylising such features in their drawings in order to accentuate desirable design elements. One of three possible approaches might be chosen*. First, what could be termed a geometric style concentrates on the shape and outline of the plant (fig 3). Obviously the wide range that plants exhibit needs to be simplified and a classification first proposed by Sidwell (1984) is useful in this context. The shapes are described as rounded, conical, ovoid, ellipsoid, columnar and tabular, and the outline can vary between very smooth and strongly broken.

Second, a structural style emphasises the branching habit of the trees and may be of some seasonal significance if the design of deciduous trees are present. Growth may be upright, spreading or pendulous.

Third, an impressionistic style is, as the word suggests, more free-flowing and naturalistic in effect. Here the essential design elements comprise texture and density of the foliage. Individual foliage units vary from small textured conifers to coarse patterned aesculus species. Foliage density implies a range from totally opaque (taxus sp) to extremely transparent (betula sp).

In computer graphics, the geometric and structural styles of depicting trees are very common. Even with the addition of colour many can end up looking like simple lollipop shapes or wire brushes. Similarly, in those graphic systems that can display textured symbols, the resulting images often appear very grainy. The solution for the discriminating designer could well be by some technique of combining or merging the different means of representing trees, and by the selective application of realistic colour. The Plant-View system attempts such a technique.

The Plant-View System

This interactive computer system has been develcped with the central aim of improving the representation of plants.

* *A. Steeves-Booker: private communication*

In terms of hardware, it is based on a Pluto colour graphics controller linked to a high resolution screen, and driven by an Apricot micro-computer. Peripheral devices include a bit-pad and cursor, a printer, a video camera and video encoder. The software provides the designer with the flexibility to view a site from any angle and, using the bit pad and cursor, to superimpose tree symbols on the perspective. These symbols can be moved, deleted or altered by invoking the relevant commands from the main menu. The tree symbol table and the colour palette are displayed towards the bottom of the screen, leaving sufficient working space for the perspective in wide landscape format. The Redraw option plots the same perspective or one from a different viewpoint and incorporates any changes made to the planting plan. Finally when the design achieves an acceptable layout artistic enhancements can be made using the cursor as a "paint brush", and the perspective can then be transformed to a two-dimensional plan complete with tree locations superimposed on the topographic base.

The successful implementation of these attributes is due in the main to features integral to the colour processor and partly to facets of video technology. Of particular interest are the rapid graphics operations of the Pluto, its considerable colour palette and its facility to copy non-rectangular shapes.

The graphics facilities provided by the Pluto controller are extensive and include a range of vector commands (e.g. geometric shapes) and raster operations (e.g. flood fill and patterned symbol copying). In addition the zoom command can magnify a screen image by up to sixteen times. A palette of 256 colours can be created for simultaneous screen display thus permitting image enhancements in hues more appropriate to landscape scenes. For example the tiled surface of the terrain is progressively shaded to increase the perspective effect ('depth cueing'), and a sufficiently large range of naturalistic greens for varying foliages is offered.

Tree outlines and textures can be manipulated without destructively affecting the background and any undesirable overlapping caused by drawing more distant trees which should be partially or wholly hidden from view is overcome when the perspective is redrawn.

The foliage texture and density have been captured from video images of actual deciduous and coniferous canopies. These are held in symbol partitions in the Pluto in a

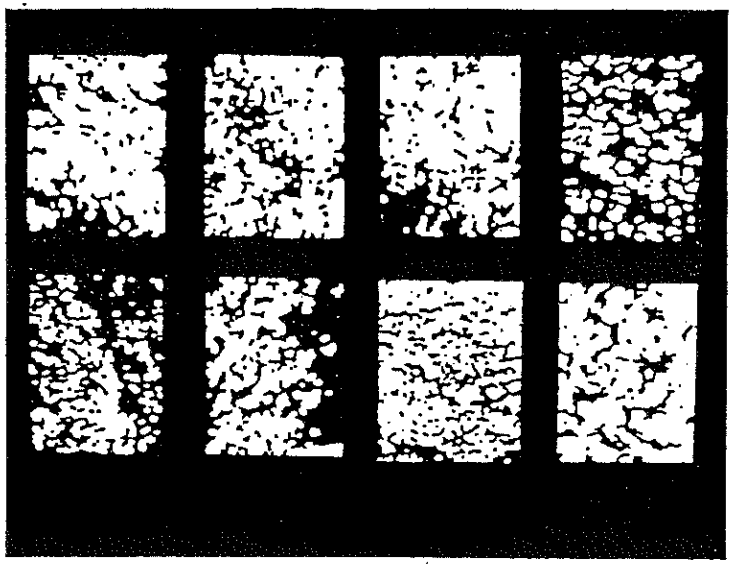

Fig. 4 Solarised frame-grabbed tree foliage

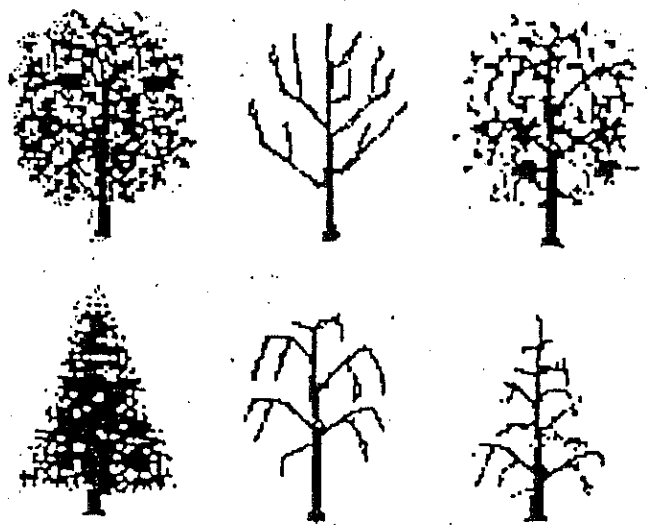

Fig. 5 Foliage pattern of different densities applied to branching structures

solarised form (black and white planes only) to enable foliage colour to be applied uniformly (fig 4). Scaling of the texture to suit more distant trees is achieved by a simple pixel-based algorithm*. Any gaps in the foliage can be assigned as a transparent element in the copy commands, thereby enabling a density effect to be produced when the trees are drawn. It is also possible to superimpose foliage upon a chosen branching structure increasing the realism (fig 5).

A typical session at the computer would probably use many of these facilities and would consist of the following operations. First, a digital terrain model of the site needs to be created. Since it is envisaged that most sites suitable for this system are of medium to small scale in area, detailed land survey should be undertaken producing spot heights ideally in a square grid. The Ordnance Survey already markets such data thus obviating the need to redigitise from contours. Roads, buildings, lakes etc. can nevertheless be digitised using the bit pad and cursor, and these data are held in a separate file to the terrain model.

The second operation is to plot a number of site perspectives and then to choose the one that best serves as the "working" view upon which the trees can be superimposed. This is followed by what could be a fairly long phase of genuine computer-aided design. The various tree styles, colours and textures could be tested either singly for simple effects or in combination for more intricate solutions. When the symbol's characteristics are endorsed by being drawn on the perspective, these are automatically written to file to enable easy recall when different views are requested. A design such as shown in fig. 6 was created in this way, and, with the addition of some cosmetic rendering, took about thirty five minutes to produce.

The final operation in the session concerns the printing of a planting plan. The tree symbol graphics can relate directly to the plant characteristics or can merely indicate the plan position. The plan can be saved as a file for later updating or can be output to video tape or paper (fig 7).

* *a formula used to scale a patch of dots (pixels) on the screen.*

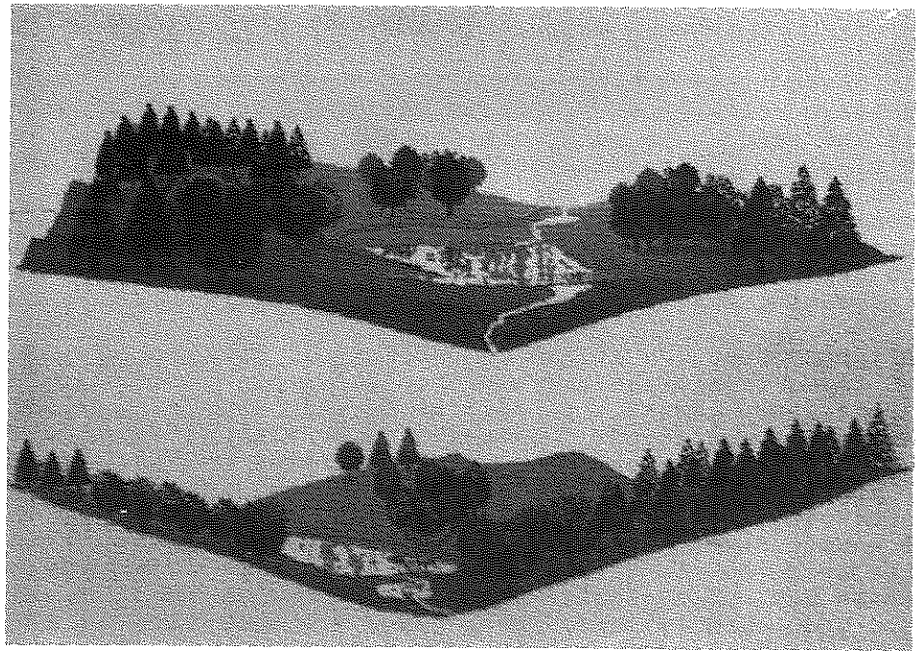

Fig. 6 Simple design produced on the Plant-View system

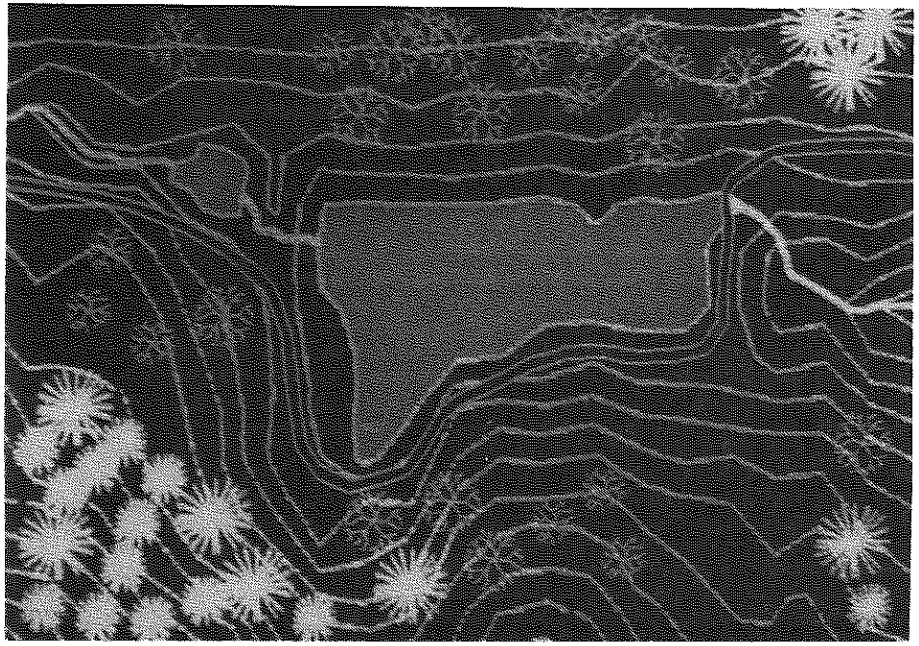

Fig. 7 Planting plan of scheme shown in Fig. 6

Conclusion

In the field of landscape architecture, it is probably true to say that there is hardly any activity remaining that has escaped the invasion by computers. Not everyone, however, is convinced by their benefits and the tradition of the artist's revulsion for anything mechanical or artificial dies hard. Yet, little by little, the new technologies offering visibly better output are being approved. The important area of landscape visualization is slowly approaching a genuinely acceptable level of refinement, and it is to be hoped that by freeing the designer from much painstaking work in the drawing and validating of perspectives the time so released can be made available to higher-level and ultimately more satisfactory design decisions for our environment.

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RURAL EMPLOYMENT AND PUBLIC POLICY

Nigel Curry

1. Introduction

This paper reviews the impact on employment in the countryside of a number of recent government policies affecting rural areas. These centre on several initiatives designed to curb food over-production but also embrace more direct employment and training policies outside of agriculture, that impact on the countryside.

Agricultural policies have always had a curious relationship with employment generation. Despite a paramount objective of all such policies in Britain since the war having been to maintain farm incomes (and thus sustain the jobs of farmers), policies generally have led to the substitution of capital for labour causing continuous large labour losses in agriculture. This is indicated in table 1 for the 10 years 1971-1981.

Since the mid-1980s, a number of policies to curb food over-production have been considered by both European and domestic governments. These have been summarised by the Ministry of Agriculture Fisheries and Food (1987) as falling in to one of six broad groups.

The first two of these groups — quotas and co-responsibility levies — are solely concerned with market manipulation in some way. They respectively place physical restrictions on output and taxes on output to dissuade higher volumes of production. These have been in operation in the U.K., particularly for milk and cereals, for the past 3 to 4 years.

Dr. Nigel Curry is Director of the Countryside and Community Research Unit at GlosCAT. His current research interests are concerned with recreation policies in the countryside, the analysis of environmental job markets and development pressures in National Parks.

TABLE 1 Employment in agriculture 1971 & 1981 (figures in thousands)

	1970–72 average	*1981*
Full-time, regular		
Hired male	177	129
Hired female	15	12
Family male	55	30
Family female	15	5
Part-time, regular		
Hired male	25	19
Hired female	26	24
Family male	16	12
Family female	16	7
Seasonal		
Male	38	58
Female	36	41
Salaried managers	–	8
Total employed	418	344
Farmers, partners, directors		
Full-time	224	205
Part-time	69	90
Total farmers, etc.	293	295
Total	716	639

Source: Ministry of Agriculture, 1982.

More recently, a second set of measures — 'setaside' and extensification — has been introduced, with formal sanction under the 1988 Farmland and Rural Development Act. Rather than just managing the market, both of these measures impact more directly on the physical appearance of the countryside landscape. The setaside of land is now in operation with farmers being required to register an interest in setting land aside by October 1988.

Under this programme farmers elect to fallow a minimum of 20% of their land in exchange for cash payments. Extensification is still under discussion at the Ministry of Agriculture, particularly in the context of beef

production, but it is envisaged that this will entail the reduction of output (again by at least 20%) on the same area of land: effectively a capital setaside.

The final pair of measures are longer-term and not yet near to implementation. Price restraint policies are now recognised as being the most effective means of curbing over-production (since artificially high managed prices are the main spur to excessive farm output) but are a long way off politically. Changes in people's attitudes, both of consumers and farmers, will also lead to suitable adjustments in food output, but this too will take a long time, it is argued by the Ministry, because of people's innate resistance to change.

To these six principal measures may be added a number of initiatives launched under the 1986 Agriculture Act in pursuit of farm diversification both on and off the farm, encapsulated in the ALURE (Alternative Land Uses in the Rural Economy) package (Department of the Environment, 1987). This now gives financial encouragement for various forms of diversification into alternative products, woodlands and marketing and processing.

Despite the reduction of food surpluses being the prime objective of all of these measures, they will also have important impacts on levels of employment both within agriculture and in the wider rural economy. This paper postulates a number of these impacts and places them in the broader context of other government policies that affect rural employment.

2. The Employment Impacts of the Overall Allocation of Public Funds to Rural Areas.

Table 2 illustrates the relative weight of public resources disposed within the rural economy. It does not purport to be comprehensive but it does provide a broad picture of the relative disposal of government monies in the countryside as result of public policy.

From this table, it is clear that there is an overwhelming disposal of resources to agriculture and it is therefore from this sector that resources might be expected to be diverted if rural employment objectives are to become a more explicit part of public policy. Moreover, it is now widely accepted that this resource allocation is grossly inefficient in economic terms. The 1986/87 estimate of national net farm income was only

£1,826 million, for example, (Blunden and Curry, 1988) representing an exceedingly poor level of value added in the industry in comparison with a £1,800 million input of public funds spent on farm support.

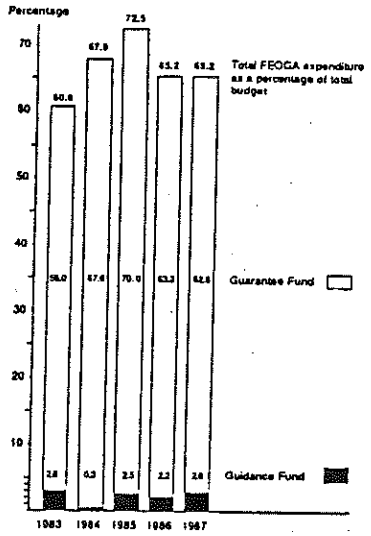
TABLE 2 Government support to the rural sectors 1986/7

		Pounds Million
ECONOMIC DEVELOPMENT		
CoSIRA		20
DBRW		10
HIDB		30
RESOURCES		
Agriculture	All national aids England and Wales	1,800
Forestry	Commission Budget	150
	Private Sector Grants	7
	Tax Concessions	10 - 20
ENVIRONMENT		
Countryside Commission		18
Nature Conservancy Council		32

Source: All figures taken from Blunden and Curry, 1988.

Net farm income is actually less than total government support if the Ministry of Agriculture's (1988) own figures are introduced. They estimate a total cost of domestic government expenditure on agriculture in 1987/88 to be £2,500 million if research and development,

FIGURE 1 - Costs of the Common Agricultural Policy as a Proportion of the Total Commission Budget, 1983-1987.



Source: Blunden and Curry, 1988.

advisory services and administrative costs are also taken into account. In addition, the National Consumer Council (1988) has recently reported that this level of support costs each family in Britain £9 per week in higher food costs than would be the case in a free market for food and 4.50 per week in higher taxes, to dispose of food surpluses. Not only is this level of expenditure now seen as being economically inefficient, but its distribution is also subject to criticism. The vast majority of all of this direct expenditure is disposed towards price support or capital support, and very little at all to the direct support of labour.

This is illustrated in figure 1, which shows the percentage of the whole European Community budget disposed on the one hand to price supports (the guarantee fund) and on the other structural supports (chiefly of a capital nature — the guidance fund) for agriculture. It is now widely recognised that these types of support are an inefficient means of supporting farm incomes,

certainly relative to direct income supports or transfer payments to farmers (Slee, 1981).

Not surprisingly, pressure is mounting for a diversion of this magnitude of resources away from food output, and for a reassessment of the way that it is distributed across the rural economy. Such pressures present the opportunity for the development of direct employment objectives possibly with enhanced funding to both the economic development and environmental sectors. It should be emphasised that much could be done in employment terms by a redistribution of such money rather than any net addition to the rural public purse. It is essentially only a discussion of the arguments concerning redistribution rather than additional funds, that is considered politically realistic.

The £150 million disposed to forestry again provides a poor investment, specifically in employment terms. Both the National Audit Office (1986) and the the House of Commons Public Accounts Committee (1987) have dismissed job creation as an objective of forest policy as a means of justifying additional public expenditure on timber expansion. They both have concluded that there is no clear job creation impact at all in this area of public expenditure.

Finally, in terms of the overall scale of public rural resource distribution, it is important to note that market commodities (food and trees) get much more government support than non-market commodities, particularly in relation to the environment. With an enterprise economy this is an anomalous situation. In the longer term only public support to non-market sectors can be sustained, and, as is suggested below, it is precisely these sectors that offer the greatest opportunity for employment creation because of their labour intensity.

3. The Employment Impacts of Resource Adjustments to Curb Food Over-production.

The figures presented in table 3 are indicative of the kinds of expenditures being disposed towards agricultural diversification measures of the types discussed in section 1 above.

These figures give cause for concern for job creation in a number of respects. Firstly in overall terms, there is still only a minute shift in resources away from agricultural production, so very few changes to the rural employment profile outside of agriculture can be expected as a result of these specific measures. Secondly, the lowest allocations are to activities (diversification and marketing) that might do the most to create rural jobs because they represent a move away from capital intensive primary resource production, and are relatively labour intensive.

Thirdly, the highest allocation of these diversification resources is into woodland which the National Audit Office has already suggested offers little potential for new rural employment. In addition, O'Riorden (1988) maintains that the Farm Woodlands Scheme requires an unacceptable length of time to 'freeze' land out of agriculture, to be acceptable to most farmers. Its employment impacts must therefore be considered slight.

TABLE 3- Financial Allocations to Diversification

ALURE PACKAGE	Pounds Million
Proposals made in April 1977 for 1987/88	
Rural diversification under ALURE	25
Diversifying into woodland (Farm Woodands Scheme)	13 (for 33,000 ha)
On-farm diversification	3
Farm products marketing	2
Proposals made in November 1987 for 1989/99	
All Alure Schemes - additional funds	10
SETASIDE AND EXTENSIFICATION	
Proposals made in November 1987 for 1989/90	
For extensification and setaside	16
CONSERVATION	
Annual Allocations	
Original ESAs (6)	12
New ESAs (6)	7
NCC estimate of SSSI management agreement costs	15-20

Source: Blunden and Curry, 1988

Finally, there is a more general problem concerning jurisdiction over these new resources for diversification. Despite being measures designed to move away from food-production they are still largely funded through Ministry of Agriculture channels. The Ministry is diverting its resources rather than losing them altogether to other agencies more centrally concerned with the environment or the rural economy.

Diversification is therefore allowing the Ministry of Agriculture to extend its sphere of influence in the rural economy and environment without, necessarily, any corresponding increase in its expertise in these new areas of concern. As O'Riorden (1988) states: "The advisory networks necessary to propel the agriculture industry from primary food producing sector to a tertiary service sector are not appropriately trained, managed or financially resourced."

These criticisms are reminiscent of those made of the socio-economic advisers after the 1974 implementation of the EC Socio-economic Advice Directive (EC 72/161.) where their work was considered less than effective because the Agricultural Development and Advisory Service had little received knowledge in their new socio-economic sphere of responsibility (Vincent-Evans, 1978). These concerns suggest that the need for the Ministry to spend an amount of 'lead time' developing expertise in areas other than food production might inhibit the aggressive pursuit of new types of objective in rural policy — particularly any relating to rural employment. They simply have no expertise in this sphere.

4 New Agricultural Policies: Prospects for Employment

In addition to these likely impacts as a result of resource adjustments from agricultural policy changes, other characteristics of these policies exhibit scant regard for rural employment. This may well be due, according to Bond (1988), a Transport and General Workers' Union Trade Group researcher, to the fact that rural employment simply is not an important political issue. It will always do badly in public resource allocation decisions for the countryside, particularly since it is invariably eclipsed by issues of conservation in rural political debate.

In terms of these new agricultural policy proposals, the objectives of overproduction solutions, for example,

simply do not address the issue of rural employment at all. Action for Communities in the Rural Economy (ACRE) (1988) claims that they are simply not targeted at people in any significant way. In addition, agriculture ministers have been given wide-ranging new powers under the 1986 Agriculture Act and the 1988 Farmland and Rural Development Act — for conservation, recreation and farm diversification, for example, — but not for the creation of employment directly.

In contrast to this low prioritisation of direct employment objectives in agricultural policy changes, other land use policies with more clear employment goals have been liberalised.

Government Circulars 16/84 'Industrial Development' and 2/86 'Development by Small Businesses' have allowed the facilitation of more industrial development in the countryside but importantly, they do not provide financial support to such developments in the way that policies for agricultural diversification do. There is still a large divergence between financial support for agricultural and non-agricultural policies for rural areas and, according to the National Farmers' Union (1988), still a very common misunderstanding that rural communities and particularly rural labour markets can be protected by agricultural support alone.

5. Agricultural Overproduction Solutions and Employment

In terms of specific overproduction policy solutions, some employment impacts may be postulated about the first four measures outlined in the introduction since they have all been implemented in some way. Since quotas and co-responsibility levies have been in operation TGWU data shows a 20% drop in the full-time male agricultural workforce — from 1985 to 1987 (Bond, 1988). Whilst no casual relation-ship is implied here, certainly these market management policies are doing little to stem the decline in the agricultural labour force summarised in table 1.

There are contrasting views about the employment implications of setaside. The Countryside Policy Review Panel (1987) was optimistic that it might lead to 150,000 new jobs in the countryside by the year 2000 developing conservation, but particularly recreation, opportunities. This however was to be dependent on significant shifts in rural resources to these sectors, particularly through

the 'Recreation 2000' initiative (Countryside Commission, 1987) to local authorities, which have not been forthcoming.

ACRE (1988) fears that setaside may actually lead to further reductions in employment as land is left unused and therefore potentially requiring a lower labour input. This would seem the most likely outcome for such policies. Setting land aside as a means of curbing food overproduction is inappropriate, because it is manifestly capital that has caused food over-production, and capital has chiefly displaced labour on the farm. Setting land aside will not do anything to halt this capital/labour substitution.

Extensification is essentially farming land less intensively which is a form of capital set-aside. This therefore can lead to some advantages, but it seems probable that the impacts on employment are likely to vary according to the principal objectives of extensification programmes.

If extensification is pursued with production objectives as its primary concern, employment prospects look promising. Based on a 20% reduction in output, the Council for the Protection of Rural England (1988) sees production-orientated extensification allowing more labour intensive farming, concentrating on high value, low output crops that would survive free market pricing, and organic farming. The Transport and General Workers' Union, too (Broad, 1988) supports organic farming because of its labour intensity and is calling for a shift in price supports to direct labour subsidies to place organic farming on a firmer economic footing. This is supported by earlier research in the Open University Technology Group (1977) which estimates that smaller farms, organic farming and chemical-free husbandry could lead to 1.3 million extra jobs in agriculture if they become prevailing farming systems.

Extensification primarily with environmental objectives on the other hand may well be less beneficial in employment terms. Policy measures consistent with this category such as ESAs and management agreements under the 1981 Wildlife and Countryside Act both entail financial transfers but with no explicit labour component. This is principally because such environmental policies remain strictly within the jurisdiction of the agricultural sector. Earlier types of support for marginal areas,

still within agriculture, have been even worse in terms of job creation.

Where structural support measures have been introduced that have had some conservation component, there has been a reluctance to subsidise labour. In Less Favoured Areas for example, where supplementary payments have been made to farmers simply to keep their income levels high enough to allow them to remain in business in the upland landscape, policies have been orientated towards the subsidisation of animals, through hedge payments, rather than people.

This keenness to provide financial support for both production and conservation objectives in agriculture for anything but labour almost reaches absurdity in the case of initiatives instigated by Ryedale District Council in North Yorkshire. In 1987 the council introduced a campaign to bring back the scarecrow, "to enhance the traditional rural atmosphere". Every farmer who put up a scarecrow would be paid £5. If he put up 10 scarecrows he would be paid £50 (Nicholson, 1988). The direct support to images of humans must be considered a perverse priority when direct support to labour itself has clearly no role in diversification policies with conservation objectives.

6. Environmental Employment and Government Job Creation Programmes

Despite the fact that developing extensification with conservation objectives appears to place no importance on employment creation other elements of government policy have allowed the growth of environmental work in the countryside directly.

In the sphere of government job creation policies the Community Programme (CP) has been the most significant up to the introduction of the Employment Training Programme (ET) in September 1988 in the environmental sphere. At its peak in October 1987 it employed between 80,000 and 100,000 people (Countryside Commission, 1988a) on countryside environmental work. This included specific supplements to rural communities under the Farm and Countryside Initiatives Scheme. This was possibly as much as 40% of all Community Programme work, because the CP had to be non-market work experience (Department of Employment, 1987).

Despite this expansion of environmental jobs in the countryside up to 1988, the transition to the Employment Training programme appears to be disastrous for countryside environmental work since it now is concerned with the provision of training rather than work, and has to be orientated towards market activity and local labour markets.

U.K. 2000 estimates a permanent loss of places from CP to ET of 54,000 overall (from 230,000) (National Council for Voluntary Organisations, 1988). From a research project currently being conducted for the Countryside Commission, it appears that there could be as much as a 90% reduction in environmental jobs. Also, Approved Training Agencies, the bodies that allocate ET places, steer people away from environmental work, because there are few established market jobs at the end of training.

Some indication of the shortfall in environmental places in a number of organisations at September 1988 is given in table 4. It indicates the salient results of a postal survey conducted for the Countryside Commission with a wide range of agencies all of whom had been involved in CP environmental work.

TABLE 4 - Environmental Manpower in the Transition from CP to ET

* There are 57% fewer allocated environmental places under ET than CP, and (at the time of the survey) hardly any actual uptake of ET places at all

* There are 27% fewer organisations involved in ET than CP in environmental work.

* Of those organisations involved in ET, 77% intend doing fewer environmental man-days than under CP. Only 5% intend doing more.

* Over 36% of all CP authorised places were associated with the environment. Fewer than 22% under ET are environmental.

Source: Countryside Commission, (1988b)

This significant reduction in the countryside environmental workforce as a direct result of government employment and training policies is particularly worrying when seen in the context of the Government's December

(1988) White Paper on 'Employment into the 1990s.' (Department of Employment, 1988). In its review of the changing structure of employment nationally it sees a shift from manufacturing into the 1990s, to services. It mentions two principal growth sectors in this respect, financial and banking services, and tourism and leisure. This latter area has a critical relevance to the countryside environment.

The success of the manufacturing sector since the war has been attributed in no small degree to the provision by governments of all persuasions of a manufacturing infrastructure, particularly of roads and buildings. (Fothergill and Gudgen, 1982.) In the face of a shift in employment from manufacturing into leisure and tourism it is important that the government pays full regard to the infrastructure requirements of the leisure industry. For the countryside, this infrastructure is the quality of the environment itself and there are clear parallels with manufacturing that suggest that an environmental workforce should be maintained in support of this growth industry of the 1990s.

This kind of development would also be broadly consistent with public attitudes, where a recent survey (Jowell, Witherspoon and Brook, 1988) has indicated that there is very little public opposition to the development of tourism in the countryside, much more concern about the development of industry that could be environmentally damaging, and a great deal of concern about the sustenance of environmental quality in the countryside, particularly to counter unsympathetic agricultural practices.

7. Conclusions

Extensification particularly with production objectives does appear to offer the most potential for developing rural employment opportunities within the package of over-production measures recently introduced by government for agriculture. Even in the field of extensification with conservation objectives where employment is not normally seen as an objective, innovations can be made: Dartmoor National Park Authority, for example, now issues management agreement grants under the 1981 Wildlife and Countryside Act only as labour subsidies. They are now issued to pay the wages of workers to undertake landscape improvements rather than to desist from destructive operations. They

are still cautious about this procedure though, since they don't know whether is really within the terms of the Act.

Despite this, extensification with production objectives seems likely to serve the rural community best. In this context, McLaughlin (1988) does suggest that making environmental objectives paramount in the new opportunities that solving over-production problems brings should not be automatic. There is, he claims, a responsibility to the people of the countryside and their welfare first and foremost. In more general terms, there is a strong case for petitioning government for direct financial support for rural work, even if it is for environmental ends, particularly in the wake of the demise of the Community Programme and in a climate of a shift, albeit nominal so far, of agricultural resources away from production objectives. This would be a diversion of resources away from support to agriculture that has no job creation element, rather than a net increase in funds from the public purse. There is a public relations exercise to be undertaken too, in overcoming the stigma of direct transfer payments for rural employment, particularly in the non-market sectors such as conservation, amenity and the environment. There seems to be a strong case on a priori grounds for making employment objectives an explicit part of rural diversification programmes.

Certainly in terms of the current structure of financial support to rural areas Lord Vinson's (1988) views on rural employment seem dubious. Writing in an article entitled "Putting People First", he states: "Government cannot create jobs, but they can set the framework for enterprise and facilitate new employment opportunities". It seems hard to believe that just imposing an enterprise culture in rural areas is doing enough for rural jobs, when the government is still spending some 1,800 million a year supporting farm incomes - a level of support that is still creating further job losses even within agriculture.

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THE GENIUS OF THE PLACE: SOME REFLECTIONS ON OLMSTED AND HIS WORK ON CENTRAL PARK

Colin Young

UNTIL COMPARATIVELY RECENTLY Frederick Law Olmsted was a public figure whose work attracted little acclaim. For fifty years after his death the profession that he helped to found looked coolly on his considerable achievements. Happily that situation was transformed by the close attentions of a coterie of serious students of nineteenth century landscape design who revealed to a receptive public a genius of international standing in urban improvements and landscape design. There seemed little doubt about the status of this figure, cast as he frequently was, and is, as hero in perpetual combat with the forces of Philistinism and corruption in defence of visionary environmental values.

Much of Olmsted's reputation rests on his work as a landscape designer and in particular the innovatory character of his design ideas and the manner in which they were implemented. This, it has been claimed, is where his genius resided.(1) None other than Daniel Burnham declared him a genius,

> an artist ...[who] paints with lakes and wooded slopes; with lawns and banks and forest-covered hills; with mountain-sides and ocean views.(2)

This contemporary assessment should not be undervalued even in the face of the suggestion that it was as a manager and propagandist that Olmsted really showed his genius (3) or the fact that Charles Eliot, a later acolyte who worked in the Olmsted office, could be quite critical of the firm's work. But it is to the issue of Olmsted's genius as a designer that this comment is addressed.

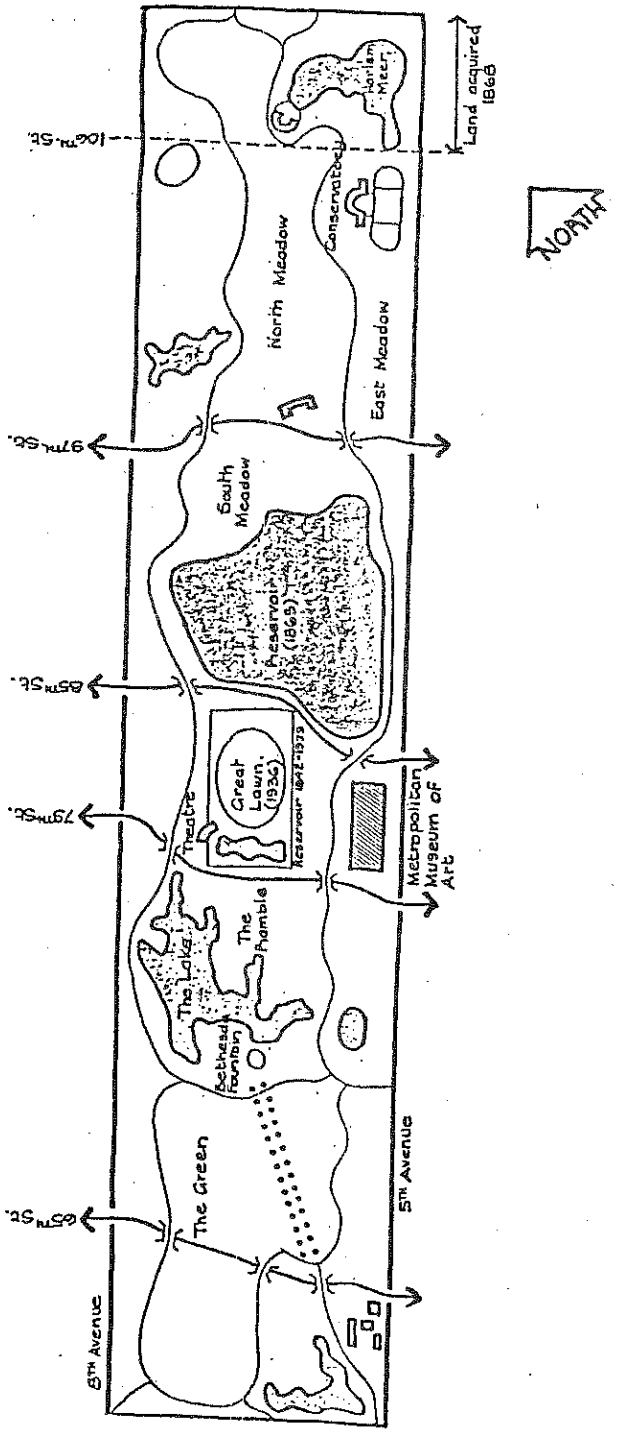
Colin Young originally studied landscape architecture in America. He is currently a principal lecturer in the School in Gloucester and his responsibilities include the subject leadership of theory, principles and process in landscape architecture.

While this subject may be worthy of more exhaustive enquiry the purposes of this note will be served if it prompts such a study. Thus no broad nor balanced investigation is here mounted but rather a mere soupcon that is no more than indicative. For this purpose three aspects of the design of Central Park, New York (1858), have been identified and their originality assessed in the belief that the implication, at least, of many commentators, is that genius equates with originality. Before embarking, this intention will be best served by a quick review of the circumstances surrounding and germane to the designing of Central Park.

Some biographical facts dominate the issue. Firstly, Olmsted was well versed in both contemporary and historical landscape achievements in Europe through a fairly extensive literature and through travel (the American equivalent of the Grand Tour, with visits in 1850, 1856 and 1859)(4) Despite some eighty years of political independence Americans remained culturally attached to the old world even though the assertion in landscape circles was that European precedents should be adapted to the special conditions of the new world.(5) Secondly, Vaux, London born, educated and with significant professional experience in the capital, not only took with him on his emigration in 1850 all the cultural 'baggage' that this background implied but immediately became the partner of the accepted doyen of American landscape gardeners, Andrew Jackson Downing, a self-declared devotee of Loudon.(6) Vaux's true worth in the partnership has yet to be assessed but Reed credits him with sufficient insight to see the park as a work of art (7) and Olmsted himself claimed him to be 'absolutely the most ingenious, industrious and indefatigable'.(8) With this kind of orientation there can be little doubt of the influence that English- and European-designed landscapes had upon Olmsted and Vaux and with this in mind a closer examination of some select features of the Central Park circulation system follows.

Cellular layout

By any measure the proportions of the Central Park make for design and layout difficulties. A parallelogram nearly five times as long as it was wide made the achievement of a 'sense of enlarged freedom'(9) problematic even without the present tall buildings on part of the periphery. Add to this the division of the tract into two parts by the raised Croton reservoir and it is clear that no ordinary layout would satisfy this key aesthetic objective. The stroke of genius that



CENTRAL PARK, N.Y.C.
OLMSTED & VAUX 1858-78
340 ha. (2½ miles x ½ mile.)

resolved this dilemma was a cellular layout of drives, each cell varying in size according to the size or number of elements to be ringed. Thus the largest cell accommodates the reservoir while one of the smaller ones surrounds the Mall. Cell size and shape is also determined by the character of the landscape to be enclosed so that the rugged and picturesque lake and Ramble area is given a wide berth while the areas on the boundary tend to be, especially in the southern half, quite narrow, so much so that in places these allow no more development than dense boundary planting.

At the very least this system is made to appear to fit the particular circumstances described extraordinarily well. If this is the product of genius so be it but as to the originality of such an arrangement some doubt might be entertained. It is generally accepted that the wholly American phenomenon of the 'rural cemetery' had, as a precursor to public park, a considerable influence on its design. Both Mount Auburn Cemetery, Cambridge, Mass. (1831), and Greenwood Cemetery, Brooklyn (1839), possessed cellular layouts and since wildly popular as places of recreation would have been known to both Olmsted and Vaux. Given Olmsted's close observation of all matters connected with landscape design and use it is inconceivable that these precedents escaped his attention and therefore can be assumed to have been carefully considered in the preparation of 'Greensward'.

But, perhaps more significantly, seven years before the advent of the 'Greensward' scheme and a year after Vaux's arrival in the U.S.A. Downing designed a layout for the Mall in Washington, a layout with which Vaux might quite conceivably have been involved. Though very much smaller than Central Park this scheme nevertheless shared significant characteristics, namely that the central section of the Mall site was a regular parallelogram crossed by transverse roads (to be discussed later). The circulation system Downing (or Vaux ?) adopted was essentially cellular(10). It is not stretching credulity too much to claim that the circulation in this little scheme served as a model for Central Park and that what genius was involved might have been Vaux's.

The Mall

A distinctive feature of Central Park and of its circulation system is the Mall, a 370-metre long, elm-lined promenade sited in the southern half of the park.

> In giving it this prominent position, we look at it in the light of an artificial structure on a scale of magnitude commensurate with the size of the park, and ... that it occupy the same position of relative importance ... that a mansion should occupy in a park prepared for private occupation. (11)

The 'Greensward' authors could not have been clearer in their intentions for the Mall and it is fair to say that it fulfils this role even today when so many distractive buildings have made their incursions over the years. However, the point to emphasise here is that, without suitable precedents in the public realm, the designers invoked common gardening precedents for their inspiration. This though was not the sum of the matter for the idea of a formal promenade had antecedents both ancient and widespread. In fact it would be difficult to find any city or town of any significance in Europe without a 'public' promenade. The difference here, it might be claimed was that the walk was integrated with the park rather than being an independent element but even this was not unprecedented. Many London pleasure grounds, of which Vauxhall was perhaps the most famous, contained formal tree-lined promenades but more significantly so too did many early European public parks, to such an extent that it may be said to have been the norm. The John Nash and Edward Mogg layouts for Regent's Park (1811 an d 1828) and John Gibson's revised layout for Battersea Park (ca.1847) is sufficient evidence to show that the Olmsted/Vaux idea was hardly an innovation. It is interesting that this important feature was omitted in the original scheme (1866) of their next park at Brooklyn, an admission perhaps that the earlier oeuvre had been less than successful. However after Vaux had left the partnership Olmsted resurrected the idea in the form of The Greeting in Franklin Park, Boston (1885), a most incongruous inclusion that seems both unimaginative and insensitive.

So it is difficult to see either originality or sound design judgement in the Central Park Mall although it must be owned that its terraced termination is skilfully handled.

Grade separation

The feature above all others that has been identified as indicative of design genius is the way in which the transverse roads were handled and how this device was broadly and consistently used to effect an integrated

multi-mode circulation system. It was a requirement of the competition brief that four city roads should be continued across the proposed park, an arrangement that had precedents in Birkenhead Park (1847) and Victoria Park, Tower Hamlets (1846). In coming to terms with a stipulation that was so completely at variance with a 'country park' ethos was the coup de theatre of the Greensward plan. The solution to the problem lay in the adoption and adaptation of the principle of appropriation made possible partly by means of the so called 'ha-ha' an excavated trench 'invented' by Bridgeman some hundred and fifty years earlier which, by concealing a desired fence or wall, secured the illus ion of a continuous sweep of parkland verdure. Here, however, the 'ha-ha' contained a road and was locally 'bridged' by tunnelling to ensure the actual continuity of park drives, bridle and foot paths, the whole held by commentators to be,

> ...one of the best examples of Olmsted's capacity for being ahead of his times... the most brilliant single stroke of the Greensward plan...(12)
>
> ...an Olmsted innovation...(13)
>
> ...a complete novelty. (14)
>
> ...a unique solution. (15)
>
> and essentially inventive. (16)

The first matter of interest here is that Vaux's name is nowhere mentioned. It may be that as senior partner the convention allowed nothing else even though all reports and drawings were signed by Olmsted, Vaux & Co. (other than the oils painted by Vaux)(17). Equally it may be that since the reports carry Olmsted's inimitable literary style he is assumed to have been not just the scribe but the originator of all the ideas. The briefest of reflections will expose this as naive. Far from being that passive, Vaux it was who persuaded Olmsted to join him in entering the Central Park competition whereupon he (Olmsted) entered on a 'six-month apprenticeship working with Vaux' (18) and he it was who made the basic decisions on the Brooklyn Park during his partner's absence in California. It might also be added that since Vaux was the acknowledged designer of the spatially complex stair and terrace at the northern end of the Mall (19) it would have been within his creative capacity to have seen how to utilise the grade separation idea.

There is a danger of incestuous scholarship fathering a myth of Olmsted's pre-eminence. Yet, while apportioning credit with any certainty is difficult and certainly impossible in these few lines, assessing the innovatory quality of some of the design ideas is a less intractable task. In the report accompanying the Greensward submission reference was made to two 'foreign examples', Regent's Park zoo and the Tuileries, where public roads made awkward incursions but here the concern was principally security and examples of what the authors considered a poor arrangement. In his useful article on the 'British influences on Frederick Law Olmsted and Central Park' (20) Rettig reviews the speculation about the source of the grade separation idea. In addition to the underpass in Regent's Park zoo identified by Chadwick and Olmsted/Kimball, Rettig implies that the bridge carrying the road that separates Kensington Gardens and Hyde Park and traversing both Serpentine and a path was a possible known precedent.

There are others equally plausible and in sufficient quantity to suggest that grade separation was a common practice. Consider, for example that recommended by Repton in his Red Book for Hooton, Cheshire in 1802 (21) or the Esplanade at Kemp Town, Brighton, which included an underpass link from beach to gardens under the busy Marine Parade, built in 1828 (22). Again, the case of the public footpath that crossed the Little Park, Windsor, is not without relevance. The Queen, finding it 'inconvenient' to cross this public thoroughfare when walking to her dog kennels, ordered it to be lowered under the royal route and thus effect a social as well as a physical separation of functions (23). It is difficult to believe that these, or even some of these, examples were unknown to either Olmsted or Vaux and equally implausible that they would have been unaware of a letter written by Loudon published in the Morning Chronicle and reproduced in an article by him in the Westminster Review in 1841 in which grade separation of roads through Kensington Gardens was proposed.

> ...these roads may be ... left open for the use of the public at all times, and still the unity of the gardens and continuity of the walks preserved...(24)

The emphasis here on precedents is not intended to undermine the achievement in Central Park but rather to set that achievement in an appropriate historical context, one that would be incomplete without a reference

to the continued application of grade separation in parks and no more recent an example than Tschumi's Gare du Flon, Lausanne, competition entry.

While the conclusions to be drawn from these notes are few it is hoped that they might stimulate discussion that will further our understanding of one of the key figures in landscape design. The circumstantial evidence compiled here serves to cast some doubt on the magnitude of Olmsted's reputation as a designer. The question of genius is even less certain, that is if it is measured by originality. Let Vaux have the last word:

> The study of what has been done by other nations, though useful as a help, will never, by itself, lead to much result in America (24)

This seems to encapsulate the partnership's approach to design in admitting the value of old world precedents yet freely adapting them to the peculiar conditions of the new world.

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AN ECOLOGICAL CONTEXT FOR LANDSCAPE DESIGNS

Ruth Tittenson

Ecology is a branch of the biological sciences which has existed as a separate discipline for a century. It is concerned with the processes by which plant and animal populations operate in their environment — 'demography' and 'sociology' really. So ecologists study birth and death rates, age-class structures, distribution and abundance, activity patterns, life cycles, energy flow in food webs, daily or seasonal patterns of activity. They spend a considerable amount of time observing and counting, often at unsociable hours and in inclement weather. Then they measure, record, and model (in a mathematical sense) as an aid to analysis and prediction.

Ecological principles provide the scientific basis of modern land management. Farming, forestry, wildlife and fisheries management, and nature conservation, all need ecological knowledge. And of course landscape management for amenity, recreation and rehabilitation too — that is —landscape architecture. All these facets of land use, whether urban or rural, are valid applications of ecology required by 20th century society.

In agriculture and forestry, ecology is applied directly to species or habitats of obvious commercial value. Examples are crops like wheat or oil seed rape, stock like sheep or red deer as well as timber crops like sitka spruce, sycamore or Scots pine. Wildlife management is concerned with animal populations which need conservation, cropping or control. Pests such as rabbits, woodpigeons and even roe deer are species which are controlled because they reduce the commercial value of farm or forest crops. Pheasants, grouse and grey partridges are species which are cropped because of their commercial value in rural sports. Habitat manipulation is the modern, sophisticated way of ensuring that their

Ruth Tittenson runs the Countryside Management Consultancy from a Sussex village. She specialises in landscape history, woodland ecology and management, and integration of conservation with farming.

populations are sufficient to allow cropping by sportsmen on a regular basis.

Nature conservation and landscape architecture differ from those aspects of applied ecology. They are both ways of managing land to encourage species which have no or little direct and obvious commercial value. They do not produce instantly marketable products although they may give added value in the sense of making another product more desirable. Society wants to conserve nature and to design amenity landscapes for other more subtle reasons: because the landscape forms our reservoir of natural resources; species may have particular scientific interest or possible future uses; beautiful flowers and landscapes give aesthetic pleasure; landscapes are our living cultural heritage.

Considering the 'ordinary' farmed landscape which makes up over 80% of our country's area, it is obvious that normal agricultural operations carried out on a farm must sustain the habitats or species which live there — species perhaps valued for conservation, sport or landscape. So it is important to carry out an 'ecological audit' of a landscape to determine what are the existing biological resources. It is easy to interpolate new tree-planting or landscaping schemes which can — and do — reduce nature conservation value, if a thorough assay is neglected.

The urban landscape is not totally inimical to nature conservation either. Any place, a skyscraper, some derelict ground, a rubbish dump, cemetery, underground tunnels — even a freezer — can be wildlife habitat. This is because urban habitats mimic 'natural' homes: skyscrapers and cliffs as nesting places for kestrels or gulls, tunnels and caves as hanging places for bats. And of course species evolve: mice living in freezers for example.

An ecological audit and assessment of present and potential nature conservation value is therefore a necessary prerequisite of any landscape design, urban or rural.

Bared down, the landscape is geology, topography, soil, climate, fauna, flora. And time — ie history. The first six are the physical and biological facts of the environment which influence any landscaping scheme. The seventh is humanity, which means the history of civilisation's use of the landscape during five millennia and the subjective wishes or artistic desires of people.

The urban or rural landscape in which we find ourselves, or the landscape for which you are commissioned to produce a design, is really a slice in an evolutionary continuum where all the seven factors have interacted. The design which you interpolate onto that slice is a new stage, a new slice or 'landscape painting', a new mosaic of plants and animals in their environment. The design is therefore a big responsibility because the future course of the continuum will be altered by you. Even more reason for an audit of the canvas upon which you are working.

Some sort of context other than 'design' or 'amenity' is needed. Ecological context is fundamental because unsuitable species will not survive nor form a true population of interbreeding individuals. A collection of trees is not a woodland... Historical or cultural context is also important, so that the future slice you are designing bears some relationship to the past. For instance, 18th century landscaped parks did not arise out of a vacuum; they developed out of medieval Royal Forests, hunting parks and rabbit warrens. And they continued the tradition of open tree cover and grassland grazed by useful herbivores, which were the hallmark of those earlier ecosystems.

And finally it is necessary to know that a design for a landscape is a nature conservation improvement and not deleterious to wildlife. Rare or endangered species do not confine themselves to nice-looking places. They can occur (ie live!) on rubbish dumps, old railway sidings, derelict buildings or muddy patches as well as in attractive hay meadows or ancient woodland.

The influence of landscape architects on future environments is enormous, and brings a big responsibility towards client, society and nature.

1989 DISSERTATIONS: BA Hons (Landscape), Gloucester

The following is a list of the successful degree dissertation submissions for 1989. These documents can be consulted in the College Library and abstracts may be obtained from the Librarian on receipt of a stamped addressed envelope.

A.L. Bradley	Human place: creation of genius loci
P. Brown	Landscape architecture: a necessity to man?
A. Capper	Wytch Farm Oilfield Development
S. Chandler	The concept of the parterre
N. Curtis	Garden festivals: urban renewal?
K. Doyle	Responsive housing environments
S. Edwards	Tree roots: nursery practices
L. Elsworth	Concrete coastlines
R. Elwood	The merit and beauty of tradition: ESAs
C. Engel	The process of deep shaft coal mining
A.R. Gelling	Urban redevelopment in British seaside resorts
T. Grantham-Wright	Land, agriculture, countryside and landscapes in the UK
A. Haggar	Golf courses: landscapes for man
R.J. Hodgetts	The storm of October 1987
Jennifer Jackson	Nature conservation in Britain
Joseph Jackson	The restoration of historic landscapes
S. Lavigne	Urban fringe management
A.P. Lightfoot	Set-aside and the landscape architect
M.C. Lonsdale	Planning for open-cast coal
K.L. Lowndes	New life beneath elevated motorways
A. MacDougall	Conservation in the North York Moors
S. Martin	Housing design in the Cotswolds
I. Matthew	Colour and planting design
D.M. Robinson	Trees: psychological contributions in urban environments
D. Sabold	Experience-inspired space
N. Singh	The renewal of inner city housing estates
R. Strange	Contemporary aesthetic theory of landscape design
M. Woolgar	Politics, planning, private enterprise, plants

BOOK REVIEWS

BEAZLEY'S DESIGN AND DETAIL OF THE SPACE BETWEEN BUILDINGS by Alan and Angi Pinder, E & F N Spon, 1990.

ORIGINALLY PUBLISHED IN 1960, Design and Detail of the Space between Buildings has been recognised as a classic in an area which continues to be poorly represented by any literature published in this country. The book has been included in every worthwhile reference and bibliography on the subject for the past thirty years, even though it was out of print for a great deal of the time.I still have the copy of 'Design and Detail' someone bought for me in 1963. It has been in continuous use and a constant source of both information and inspiration. It had for me the unique combination of philosophy, information and illustration, able to deal equally with the qualities of historic Rome ,the Brussels Expo of 1958 or a Pembrokeshire stone hedge.

The text was however showing its age; it needed the imperial dimensions converting to metric, it needed all those valuable references to trade associations and British Standards updating and in a few places it required the use of more modern illustrations. At first sight this might have seemed no more than a tedious and rather uninspiring task. Arduous and time consuming it might have been but the authors of this new edition have done more than a revision of the original, they have put their own character into the book. As an ardent admirer of the original work I began this review with a great deal of trepidation. I looked for my favourite photographs and I checked those paragraphs which had so impressed me when I first read the book. The text has been revised in a sensitive and thoughtful way. I found many of the additions difficult to separate from the original, most of which has been left intact where change was not absolutely necessary. The omission of the short final chapter on "Planning" was I think inevitable, since there have been a number of books which have been produced during the last thirty years which cover the subject in a much more appropriate way. The slightly misplaced information relating to steps and ramps has fortunately not been lost. On the contrary the whole of Chapter Three is now devoted to "retaining walls, steps and ramps". This now provides a logical and appropriate complement to the first two parts which deal with "paved

surfaces" and "walls and fences". This is an undoubted improvement on the previous editions. The philosophy and the information aspects had passed the test.

The illustrative content did not unfortunately impress to the same high standards; many of the original photographs have been omitted and the few that have been replaced seem to lack the confident qualities of their predecessors. With only eighteen photographs in the new edition it compares unfavourably with my old book and its one hundred and twentyfour. There has been an increase in the hand drawn details, but these in no way make up for the images of reality which formed such an attractive part of the original book. The sketches themselves, so often reduced copies of the earlier work, are too often of the derided 'standard section' form. These give little cognizance to what might happen around, at the ends, or where one group of materials meet another. The format of the book with its wide right hand margin seems to have dictated the size and form of many of these drawings. Perhaps the layout should have been made to respond to the content rather than the content being forced into a straight-jacket of the publishers making.

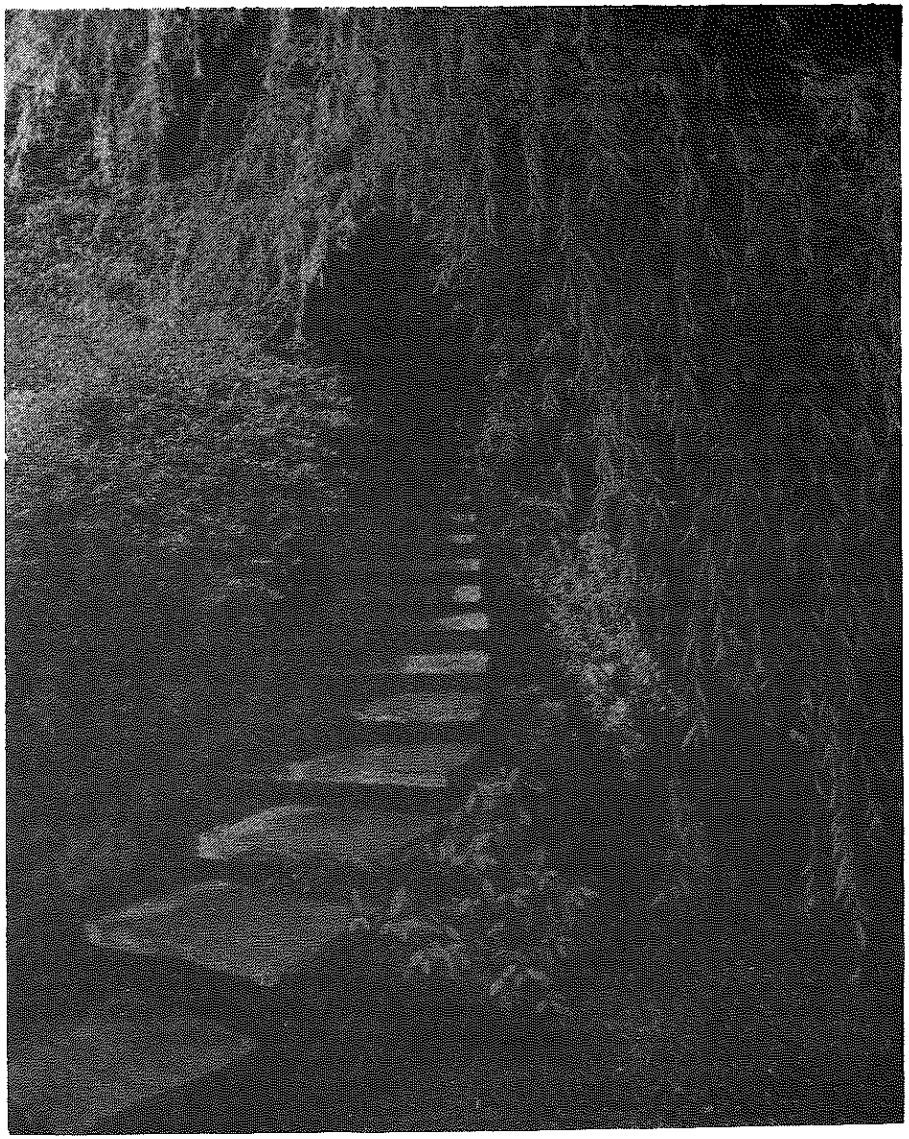
In spite of these complaints the book "feels right" and must be regarded as a worthy replacement of Elizabeth Beazley's original work. It will continue to be included in any general reading list dealing with its subject, essential reading for any student who aspires to understand how to do it, rather than for one who reaches for the manual which presumes to tell us what to do.

A copy will certainly find a place on my bookshelf, next to my beloved 1963 edition of course.

Gordon Hyden,
School of Landscape Architecture,
GlosCAT.

Illustration opposite:

One of the few photographs retained; but is the 1990 explanation a necessary improvement?



"Cantilevered steps: 1. Rugged stone slabs in an Italian garden curve up to a cool green tunnel from the glare of the sun" (1960 edition)

"Sensitive detailing allows these slabs to appear to float upwards and onwards signalling events yet to come" (1990 edition)

THE CITY OF GLOUCESTER, V.C.H. Vol 4, ed. N.M.Herbert, University of London, pp xxiii 474, 59 plates, 27 maps, ISBN 0 19 722771 6, 1988, £60

THIS IS THE SEVENTH VOLUME in the Victoria County History of Gloucestershire, begun in 1907 and revived in 1958. It is a magisterial work of reference which took over seven years to research and write. Two local authors, the editor Dr Nicholas Herbert and Dr John Jurica, wrote some 90% of the text. Carolyn Heighway contributed the story of Anglo-Saxon Gloucester and Professor Peter Clark covered the substantial period on Early Modern Gloucester, 1547-1720. Numerous local scholars are acknowledged for their contributions.

The series began throughout the country as a dedication to Queen Victoria, hence the 'V.C.H.', the Victoria County History, and the style owes something to that previous generation in the layout of the text; each major period is prefaced by an introductory essay which from modern times treats population, economic development, social structure or 'problems', cultural life, and parliamentary representation, followed by a theme on topography. The period covered runs to 1985 and there then follow 24 essays and lists in double column print on such topics as Gloucester Castle, Quays and Docks, Public Services, Gloucester Cathedral and Close, a list of street names and cameos on the history of Barnwood, Hempsted, Hucclecote and Matson, once on the periphery of the city.

Those with a lively interest in their local history have waited 170 years since T.D.Fosbrooke published his 'Original History of the City of Gloucester' for an up-to-date, authoritative text; the value of a small handful of other histories pales into insignificance in the light cast by this new text. One cannot imagine another history of Gloucester for another century.

The first theme covered (there are no conventional chapters) is Anglo-Saxon Gloucester, c.680 to 1066 and Carolyn Heighway quite rightly leans heavily on the continuing archaeological research into both Roman and Anglo-Saxon remains. The whole period is brought to life in the recognition of survivals from that time, including the ancient street pattern and the mapping of ecclesiastical foundations. There is no provincialism in the treatment as references are made to other contemporary places and events.

Dr Nicholas Herbert's essay on Medieval Gloucester, 1066-1547, covers 11 themes and sheds considerable light on what a previous generation of history students found rather dry - town administration and government and the gaining of liberties for townsfolk to rule themselves. 'Trade and industry, 1066-1327' identifies the Forest of Dean iron connection and individual merchants and traders as the economy develops until modern times. Masons, plumbers, soapmakers, tanners, venturers down the River Severn, bring a realism to the story. One has a great sense of the flow of history, sometimes in broad brushes but mostly in detailed minutiae which never become tedious.

Clark's period, 1547-1720, includes the English Revolution of the 17th century and a profusion of contemporary sources. The heroism of the inhabitants in the Civil War, when they faced the largest army assembled in modern times outside the city walls in 1643, is treated almost clinically - as is appropriate. On the other hand, efforts to relieve poverty and several job creation schemes in periods of distress and social tension have a modern ring as the hospital services in the 16th century broke down. The work of the city council is recorded as central government imposed further duties on local councillors and officials.

Herbert's essay takes the story from 1720 to 1835 when city government was put onto a modern footing and economic trends, identified earlier, are elaborated. This is a particularly strong feature of the book and a mark of keen editorship. City government, parliamentary representation and social and cultural life have a vividness and sheer interest that is often quite compelling.

Jurica continues these themes from 1835 to 1985 using a vast range of sources, tightly managed without any congestion of detail and one again has a lively sense of development - and, generally speaking, of progress.

For landscape architecture students the topographical essays which complete each period will be outstandingly valuable. Invariably illustrated by excellent maps and a judicious selection of townscape photographs, there is now a first class resource for students to gain an essential sense of historic place - and a recent analysis of dissertations in Landscape Issues indicates the popularity of urban themes. For more specific topics we

have already noted the cameo essays on particular themes in the built environment.

However, this text does not cover the whole of Gloucester's history; detailed history of religious houses and the grammar schools are found in Vol 2 and forthcoming articles will cover the canals, railways, county administration in Gloucester and prehistoric, Roman and pagan-Saxon Gloucester. Many readers will need to refer to other texts to decipher the villani and bordars on p.402, the value of a mark (p.16) and the O.E.D. cannot help with 'keziard' on p.56. And this reviewer still does not know the origin of the place name Longlevens, the local parish for GlosCAT.

This is a work of scholarship and immense interest and by contemporary standards the price at £60 is excellent value.

Bryan Jerrard,
Adult Education,
GlosCAT.

LUNATIC ATTRACTION

TWO BOOKS BY LANDSCAPE NOTABLES recently arrived at my desk together. Each offered yet more evidence of the neglect of some of our most interesting landscapes. The first, The pattern of landscape(1), is a text by Sylvia Crowe to a sequence of photographs assembled (and mostly taken) by Mary Mitchell: an expensive coffee-table book that deserves passing attention because of the photographs which, although outstanding neither individually nor collectively, and badly served by the clear but naive text, well illustrate a range of 'attractive' landscapes. Almost at the end is a pair of views captioned "A small quarry in the hillside may add interest by revealing the underlying strata, while both the form and the mood of a landscape are wrecked by large excavations."

The latter situation is the context picked up by some of the illustrations in the second volume, Geoffrey Jellicoe's Guelph lectures on landscape design(2), which is an awkwardly incoherent (and I suspect not a little specious) text, in part quoting from earlier publications, and illustrated with a notable collection of the author's eccentric graphics, to elucidate, by a series of schemes in which he has been involved over the years, his ideas on (if I may paraphrase) Landscape, The Universe and Everything.

One of the projects discussed is the Blue Circle Cement Works at Hope in the Peak District, for which a 50-year plan — the first in England — in 1943, and a progress report in 1979, were commissioned. Sir Geoffrey quotes from the latter:

> Depending on whom [sic] you are, the works at Hope can register as an unwelcome intrusion into a National Park or as a welcome symbol of prosperity for the neighbourhood.

Now, (for Britain) the scale of the Hope quarries and adjacent debris and works is certainly quite large (and like Mary Mitchell's example is limestone); certainly the workings have been registered as an unwelcome intrusion. For Jellicoe, the Works and his work at Hope are "concerned with man's relation to the cosmos"; and he reviews the scheme in order to consider whether the landscape being created "is or is not a new art form".

Farbeit from me to imply no inclination for

> unsealing synchronous poetries of landscape
> into mind(3)

for what these illustrations in these two books reminded me of was a wonderful, solitary, walk into and out of and around the Hope Valley that I made a few years ago. It might have suited Sir Geoffrey, and he might have agreed that

> simply to remember
> .....
> is to begin to be healed
> of the fathomless audacity of my conceit
> that I create this world
> .....(3),

for we forget who has created it. And what. People at work: work, labour; sweat and tears; these have created our landscapes. Britain's landscapes (whatever else they are) are monuments to work.

For that walk, I left Edale and crossed the ridge to descend into Hope in a June dusk, walked up Pin Dale past the Works, followed the ancient tracks over Dirtlow Rake in the dark (the local 'rakes' are the old, elongated surface workings for lead), sat and watched the quiet, black hillsides of Rushup Edge, then, before returning to Edale, lay on the hillfort of Mam Tor, the Shimmering Mountain, to take in

... the stars that perforate the bombazine(4),

and the night-lights of Castleton village below - and all this added to my belief that our refined and elitist interest in that nebulous thing 'landscape', besides the fathomless audacity it tends to engender, neglects what is for many people almost the most important aspect of what they see; what it was: what, if you like, it has meant, as well as what it means(5).

MEANING HUMANISED

It is the past, the history, the uses, of the land, quite as much as the native rock, the topography and vegetation, that make and give meaning to the landscapes we see. It is the quarries as much as the dales, that make the Peakland scene.

The area from which I am currently trying to glean meaning is Dean Forest. Now, the Dean has been dug. It is a palimpsest scratched and pitted for iron, coal and building stone for over two millennia. Just so was that area dug, in which I previously found meaning: Pin Dale, Dirtlow and The Winnats. And these diggings have left "scarred" landscapes of great intrigue, charm and poignancy. They are the more interesting for the digging.

In this context, two things thrill me. One is knowing that a place is wild. The other, contrariwise, is knowing that a place has a long history; knowing that it has been used, made and remade by a long succession of people: that it is not wild, but 'humanised'. The White Peak, into which the Hope Valley leads, is 'humanised'. Much of its appeal (I can say only personally) is because

it has been used, by a long succession of people — and the resulting (or, rather, the present, for this is a continuing process) landscape remains a pleasing one, a landscape of plateau and dales. The White Peak also is being bitten into by the longest man-made cliff in Europe, as the quarries of Great Rocks Dale, Peak Dale and Dove Holes have been called. And what a landscape could result! Large-scale quarrying in the Peak has been resisted for years by the National Park authority, the C.P.R.E., and many another body. Yet... what an amazing, pleasing, landscape could — if developed and treated appropriately — result.

Alas! there is always an 'if'. Or, rather 'ifs' ... For a Dame Sylvia, the 'if' is about whether or not the existing mood of the landscape is "wrecked" or (if it may be so) changed to advantage; for a Sir Geoffrey, an 'if' might be whether or not we can produce a new art form from the change.

Probably the commonest 'if' invokes the rather blunt negative "Don't": and in one form I would agree with it. There are, I believe , two reasons why one perhaps should not dig in the first place: that one should "live lightly on the Earth(6)", in conservation terms, and because we seldom seem to make use of the opportunities presented; for, as often as not, when a large digging is produced, a common reaction is to seek to fill it in again — or if a colliery spoil heap, or a china clay mountain, or waste slate tip, to take it down again... It is not that I am against reclamation; I am quite conscious of the enormous need for it. Rather, what worries me is that these holes and heaps have been produced at great effort, and we seem to miss many an opportunity to make use of these efforts, by seeing their works not as only as monuments, but as opportunities - in (I stress) some cases. It is not that I am whole-heartedly in favour of large scale diggings: certainly not; but ... in some cases the larger scale yields the larger opportunity — and the grander can be the ideas with which to develop them. This may not quite be "living lightly on the Earth", and I am not suggesting that we dig grandly, and make even longer cliffs for the sake of having them; rather, that "opportunities arise" (or at least, that we can "make the best of a bad job"?). Opportunities like the almost fantastic beauty of the landscape that Daphne du Maurier saw in Cornwall's china clay area, where spoil heaps

like pyramids paint the sky, great quarries formed about their base descending into pits ... icy green like arctic pools,(7)

where others have found only problems in the white leprous country with the pyramidal pustules ... and unnatural jade pools...(8)

or savage dereliction... with lunatic attraction(9)

Derelict, degraded (all but dead), dehumanized and dehumanizing suchlike landscapes can be, to live with (they are not nice places to work in....); yet, to some, they have a lunatic attraction. I have found the same sort of attractiveness in the quarries of the White Peak, on the grey dunes of the northern coalfields, in the gritty Mill Towns of the Pennines, and about the scale-backed slate tips of Eryri.

CHWARELI A CHWARELWYR

Consider the wastes of Eryri. One could hardly be subject to more lunatic attractions than the terraces of Dinorwic, or the scaley shoulders beneath which Blaenau Ffestiniog survives, or the excrescences and ghosts of Cwm Orthin, whence

Everybody's gone now,
Leaving signs of habitation behind:
Eyeless ruins like empty skulls
Here and there, and an old chapel deteriorating.(10)

One could hardly be blamed for calling these unfortunate places, that ought to be 'reclaimed'. One can see why the National Park boundary stops at Llanberis, and leaves Blaenau in a hole in the map: they do not meet the conventional criteria for attractive landscapes. Yet - attraction they have, albeit of a lunatic, heretical, nature. They are, as much as Yr Wyddfa, high points in the "heritage" of Eryri: heritage landscapes, full of meaning and interest, and full of beauty for those who can see it. And not least that beauty is of the history of the places; is bound up with knowing that men have worked this land,

Giving a shape to and making.(11) I have just again visited a place given shape to and made by man. Dorothea is beautiful. Dorothea is grand. Dorothea is between Penygroes and Nantlle. Here, the ground has been eaten

by men, chewed in holes hundreds of feet deep. The defunct Dorothea quarry is a flooded hole in the purple slate with cliffs in places a hundred feet down to the water — clear, tranquil water, green or torquoise or grey according to the light, and 600 feet deep. Dorothea is one hole of many in the derelict Nantlle landscape; there are waste tips and ramps and massive cracking walls giving an impression of, perhaps, Mayan ruins; the ground oozes the pains and the achievements of workers; and on a wet day (at least as much as in the sun) this must be one of the most awe-full places in Eryri. If anywhere is a "heritage landscape", this is.

If any landscape has the potential — offers opportunities — to inspire, and to allow one both to remember and to imagine, this is it. (There is now, it seems, a scheme afoot to make the place a recreation centre.) Again I must emphasise that I am not attempting an apology for diggers and spoil-heap makers. The world is poxy enough; men have

... held this land, and with their filthinesse
Polluted this same gentle soyle long time;

and there is more than a little agreement that during their working these places are, if intriguing and awe-inspiring, not at their most appealing. It is after they have started moldering "back to Nature" that they have maximum appeal - and in many, many cases, of course, that appeal is minimal; but occasionally we have unwittingly laboured to produce inspiring, valuable places. As to their particular opportunities ...

Martin Spray,
School of Landscape Architecture,
GlosCAT.

NOTES

1. Packard Publishing, Chichester, 1988.
2. University of Guelph, 1983. Available in Britain from Packard Publishing, Chichester.
3. Alan Ryecroft 'Return to Earth'.
4. Source forgotten.
5. Martin Spray (1988) Amor loci, Landscape Research, 13(3)
6. In this context it is interesting to note that one economic analysis of the total 'use' of limestone concludes that the resource is most valuable when

left undug, especially when aquifers are considered. William Stanton(1989), Bleak prospects for limestone, New Scientist 122(1664):56.
7. Vanishing Cornwall.
8. Peggy Pollard (1947) Vision of England.
9. John Barr (1969) Derelict Britain. I am indebted to Mike Davies (1988) Developing a landscape strategy for the china clay industry in Cornwall, GlosCAT dissertation, for these points of view.
10. Gwyn Thomas 'Cwmorthin' tr. Merfyn Williams.
11. Barbara Zanditon 'Time'.
12. Spenser 'Fairie Queene'.

HORTICULTURAL SUCCESS

CONGRATULATIONS TO PETER YEO for winning the West Midlands and South Wales Branch final for the Young Horticulturalist of the Year Competition being organised by the Institute of Horticulture and sponsored by Shrewsbury Flower Show. Peter, a second year student in the School, defeated students from all horticultural colleges within this Branch and gains a place in the National Final to be held in early April 1990.

INFORMATION FOR CONTRIBUTORS

LANDSCAPE ISSUES publishes articles and reports on aspects of landscape architecture and landscape education. Manuscripts should be submitted to the Editor, in duplicate for refereeing, typed on A4 sheets with ample margins and bearing the title of the paper together with the name(s) and any affiliation(s) of the author(s). A high scholarly standard is expected, and normal conventions for references, illustrations etc. should be followed. Footnotes should be avoided. Further details will be supplied on request. Although there is no strict limitation on the length of articles, 3-5000 words are preferred. Reports are much shorter and cover matters of topical interest; for example, specific design projects, research seminars and dissertations. Illustrations are welcome: diagrams should be neat and clear; photographs should be black and white or, if colour, of suitable clarity for reproduction. Copyright is held by the authors of all work submitted. Articles may contain views which do not coincide with those of the Editorial Board.