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## Crossing Programmatic Boundaries: Integrative Approaches to Managing the Quality of the Visitor Experience

**T**raditional approaches to organizational theory suggest that as organizations initiate new programs and grow in size, they must divide work into specific jobs and employ new specialists to achieve desired goals (Hage 1965; Hage and Aiken 1967; Lawrence and Lorsch 1967; Thompson 1961). Termed “complexity” or “specialization,” this process has characterized development of most organizations, including the National Park Service (NPS). For example, during the tenure of the agency’s first director, Stephen Mather, the NPS created at least nine administrative branches (Olsen 1985). By 1980, the agency had established ten different operating regions and over 41 mid- to high-level administrative entities (Olsen 1985).

Along with specialization, however, organizational theory recognizes the need for integration across specialized job types, or programs. A number of scholars have addressed this issue. For example, Lawrence and Lorsch (1967) conclude that organizations in diverse fields must be highly specialized and highly integrated. Hall (1980) argues that complex organizations face the problem of integrating diverse ideas from different organizational members. Hall’s “problem” reflects the challenge of balancing the need for specialized job functions as well as integration as the “key management problem of the 1990s and beyond”

(Banner and Gagne 1995). Ashkenas et al. (1995) conclude that although specialists are still needed, their ability to function as an “integrated whole” is necessary to achieve desired goals.

The inherent tension between specialization and integration is manifested in all complex organizations, including the NPS. As noted above, NPS has been organized and subdivided into many programs, all of which are designed ultimately to pursue the agency’s two-fold mandate in the Organic Act: to protect natural and cultural resources of the National Park System, and to provide for visitor enjoyment and appre-

## Managing Recreational Use

ciation of this system of parks and related areas. It may seem ironic that no one organizational entity of NPS is directly responsible for accomplishing either of these mandates, particularly the latter. This suggests that the agency may be wise to search for ways to integrate across programs for purposes of efficiency and, ultimately, to further its most fundamental mandates. This paper briefly describes several examples of ways in which NPS programs might be integrated more closely to manage visitor use and protect the quality of the visitor experience.

### **Carrying Capacity: Development and Application of the Visitor Experience and Resource Protection Framework**

The increasing popularity of outdoor recreation and the national parks has led to concerns about the impacts of rising visitation. Initial concerns focused on impacts on environmental resources. However, it soon became clear that the quality of the recreation experience was affected too. In his monograph titled "The Carrying Capacity of Wild Lands for Recreation," Wagar (1964) noted that increasing visitor use affected not only environmental resources, but quality of the visitor experience as well. The notion that there is some type and level of visitor use beyond which the quality of natural resources and the recreation experience diminishes to an unac-

ceptable degree forms the basis of the concept of carrying capacity. Based on this concept, a number of planning and management frameworks that address carrying capacity have been developed.

The visitor experience resource protection (VERP) framework has recently been developed by NPS (National Park Service 1997; Manning 2001). Under the National Parks and Recreation Act (1978), NPS is required to address carrying capacity issues in park general management plans. VERP provides the logic and rationale for making carrying capacity-based decisions. It comprises a series of nine iterative steps, the main elements of which are description of desired future conditions for park resources and visitor experiences; identification of indicators of quality of visitor experience and resource conditions; establishment of standards that define minimum acceptable conditions; formulation of monitoring procedures to determine if and when management action must be taken to keep conditions within standards; and development and implementation of management actions to ensure all indicators are maintained within specified standards. VERP may be viewed primarily as a planning framework, but it is also a monitoring and management framework, and will require consideration, assistance, and implementation by many NPS program areas if it is to be fully successful.

## Managing Recreational Use

In this paper we explore potential integrative relationships between VERP and two other programs within the NPS: transportation and the Natural Resource Challenge. Coordination—"crossing boundaries"—among these programs may lead to more efficient and effective visitor management and protection of the quality of the visitor experience.

### Transportation Planning

Transportation planning within national parks dates back to the early 1870s and the creation of Yellowstone National Park. The railroads promoted Yellowstone, realizing that more visitors meant greater revenues. This policy was supported by early preservationists who appreciated that political support for parks would increase only if people could access them. Later, as automobiles became commonplace, these too were increasingly allowed into parks. In 1914, Yosemite National Park received fewer than a thousand cars. Within two years this figure grew to nearly 15,000. Today, hundreds of millions of visitors enter the National Park System by automobile, and this raises a number of management challenges. Park access has been limited or impaired due to traffic congestion, adversely affecting park resources and the quality of the visitor experience. Further, there are limited opportunities for nonmotorized travel or alternative transportation modes.

In 1997, the Secretary of Interior and Secretary of Transportation signed a memorandum of understanding (MOU) addressing transportation issues in national parks. Under this MOU, the two departments were to work together to reduce traffic-related noise, congestion, and pollution, as well as parking shortages in the parks. One of the strategies outlined involved the development of alternative transportation systems.

Alternative transportation systems may mitigate traffic congestion, alleviate parking problems, reduce adverse effects of vehicular traffic on sensitive resources, and offer possibilities for interpretation and information dissemination. However, such systems could potentially affect carrying capacities of parks by altering the number and distribution of visitors at attraction sites within the parks. Variations in fleet size of alternative transportation systems (number of vehicles in fleet and capacity of each vehicle), scheduling, and routing are ways in which transportation systems can affect carrying capacity. This is illustrated in the following example.

In a study of carrying capacity in Yosemite Valley, visitors at the base of Bridalveil Fall were asked questions regarding park conditions that added to or detracted from the quality of the visitor experience (Manning et al. 1999). The number of persons at one time (PAOT) at the

### Managing Recreational Use

fall emerged as an important indicator of experiential quality. Visitors were also asked a series of questions about the maximum acceptable number of people at this site. Using these data, managers have an empirical basis to help formulate standards of quality and, ultimately, carrying capacity.

Using a computer-based simulation model of visitor use at this site, PAOTs were plotted against time in minutes as a simulated summer day progressed. Figure 1 shows PAOTs during a representative simulation model run for a typical summer day. The line graph indicates the numbers of visitors the model estimates at the fall at one time through a simulated day. The model records the number of people at the fall each time a simulated visitor enters or leaves the area. In this way, the model predicts the number of other visitors each visitor would see while viewing the fall. Therefore, there are more data points when the simulated fall viewing area has a larger numbers of simulated visitors. The mean PAOT (69) is represented by a horizontal line. By keeping constant the total number of daily visitors to the fall, variations in the rate of delivery of persons were simulated, and PAOTs were again plotted against time. Results indicate that variations in the rate of delivery of persons led to sub-

stantive changes in average PAOT at the fall. Figure 2 shows PAOT conditions with visitors delivered in large groups every 30 minutes, as they might be with a public transit system such as buses. Here, mean PAOT dramatically increased to 98. Figure 3 indicates PAOT conditions when visitors were delivered in smaller, more frequent groups every 7.5 minutes, as they might be using smaller buses or vans. Here, the mean PAOT dropped to 62.

These results suggest that PAOT, which is a salient indicator of the quality of visitor experience, is transportation-dependent. Infrequent, large groups can increase average PAOT, thereby decreasing carrying capacity. More frequent, moderately sized groups, can decrease average PAOT, thereby increasing carrying capacity.

There appears to be a potentially strong relationship between carrying capacity and transportation planning. Transportation systems, depending on how they are designed and operated, can increase or decrease social carrying capacity, and may affect resource-based carrying capacity as well. Carrying capacity-related information can be used to help design more informed transportation systems. Clearly, integration between carrying capacity-related programs and transportation-

### Managing Recreational Use

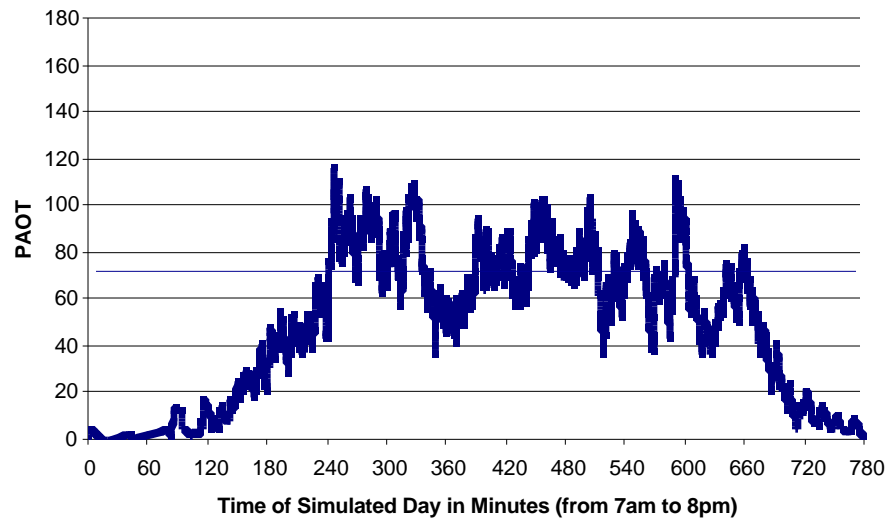


Figure 1. Simulation of current conditions at the base of Bridalveil Fall.

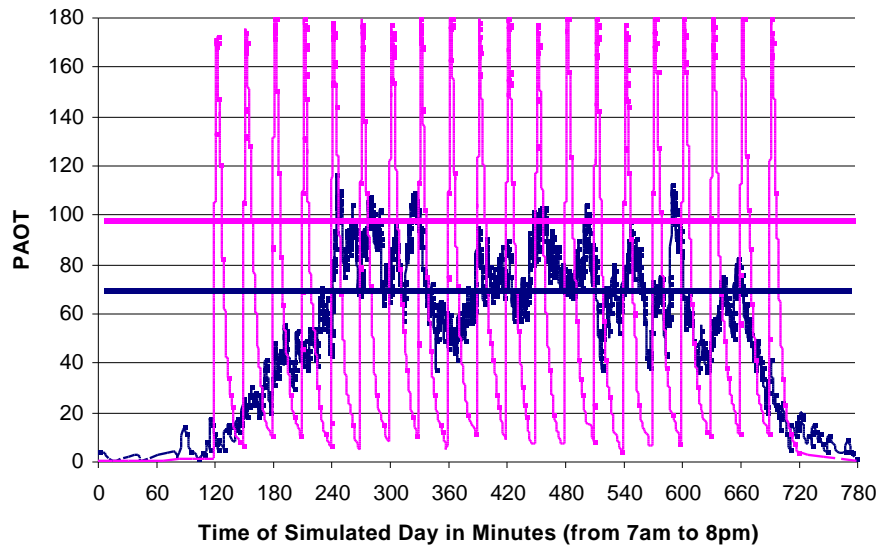


Figure 2. Simulation of current conditions and 30-minute scheduled alternative transportation system at the base of Bridalveil Fall.

## Managing Recreational Use

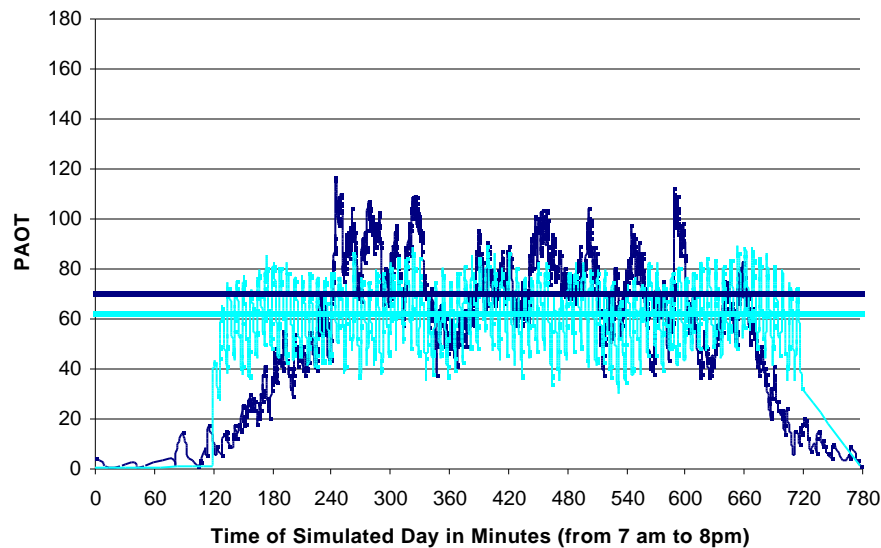


Figure 3. Simulation of current conditions and 7.5-minute scheduled alternative transportation system at the base of Bridalveil Fall.

related programs is warranted.

### Natural Resource Challenge

Effective park management requires knowledge of current conditions of natural resources. Increasing park-use levels, as well as other cross-boundary pressures such as invasive species, air/water pollution, and incompatible resource use, have led to environmental resource degradation and associated impacts on the quality of the visitor experience. Protecting such resources requires an understanding of plants, animals, ecosystems, and their interrelationships, along with knowledge about current natural resource conditions. In order to do so, however, managers

must inventory and monitor these resources. NPS policy provides the institutional mandate to inventory and monitor current resource conditions. For example, the National Parks Omnibus Management Act (1998) states that the Secretary of the Interior "shall undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends in the condition of National Park System resources."

In August 1999, NPS created a new initiative, the Natural Resource Challenge. The Natural Resource Challenge is a strategic action plan aimed at balancing resource preser-

### Managing Recreational Use

vation with park visitation and facilities development. It envisions that all park units that contain significant natural resources will possess the basic resource information needed for effective, scientific management decisions and resource protection. The plan outlines the need for “inventorying natural resource conditions, monitoring how those conditions change over time, and developing standards to evaluate changes in condition and the effectiveness of management actions” (National Park Service 1999b, 10). Inventories will provide baseline information about natural resources, while monitoring will track any changes to these resources.

With nearly 400 park units—and limited staff, budget, and time—such an exercise is a formidable task. It is impossible to inventory and monitor all natural resources in a park. However, by selecting a set of vital indicators that best meet management and monitoring objectives, it is possible to evaluate changes in resource conditions and the effectiveness of management actions. This is where integration with a program like VERP may be beneficial.

VERP and the Natural Resource Challenge share a number of common elements. Both require that indicators of resource or experiential quality be identified and selected, standards of resource and experiential quality be set, and indicators be monitored. Managers can therefore

potentially use the VERP framework to help formulate indicators and standards of resource quality. They may also use the Natural Resource Challenge to help monitor indicators of quality to ensure that standards are maintained.

### Conclusion

Specialization, subdivision, and creation of new programs are ways that organizations typically deal with growing responsibility and complexity. However, there can be a natural tension between proliferation of programs and accomplishment of fundamental organizational mandates. Over the years, NPS has created a number of programs that are ultimately designed to further its twofold mission of protecting significant natural and cultural resources and providing opportunities for high-quality visitor experiences. Consequently, there are significant opportunities to integrate these programs in ways that will most efficiently and effectively further agency objectives. This paper is suggestive of such opportunities.

Integration across programmatic boundaries may be especially warranted with regard to visitor-use management and protection of the quality of the visitor experience. No organizational entity or program within NPS has been explicitly assigned the overall responsibility for visitor use management. There are specific programs for natural and

## Managing Recreational Use

cultural resource management, but across agency programs that relate to not for the visitor experience component of the agency mandate. Therefore, efforts to coordinate visitor-use management and the quality of the visitor experience may be especially needed and productive.

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