Designing and Managing Resilient Recreation Landscapes

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Landscape architects are professionals who design, plan, and manage the land, and so it is a profession that is essential to defining the character of our National Forests and Grasslands. There are key points of entry and engagement where we have a chance to make a first and lasting impression for the public when they come to visit their public lands. Providing quality recreation experiences is perhaps one of the most relevant, as many people come to understand the value and meaning of their landscapes through recreational visits (Figure 1).

Outdoor recreation activities occur in numerous places across the American landscape, on and outside of the National Forests and Grasslands. They take place in neighborhoods, undeveloped woodlots and streams, city and state parks, county open spaces, and a vast array of Federal and Native American lands. For many, these settings are their introduction to the natural world, a beginning point for engaging in a healthy outdoor lifestyle. But the reality is these landscapes are changing. Climate change, natural disasters, and other disturbances are altering the health of our public spaces and in turn what they look like. These changes are forcing us to examine, and in some cases reconsider, how we design and manage for recreation.

Figure 1: Project-level recreation site design decisions are challenging. Being responsive to, and ultimately respecting the landscape and unique sense of place require balance, consideration, and integration of numerous concerns in the context of increasing demand for access and opportunity, and limited financial resources. Understanding the setting is the foundation of site design—providing for people's experience of a particular place with intrinsic natural and cultural features.
Photo by Katherine Hawkins, Share the Experience Photo Contest, used with permission.

Forest Service Landscape Architecture and Recreation—A Brief History

USDA Forest Service landscape architects have a long history of composing recreation settings and experiences. Our first recreation professional, Arthur Carhart, was hired in 1919. Carhart trained as a landscape architect and contributed greatly to the development of the idea of wilderness, in addition to conceptualizing and building some of our first recreation sites. 2019 is the centennial of his hire and his studies of how recreational opportunities could be woven not only into the landscape, but also into the fabric of our agency.

Initially, the focus of the Forest Service landscape architect's work was squarely on the experience of the recreational forest user. But as our National Forests became a primary source of timber harvest, helping to feed the growth of suburbia after the World War II, we compromised many of our recreational roots and values in deference to the large-scale extractive logging practices of the times. In 1976, public outrage at the visual impacts from Forest Service clearcutting led, in large part, to the passage of the National Forest Management Act (NFMA), which placed specific requirements for National Forest managers to create management plans to protect natural resources while providing for multiple uses. With the NFMA in place, the agency began to craft a systematic approach to managing for scenery. The effort was guided by R. Burton Litton's landmark publication, "Forest landscape description and inventories – a basis for land planning and design," which introduced terms and concepts that later evolved into the Forest Service's visual management system (VMS) (Litton 1968). These "environmental design arts" for scenery emphasized the natural "characteristic landscape," as a scenic composition of form, line, color, and texture elements, using "landscape design" concepts, principles, and variables (Figure 2).

While timber harvests increased in size and scope through the 1980s, VMS became a fundamental method for protecting scenery values through visual mitigation. A large workforce of trained landscape architects was hired to implement this system, peaking at 300 in the mid 1980s. The 1990s saw changes in forest management and greater attention to environmental protection, including increased opportunities for public involvement in management decisions. This opened the door to updating VMS to the current scenery management system (SMS), which incorporates more social and ecological context to establishing desired conditions for scenery.

SMS is built on foundational concepts of primary aesthetic qualities (e.g., naturalness, variety), regional context (landscape character and sense of place), criterion judgments (scenic attractiveness and integrity), and local sensitivity to change (landscape visibility and constituent analysis). These basic notions are well corroborated by empirical research on people's scenic

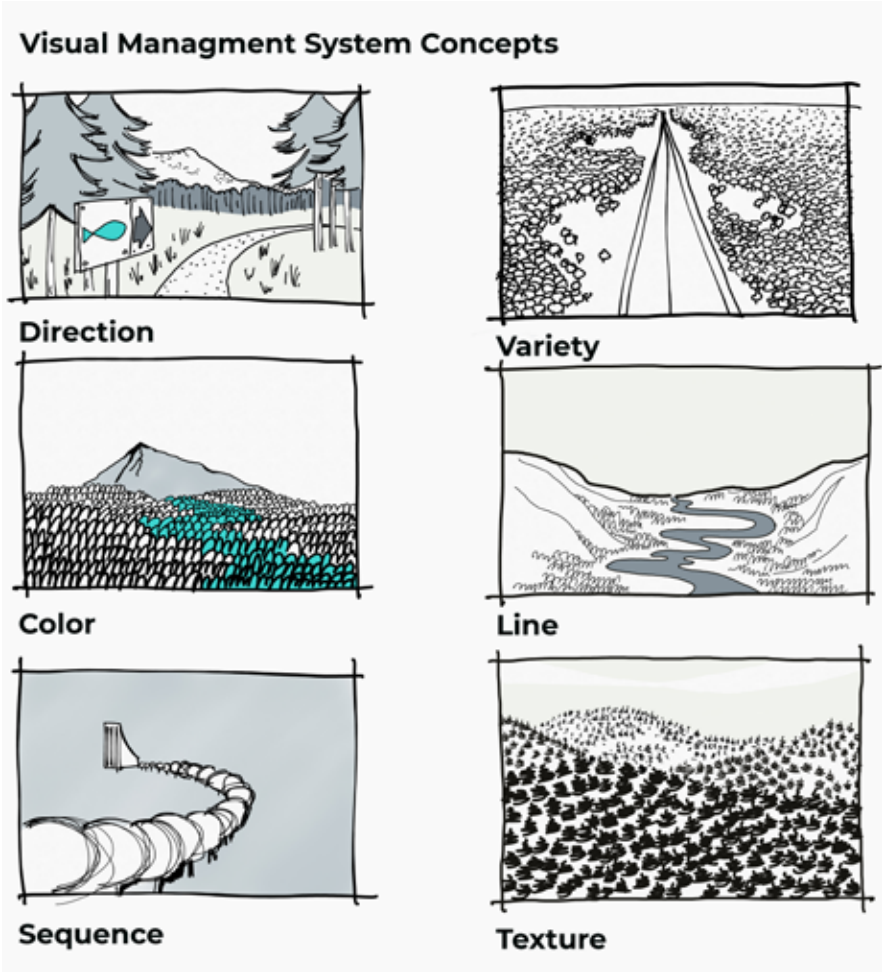


Figure 2: The character of a landscape is the overall impression created by its unique combination of visual features (such as land, vegetation, water, and structures) as seen in terms of form, line, color, and texture. These examples of analytical factors and compositional types are useful in recognition and description of scenic resources. The overall impression created by a landscape cannot be rigidly classified. However, Litton references a number of terms that are useful in describing the character of a particular landscape, or, as is more often the case, segments within the landscape.

Image by USDA Forest Service.

quality perceptions and as a foundation for aesthetic landscape assessments. They are widely accepted as valid and critical components for determining scenic character in forest-level landscape planning.

In the past several years the USDA Forest Service has updated the guidance and direction for how land and resource management plans (forest plans) are to be created and revised. Within this regulation (referred to as the Forest Service 2012 Planning Rule) the role of scenery has been reinforced through stronger connections made between desired conditions for scenic character and recreation. The rule makes it mandatory that units address scenic character, on par with attention to other resources. As plan components for scenery and recreation must be balanced with other resource considerations, an opportunity exists for creating integrated goals and desired conditions for Forest Service settings, which in turn can help create more shared ownership of scenic character outcomes and more resilient landscapes.

Scenery Management and Resiliency

The opportunities for broadening this shared stewardship of scenery resources is increasingly apparent in light of the intensifying multiple-use demands on National Forest System (NFS) lands. Increased agency focus on restoration and forest resiliency projects requires that scenery management objectives be viewed as part of the purpose and need for sustaining desired character, instead of being viewed as a potential obstacle to ecosystem investments. Another balancing act is the amplified interest in and applications on NFS lands for renewable energy projects (geothermal, hydropower, wind, and solar) and their ecosystem services with the potential cumulative effects to scenery across the larger landscape. While visual impacts and mitigation practices for renewables may be similar in scale and scope to those for traditional extractive resource practices like mining and timber, there seems to be a greater willingness to accommodate them on our public lands because of the benefits they provide.

Forest Service Landscape Architecture—The Current Day

We now have about 120 landscape architects practicing across the agency, most of whom work within the National Forest System (NFS). Put simply, they are tasked with heightening the public's connection to a particular place through memorable outdoor recreational experiences. That connection is our best chance to engage a stewardship ethic and to map out sustainable intersections on our National Forests—the integration of social and ecological

places and processes. As an example, a landscape architect practicing on an individual forest or grassland is often charged with balancing the effects of land management and resource extraction on the scenic resource (the main role of the 1980s) with enhancing the recreation experience (Arthur Carhart's original charge) and preserving it for future generations. This is what we have begun to refer to as sustainable recreation. Here, landscape architects are trying to settle both the experience of recreationists and the negative impacts of their recreation use (Figure 3).

A key challenge of our time is for the recreation community to more fully acknowledge our country's increasing diversity. When the Forest Service began, most Americans were no more than a generation from working the land, and populations weren't concentrated in urban areas as they are now. People of color would have limited options to recreate on public lands. We

Figure 3: The *Sustainable Recreation Site Design Guide* (SRSDG) is a national technical guidebook of best practices and processes for implementation of sustainable recreation design into Forest Service projects at the site scale. Recreation uses and values are important aspects of the ecosystems we manage, and sustainable recreation design enhances the ecosystem benefits these landscapes provide. Recreation site design influences the experience of those interacting with built improvements and natural surroundings. Several foundational principles infuse each stage of project development to help achieve sustainable outcomes. Planning and design decisions to preserve the character of place should be: relevant, local, flexible, holistic, strategic, and inclusive. The outcome of sustainable recreation design is a constructed and operated site which gives form to social, ecological, and economic values.

WHITTEN DESIGN CHARRETTE

NOV. 30. 2007

memorial birch grove

memorial walk
NEW PLANTINGS

connect to farmers mkt

memorial walk

NORTHEAST ZONE

journey begins from metro stop.

organize memorial plantings to create visitor/employee experience

bioswale

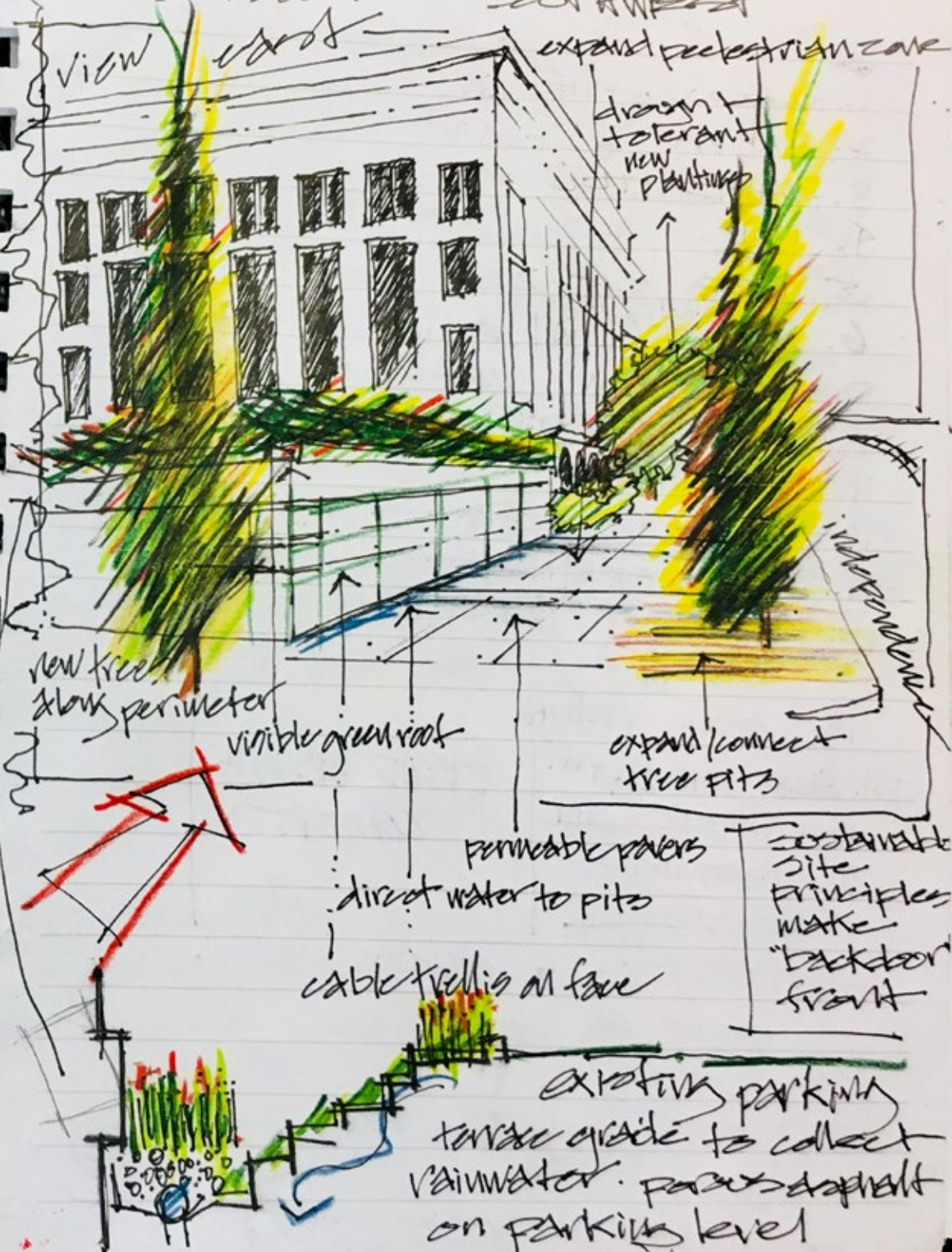
path

treebed

native grasses

overlook

N


view
expand pedestrian zone
drought tolerant new plantings
new trees along perimeter
visible green roof
expand/connect tree pits
permeable pavers
direct water to pits
cable trellis on face
sustainable site principles make "backdoor" front
existing parking terrace grade to collect rainwater. porous asphalt on parking level

PREVIOUS SPREAD

Figure 4: Design is the integrative, creative, and iterative process used to develop planned solutions and accomplish desired outcomes. Good design connects people to the outdoors, giving everyone opportunities for memorable experiences and making them feel welcome. This applies to our most concentrated urban sites, as well as iconic destination landscapes. It recognizes the quality of design affects the quality of experience, and should tell a story about how we should respect the landscape's sense of place. Public planning workshops, or design "charrettes," provide forums to help designers better understand community priorities and concerns, and vice versa. They can help unwrap the functional needs of the users and daylight how people will actually use the space. A designer's sketch book is an important tool for capturing public input and ideas and for communicating concepts that will ultimately result in a built landscape.

Credit: Matt Arrn, USDA People's Garden Design Charrette, 2007.

can no longer base our recreation planning on the preferences and experiences of one segment of our visitors and remain relevant to an increasingly diverse, urban audience. These shifts in population demographics underscore the importance of pairing well designed and connected recreation on National Forests with thriving urban green spaces to which the majority of our population are exposed every day. Vibrant local parks and urban tree canopies, along with conservation education, can inspire a stewardship ethic and drive diverse users to our public lands for quality, sustainable recreation experiences (Figure 4).

Working with Disturbance and Resiliency

Disturbance and resiliency have shaped our thinking about public landscapes over the years. Disturbance compels us to move away from the traditional focus of design—which is on *form*—to a focus on resilient *function*, so that our systems have a greater likelihood of being able to recover more quickly after future disruptive events. To me, recovery is about the capacity of natural systems to self-repair—recovery to a previous state, or to a new one. We seem to be caught in this cycle of unprecedented environmental change and disruption to the modern landscape: climate change, for example, has us dealing with more frequent and more extreme weather events. The 2017 Atlantic hurricane season alone has been catastrophic, featuring 17 named storms. Over 2 months after Hurricane Maria ravaged Puerto Rico, (1 week after Irma came through) the El Yunque National Forest remained closed and without electricity. The services provided by our public lands and open spaces are increasingly at risk right now, and as a response, we find designers, planners, and natural resource professionals alike are joining together to retrofit sites and work with communities so that recovery can happen more quickly and purposefully in the aftermath of extreme events. We now need adaptive, multi-layered systems that can maintain vital functions and that are also more multifunctional and

cost effective, using strategies like biomimicry (creating solutions to human challenges by emulating designs and ideas found in nature) and designing cobenefits or multibenefit strategies like revegetating stream banks with flood tolerant native pollinators that buffer stormwater and provide habitat.

Risk avoidance is another important strategy. This means having the confidence to put the brakes on a proposed project, leave the landscape be, let it self-repair. Andy Warhol once said, "I think having land and not ruining it is the most beautiful art that anybody could ever want."

Over the past several years, Forest Service landscape architects, engineers, and recreation managers have recommended the movement of camping and lodging, roads and bridges, pump stations and sewer systems out of high risk floodplains to reduce long-term investment in operations and maintenance and to create safer recreation sites. In the past, the landscape was driven out of the design and the philosophy was: "This is where people want to be, therefore we're going to build into the structure to support them where they want to be." Today, our approach is based on "This is what the landscape can support" (Figure 5).

Zooming out from a site scale, the Forest Service estimates that since 2010, more than 102 million drought-stressed and beetle-ravaged trees have died across 7.7 million acres of acres of California forest and the Rocky Mountains. The loss has major implications for future vegetation management strategies, timber practices, watershed protection as well as recreation

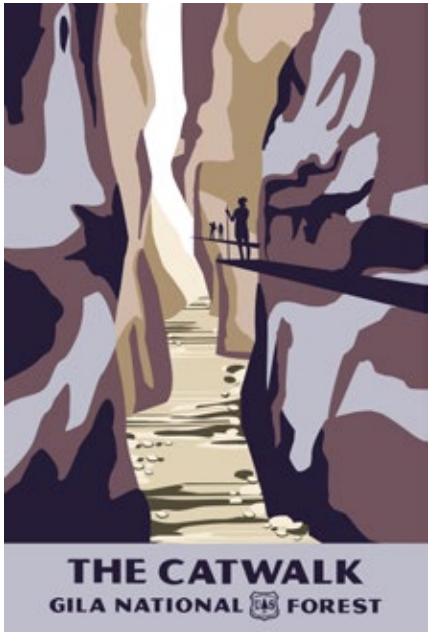


Figure 5: The Catwalk Recreation Area on the Gila National Forest is a unique recreation opportunity in southern New Mexico providing hiking access on an elevated catwalk along the Catwalk National Scenic Trail on Whitewater Creek. The original catwalk was built by the Civilian Conservation Corps in the 1930s as a recreation attraction, following an old mining pipe route used to bring water to an ore processing plant in the 1800s. The recreation site has been rebuilt in recent years due to a loss from post-fire flooding. This conceptual tourism poster was developed as an example of ways to attract visitors to this historical and scenic recreation experience. The poster is done in in the style of the WPA tourism posters for public lands popular in the early 1900s, in order to invoke the historical legacy of the site while celebrating its relevance to today's visitor.

USDA Forest Service. Graphic design and artwork by Jessica Dunn, FS landscape architect.

Figure 6: Responding to the public's desire to honor and memorialize the tragic losses that occurred on September 11, 2001, Congress authorized the USDA Forest Service to create the Living Memorials Project, utilizing the resonant power of trees and green space to create lasting, living memorials to the victims of terrorism, their families, communities, and the Nation. Cost-share grants and technical assistance supported the design and development of more than 50 community memorial projects in the New York City and Washington, D.C., metropolitan areas and southwestern Pennsylvania. The Living Memorials Project also provided a unique educational opportunity for landscape architecture students and their academic institutions. The LMP Design Collaborative joined design students and community members in a common cause, to envision public spaces that would allow people to gather and find balance after 9/11, build a mutual learning experience in creating a memorial, and also challenge the use of traditional brick-and-mortar tributes.

access and infrastructure. Restoration in these landscapes involves both science and management activities, as well as people's perceptions. The science tells us that historically, these forests were less dense because frequent low to medium-intensity fires controlled fuels and created mosaic landscapes. Today, management activities to restore the forest might focus on thinning some of the unhealthy and overstocked stands and landscape architects are designing vegetation management plans with people's perceptions in mind. Visitors can have highly personal connections to places. Landscapes may change and evolve; how accepting are people of this reality, based on their understanding of the ecosystem? How will people perceive a forest is much thinner; will they understand that these activities ultimately help the forest to become more resilient to future disturbances, including both fire and bark beetle?

We are only just beginning to understand how important people's connection to place can be. At the same time, climate change, natural disasters, and other disturbances are changing what our special places look like and forcing us to examine, and in some cases reconsider, how we design for recreation. As we seek to build more resilient landscapes, we will need to foster a dialogue with the public in hopes that we can design sites that can withstand disturbance while still facilitating people's connection to place.

Given the realities of climate change, we know that seasons are becoming shorter for different recreation activities and longer for others. We are

closing off rivers to rafting and fishing due to climate-induced drought. We are decommissioning campgrounds that are increasing susceptible to extreme weather events and fire, and we are opening up ski areas to all kinds of new experiences, such as mountain biking and ziplines, to capitalize on the expanded summers and increased temperatures. All of these changes are creating much, much more challenging recreation settings and opportunities for managers and for people.

But we don't necessarily understand yet what the reaction of the public will be or how their recreation choices will change based on these adaptive strategies and design solutions that we paid for. What are people seeking in their recreation experiences? Should we be retrofitting our campsites or our boat launches or our trail systems, because these are the essential activities that people come back for? Should we preserve a fishing hole because that's where their father or mother took them when they were growing up? Ultimately, this choice is not only about the fishing, but also about the connection to place? It doesn't have to force some kind of action, or force people to become stewards.

In the end, our purpose as designers, planners, researchers, and natural resource professionals is to engage a *stewardship ethic* with people through the different tools that we have (Figure 6). Landscape architects practicing on our public lands have an acute opportunity and responsibility to foster resiliency by tapping that sentiment, by connecting people to place and by creating memorable outdoor recreational experiences.

Literature Citied

Litton, R.B., Jr. 1968. Forest landscape description and inventories – a basis for land planning and design. Research Paper PSW-RP-49. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 88 p.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.