

An Eclectic Approach to the Skills of Reading Landscape and Their Application to Permaculture Consultancy

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ABSTRACT: An overview of the indirect sources of information about landscape available to land managers and advisors will be given and the importance of reading landscape (that is, the trained but direct perception of landscape form and process) in extending the usefulness of, and integrating information from these secondary sources. The subject will be discussed under the headings: Application of Science, Field Naturalism, Contemplative Awareness and Indicators/Rules of Thumb, in an attempt to provide guidelines for development of skills in reading landscape while keeping in mind long-term aims of achieving sound land use system and the land ethics needed to sustain such systems over generations. The use of these ideas and methods is implicit in permaculture but little attention has been given to their development. The lack of skills in this area is seen as a major impediment to permaculture development and more specifically permaculture consultancy.

One of the fundamental issues of permaculture consultancy is the need for a thorough understanding of the processes shaping the landscape and the interaction with land use, contemporary and historical. This need is critical because permaculture relies more on working with natural processes than in transforming the landscape through high energy inputs. As a corollary to this, permaculture must be site specific if it is to be attuned to the particular combinations of energies and form. A sound understanding of landscape has conventionally arisen from two rather polarized approaches.

The first approach involves long experience working particular land, seeing it respond to various stresses and changes. Through a combination of trial and error, oral history, tuning of the senses to particular local forms and processes, and general absorption of knowledge by growing up in the natural environment, traditional farmers often develop a very thorough understanding of their land and the influences affecting it. However their understanding is often so site specific and lacking in comprehension of underlying processes, that it is of little value in another landscape. This approach has never been developed in Australia as in countries with a peasant culture, and, with rapidly changing rural ownership and far reaching changes in land use and farming methods due to the emerging post-industrial economy, this approach is even less relevant.

The second requires the survey of the characteristics of geology, soils, vegetation, water resources, wildlife, etc. In standard format which allows comparison to other sites. This data are evaluated by specialists and then applied to land use planning and management issues by agricultural scientists, foresters, soil conservators, and other applied science professionals. Land managers then use the results of this work in on-farm decision making. Geographers and landscape planners may contribute an integrative or synthesizing approach but generally it is assumed that the land manager integrates the information to create coherent and balanced land use systems. Because of the costs involved, the formal and professional approach provides only broad brush management techniques for application over diverse landscapes. Also as could be expected land use systems which at present

yield the greatest economic results are the focus of most research. The permaculture consultant needs to be familiar with both approaches. Extensive personal experience in managing a range of land types is not possible but a consultant should have "hands on" experience of working land in some form. Practical experience is also necessary to understand the significance of anecdotal information. I've found that "old timers" can be very knowledgeable about land use issues and details, but that it's necessary to ask the right questions. What they view as interesting may not be half as important as comments let slip, as an aside.

Familiarity with all the historical, conservation and development studies in a region, the source of map information, and public sources able to provide published or unpublished material can take some time to develop, a task more difficult for those operating away from capital cities.

However, the information from personal and anecdotal experience and scientific sources is an inadequate data base on landscape systems for effective consulting in permaculture. To summarize the inadequacies, permaculture is site specific, requiring a fine-grained rather than broad-brush approach; projects are rarely large enough to employ the services of specialists; and available information is geared to existing land use systems and may be of marginal value for alternative strategies.

The third option available is the development of skills in reading landscape. Reading landscape may be defined as the gleaning of information about the environment by direct observation. Visual phenomena is the primary source but extension to the other senses, and their associated phenomena is implicit in reading landscape. The organization of the information received is through the patterns as they present themselves in the landscape, cutting across the traditional boundaries of the natural sciences. Thus pattern recognition is the central activity in reading landscape.

We all have some skill in this area, but I believe the development of these skills to a high level is essential for effective permaculture consultancy. The ability to be able to quickly assess basic site characteristics such as soil drainage, moisture retention, erosion risk, nutrient status, pH, flooding, runoff, wind, frost, fire potential, rainfall and land use history with little or no collaborative information is a basic tool of trade. A broad understanding of the major processes of soil formation and degradation, ecological colonization, succession, competition and symbiosis at work on the site is necessary if a consultant is to give the landholder an overview of the biological potential of the land and the natural limiting factors affecting it, before considering planning and design options. Skills in reading landscape can help, in both strategy planning and detailed design and specification.

I have identified four aspects which contribute to building skills at reading landscape through my own experience. They are: Application of Science; Field Naturalism; Contemplative Awareness; and indicators/Rules of Thumb

Application of Science

Scientific disciplines, especially ecology and geography, provide frameworks useful in reading landscape. Three levels of scientific endeavor can be discerned: description, classification and explanation. In some ways the whole process of reading landscape can be seen as an aspect of the descriptive process. This is explained further as field naturalism. Classification involves the grouping of elements with certain similar properties and is the

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way science organizes the diverse phenomena of nature into handleable subjects. The third and most advanced level is the theoretical-predictive form. Theoretical science recognizes the underlying relationships between structure and movement in spatial processes and through abstraction seeks to explain these.

Classification: Questions such as, what eucalypt species is that? constantly arise in studying landscape. By noting recognized diagnostic features used in the relevant taxonomic system, identification is possible using references and keys. Once identified a range of published and other authoritative information about the type or species can be referred to. Given that it may be time consuming to refer to specialists for identification of "species" of rocks, soils, plants, and animals, a consultant should, ideally be capable of this for the region covered. Although not reading landscape, this is a companion skill expanding the usefulness of pattern recognition. More general classification systems help us to recognize processes and phenomena in the field, e.g. eutrophication in a lake or river or sheet erosion in a paddock. In soil science quite an elaborate system of taxonomy has developed, similar to the taxonomy of plants and animals, but validity and usefulness of the system is uncertain.

The assumption that existing soil types have a direct relationship to soil origin and development appears to be very questionable. In fields where taxonomy is more soundly based, such as botany, scientists are inclined to believe the classification system is reality itself rather than a construct of our minds. In making use of scientific classification we should never fall into this trap.

Scientific theory—explanation and prediction.

Many areas of landscape interpretation are still without well-formalized theories useful in explanation and prediction. Most theories which are of direct interest come from the two integrative disciplines of ecology and geography, (e.g. ecological succession, watershed evolution and location theory).

ideally, consultants should have a working knowledge of the theoretical aspects of these two disciplines. That means understanding just what phenomena a theory does and does not explain, and being able to make practical use of it to explain and predict, rather than the "garbage in garbage out" process so common at institutions of learning. This working knowledge is best achieved by constantly testing theory against observations in the field. All too often land managers and their advisors have a poor understanding of fundamental landscape processes and academics have little direct experience of the phenomena in context. As with the use of taxonomic classification the application and testing of theory is hardly reading landscape, but it helps make sense of the chaos of undisciplined observation. When practiced as a matter of course it can lead to the formulation of hypotheses which are useful within the range of the consultant's work, even if they do not represent an advance in general theory. This can be achieved, not because the consultant has become an expert in the particular field but because of the cross-fertilization of ideas from fields academically isolated from one another.

Field Naturalism

This involves the skills of careful observation and recording the landscape. The intention is to experience the diversity of nature first hand, learning to move carefully, patiently watch (and listen, feel, taste and smell) and objectively record. There need be no other particular purpose. This activity may reinforce the theoretical understanding of landscape or it may simply remind us of the

metaphysical mystery of nature. I record wild and cultivated landscapes with a camera and notebook, occasionally sketching or taking samples. Sometimes I simply photograph the beauty other times I take shots for historical record to see the change with the passing of seasons or years. On other occasions I attempt to capture a subject which clearly illustrates process through form, something most people find hard to see (maybe you have noticed that permaculture gardens are difficult to portray on film because the forms are not distinct and the most interesting aspects involving process may not be visible).

Bushwalking without particular goals or targets, especially away from tracks is useful in developing a familiarity with landscape. So many people who bushwalk isolate themselves from the environment by strenuous endeavors which literally shut down the senses, and rigid targets and timetables which reinforce everyday patterns of work from familiar man-made environments. Although wild landscapes can provide great stimulation, we should keep our field naturalists eye fully focused even in built-up city spaces. It is the ways in which nature adapts to mankind's activities and structures that are often most instructive in the design of cultivated ecosystems which can reflect a working with nature rather than against it. Thus, I often find delight in urban wasteland and the marginal spaces on otherwise carefully managed farms and old abandoned gardens. Weeds (from herbs to trees) are remarkably instructive on history of land use and abuse and Nature's ability to repair and heal. Militaristic thinking about weeds, whether motivated by "ecological morals" or exploitative greed is counterproductive in understanding landscape. The challenge of weeds is firstly to understand the processes of disturbance and degradation they are responding to and then how harness their healing work for a rapid succession to a more advanced and productive state. These insights are much assisted by "seeing it from the weeds' point of view". Thus the field naturalist approach allows us to identify with any and all lifeforms independent of whether they are beautiful or ugly, rare or ubiquitous, useful or noxious, to help broaden our perspective and in the long term act more effectively in creating and managing cultivated ecosystems.

Contemplative Awareness

This is where the mind is out of gear but the senses are fully attuned. No purpose or objective directs the thoughts which come and go. Mountain tops seem particularly favorable places for this state of mind. The distance allows us to see the woods instead of the trees, and the view from above gives a new insight into the broad patterns of landscape and our place in them. Looking down, we can recognize from new perspectives, places we think we know, see the connectedness of the landscape in other ways than the linear imagery of foottracks and highways. As terrestrial creatures we live on a two-dimensional curved surface where everything is in front of everything else. What is most noticeable is the interface between terrestrial features and the atmosphere: the skyline. Although very revealing, this view shows little of the complexity of the spatial connection between elements on the surface. As George Gester shows in his incredible book of photographs, *Grand Design, The Earth From Above*, the view seems to X-ray the landscape revealing previously hidden forces, structures and processes. Is it any wonder that people have traditionally regarded mountain tops as closer to God?

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Viewing landscape at night also tends to encourage this state of mind. The loss of color and depth seems to help break down our preconceptions of what a tree, building, river or other familiar form looks like, as textures outlines, and edges invisible in daylight reveal hidden aspects. Haikai Tane, describing experience in field survey work in the high country of New Zealand for the Lands & Survey department, said his greatest insights into the nature of the landscape were at dawn, before that first cup of tea, or after dinner, around the campfire relaxing. I might add that Haikai tends to choose rather special places to camp when out in the field. The insights resulting from contemplative awareness may appear as direct and isolated perceptions of the "truth" but generally are the surfacing of mental distillation resulting from observation, both conscious and unconscious. It seems that many of these observations may originate from the inputs of peripheral vision rather than direct focused sight. Contemplative awareness can be fostered by the way we work and live but it certainly cannot be forced.

Indicators/Rules of Thumb

The three approaches described so far represent fairly long-term investment if we are talking about becoming effective consultants. I've been improving my skills through these sorts of activities for over ten years and in the last five years, I've become conscious of their importance in consultancy work, but it is only in the last twelve months that I've started to experience the practical benefits in paid work. Much of those benefits come through recognition of "indicators" or "signposts" in landscape and the formulation of rules of thumb appropriate to particular land systems or situations.

From experience in scientific identification using taxonomic classification combined with pattern recognition skill developed through field naturalism and contemplative awareness it becomes possible to "recognize" rather than formally identify species. Eucalypts within limited land systems can be recognized at a distance by foliage texture, tone and density, tree form, associated species etc. This sort of short cut is essential if consultants are to usefully use limited time, but it also assists in the casual assimilation of information which fosters the synthesizing insight of contemplative awareness indicator plants are basic tools of trade, and can show hidden properties of the site and soil such as salt, drainage, moisture retention, pH, general fertility and structure. The use of indicator plants is very context dependent especially with regard to land use and management activities such as burning, plowing, fertilizing, grazing etc. A good example is the interpretation of acidity using Sorrel (*Rumex acetosella*), rag grass (*Holcus lanatus*), and Cats Ear (*Hypochoeris radicata*).

in high-rainfall pastoral country of southern Australia these plants are common in waste spaces and unmanaged pastures. They are generally regarded as indicators of acidity but their complete absence from a supered and grazed clover pasture does not necessarily indicate a moderate pH. Conventional management of clover and grass pastures has led, over thirty years or more, to very acid conditions which eventually show up as failure of the clover to nodulate even though increasing stock health problems do provide a warning in many cases. Right up to the failure, the pasture may contain no acid soil indicator plants though if the pastures are left ungrazed and unfertilized even for short periods these species soon invade. Thus the pasture management completely masks the acidic conditions

Animals can also be used as indicators of conditions but are generally less specific than plants because animals are mobile and adapt to varying conditions through behavior patterns. In southern NSW I found lyre-bird activity correlated with forest litter and humus levels. Generally lyre birds are considered wet sclerophyll forest birds where litter and humus levels are high, and thus invertebrate soil and litter fauna, which form the bulk of the birds' food, are more abundant. Dry ridge forest free of regular burning is quite attractive to Lyre birds if the soil is moist. Interestingly enough, scratching and mound building by the birds appears to have a significant effect on fuel accumulation and thus fire risk. This simple example illustrates one of the ever-present traps with correlation leading to a misleading picture of the casual agent. A common misinterpretation is for people to believe pioneer plant species growing in, say, very poorly drained or salt-wind exposed environments actually prefer those conditions because that is where they are always found. Generally these species grow much better in more "moderate" conditions but they are less competitive than species specifically evolved to make use of the favorable environment. Other examples of the use of indicators are: parallel soil ridges and stone piles as signs of previous cultivation; checking tree butts for fire or ringbarking scars to identify events in the history of the land; checking tree crown growth form for winds which inhibit growth; and checking rocks in a stream bed to identify the upstream geology.

Rules of thumb represent a further distillation of general skills in reading landscape and a more accurate assessment of landscape characteristics. For example, being able to recognize the difference between a chainsaw felled tree and one felled with an axe and crosscut from weathered stumps can allow the dating of a logging operation as prior to or after the introduction of chainsaws in the 1930s. Similarly, familiarity with rates of weathering and decay of particular species in a given environment can allow the rough dating of much earlier logging or ringbarking. Another example involves the salt pruning effect. Understanding how resistant a particular plant species is to salt winds, from frequent observations of its growth habits and degree of salt pruning allows an assessment of the relative severity of salt winds at a particular site where the plant is found growing. The slide presentation of wild and cultivated landscapes from southern Australia, Tasmania and New Zealand illustrates visual aspects of skills in reading landscape toward the understanding of broad landscape processes and land use issues as well as information of practical use in land development.

Hopefully this discussion and display will provide some ideas and examples of how skills in reading landscape can be developed and applied in permaculture consultancy and emphasize the need for much more work in this field by everyone concerned with land development and management, if we are to achieve the goal of sustainable land use.