The Aesthetic Experience of Sustainable Forest Ecosystems

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Abstract — The social acceptability of "Ecosystem Management" and other sustainable forest ecosystem approaches rests in large part on people's aesthetic response to management change. For many, this response is based on a "scenic aesthetic" that is narrowly defined and largely visual in nature. The process of change is often perceived negatively, especially when it involves the death of trees by natural or human-induced causes. The scenic aesthetic remains the culturally dominant mode of appreciation; it is reinforced by research models of landscape perception and by landscape management practices, hindering progress towards other social goals such as biological diversity and ecosystem health. In contrast, an "ecological aesthetic" as espoused by Aldo Leopold and others requires a learned experience of the multimodal, dynamic qualities of forest environments, and appreciates both subtle and dramatic changes exhibited in the cycles of life and death. As such, adoption of an ecological aesthetic could help resolve perceived conflicts among social goals. Suggestions for planning, management, research and theory gleaned from an ecological aesthetic show how we might achieve sustainable forest ecosystems that are understood and appreciated by our public.

Our first and most immediate response to the environment is often an aesthetic one (Kaplan 1987). Although the adage that you "can't judge a book by looking at its cover" bears a great deal of truth, our evaluation of a place frequently depends on what we see from an aesthetic point of view. In the forest landscape, this implies that the appearance of the environment reflects the quality and care that goes into its management, and treatments that conflict with our aesthetic preferences may be construed as signs of poor management (Hull 1988, Nassauer, 1988).

In this paper I argue that current approaches to forest visual management practice and research are inadequate for dealing with aesthetic issues in the context of sustainable ecosystem management. Since their inception some thirty years ago, these approaches have tended to emphasize the formal, visual, and static characteristics of landscape scenery, a response to the dominant cultural mode of landscape perception and experience. However, forest ecosystems managed for sustainable values may exhibit few characteristics one typically thinks of as scenic, and thus under the current paradigm of visual management practice and research we have few guidelines for resolving aesthetic and biological/ecological goal conflicts. The primacy that aesthetics plays in people's evaluation of environments suggests that in order for sustainable ecosystem management to be fully accepted, a better understanding is needed of how aesthetic and biological/ecological outcomes are perceived and interact. In this paper I attempt to show how aesthetic appreciation of sustainable forest ecosystems requires an expansion of our understanding of what beauty in the landscape can mean and provide to people, and how a redefined program of landscape practice and research can be instrumental in discovering this beauty and communicating it to the public. I conclude with some practical ideas for bringing this sustainable "ecological aesthetic" into the vocabulary of landscape practitioners and researchers, to provide a better integration of aesthetic and biological/ecological goals in the management of forest ecosystems.

"Sustainability" has a variety of meanings when applied in the context of forest ecosystems (Gale and Cordray 1991). My use of the term sustainability focuses on the ecological aspects of sustainability, specifically on management approaches and practices that aim to restore and maintain the ecological structure and function of ecosystems, and preserve and enhance the health
and diversity of species and ecological communities. Examples of management approaches include "New Forestry" and "Ecosystem Management" (e.g., Franklin 1989, Robertson 1992), where forest and related wildland ecosystems are managed for multiple resource values, including commodity values such as timber, and "ecological restoration" (Jordan et al. 1987), where commodity values usually do not enter the picture. Examples of management practices implemented to achieve desired future conditions include direct manipulation through cutting, burning, and other intentional activities, and indirect management that permits or encourages natural processes and disturbances like fire; timber falls, and diseases to accomplish sustainable management goals.

**FOREST AESTHETICS IN CULTURE, MANAGEMENT, AND RESEARCH**

People's aesthetic preferences arise from a number of different sources, but of these, our dominant culture has played the major role in shaping our aesthetic preferences for landscapes (Rees 1975). I feel three cultural legacies are particularly important in understanding our current preferences for forest landscapes and forest landscape management: these include an attraction to an idealized nature; an orientation to a static, visual mode of landscape experience; and an aversion to disruption and change. Together, these legacies are responsible for what I will call the "scenic aesthetic" mode of landscape appreciation. The preponderance of the scenic aesthetic in our society makes it difficult for many people to appreciate the more subtle, experiential, and dynamic qualities that often characterize sustainable forest ecosystems, qualities that relate to a much different, "ecological aesthetic." In the following sections I will discuss how these two aesthetics differ, and describe how the emphasis of contemporary landscape research and practice on the scenic aesthetic could affect our ability to implement sustainable ecosystem practices that are aesthetically acceptable.

### Idealized Nature

Empirical studies of people's landscape perceptions have identified important attributes of wildland forests that contribute to visual quality. Research findings indicate a high visual preference for "near-view" forest stands with large trees (Arthur 1977, Buhyoff et al. 1986), an herbaceous ground cover (Patey and Evans 1979, Brown and Daniel 1984), and an open mid-story with high visual penetration that affords a park-like character (Brown and Daniel 1984, Ruddell et al. 1989). Additionally, many "vista" forest landscapes of aesthetic appeal exhibit distant views and high topographic relief (Propst and Buhyoff 1980, Buhyoff et al. 1982, Gobster and Chenoweth 1989).

The kinds of forests characterized by these attributes conform very closely to those popularized by landscape painters of the 17th and 18th century, who together with writers, landscape designers, and gentlemen travelers brought about an aesthetic appreciation for landscapes that were natural in character (Huth 1972, Nash 1973, Cox 1985). In the U.S., painters of forest landscapes emphasized the dramatic panoramas of the mountainous west and the lush, tidy, pastoral views of the east. Their idea of natural beauty was a highly selective one, defined by a rigid set of criteria. Landscape painters often stylized nature, and composed a scene by adapting formal design principles to enhance the beauty of the nature they saw (Clark 1949).

This natural, scenic ideal is evident in current landscape management and research programs whose objectives are to assess aesthetic quality. "Visual resource management" programs such as the Forest Service's "Visual Management System" (1974) were developed to deal comprehensively with aesthetic issues on our public forest lands. Like the methods of the landscape painters and designers, aesthetic quality is defined in part on the basis of formal principles of variety in line, form, color, and texture. Landscapes that exhibit these features are evaluated as "distinctive" and given high levels of protection, while landscapes that are "common" or "minimal" in their variety are allowed to be more intensively used for timber harvesting or other purposes. While relatively few empirical studies have used formal or "artistic" design attributes to identify landscape preferences (Gobster and Chenoweth 1989), the focus on evaluation and comparison is a trait common to most studies, and methods are often geared to finding the "most scenic" landscapes for protecting.

Our current orientation to an idealized nature has made it difficult to merge aesthetic objectives with those relating to the management of sustainable forest ecosystems. Many sustainable forest ecosystems do not display the formal, compositional properties of an idealized nature. In my own region of the Lake States, many of the areas identified as valuable for the protection of endangered species or ecosystems are unspectacular areas of flat, interior forest, prairie, marsh, bog, and barren land. Such areas frequently merit visual variety ratings of "common" or "minimal," and are thus prone to be discounted as unworthy of aesthetic consideration. By the same token, management practices enacted to maintain or enhance ecological function such as prescribed burning or the retention of downed wood often detract from the tidy, stylized naturalism of the scenic ideal. By maintaining a limited standard of aesthetic value such as "visual" or "scenic" quality, we are negating many of the attributes of biologically diverse ecosystems that, in product or process, can contribute to a richer, multidimensional understanding of the aesthetics of nature.

Aldo Leopold was one of the first to point out a different type of aesthetic in the natural landscape, one that did not conform to the canons of idealized beauty expressed by popular scenery. The elements of this "ecological aesthetic" were referred to implicitly in many of Leopold's essays, and have more recently been brought to light in the writings of Callicott.
and his colleagues (e.g., Callicott 1992). With respect to the formal qualities of an idealized nature, Flader and Callicott (1991) conclude: “For [Leopold], the esthetic appeal of the country... [had] little to do with its adventitious colors and shapes — and nothing at all to do with its scenic and picturesque colors — but everything to do with the integrity of its evolutionary and ecological processes” (p. 9-10). Leopold thus expands our concept of natural beauty to encompass a wide range of sustainable forest ecosystems. By appreciating forest ecosystems for their biological diversity and health, we redefine the goal of much which is done in landscape research and management from identifying and protecting the most beautiful forest sites, to discovering and interpreting the varieties of ecological beauty present in each forest site (Evernden 1985).

Landscape Experience

The scenic aesthetic is driven by a second factor that is highly related to our culture, that is the way in which we experience the beauty of nature. Terms and activities from the romantic period reveal our cultural biases of landscape appreciation. “Scenic” and “picturesque” beauty were coined to refer to landscapes that exhibited the desired formal aesthetic qualities found in landscape paintings, and use of the term “landscape” took on an artistic meaning, as a view seen from a specific perspective (Rees 1975). The aesthetic experience of landscapes thus came to be associated with the view of a static composition, and such an activity was referred to as “sightseeing” or “picturesque touring” (Adler 1989). Carlson (1979) describes the birth of the “landscape cult” in the 18th and 19th centuries, who developed sightseeing as a leisure pastime, and even went so far as to use a device called the Claude Glass, through which a landscape could be viewed in “proper” framing, color, and perspective.

Scenic touring continues to be the way most people experience the forest landscape. “Driving for pleasure” and “sightseeing” are among the top activities of visitors to public park and forest areas (Cordell et al. 1990), and while the Claude Glass is no longer in use, the forest landscape is similarly framed and experienced through the windshield of the automobile, the viewfinder of the camera, and the designated scenic overlook. Like a painting, our experience of a landscape is often limited to a view at one point in time, and with most of us living in urban areas, we rarely get to experience how forest landscapes change on a daily, seasonal, or yearly basis.

Because of the high popularity of sightseeing by car, forest landscape management often focuses on visual enhancement and mitigation activities along road corridors. This is evidenced in the National Forest’s “Scenic Byways” program (Robertson 1988), and in visual management criteria for identifying areas of high “visual sensitivity” (USDA Forest Service 1974). These areas receive priority treatment as visual retention zones, and are managed to provide a naturally appearing forest condition with few signs of disruption. Viewshed management strategies vary by region, but in areas with flat topography this might only mean a narrow “peek-a-boo strip” of uncut trees to mask forest harvesting activity to the unaware motorist zooming by (Wood 1988).

Most research in landscape aesthetics has done little to explore varieties of aesthetic experience beyond the scenic. Methods to assess aesthetic perceptions often consider only “visual quality” or “scenic beauty” as dependent variables, which are operationalized by a simple check mark on a rating scale (Daniel and Boster 1976). A photograph or slide substitutes for the actual landscape in most studies, which, like the landscape painting or Claude Glass, is a flat, framed snapshot of a single point in time. The entire assessment process usually requires only a few seconds for a person to view and rate each landscape scene, further reducing the “landscape experience” to a momentary judgment.

Because many sustainable forest ecosystems lack the formal qualities of an idealized nature, it is difficult to experience them as one would a landscape painting. There may be no prospect, no “view” in the traditional sense, and thus nothing “scenic” to behold (Evernden 1983). In Leopold’s ecological aesthetic, however, there is much to experience in these non-picturesque landscapes. Aesthetic qualities engage all of the senses, not just sight. Ecosystems are appreciated for their detail and for the “big picture,” but ecological beauty is most highly manifested in the interplay across scales, such as in the existence of wild species sustained by a community that retains a high degree of ecological integrity. Aesthetic experience for Leopold is a cumulative process that begins in the mind of the individual and is refined and nurtured through an intimate relationship with the environment over time. Most importantly, Leopold’s landscape experience ties aesthetics together with ethics, giving moral justification to the pursuit and protection of beauty in the environment: “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise (Leopold 1981: 224-225). This changes our idea of the aesthetics of nature from one of viewing scenery as a passive form of entertainment to one that engages our hearts and minds towards participatory action.

Disruption and Change

A third factor that comprises our scenic aesthetic has not received much direct attention by landscape writers or researchers, yet is pervasive in our culture. This is our aversion to change in the forest landscape, especially change that signals a disruption in our static ideal of beauty. This aversion is evident in our empirical studies which show radical changes in scenic beauty “flows” over the course of a growing cycle (Hull and Buhoff 1986, Palmer 1990, Ribe 1991), and negative responses to standing dead trees (Benson and Ullrich 1981, Ribe 1990), downed wood (Vidak et al. 1985, Brown and Daniel 1986; Ribe 1991), insect and disease outbreaks (Buhoff and Lueschner 1978, Hollenhorst et al. 1993), and fire (Anderson et al. 1982,
Taylor and Daniel 1984). These findings in many ways conflict with what ecologists are telling us about the beneficial effects that some kinds of disruptions—both natural and human induced—can bring to forest ecosystems (e.g., Ostry and Nicholls 1992, Maser et al. 1979, Hunter 1990, Baker 1992).

In one sense these research findings are simple expressions of our preference for tidiness, mature trees, and a lush forest understory, but in another sense they may reflect deeper cultural aversions to change. One of the most deep seated of these is change that brings on disease and death. Human diseases have long been associated with evil, and the metaphors we use to describe diseases, those afflicted, and actions towards treatment are often equated with warfare against evil (Sontag 1978). Fear of death is universal to most societies, and even though many religions believe in an afterlife, our concept of death has a strong sense of permanency (Becker 1984). Whether or not these fundamental attitudes towards human disease and death are linked to how we think about forest diseases and the death of trees, it is clear that they exhibit many of the same characteristics. For example, our culture has tended to view forest insect outbreaks in a mostly negative way, and has used warfare-like tactics (including propaganda campaigns) to try to wipe them out, however unsuccessfully (Carson 1962). We have long viewed healthy trees as a sign of a healthy forest (Ostry and Nicholls 1992), and as with human diseases, have tended to focus on treatment of the symptoms of forest diseases rather than trying to understand the causes. And because our ideal image is of a mature forest frozen in time, the death of trees by natural forces or human intention may convey a permanent end rather than a point in a cycle (American Forest Council 1991).

Following the popular scenic aesthetic, many of our current landscape management guidelines attempt to reduce the noticeable change. Regeneration sites are located away from areas of human use, are screened, or are designed to blend in with the forms and lines found in the natural landscape (Bacon and Twombly 1980). While the presence of wildlife adds considerable scenic interest to the landscape (Hull and McCarthy 1988), dead "snag" trees and slash piles created for wildlife food and cover are also located so that they minimize disruption to the visual scene (USDA Forest Service no date). Prescribed fire can also improve the beauty and diversity of the understory, but the immediate negative visual effects are mitigated by leaving unburned islands, limiting the amount of road frontage that is treated, and restricting burns to periods of low visitor use (Bacon and Dell 1985). The "illusions" created by these techniques further the idea that a natural forest is one that is mature, tidy, and unchanging (Wood 1988).

Landscape research has tended to focus on people's aesthetic response to discrete changes in the landscape rather than to understand how the dynamics of change are perceived or experienced. For example, the visual effects of a prescribed burn or the slash left from a timber harvest can be highly negative, but in many environments their duration is quite brief (Bacon and Dell 1985). Although such studies are consistent with the fact that most people see the forest at only snapshots in time, it is possible that methods that explore the experience of landscapes might arrive at a much different understanding of the aesthetic values of change.

As a keen observer of nature, Leopold's ecological appreciation was closely tied to the dynamics of change. In his essays in Sand County Almanac, Leopold (1981) gives many examples of how ordinary places take on aesthetic significance through the experience of change. In "Prairie Birthday," Leopold's daily observations of prairie flora growing around a "backward farm" make clear how the beauty of a diverse environment unfolds itself through the course of a growing season. In "A Mighty Fortress," he conveys how tree insects and disease transformed his "ailing" woodlot into a wildlife haven. And in what is perhaps his strongest appeal to an ecological aesthetic, in a "Conservation Esthetic," Leopold states that the perception of beauty and quality comes with an understanding of the natural processes through which ecosystems evolve and are maintained.

ADOPTING AN ECOLOGICAL AESTHETIC IN THE MANAGEMENT OF SUSTAINABLE FOREST ECOSYSTEMS

This review has shown that our orientation to the scenic aesthetic is strongly grounded in our culture. In forest ecosystems this aesthetic is reinforced by the places we designate for recreation, and by the methods through which we manage forests for aesthetic enjoyment. Research knowledge of people's aesthetic preferences for forests accumulated over the past three decades is formidable, but it, too, is limited in its methods and scope of inquiry, and tends to "mop up" questions relating to our understanding and application of the scenic aesthetic rather than expand aesthetic theory through discovery and expression of alternative paradigms.

Leopold's ecological aesthetic provides such an alternative, one that offers promise in merging the goals of aesthetic preferences and ecological sustainability. In a recent paper that discussed some related aspects of scenic and ecological aesthetics (Gobster in press), I argued that because the scenic aesthetic was so deeply entrenched in our culture it would be difficult to get people to "see" beauty in an ecological sense. To sidestep the wait for such a cultural evolution to occur, I outlined a synthetic approach called "appropriateness analysis" that might help to resolve immediate conflicts between managing forests for aesthetic and biodiversity goals. At the same time, I suggested that trade-off analyses such as appropriateness analysis were at best a short-term fix, and that in order to move towards a more sustainable forest landscape that is also socially acceptable, landscape practitioners and researchers needed to develop the ideas and tools to begin to understand and implement an ecological aesthetic here and now.

In the second part of this paper I wish to flesh out some ideas of how an ecological aesthetic might be realized. Many of these ideas have been stated previously by others, but by bringing...
them together under the focus of sustainable ecosystems I hope they might provide the reader with some practical insights on how we might incorporate ecological thinking into planning and program development, on-the-ground management, and research and theory development in landscape aesthetics.

Some Ideas for Planning and Program Development

Continue to move "visual management" towards an ecological approach.

The Forest Service's Visual Management System (USDA Forest Service 1974) and related policies and programs have gone far to bring visual quality issues into the forest planning process. In many cases, however, landscape management for visual quality has been reduced to one of mitigating the visual impacts of timber harvesting and other resource development activities that do not conform to public expectations of a "naturally appearing forest." Sustainable forest ecosystem management offers new opportunities to help redefine public expectations of naturalness, and landscape management programs should recognize the need for an "expanded" aesthetic that incorporates principles of ecological sustainability explicitly into methods and practices. Revisions of the Visual Management System handbook are currently underway, and show a sensitivity to ecological management concerns (Galliano et al. 1992). As resource-specific handbooks and training programs are updated, these, too, should reflect a broader, ecological aesthetic in landscape management principles and practices. One recent example that moves in this direction is a nationally-produced publication that uses landscape ecology as a basis for forest landscape analysis and design (Diaz and Apostol 1992).

Expand the concept of "scenic byways" programs

Scenic roads programs have been developed by the Forest Service and other agencies in recent years to showcase outstanding natural and cultural scenery available to the automobile traveler (USDOT Federal Highway Administration 1988). While the emphasis is currently on the scenic aesthetic as described in this paper, programs like the Forest Service's Scenic Byways program (Robertson 1988) offer significant opportunities to interpret the ecological aesthetic of sustainable forest ecosystem management to mass audiences. Interpretive signs, roadside pullouts, short-loop trails, and other suggested byway developments could be used to bring people out from behind the windshields of their cars and towards a deeper understanding and appreciation of sustainable forest ecosystems.

Incorporate contextual considerations into ecological management

Perceptions of the appropriateness of management activities are dependent on the context or setting in which management change is to occur. Thayer (1992) provides a conceptual model for understanding how different aesthetic management criteria might be applied to different types of forest settings. He identifies three major setting types: "Functional" settings like wilderness areas or plantations, where management emphasis is not on aesthetics, and aesthetic management is thus "hands off" or mitigative in nature; "recreational" settings where emphasis is on the visual, scenic landscape and aesthetic management activities conform to people's notions of idealized nature; and "ecosystem" settings, where emphasis is on sustaining the structure and function of the ecosystem and aesthetic management aims toward principles conveyed by Leopold's ecological aesthetic. The "Recreation Opportunity Spectrum" (USDA Forest Service 1986) offers a somewhat different concept of settings, but could also be used to understand and plan for ecologically sustainable forest management activities that are appropriate in scale, duration, and other considerations as one moves across the wilderness-to-urban spectrum (Gobster in press).

Some Ideas for On-the-Ground Management

Show a "conspicuous experiential quality"

Visual mitigation practices such as screening, edge shaping, or location are commonly used to reduce the impacts of resource activities that might not meet people's expectations for a naturally appearing forest environment. Should sustainable ecosystem management practices that violate this same scenic ideal be similarly mitigated? Thayer (1989) argues not, maintaining that the "visibility and imageability of the sustainable landscape is critical to its experiential impact and the rate at which it will be adopted and emulated in common use" (p. 108). This implies that in order for an ecological aesthetic to become understood and appreciated by the public, it must be seen and experienced. This "conspicuous experiential quality" will help speed the diffusion of change in aesthetic expectations (Thayer 1989).

Use design cues to "reveal" ecological beauty

Nassauer's research on landscape restoration in agricultural (1992) and suburban (in press) settings suggests that design cues can convey powerful messages that "messy" ecological practices show human care and stewardship rather than neglect or mistreatment. In other words, "conspicuous experiential quality" need not be of the "in your face" variety, and design
cues can help reveal and express the intentions behind sustainable management practices. In settings where recreational use dominates, these cues might include some picturesque conventions like framing or the use of texture, height, and color contrast to call attention to sustainable land use practices. These practices might be small in scale and of limited duration, but would be visible to the recreationist, perhaps along a winding, well-maintained nature trail. Selective cutting, and even some planting of immediate foreground views with native but showy under-, mid-, and overstory species might be done to enhance the visual, scenic effects. In forest areas away from concentrated recreational use, picturesque conventions might be replaced by less stylistic cues like mowing or low-key fencing that still convey human intent and land stewardship. In backcountry areas, cues might be subtle or missing altogether—perhaps unobtrusive marker posts in representative areas, keyed to a brochure available off-site. For these sites, care is exhibited by ecological integrity and largely up to forest users to discover it.

Use information to interpret sustainable forest ecosystem management practices

For Leopold, knowledge was an important precursor to the comprehension of ecological beauty. Information can be an important tool in conveying knowledge about the intent and purpose behind sustainable management practices, especially for some management activities like burning, where it is difficult to employ design cues to improve public acceptability. On-site information such as signage, interpretive nature trails, stewardship programs, and the like can aid in communicating messages to the public. Newsletters or brochures put out by many forests and restoration groups are useful off-site ways to spread the word, as are local newspapers. It is critical, however, that this information be expressed with sincerity and in an objective manner to avoid suspicion that managers are trying to “fool the public” (Wood 1988).

Involve the public to gain a deeper understanding and experience of “ecological” beauty

Experience is the essential counterpart to information for attaining knowledge and appreciation of sustainable ecosystems. Experience can be facilitated through the design of self-guided nature tours; by the encouragement of nature-oriented recreation like birding, plant identification, hunting, and nature photography; and by providing other forms of unassisted nature experience opportunities. Directed activities are particularly valuable ways through which forest users can gain experience and appreciation of natural systems and processes maintained through sustainable management practices. Guided tours are one important way to reach large audiences, and have shown potential in communicating the benefits of “new forestry” practices (Brunson 1992). Public participation in ecosystem management activities is less easy to accomplish on a large scale, but can be extremely effective on a project basis. Student internships and summer youth camps sponsored by national forests or scouting groups are two types of existing programs that could be geared towards ecological management. Ecological restoration programs have made effective use of volunteers, who often dedicate much of their free time in activities like cutting, burning, seed collecting, and planting. In the Chicago area where I live, the Nature Conservancy’s Volunteer Stewards Network has grown to over 5,000 members in the past 15 years, and for many in the network, restoration has become a leisure activity that has deep aesthetic, symbolic, and spiritual implications (Lonsdorf 1993).

Some Ideas for Research and Theory Development

Investigate the attributes of sustainable forest ecosystems that relate to aesthetic quality

Much of the past research on people’s perception of landscapes has been directed towards identifying “universal” predictors of landscape quality (e.g., Wohlwill 1976), and looking at the visual impacts of different resource-oriented management practices (e.g., Ribe 1988). With new forestry, ecosystem management, ecological restoration, and other sustainable ecosystem approaches attaining wider application, forest landscape perception research has the opportunity to expand this orientation in some significant ways. One of these is in the types of management practices that are studied—we need more in-depth studies that look specifically at sustainable ecosystem management practices such as prescribed burning, snag trees left for wildlife, and cutting patterns that minimize forest fragmentation. Along with basic management practices, we also need more information on people’s aesthetic responses to the structure and function of forest ecosystems. In this respect, a key need is for information about the perception of change, especially on how the dynamics of change are perceived and experienced. Finally and most importantly for developing ecological aesthetics, we need information about the unique qualities that make each forest type and ecosystem aesthetically significant. Evernden’s (1983) criticism of visual management’s emphasis on “thingness” in relation to the aesthetic qualities of prairie ecosystems vividly illustrates the importance of studying natural landscapes on their own terms.
Investigate the people's aesthetic experiences of sustainable forest ecosystems

The search for landscape attributes, whether general or unique to a given ecosystem, provides only part of the knowledge needed to expand our understanding of an ecological aesthetic. The other side of the equation where more information is needed is on the nature of the aesthetic response itself. Because most studies have operationalized people’s aesthetic responses to landscapes as “visual quality” or “scenic beauty” ratings of photographic environmental surrogates, we know very little about how real places are experienced (Hull and Stewart, 1992), or about the wider nature of aesthetic responses. Zube et al.’s (1982) framework for landscape perception research laid out a rich source of ideas for understanding the aesthetic experience of landscapes, a set of ideas which take on a heightened sense of significance in the context of an ecological aesthetic. Using the terms of their framework, the aesthetic of the surrounding, multimodal, information-rich environment of sustainable forest ecosystems is one that is appreciated by movement and exploration rather than by gazing at a view, is perceived and experienced through multiple senses simultaneously, is interpreted through affective, cognitive, and symbolic meanings, and invites participation and meaningful interaction. Each aspect of the Zube et al. (1982) framework deserves renewed attention as aesthetic perception studies of sustainable ecosystems increase in the years ahead.

Colleague Rick Chenoweth and I have begun to look at aesthetic experiences in the landscape in a somewhat different way, not only examining the attributes of the landscape and the characteristics of the experience, but also trying to understand the “ecology” of experiences in time and space and in relation to social and situational conditions, and the value aesthetic experiences play in people’s lives (Chenoweth and Gobster 1990, Gobster and Chenoweth 1990). While not addressing sustainable ecosystems in particular, we think our work holds significant potential for understanding how aesthetic experiences in non-spectacular ecosystems like prairies might differ or are valued in comparison with experiences in more “traditionally” scenic areas. For example, many people’s aesthetic experiences from our work showed the importance of environmental knowledge and of the dynamic, ephemeral characteristics of the environment—some of the same qualities exhibited in Leopold’s ecological aesthetic.

Expand the repertoire of methods

Investigations of some of the ecosystem- and experience-related phenomenon mentioned above will require new and innovative methods. “Experiential approaches” to landscape assessment include a wide range of qualitative and quantitative methods (Gobster 1990), and hold significant promise for understanding how sustainable ecosystems are perceived and experienced. For example, our study of aesthetic experiences had study participants carry small diaries with them to write down quantitative and qualitative information about their aesthetic experiences (Chenoweth and Gobster 1990). Hull et al. (1992) similarly used diaries and beepers to obtain quantitative ratings of people’s moods, satisfaction, and perceptions of scenic beauty in order to understand the dynamics of recreation experiences. Focusing, a technique from experiential psychotherapy, is a qualitative method that has been suggested as a means to understand the non-verbal “felt senses” that result from aesthetic experience of the environment (Schroeder 1990). Other qualitative approaches such as first-hand aesthetic description (Berleant 1992), literary analysis (Porteous 1986), and observation (Seamon and Nordin 1980) have been described as phenomenological alternatives to positivist methods of analysis (Seamon 1982), and hold particular promise in exploring the aesthetic experience of sustainable ecosystems.

Build ecological aesthetics into landscape perception theory

Finally, research on the perception of sustainable forest ecosystems has the potential to advance our theoretical understanding of environmental aesthetics. Carlson’s (1993) review of landscape assessment concludes that most of the theoretical development has focused on models and theories that attempt to identify and put into an organizational framework the basic person- and landscape-related variables that help to explain landscape preferences. While this work has been valuable in explaining which landscapes are preferred, current theory in landscape assessment does little to justify why they are preferable. For example, just because the complete removal of slash and downed wood may make a forest stand more scenically preferred, it does not justify this preference. As Carlson (1993) concludes, justificatory theory is needed in this field because: “We need not only to be able to explain what is preferred and desired by way of landscapes, but also to establish what is preferable and desirable. Only by references to the preferable and the desirable do we have the ultimate grounding for landscape evaluation and for the more practical matters of landscape planning and design” (p. 55).

In this sense, Leopold’s land ethic provides an important foundation to a justificatory theory of landscape aesthetics. By uniting beauty with ecological stability and integrity, Leopold’s land ethic provides a normative justification for preferable and desirable landscape management that enhances the sustainability of forest ecosystems for human, biological, and ecological values.
CONCLUSION

Evidence of evolving land management approaches in urban, agricultural, and wildland environments shows that the concept of ecosystem sustainability is becoming accepted at least on some basic level by many professional and lay persons. But for most, this acceptance has been largely because of an intellectual understanding, and not because the products or processes of sustainable landscape management are inherently preferred. Our cultural ties to the scenic aesthetic run deep, and because of the primacy of aesthetics in environmental perception, a greater commitment toward the adoption of innovative methods for ecological sustainability has not been forthcoming.

Leopold's ecological aesthetic offers guidance for merging biological and ecological concepts of sustainability with aesthetic appreciation. Experience is a key component of this aesthetic, where both intellectual and affective capacities engage an individual to understand, appreciate, and ultimately act upon the environment in a purposeful way. This last point is a crucial one for greater adoption and acceptance of sustainable forest ecosystem management, and suggests that approaches that foster experiential contact with natural systems and processes can lead to positive behaviors to protect them. The ideas discussed in this paper provide some first steps for how we can help to advance this evolution of change, not only among our public groups but also in our own institutional cultures of landscape management and research.

REFERENCES


