A problem-definition approach to stakeholder interests: A case study of the Zion Lodge landscape, Zion National Park, Utah

Susan Bahnick Jones
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A PROBLEM-DEFINITION APPROACH TO STAKEHOLDER
INTERESTS: A CASE STUDY OF THE ZION LODGE
LANDSCAPE, ZION NATIONAL PARK, UTAH

by

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A thesis submitted in partial fulfillment
of the requirements for the

Master of Science Degree in Environmental Science
Department of Environmental Studies
Greenspun College of Urban Affairs

Graduate College
University of Nevada, Las Vegas
December 2005
The Thesis prepared by

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Entitled

A PROBLEM-DEFINITION APPROACH TO STAKEHOLDER INTERESTS:
A CASE STUDY OF THE ZION LODGE LANDSCAPE, ZION NATIONAL PARK, UTAH

is approved in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE

Examination Committee Chair

Dean of the Graduate College

Examination Committee Member

Examination Committee Member

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ABSTRACT

A Problem-Definition Approach to Stakeholder Interests:
A Case Study of the Zion Lodge Landscape,
Zion National Park, Utah

by

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Environmental decision making seems predisposed to conflict and impasses because it involves complex technical issues and attracts multiple stakeholders. Overcoming an impasse requires a look beyond entrenched positions to identify, clarify, and communicate stakeholders' underlying interests. Problem-definition theory offers one way to clarify those interests. It integrates stakeholder perspectives on problem causes, evidence, harms to affected populations, and solutions.

This study proposed an analytic framework for clarifying stakeholders' interests and tested it at Zion National Park. Stakeholders participated in semi-structured research interviews about their ideas for creating a sustainable landscape for the Zion Lodge area. The proposed framework helped stakeholders' clearly communicate their perspectives and interests related to managing the landscape. The framework also helped policy makers understand competing visions of the problem and a range of potential solutions proposed by stakeholders.
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ACKNOWLEDGMENTS

Many individuals and organizations deserve recognition for their efforts and support, beginning with the staff of the National Park Service and Xanterra, who volunteered their time for interviews and site tours. In particular, I need to thank three NPS staff in particular: Lisa Ogden, landscape architect, who first contacted UNLV to ask if there was a student who would like to work on problems with the Zion Lodge landscape; Sarah Horton, park archaeologist, my main point of contact whose insights and introductions opened many doors that otherwise might have remained closed; and Jack Burns, Assistant Chief of Resource Management and Research, who was willing to take a chance on me as an unknown student intern and arranged for financial and logistical support. I’d like to thank Gordon Taylor, Xanterra Regional Manager, for his personal time, as well as for access to his staff.

My thesis committee deserves special thanks as this was truly an interdisciplinary effort. Krys Stave reigned me in when I tried to do too much landscape architecture and not enough environmental problem-solving; Mark Hoversten for his (in)famous “whiteboard” sessions at crucial points in the study; Andy Kirk for fine-tuning my skills as a historian and reminding me to see my work in its historic context; and Dawn Neuman for her enthusiastic pep talks. Mark, as head of the Landscape Architecture and Planning Research Office, and the UNLV Graduate and Professional Student Association deserve thanks for their financial support for travel to Zion National Park. Several landscape architecture undergrads also helped me along the way with typing, proofreading, drafting, and listening to me fuss and fume, especially Susan Farkas, Knut-Kjell Hoversten, Brian Pugh, and Ramil Santiago. And, of course, my editor Monica Miceli, who handled the nitty-gritty details of manuscript preparation so I could focus on intellectual content.

Finally, I want to thank my parents, Dee and Ed Lowe, who pulled the weeds in my yard, cleaned the pool, did my laundry, and made sure that I had a home-cooked meal at least once a week. I may be fifty-five years old, but I still need my mom and dad!
CHAPTER ONE

UNDERSTANDING STAKEHOLDER INTERESTS

For several years, the National Park Service (NPS) has faced an impasse over landscape management policy for the Zion Lodge area of Zion National Park. The first history of the Lodge area landscape, prepared in 2003, portrays an eighty-year trend of decisions that moved the Lodge from a traditional NPS rustic design aesthetic towards the more manicured and urbanized look seen today (Jones 2003a). About this same time, landscape management took a new turn as the NPS and concessioner began exploring ways to create a sustainable landscape in the Lodge area. After many meetings, staff prepared draft guidelines in February 2003. But then the decision-making process stalled as participants brought conflicting philosophies and values to bear on the problem. While staff remains at an impasse, trees are dying and visitors continue to trample the landscape into bare mineral soil, challenging the NPS image as the leading environmental agency.

Interviews with NPS and concessioner staff, conducted in late 2004 and early 2005 as part of this study, confirmed that they do not share a common vision for what a sustainable landscape should look like or how it should function. Some staff believe that ecological integrity is not compatible with use of the Lodge area, as described in the General Management Plan for Zion National Park (NPS, 2003a). Others argue for complete restoration of the native riparian community and letting the river flow freely, even if that means removing the Lodge entirely. Still others express concerns over the man-made look of the landscape and want the landscape to look the way it did twenty years ago. Some of these visions for a sustainable landscape cannot be reconciled, but each reflects the opinion of someone who cares deeply about the future of Zion National Park. Taken together, however, they illustrate the dilemma faced by the superintendent
of Zion National Park who ultimately must decide on policy for management of the Lodge landscape.

This dilemma typifies environmental decision-making problems faced by managers in national parks. Stakeholders in environmental disputes often bring incompatible positions, interests, and values to the negotiating table that make problem resolution complex and result in competing solutions that are hotly contested by everyone concerned (Randolph & Bauer, 1999). Because national parks include natural, cultural, and recreational resources, they often become the arena for these conflicts, as multiple stakeholders express competing values, goals, and interests. One complex debate, in particular, has characterized long-standing conflicts over national-park policy and management: the nature versus culture debate.

The Nature Versus Culture Debate

Congress created the National Park Service in 1916. In the Organic Act, they defined the fundamental purpose of the national parks “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same is such manner and by such means as will leave them unimpaired for future generations” (39 Stat. 535). The underlying premise is that the landscape’s preservation could be achieved best through development of its tourism potential (Carr, 1998). Many people believe that Congress created a paradox when it simultaneously tasked the NPS to provide for public access and enjoyment while also charging the NPS with preserving the outstanding natural qualities for which each park had been designated (McClelland, 1998).

The paradox centers on a perceived conflict between two opposing views of the basic purpose of national parks. In simplified terms, one view emphasizes recreational tourism, provision of visitor facilities, preservation of historic and cultural artifacts, and public enjoyment of the sublime landscapes found in the national parks, combined with preservation of only a semblance of ecologically intact wild America. The other view emphasizes preservation of ecological integrity in the parks and wilderness preservation, while permitting limited public use in a few carefully selected areas. As a result, persistent tensions between recreational use
and resource conservation have continually characterized national-park management policy (Sellars, 1997).

The nature versus culture debate has manifested itself in many ways since the first national parks were created. The most relevant variations for this study include conservation and preservation conflicts over use of public lands, past and present manipulations of the landscape within national parks, the paradox of use-to-save; and changes in public values during the Environmental Era.

Conservation and Preservation Conflicts

Over Use of Public Lands

By the end of the 19th century, Americans began to realize that natural resources on public lands were finite and disappearing under intense exploitation by private interests. In response, conservation emerged as an organized movement during the Progressive Era between 1890 and 1920. It espoused rational, centralized planning to promote efficient development and use of all natural resources on public lands. Under President Theodore Roosevelt, conservationists embraced the philosophy of multiple economic uses of public lands. They believed that conflicts among multiple resource users such as agriculture, mining, forestry, and ranching required rational, scientific, and efficient decisions made by trained technical professionals like themselves. They eschewed resolution through lengthy, irrational, and unpredictable political or public processes. Conservationists also ridiculed the idea of preserving land exclusively for its scenic qualities. To conservationists, total preservation for aesthetics was as old-fashioned as abusive exploitation of the land. But if they were directed to protect scenery, conservationists believed that scientifically improved methods of forestry and grazing would provide sufficient protection of scenic qualities while allowing economic exploitation of resources within national parks (Carr, 1998; Hays, 1999).

Middle- and upper-income urbanites originally embraced conservation as a means of resisting threats posed by uncontrolled industrialization in the late 19th and early 20th centuries. Urban dwellers had long turned toward the wonders and beauties of nature for spiritual renewal.
Conservation seemed to symbolize traditional American virtues of honesty and hard work and be oriented toward the countryside and the nonmaterial values inherent in nature. However, these urban recruits to conservation preferred to preserve resources from economic use rather than apply technology to their efficient development as espoused by conservationists (Hays, 1999).

These two radically different views of conservation created bitter conflicts between conservationists and preservationists, between those who favored resource development and those who urged for the protection of nature for its own sake. Preservationists concerned themselves with preserving land as an object of beauty, scientific curiosity, and recreation and maintained that conservationists ignored the spiritual benefits of wilderness and nature as essential components of humans' quality of life (Hays, 1999). Conservationists dismissed scenic preservation as the basis for public land management policy, whereas national parks (existing and proposed) depended on aesthetic justification for their existence (Carr, 1998).

Proponents of national parks recognized that the commercial value of landscape scenery could be exploited, without destroying public lands for enjoyment by future generations, by developing it for tourists. They saw parks as scenic recreational areas that could, and should be, developed for public use, to help the economy through national tourism, to improve the public's physical and mental health, to enhance citizenship, and to promote patriotism (Sellars, 1997).

These tensions between preservation and conservation framed public debate over the rationale for and development of America's national parks throughout the 20th century (Hays, 1999; Kline, 2000). These attitudes also set the stage for resistance to, and later conflicts over, public review of federal decisions required by most environmental laws passed in the last half of the 20th century.

Manipulation of the Landscape

Americans' strong identification with wilderness heavily influenced the manner in which national parks were developed for tourism. By the end of the 1800s, the spectacular scenery of the American West had become the symbol of the nation's achievements in its first century (Carr, 1998). Explorers, artists, writers, and photographers defined a romantic, idealized, uninhabited
West, and imbued it with significance (Spence, 1999). As interest in the vast American landscape grew, places such as Yellowstone and Yosemite developed special cultural meaning. Americans began to see themselves as "Nature's nation" and perceive themselves as enjoying a unique relationship to the natural world (Rothman, 1998, p. 41). As a result, a firm bond developed between the visually exceptional Western landscape and the people who believed they had conquered it. The expansive national parks of the Western United States, therefore, embody this national creation myth, and were created, in part, to preserve that romanticized vision of landscape that is so intimately connected to American identity (Rothman, 1998).

The American West and its national parks acquired symbolic meaning at exactly the time that wealth and technology made widespread travel possible (Rothman, 1998). In the late 19th century, touring the great places of the West became a sign of culture embraced by wealthy Americans. Furthermore, tourism took the form of viewing and appreciating the aesthetic qualities of sublime scenery in the tradition of viewing picturesque landscape painting (Carr, 1998). Therefore, early NPS policy emphasized design, construction, and maintenance of carefully crafted access to scenic vistas reflecting the American vision of wilderness untainted by humans. These early NPS nature-management policies preserved scenic beauty and encouraged tourism at the expense of ecological health (Sellars 1997). For example, NPS forest-management practices, such as removal of deadfall and snags, reduced wildlife habitat while NPS wildlife-management practices eliminated predators to increase wildlife species, such as bison and elk popular with tourists. The NPS introduced nonnative fish species into lakes and streams to improve sport fishing. Early pioneers and concessioners also modified landscapes by draining meadows, growing hay for their livestock, and planting orchards and gardens to feed visitors and workers.

NPS landscape engineers (now called landscape architects) also manipulated the landscape in a host of ways. They located and built trails, roads, and other facilities to revel scenic vistas and maintained them to ensure that popular views remained unimpaired and free from commercial intrusion. Through extensive landscape development in easily accessible areas, they mediated visitors' interaction with nature through carefully choreographed movements that
defined the pace and sequence in which visitors experienced the scenery (Carr, 1998; McClelland, 1998).

The Paradox of Use-to-Save

Horace M. Albright, second director of the NPS, addressed this aspect of the nature versus culture debate in one memoir: "There has been a persistent question through the years about whether we (those who wrote the Organic Act) were aware of and discussed the paradox of use and enjoyment of the parks by the people versus their preservation 'unimpaired.' Of course, we knew there was this paradox, but the organic acts creating Yellowstone, Yosemite, and other parks always contained these opposite tenets. We felt that it was understood to be standing policy" (Albright & Schenck 1999, p. 126-127).

As noted in the discussion of conservation, early proponents believed that developing the parks' economic potential as tourist destinations provided the best and only way to save them. So development tied to recreational tourism dominated park management until the 1960s. Furthermore, the culture of the NPS was "defined largely by the demands of recreational tourism management and the desire for the public to enjoy the scenic parks. Success was measured by "annual visitor counts; the increasing scope of its programs and size of the park system; and the number of new campgrounds, visitor centers, and related developments (Sellars, 1997, p. 282).

Although large numbers of visitors helped ensure financial and political support for the national park system, visitors created their own impacts on park resources. Many authors such as Albright and Schenck (1999), Carr (1998), McClelland (1998), Meyerson (2001), and Sellars (1997) have chronicled the damage to natural and cultural resources inflicted by uncontrolled visitor activities. The NPS undertook early park development aimed at correcting these abuses as much as it pursued aesthetic goals.

However, after World War II, a travel explosion by middle-class Americans created a huge increase in the numbers of park visitors arriving by automobile. These visitors created soaring demands for different types of amenities, as well as overcrowding parks' existing facilities. Demands also increased for services such as ice cream stands, snack bars, and other income-
producing activities. The NPS responded by building more buildings and offering more services, generally in new developments of dining halls, campgrounds, and cabins clustered near older hotels, newer lodges, and prime scenic attractions (Barringer, 2000).

Advent of the Environmental Era

At the same time that the NPS was expanding its visitor facilities after World War II, however, deep-seated changes in public values were taking place that would soon conflict with NPS expansion plans. The post-war boom in material wealth produced a generation of college-educated, white-collar middle class suburbanites that concerned itself with amenities such as leisure time, outdoor recreation, healthy air and water, personal health, and security. It also placed greater emphasis on the natural world represented by parks, forest preserves, botanical gardens, and wilderness areas (Kline, 2000; Sale, 2000).

Pursuit of environmental amenities by this mobile, affluent, and college-educated generation led to significant changes in attitude by government towards the natural environment in the 1960s and 1970s (Hays, 1987; Sale, 2000). Environmental values gained legitimacy as land-management agencies at the federal, state, and local level grappled with the proper use of public lands amid competing public and private demands (Hays, 1987). As a result, NPS attempts to respond to every recreational demand from the public—for tennis courts, putting greens, skating rinks, ski slopes, and swimming pools—triggered acrimonious new debates over preservation and use, over contradictory ideas about what the national parks should be, and whether designing to meet visitor expectations was appropriate land-management policy (Barringer, 2002; Hays, 1987).

Efforts by the Sierra Club in the 1960s to prevent construction of two dams that would have flooded 150 miles of Grand Canyon National Park reflected the rise of another set of values in Americans’ relationship to the land—ecologic values that began to influence national-park management in the 1970s and 1980s. With the emergence of ecological concerns in the Environmental Era, ecological health became a priority as well as another yardstick for measuring success of park management policies and practices (Sellars, 1997).
As part of the broader environmental movement, Americans acquired an increased interest in preserving a wider range of historic sites, buildings, structures, and landscapes. Historic preservationists primarily concern themselves with protection of the built environment, whereas environmentalists primarily concern themselves with protection of the natural environment (Tyler, 2000). This establishes another variation of the nature versus culture debate. This variation generally occurs when people view nature and culture as two opposing ends of a spectrum.

Robert Melnick (1996, p. 30) calls this polarization of views “landscape violence (that) establishes an adversarial relationship between those who first consider natural systems and those who first consider cultural systems.”. As discussed earlier, for decades the NPS systematically removed traces of human presence in its attempt to create a romanticized vision of wilderness. In the last thirty years, however, NPS policy has slowly embraced preservation and interpretation of national parks as integrated, inclusive, natural, and cultural landscapes reflecting a wider range of human activities and imprints.

Public Involvement in Decision Making

As this discussion of the nature versus culture debate illustrates, different values have influenced park policy at different times throughout the last 100 years. Wondolleck and Yaffee (2000, p. 30) state the problem succinctly: “Today there is a huge and conflicting set of management objectives established by law, supported by public values, and expressed as demands by interest groups. With many legitimate objectives, there is no single right answer to the question of how to manage a landscape. Rather, various directions benefit different interests in divergent ways. That is, managerial decisions are perceived as value-based choices.”

The Environmental Era has had one other significant effect on national parks: it has drastically changed the way in which federal land-management agencies make decisions. The National Environmental Policy Act (NEPA), in particular, mandated significant changes (Percival, 2000). In addition to requiring agencies to consider the environmental effects of their actions, NEPA also mandates public involvement in and review of the decision-making process. As a result, more
public and private parties have become involved in decision making, representing a much-expanded range of values placed on cultural and natural resources and public lands.

Wondolleck and Yaffee (2000) have described how the rise of the national environmental movement, with its numerous laws, public interest groups, and shift in public interests and attitudes has created a climate in which many legitimate interests often fight to a standstill over environmental issues. They note that “natural resource management has been in a state of impasse at many levels. Battles over owls in the Northwest, woodpeckers in the Southeast, gnatcatchers in Southern California, and fights over forests and range management plans and rural development strategies throughout the country have raged unabated through numerous communities, courtrooms, and media” (Wondolleck & Yaffee, 2000, p. 6-7). The resulting conflicts and impasses often occurred to the detriment of the resource in contention.

Wondolleck and Yaffee (2000) also discovered that a new style of resource management began to emerge as conflicts escalated and as agencies grappled with increasing requirements for public involvement. Agencies began turning away from confrontation and turning toward collaboration as a way to understand stakeholders' interests and to limit the negative effects of conflict and impasses.

Interests

Impasses occur when stakeholders assume inflexible positions. Wondolleck and Yaffee (2000) argue that effective collaboration can be achieved if stakeholders focus on their interests, not their positions. They believe there is a critical difference between the two. Interests are the “underlying concerns, needs, desires, or fears behind a negotiator’s position, which motivate the negotiator to take that position” (Wondolleck & Yaffee, 2000, p. 128). These interests are the needs that motivate the bulk of people’s actions. If a person’s interests can be understood, subsequent dialog may demonstrate that the parties share some core values. Dialog may lead, in turn, to a solution that respects those values, as interests can provide opportunities for creative problem solving (Mayer, 2000; Randolph & Bauer, 1999).
For example, in *Wolf Wars*, Hank Fischer recounts a 1984 meeting over plans to reintroduce wolves to Yellowstone National Park (Fischer, 1995). Fischer, a noted wolf advocate and environmental activist, describes the tense mood of 15 or 20 ranchers in the room who were opposed to reintroduction. He cited facts and figures from wolf studies in Canada and Minnesota: Wolves are not attracted to people food. Wolves don't attack people. He talked about monetary compensation for livestock losses. Finally, one rancher spoke up and identified the ranchers' real interest. "You need to understand one thing," he said. "It's not the wolf we're really worried about. What we're concerned about are all the restrictions on how we do our business that comes along with the wolf" (p. 58). More than ten years elapsed before the first wolves returned to Yellowstone. But the final solution—rules governing wolves as an experimental population rather than as an endangered species—provided the flexibility needed to address the real interests of local ranchers: federal regulations over how they conducted their business (Fischer, 1995).

Collaborative decision making challenges stakeholders to overcome their initial perceptions and entrenched positions to find shared values and develop creative solutions. In successful processes, stakeholders acknowledge the legitimacy of individuals' personal concerns, commitments, objectives, and fears, whether expressed in economic, ethical, aesthetic, or emotional terms (Randolph & Bauer, 1999). Collaborative decision making opens "up a dialog that demonstrates the parties share some core values" as a "means to achieving an end that all participants can live with" (p. 188).

Impasse

Mayer (2000) notes that being at an impasse is a natural, important, and potentially useful part of the decision-making process. He defines an impasse as the point when people are unable or unwilling to move forward through a conflict to resolution, at least not with the current approach. It occurs when one or more parties have needs they believe or sense will not be met if they move toward resolution. Often an impasse occurs because participants cannot choose among competing needs, such as the need to reduce water consumption and the need to preserve a historic landscape. A genuine impasse also occurs when "people feel unable to move
forward without sacrificing something important to them...(when) emotions and feelings prevent progress...(when) people cannot change their view of the conflict or the other parties in a way that the resolution process demands (Mayer, 2000, p. 171), or when "people cannot identify or agree on behaviors or actions" (Mayer, 2000, p. 172) that allow resolution to move forward. Sometimes an impasse occurs because the conflict is being addressed at one level of need, but the source of the impasse lies at a different level of need (Mayer, 2000).

The Research Question

Environmental decision making seems predisposed to conflict and impasses because it involves complex technical issues and attracts multiple stakeholders. These stakeholders bring conflicting positions, interests, and values to the table. They express themselves in many ways. For example, a stakeholder may express interests in economic, ethical, aesthetic, emotional, or other terms. If overcoming an impasse requires a look beyond entrenched positions, then the question becomes how to identify, clarify, and communicate stakeholders' underlying interests in a way that facilitates ending an impasse over environmental policy or decisions.

Hypothesis

I propose that problem-definition theory provides a basis for identifying stakeholders' concerns, needs, desires, fears, and perspectives and for translating them into clear statements of stakeholders' interests. The theory focuses on a set of interrelated information about a problem to create an intellectual framework for further action by identifying a cause, the harm to an affected population, evidence, and a possible solution. While social scientists generally apply problem-definition theory to analyze the historical development of federal policies, I further propose that this analytic approach can be applied to the development of new policies and management strategies. As a test of this hypothesis, I developed a stakeholder analytic framework to identify how different stakeholders define who or what is responsible for a problem, how they identify who or what is being harmed and what will happen if nothing is done, what
interests and priorities they are expressing with respect to a problem, and how they visualize the desired future condition or define successful resolution of a problem.

The test will be considered successful if the successful framework helps stakeholders communicate their interests clearly and completely by articulating their perceptions of causes, harms, evidence, and solutions. In addition, the framework should integrate scientific, cultural, and operational knowledge into a format amenable to identifying commonalities and differences among stakeholder interests and help policymakers understand competing visions of the problem and potential solutions.

Chapter Two translates problem-definition theory into a preliminary stakeholder analytic framework. It examines the role of problem definitions in framing debate, the functions they perform during debate, and factors influencing their acceptance. The chapter then integrates the roles, functions, and success factors into four components that serve as the organizing mechanism for the framework and subsequent case study. Chapter Three synthesizes Yin's case study and Kvale's research interview methods into a case study design for testing the analytic framework. The chapter also presents reasons for selecting Zion National Park for the case study. Chapter Four summarizes results of the case study. It presents detailed analyses of stakeholders' problem definitions and identifies their common, compatible, dependent, and divergent interests. Chapter Five evaluates the preliminary framework and presents a revised version. It discusses practical considerations for applying the framework and adapting it to nonacademic situations.

The overall structure of this study is charted in Figure 1.
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<th>Chapter Four. Framework Application Phase</th>
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<th>Chapter Five. Framework Evaluation Phase</th>
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<td>- Answers the original question about the applicability of a problem-definition approach to decision making</td>
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<td>- Proposes a revised stakeholder analytic framework</td>
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<td>- Speculates about adapting the framework to non-academic settings</td>
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Figure 1. Overall Design of the Thesis

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A PROBLEM-DEFINITION APPROACH

Problem definition emerged as a separate field of social science and policy study in the 1980s. Basso (1994) summarized several possible explanations for this surge of academic interest. Old case studies were being reanalyzed and problem definition was found to have played a more important role than previously thought. Researchers found that the "politics of problem definition (had) become critical to the success or failure of policy formation" (p. 182) at the same time as traditional bases of policy support, such as political parties, were becoming less effective. The end of the Cold War had also produced a state of ideological anarchy, where old labels like liberal and conservative were being redefined. Meanwhile, globalization was destroying older stable policy and political alignments. Electronic mass media were intruding into "every facet of policy formation (making) rhetoric and symbolism all the more critical to framing policy debates and policy direction" (p. 183). And finally, social scientists may have been rebelling against economic-based theories of policy making as part of a larger effort to "reexamine concepts and factors (e.g., culture, societal values, formal institutions) that may have been undervalued" (p. 183) in previous policymaking research.

Regardless of the exact origin of problem definition as a field of inquiry, in 1989 Deborah Stone proposed a unified theory of problem definition. Whereas prior research had examined problem definition as a part of political agenda setting, Stone (1989) argued that this approach overlooked what she called the "substantive agent" for turning bad conditions into political problems (p. 282). The earlier studies had investigated agenda setting along three lines of thinking: (1) identity and characteristics of policy actors, (2) nature of the difficulties or harms themselves, or (3) deliberate use of language and symbols. Stone argued that these three lines
of thought are not separate aspects of problem definition. Instead, she asserted that they represent components of a broader concept of problem definition known as a causal story, and that causal stories are the primary mechanism for moving a condition on to the political agenda. Moreover, Stone argued that policy actors compose and manipulate their causal story as they attempt to have their problem definition adopted as the basis for policy and action. Starting from the premise that problems are socially constructed, Stone stated that:

“Problem definition is a process of image making, where the images have to do fundamentally with attributing cause, blame, and responsibility. Conditions, difficulties, or issues thus do not have inherent properties that make them more or less likely to be seen as problems or to be expanded. Rather, political actors deliberately portray them in ways calculated to gain support for their side” (p. 282) (original emphasis).

In addition, Stone (1989) argued that political actors consciously control interpretation and images of problems and problem definitions exert an influence on policymaking long after a problem is accepted on to the political agenda. Causal stories also influence the formulation and selection of alternative policy responses because each story places responsibility and burden for solving the problem on a different party. Therefore, conflicts over causal stories become fights to control the solution, and by extension, the power and resources to affect policy actors’ preferred solutions.

Stone started “from the conventional social science wisdom that a bad condition does not become a problem until people see it as amenable to human control” (p. 299). This is an important point. She asserted that a causal story must demonstrate the mechanism by which one set of people causes harm to another, whether intentionally, accidentally, or inadvertently. In other words, one group of people causes another group to suffer in some way (p. 283). Her theory is worth quoting at length, because it provides the starting point for development of the stakeholder analytic framework proposed later in this chapter:

“First, causal argument is at the heart of political problem definition. Problem definition is centrally concerned with attributing bad conditions to human behavior instead of to accident, fate, or nature.
Second, the process of problem definition cannot be explained solely by looking at political actors, the nature of bad conditions, or the characteristics of issues. Problem definition is the active manipulation of images of conditions by competing political actors. Conditions come to be defined as problems through the strategic portrayal of causal stories.

Third, these portrayals can be categorized as four causal theories: intent (direct control), mechanistic cause (indirect control exercised through an intervening agent), inadvertent cause (control mediated by intervening conditions), and accident (total absence of human control).

Fourth, actors seeking to define a problem attempt to push the interpretation of a bad condition out of the realm of accident and into the realm of human control. The three causal stories of human control all assign responsibility for the condition to someone else and so create a burden of reform. People blamed for a problem and saddled with the burden of reform will resist the new causal theory (assuming they benefit from the status quo) by portraying the condition as accidental, as caused by someone else, or as one of the indirect forms of causation.

Fifth, political actors have increasingly used probabilistic notions of causation in addition to mechanistic concepts, and arguments based on probabilistic cause are increasingly successful.

Sixth, the competition over causal theories in problem definition is bounded not only by the usual political conditions that constrain agenda setting, but also by science and law, two social institutions that are each in their own fashion charged with arbitrating disputes about causal theories.

Finally, causal theories have important consequences for politics beyond mere demonstration of human control. They have a strong normative component that links suffering with an identifiable agent, and so they can be critical of existing social conditions and relationships. They implicitly call for a redistribution of power by demanding that causal agents cease producing harm and by suggesting the types of people who should be
entrusted with reform. And they can restructure political alliances by creating common
categories of victims” (pp. 299-300).

The Role of Problem Definitions
in the Policymaking Process

Stone's theory explains how causal argument is central to problem definition. Weiss, also
publishing in 1989, expanded on the idea that the influence of problem definitions extends beyond
the initial step of getting an issue on to the policy agenda. Weiss (1989) argued that problem
definitions are dynamic and that they play a role in all three stages of policymaking: as overture to
carcismaking, as an integral part of the policymaking process, and as a policy outcome. She
made her case through analysis of attitudes towards and policy on paperwork reduction in the
federal government between roughly 1933 and 1980 to show how changing perceptions of the
role of government fostered two different definitions of the problem of federal paperwork. In their
role as “overture,” Weiss demonstrated that problem definitions determine “how people think
about the problems that are (and are not) on the public agenda” (p. 97). They create the
intellectual framework and context for policy debate. She also asserted that problem definitions
are not fixed at the beginning of debate. Instead, problem definitions change during debate, as
policy actors continue to promote their individual problem definitions during the policymaking
process, as new policy actors enter the debate, as external events attract or refocus public
perceptions and media attention, and for any number of other reasons. In this way, changing
problem definitions are an integral part of the policymaking process. Finally, a new problem
definition emerges as an outcome or product of the policy making process. This new definition
serves as the basis of policy implementation until usurped by a new problem definition (pp. 97-98).

Portz (1994) expanded on the argument that problem definitions "set the stage for community
debate and action. Success (in framing the original question) is an important step in moving an
issue from the level of general discussion to an agenda for decision and action" (pp. 44-45). As
evidence, Portz compared three studies of manufacturing plant closures to show how problem
definitions shaped community response to the closures, reflecting a spectrum of responses in both cooperative and contentious situations.

Many authors have used case studies to investigate ways in which problem definitions frame a policy debate. For example, problem definitions frame a debate within the cultural values and worldviews endorsed by policy actors. Coughlin's 1994 study of traffic congestion demonstrated the cultural basis of problem definitions, that is, those deeply held values or traditions that create a lens through which policy actors view conditions and define issues. In his study, he contrasted two approaches to traffic policy—the traditional or economic approach and the environmental or green approach—to show how different value systems lead to different definitions of the congestion problem. For each problem definition, he analyzed the values that proponents of each problem definition place on seven aspects of traffic congestion, such as safety and economics, to illustrate how the definition influences the salient issues, the legitimacy of different evidence, the legitimacy of certain solutions, and the image of the problem.

Coughlin (1994) concluded that the policy process may seem rational, but that policy is, in fact, socially constructed, and what seem to be technical debates between different perspectives are actually debates over values. He asserted that examining problem definitions is one way to understand issues involving collective action and common resources such as parks. Specifically, Coughlin argued that “different cultural conceptions of how a problem is formulated provide alternative world views for participants in the policy process. Such perspectives are often not amenable to compromise, which can lead to prolonged, contentious, and confusing debate over the nature of a problem and the legitimate range of acceptable solutions. Such divisiveness can paralyze decision makers and can lead to policy gridlock” (pp. 155-156).

Rochefort and Cobb (1994b) echoed this theme. They observed that problem definitions are never purely technical; they are always statements of values. Stakeholders favor and develop problem definitions based on their own values, assumptions, and interests, which may not be compatible. Policymaking, therefore, becomes a contest among different perspectives. They base their argument on an extensive review of problem-definition and agenda-setting literature to show how researchers from various disciplines converge on the importance of problem definition.
Weiss (1989), Mucciaroni (1994), and Basso (1994) also observed that problem definitions are expressions of values. Weiss (1989) explored the connections between the issue of federal paperwork and cultural values and symbols. In her analysis, those who believed in the necessity of government data-gathering and its attendant paperwork linked their arguments to cultural symbols and values such as "rationality and expertise in government decision making due process, (and) the protection of citizens against the arbitrary or biased actions of government that were not guided by systematic information. By blaming people for complaining about their obligations to provide information to the government, (bureaucrats) emphasized the legitimacy of government claims on information about society" (p. 100). Advocates of paperwork reduction argued that there was federal paperwork. This causal theory legitimated complaints about paperwork by citizens, and focused on the economic costs to citizens and businesses, rather than the benefits to the government. They invoked their own set of cultural values and symbols by discussing the issue as intrusion by government into private matters, appealing to suspicion and skepticism about centralized authority, the competence of federal bureaucrats, and the importance of individual freedom. In contrast, Mucciaroni (1994) noted that problem definitions shape policy and debate by invoking imagery of deeply held cultural values embedded in a people's history and myths (p. 130). Basso (1994) reanalyzed the seven case studies that precede his paper in Rochefort and Cobb (1994a) to illustrate how powerful American cultural beliefs—core beliefs in individual freedom, private property, the Protestant work ethic, faith in technological progress—frame policy debate and limit the range of alternatives long before public debate actually begins. He concluded that problem definitions reflect the dominant value paradigm embraced by a society at large.

Problem definitions also frame policy debate by calling for specific actions. Problems only exist when someone decides that a current condition is no longer acceptable and that something must be done to create a more desirable condition. By pointing out the need for change, problem definitions implicitly or explicitly demand that someone take action. In this sense, Rochefort and Cobb (1994b, p. 8) argued that problem definitions require an "actionable statement" that can be
used as the basis for government action to reduce or eliminate the undesirable condition while minimizing negative consequences to related conditions.

A call for action may be expressed by assigning blame, proposing a solution, and/or assigning responsibility to some person or organization for implementing the solution and stopping the harm (see, for example, Burstein & Bricher, 1997; Coughlin, 1994; Portz, 1994; Weiss, 1989). For instance, Stone (1989, pp. 295-297) claimed that problem definitions, by identifying causal agents, “assign responsibility to particular political actors so that someone will have to stop an activity, do it differently, compensate its victims, or possibly face punishment (and) they can legitimate and empower particular actors as ‘fixers’ of the problem..people who have the tools or skills or resources to solve the problem in that particular causal framework.” Stone not only argued that problem definitions call for action, she also asserted that they can result in a redistribution of wealth and power.

Thus, by carefully constructing a causal story, policy actors take ownership of a problem, propose their preferred solutions, and empower themselves as the legitimate solvers of the problem. Ownership may be claimed on technical, jurisdictional, or moral grounds. Policy actors claim technical ownership through expertise or knowledge; jurisdictional ownership through institutional and process controls; and moral ownership through appeals to a legitimating authority.

Rochefort and Cobb (1994b, p. 14) defined ownership as control or “domination of the way that a social concern is thought of and acted upon in the public arena”; recognition as the authority on causes, consequences, and solutions; or having “jurisdictional control over policy decisions and appropriations for a problem area.” Problem definitions advance ownership by emphasizing specific causal factors and establishing control over the measurements or approaches used to gauge a problem’s magnitude, rate of change, distribution, existence, responsible agent, causes, future trends, and the level of analysis. These, in turn, determine acceptable solutions leading to the allocation of resources and authority to respond to the problem.
Rochefort and Cobb (1994b) also introduced the idea that language plays a crucial role in claims of ownership. Policy actors establish problem ownership by using language as the "vehicle for employing symbols that lend legitimacy to one definition and undermine the legitimacy of another" (p. 9), the "medium that reflects, advances, and interprets alternative realities" (9); "a powerful tool structuring decision making so as to favor one result and diminish the likelihood of another" (9); and the way to present "self-serving versions of events" (p. 9). In short, Rochefort and Cobb (1994b) concluded that the role of a problem definition is "to explain, to describe, to recommend, and above all, to persuade" (p. 15).

Sharp (1994) illustrated how problem definitions frame policy debate by legitimating certain forms of evidence while devaluing others, a point also emphasized by Weiss (1989) in her analysis of paperwork reduction policy. Sharp traced changes in problem definitions in the war on drugs during the 1980s and early 1990s. Although her study focused on reasons for longevity of the issue, she also examined evidence cited by policy actors to support their claims of the nature and severity of the drug problem. Those who believed that drugs were not a problem cited surveys, such as those of high school seniors and of representative households by the National Institute on Drug Abuse, that showed a steady and dramatic decline in reported drug use in the 1980s. Proponents of the war on drugs pointed to alternative evidence, such as the number of drug-related emergency room cases, to support their position that the drug problem increased during the 1980s.

Coughlin's traffic-congestion study (1994) also demonstrated that different problem definitions lend legitimacy to different evidence. Furthermore, by legitimating certain forms of evidence of harm, problem definitions lend legitimacy to certain solutions as well, inviting participation by some stakeholders while excluding others. Environmental groups, for example, equated traffic congestion with the costs of air pollution in terms of public health and cited statistics about non-attainment of air quality standards. This, in turn, legitimated their proposed solutions to congestion, such as public transportation and cars using battery power or alternative fuels, while inviting car manufacturers and the driving public to be part of the solution. In contrast, traditionalists focused on economic losses caused by delays in traffic and cited statistics about
the flow of vehicles per hour and the number of cars per mile. Their problem definition favored solutions that increase the number and capacity of highways, which invites engineers and construction firms to participate in the solution.

Finally, problem definitions establish the tone of policy debate on an issue. Rochefort and Cobb (1994c) argued that policy debates can be understood as clashes between instrumental and expressive problem definitions. Instrumental definitions aim to achieve specific goals, tend to rely on economic, factual, and statistical data and analyses, and focus on ends, not means. In contrast, expressive problem definitions emphasize means, not ends, and use cultural and moral symbols and values to appeal to policymakers. The authors presented an in-depth analysis of AIDS policy to show how instrumental and expressive problem definitions influenced both successful and failed attempts by different cities to adopt needle exchange and condom distribution programs. Rochefort and Cobb’s study showed that proponents of the programs constructed instrumental problem definitions of AIDS as a public health issue, whereas opponents of the programs constructed expressive definitions that portrayed AIDS as a moral, religious, or cultural issue. Furthermore, the authors showed how the problem definitions differed in their portrayal of the affected populations (as innocent victims or social deviants); how these socially constructed images influenced public perception of the affected populations; and how public perception ultimately resulted in policy choices to implement or not implement a specific program.

In summary, problem definitions frame policy debates by expressing the world view of the policy actors; calling for action, establishing ownership of problem, legitimating some solutions and evidence while devaluing others, inviting participation by some stakeholders while excluding others, and establishing the tone of debate.

Factors Influencing Acceptance of a Problem Definition

After policy actors create and propose a problem definition, there is no guarantee that it will be considered, let alone adopted, as the basis for policy. Rochefort and Cobb (1994b) proposed that a problem definition must pass a three-part test before it becomes a contender as the basis for
policy choice or viable management alternative: it must pass the tests of solution availability, acceptability, and affordability. In other words, a problem definition must pass each part of the test in order, before decision makers will consider it as the basis for policy and implementation.

Solution availability constitutes the first part of the test. Key decision makers must believe that the means exist to accomplish the desired outcome. Stakeholders float many ideas in the policy realm including those that have not been applied or tested on the current condition. Decision makers must be convinced that the proposed solution will solve the problem. The requirement in the Nuclear Waste Policy Act of 1983 for deep geological disposal using reasonably available technology provides a good example of solution availability. Congress considered many solutions for disposing of nuclear waste, such as burying it on the deep seabed and shooting it into the sun. Congress authorized deep geologic disposal, in part, because it perceived that the needed mining and engineering technology were available.

Deep geologic disposal also passed the second part of the test, that of solution acceptability. Acceptability does not refer to whether or not a proposed solution will actually solve the problem. Instead, acceptability refers to whether the proposed solution conforms to a society's standard code of behavior, that is, whether it is perceived by most members of a society as ethical, fair, and just. The Nuclear Waste Policy Act passed this test on two levels. First, it built on belief in intergenerational fairness—that the generations benefiting from nuclear power have the responsibility to solve the problem and not pass it on to future generations. Second, Congress believed that the federal government was morally obliged to dispose of nuclear waste created in or by the United States within its own territories rather than putting other populations at risk.

The final test, solution affordability, is relatively straightforward. Decision makers must believe that adequate resources exist to implement the proposed solution. This does not mean that determining affordability is easy. Uncertainties in estimating the cost of a solution, competing demands for limited dollars, budgeting constraints, probable costs of failure—all contribute to arguments over affordability.

The three-part test emphasizes the perceptions of decision makers. Four key factors influence perception of a proposed solution, and, therefore, whether a problem definition will pass the test:
characteristics of the decision makers themselves, characteristics of the issue, characteristics of the target population, and characteristics of political institutions and processes. Table 1 summarizes the factors and characteristics that affect problem-definition acceptance.

Table 1. Factors and Characteristics Affecting Acceptance of a Problem Definition

<table>
<thead>
<tr>
<th>Factors</th>
<th>Characteristics</th>
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| Characteristics of the Policy Actors (Advocates, Stakeholders, and Decision Makers) | • Prominence, visibility, and access to the media  
• Expertise in creating and manipulating public images of problems  
• Perception of the issue  
• Previous political and professional experiences  
• Response to different types and sources of information |
| Characteristics of the Issue | • Appeal across a broad spectrum of groups  
• Ties to cultural values and symbols  
• Claim of authority or knowledge  
• Amount of scientific supporting evidence  
• Solution availability, acceptability, and affordability  
• Comprehensiveness  
• Life span on the public agenda  
• Dramatic potential and novelty  
• Proximity to individuals' interests and values |
| Characteristics of the Target Population | • Public perception and images of the population experiencing harms or difficulties  
• Amount of power exercised by the affected population or the causal agent |
| Characteristics of Political Institutions and Processes | • Boundary effects in which developments in one policy area spillover into another  
• Shifts in public focus and emphasis over time |

Characteristics of Policy Actors

Stone (1997) observed that a problem definition is most likely to be successful when its advocates occupy prominent positions and are highly visible in the policy arenas, and have access to the media to put their causal story in front of the public; if the problem definition reflects deeply held cultural values; and if it somehow captures the current national mood. Mucciaroni

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(1994) also suggested that a problem definition is more likely to succeed when supported by occupants of strategic leadership positions in government. Webber (1991) offered a different perspective on characteristics of policy actors based on how decision makers use policy knowledge to formulate policies. Webber defined policy knowledge as "the body of human knowledge available to assist policy makers in their understanding of the causes and consequences of the outputs of government and the subsequent society impact" (p. 4). He provided an extensive review of policy knowledge literature to point out the gaps in research into the production, dissemination, and use of policy knowledge. In particular, his review of the two-communities theory of policy knowledge related directly to problem-definition acceptance.

The two-communities theory proposes that "conflicting world views, belief systems, and values do not allow meaningful communication, from policy researcher to policy maker, of different types of knowledge to take place" (Webber, 1991, p. 6). This theory suggests that personal characteristics related to education, previous political and professional experiences, political ambitions, and policy goals influence a decision maker's objectives, perception of the issue, and response to different sources and types of policy knowledge. Rochefort and Cobb (1994b, p. 178) referred to these as "personal preferences" of the decision makers. Webber went on to state that communication of policy knowledge from analyst to policy maker improves when analyses provide a causal explanation relating important elements of a policy problem to each other; explain how a policy alternative will work and affect other aspects of the problem; present the technical knowledge that defines the policy issue's context; evaluates the strength of existing claims; and assesses political consequences of alternative decisions (Webber, 1991).

Weiss (1989) attributed success to the emergence of policy entrepreneurs who promote favored solutions by emphasizing the importance of the problem. However, she noted that success also requires a receptive audience to hear the problem definition. Events of the moment and institutional structure influence receptivity. Like Stone (1989; 1997) and Mucciaroni (1994), Weiss acknowledged that personal involvement of high-ranking leaders also contributes to success or failure of a particular problem definition because each person brings their own perspectives, incentives, interests, and historical commitments to a policy debate.
Characteristics of the Issue

Many authors noted that successful problem definitions reflect widespread, deeply held cultural values embedded in history or myth. Problem definitions tied to powerful cultural symbols tend to be more successful (Basso, 1994; Mucciaroni, 1994; Stone, 1989). However, as Weiss (1989) observed, the appeal of a symbol can fluctuate through time or through conscious manipulation by a policy actor. These fluctuations can change public response to a previously acceptable or unacceptable problem definition. Stone (1989) also noted that a problem definition’s likelihood of success increases when scientific evidence supports the definition, and when the proposed solution requires no radical redistribution of wealth or power. Weiss (1989) concluded that successful problem definitions appeal to a variety of groups that respect different types of arguments, which suggests that policy actors should incorporate a variety of evidence and arguments into their problem definitions. Mucciaroni (1994) elaborated, suggesting that successful definitions appeal to a broad coalition of groups, including both political parties and both the executive and legislative branches of government.

Portz (1994) added an important political perspective to the factors affecting problem definition acceptance. Portz asserted that successful problem definitions display three characteristics: political acceptability, comprehensiveness, and a claim of authority or knowledge. Different dimensions of a problem definition, especially causes and solutions, must be acceptable to key policy actors within the affected community. That is, they must reflect compatibility with both past experience and current sentiments. Compatibility means the extent to which the problem definition contains familiar elements. Successful problem definitions also demonstrate a comprehensive understanding of the problem, including its severity and criticality, the consequences if the problem is not addressed, whether the problem is an isolated occurrence or part of a general pattern, and viable solutions. Finally, a successful problem definition must include a claim of authority or knowledge. That is, the framers of the definition must invoke some legitimating authority to persuade decision makers to accept their image of the problem. Alternatively, they must claim a special technical expertise that gives them better insight into a problem and its solutions than other policy actors.
Sharp (1994) examined problem definitions within U.S. antidrug policy debates in the 1980s. Issues usually have a short life span that limits the time available for advocates to promote their problem definition and enact their favored solution. Sharp claimed, however, that issues can remain on the public agenda for longer periods if they possess three characteristics - dramatic potential, proximity, and novelty— that make them amenable to redefinition and if they are supported by policy actors with a stake in keeping the problem visible. Dramatic potential refers to the range of stories, incidents, and images by which a problem can be defined and portrayed. Proximity means the personal relevance of a problem to an individual derived from both “objective exposure to the problem” and “the salience and centrality of the values that are embedded in a problem topic” (p. 104). In other words, the problem can be portrayed as relevant to more people when a larger number of core values can be associated with the problem. Novelty refers to opportunity for a problem to transform repeatedly, giving it a fresh appeal to the public based on the variety of causal stories that can be constructed on the topic. For example, if policy actors can define a problem in more than one way, then they can develop varying images to keep the issue alive in the media and the public arena, thus allowing more policy actors to adopt their problem definition.

Rochefort and Cobb (1994c) observed that success or failure of a problem definition often reflects the decision-making context in which the policy debate occurs. That is, broader social and political events and issues attracting public attention will influence success and failure independent of any intrinsic characteristic of the problem. For example, Mucciaroni (1994) observed that a problem definition can stand out among the many issues clamoring for public attention if it captures the awareness of a broad coalition of groups who care about the problem and agree with its severity.

Characteristics of the Target Population

As already discussed, problems and their causal stories are socially constructed. Schneider and Ingram (1993) argued that images of affected (target) populations are also socially constructed stereotypes created by politics, culture, socialization, history, the media, literature,
religion, and so on. They identified four types of target populations based on public image and political power. Advantaged populations possess a positive public image and wield a great deal of political power. In contrast, deviants have a negative public image and wield no political power. In between there are Contenders who have negative images but significant power, and Dependents who have positive images but little power. The authors used retirees to exemplify members of an advantaged population and prisoners as deviants, with corporations and children representing contenders and dependents, respectively. Furthermore, Schneider and Ingram asserted that the social construction of affected populations influences public officials to construct policies that provide a disproportionate share of benefits for positively constructed, powerful populations and to construct punitive, punishment-oriented programs for negatively constructed populations.

Rochefort and Cobb (1994c) concurred that political will responds to prevailing perceptions of affected populations as deserving or undeserving of assistance. In addition, they noted that political will also responds to whether affected populations seem familiar or strange and sympathetic or threatening. Mucciaroni (1994) adds that the tone of media debate often determines public and policy makers' perceptions of target populations, influencing whether they are perceived as deserving or undeserving of assistance, as victims of outside agents, forces, or impersonal causes or the primary cause of their own problems, respectively.

Therefore, successful problem definitions portray positively constructed images of affected populations that resonate with prevailing societal images. Or else policy actors must construct and sell new images that change decision makers' perceptions.

Characteristics of the Political Institution and Processes

Baumgartner and Jones (1994) argued that boundary effects, where events in one area of politics affects other areas, influence the acceptance of a particular problem definition because policies are interconnected--no policy exists in a vacuum. In addition, the authors claimed that boundary effects can also cause problem definitions to change over time as developments in one area affect those in another. They noted that shifts in problem definitions do not always result
from highly visible triggering events; instead, they may result from large, gradual shifts or trends over time. They presented a case study of United States's air transportation policy in the 20th century to demonstrate how public focus shifted from safety concerns to economic issues. The study also demonstrated how media attention sets and reflects shifts in debate, the rise and fall of interest in air transportation issues, and the tone of the debate.

Weiss (1989) referred to a similar phenomenon as the deep structure of public opinion, that is, the handful of themes and ideas that seem to matter to the public at the moment. Successful problem definitions resonate with this deep structure.

Components of a Problem Definition

The authors cited thus far have utilized problem definition theory to develop case studies tracing the history of policies ranging from federal paperwork reduction, congressional debate on work, gender, and family, and traffic congestion to sexual harassment, AIDS, and the war on drugs. Regardless of the issue, these studies suggested that policy actors create problem definitions comprised of four main parts: the causal story, the harms or consequences, the evidence of the problem, and the proposed solution. Each component, in turn, ideally contains specific statements about a policy actor's perception of the problem. From these explicit statements, an analyst attempts to identify and understand underlying interests and values, with or without the aid of the policy actor.

The first component takes the form of a causal story to create an image of the problem, assign blame for creating the undesirable condition to some individual or group, describe the problem's origins, emphasize the priority placed by policy actors' on various values, and relate important elements of the problem to each other (see, for example, Burstein & Bricher, 1997; Coughlin, 1994; Sharp, 1994; Stone, 1989; Webber, 1991; Weiss, 1989).

Rochefort and Cobb (1994b) conducted an extensive review of the problem-definition and agenda-setting literature and identified the characteristics most frequently invoked when problems were described for governmental consideration. In general, they found that every problem definition carries its own assumptions about why the problem occurs, what the core policy should
be, and the consequences of policy failure (p. 16). They identified and defined two overarching characteristics of causal stories: causality (a statement about the problem's origin, such as individual actions, human error, or equipment failure) and novelty (the novel, unprecedented, or trailblazing nature of the problem that may attract attention for only a short while, or, alternatively, engender prolonged debate as society attempts to grasp unfamiliar new problems).

Although policy actors create and manipulate causal stories to control the image of a problem and interpretation of its harms and difficulties, their objective is to gain support for their position. To do so, the causal story must also contain sufficient specific information to demonstrate a comprehensive knowledge of the problem.

Harms and difficulties comprise the second component of a problem definition. This part of a definition states the consequences if an undesirable condition continues, attributes the harms and difficulties to an individual or organization, and describes the affected population (see, for example, Burstein & Bricher, 1997; Stone, 1989; Weiss, 1989). The statement of harms and difficulties includes the extent, severity, and incidence of the problem, the immediacy of the threat it poses, and the relevance or proximity of the problem to people's interests (Coughlin, 1991; Paul, 1994; Portz, 1994; Sharp, 1994). Rochefort and Cobb (1994b) defined severity as the perception of how seriously a problem and its consequences should be taken. Severity determines whether a problem shows up on a policy agenda and in the media. Generally, a discussion of severity would include the extent, timing, and impact of a condition. Incidence refers to "perceptions of the frequency and prevalence of a hazardous or unjust situation" (p. 20). This includes a discussion of changes in a problem over time (such as its growth or decline) and the rate of that change. Discussions of harms and difficulties also describe the effect of the problem on core cultural values (Sharp, 1994) and acknowledge the relative strengths and consequences of competing claims and alternative causal stories (Webber, 1991).

Problem definition theory within the political and social sciences originally defined harms and difficulties as the effects of undesirable conditions on human populations. By the late 1990s, problem-definition theory had been applied to policy analysis in the natural sciences as well, and the definition of affected populations had expanded to include nonhuman species. For example,
Czech et al. (1998) used Schneider and Ingram's 1993 social construction/political power typology to demonstrate that nonhuman species also had socially constructed images that affected the benefits they received under the U.S. Endangered Species Act. They found that species with positive images (birds, fish, and mammals) and more power (measured in terms of numbers of organizations dedicated to their welfare) received disproportionately more benefits than negatively constructed, less powerful populations of reptiles, amphibians, invertebrates, and microorganisms.

Environmental problems also encompass harms and difficulties to non-living parts of the environment, such as historic buildings or hydrologic systems. Therefore, the definition of harms and difficulties must expand further to include consequences of an undesirable condition on human populations, on nonhuman populations, and/or on nonliving parts of the environment. In other words, harms and difficulties could affect a group of people, a group of buildings, an endangered species, or a traditional cultural landscape.

The third component of a problem definition presents evidence to define objective features and indicators (i.e., things observed, measured, or calculated) to support the correctness of the policy actors' position (Coughlin, 1994; Rochefort & Cobb, 1994b; Sharp, 1994; Weiss, 1989). Evidence usually takes the form of standards, statistics, and studies that establish the level of analysis (e.g., global or local, group, or individual), the magnitude of the problem, and whether it is an isolated occurrence or part of a larger pattern (Portz, 1994; Rochefort & Cobb, 1994b and 1994c). According to Stone (1989), evidence should demonstrate the mechanism or manner by which a harm or difficulty affects the target population. Further, she asserted that a problem definition should separate evidence of an actor's intentions or motives from the effects of his actions.

Paul (1994, p. 94) investigated one specific aspect of harms and difficulties in depth — the triggering event that brings a problem to the public's attention and the "aftershocks" that keep it there. She asserted that an issue needs a "crystallizing moment" to secure a place on the national political agenda. That is, it needs a "dramatic incident, a catastrophe of some kind, or perhaps a scandal, that causes the national media spotlight to shine upon it. In the immediate aftermath of

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this initial earthquake, it helps immensely if other aftershocks of a lesser but still compelling nature ensue in order to refocus media attention on the issue and trigger recollections and reflections on the original issue” (Paul, 1994, p. 94). In her analysis of sexual harassment, Paul identified Anita Hill’s charges of sexual harassment of Supreme Court nominee Clarence Thomas as the 1991 triggering event and the 1991 Tailhook convention in Las Vegas as an aftershock. Paul also noted that the media reinforce the original event by reexamining the trigger when reporting the aftershocks.

Finally, a favored solution comprises the fourth component of a problem definition and articulates practical strategies to transform the problem from political rhetoric into feasible and acceptable solutions (Weiss, 1989; Portz, 1994). A problem definition clearly and comprehensively calls for specific actions to reduce or eliminate an undesirable condition and its harms or difficulties, while minimizing negative consequences to related conditions (Rochefort & Cobb 1994b). It assigns explicit responsibility for solving the problem and explains how the solution will work (Burstein & Bricher, 1997; Paul, 1994; Stone, 1989; Webber, 1991; Weiss, 1989). A definition also specifies indicators or criteria for measuring success, including the level of analysis and types of measurements (Rochefort & Cobb, 1994b; Weiss, 1989). The proposed solution explains or implies an instrumental or expressive orientation, that is, whether the solution focuses on ends or means (Rochefort & Cobb, 1994c). Finally, a problem definition assesses the relative strengths and consequences of competing solutions to demonstrate the superiority of the favored solution (Webber, 1991).

Figure 2 summarizes the logic leading from the role that problem definitions play in the policy development process to identification of the four main components of a problem definition.

Applicability of a Problem Definition Approach

This section examines the application of a problem definition approach to bridging value differences among stakeholders in national park issues. It also proposes a preliminary analytic framework for developing, evaluating, and understanding stakeholder problem definitions.
As discussed in Chapter One, stakeholders can take apparently inflexible positions with respect to policy and management issues. They base their positions on different values and understandings of the situation, making communication and collaboration difficult or impossible. These value differences often create different views of the nature and seriousness of park problems, as well as disagreements over viable solutions. When an impasse occurs, policy or management decision-making processes may stop until stakeholders find a way to move past the stalemate.

Fisher and Ury (1991) have suggested that reconciling interests, rather than positions, can unlock a stalemate. Positions are something that a shareholder has decided upon; interests are what motivate the stakeholder to make a decision and adopt a position. The authors used a simple example to describe the difference between a position and an interest (p. 40):

Consider the story of two men quarreling in a library. One wants the window open and the other wants it closed….No solution satisfies them both (the opposing positions). Enter the librarian. She asks one why he wants the window open: “To get some fresh air.” She asks the other why he wants it closed: “To avoid the draft” (the underlying interests). After thinking a minute, she opens wide a window in the next room, bringing in fresh air without a draft (stalemate broken).

Reconciling interests rather than positions works for two reasons. First, several positions usually exist that could satisfy any on interest. Second, more shared and compatible interests usually lie behind opposed positions than just the interests in conflict. The challenge in this approach is to find a way to move beyond stakeholder positions to reveal interests—needs, fears, desires, and concerns—that underlie positions. A problem definition approach may offer a way to meet this challenge.

In an impasse, stakeholders may express only their positions and not their underlying interests. The problem definition approach that is proposed encourages stakeholders to visualize and express their interests, their priorities, their concerns, and their desired solution to any issue. It allows stakeholders to test whether other positions might provide an acceptable solution to their problem, without compromising their core values. It provides a way for individuals to let go of a
Problem definitions are socially constructed.

Problem definitions frame debate and play a role throughout the policy development process.

Problem definitions perform numerous functions as they frame the debate.

- Express the world view of the policy actor
- Call for action
- Legitimate some solutions and devalues others
- Invite participation by some stakeholders while excluding others
- Redistribute resources and power
- Establish tone of debate
- Establish ownership of problem by the policy actor.

Certain factors influence whether a problem definition will be accepted for consideration or action:

- Characteristics of policy actors
- Characteristics of the issue, including the availability, acceptability, and affordability of the solution
- Characteristics of the affected population
- Characteristics of political institutions and processes

The analytic framework for understanding stakeholder problem definitions integrates the role, functions, and success factors derived from problem-definition literature.

The preliminary analytic framework contains four main components—the causal story, harms or consequences, evidence of the problem, and a proposed solution.

Figure 2. Logic Leading to the Preliminary Stakeholder Analytic Framework
specific position–to distance themselves emotionally from a position–while retaining the values inherent in their problem definition.

Preliminary Stakeholder Analytic Framework

Table 2 presents a preliminary stakeholder analytic framework. It uses problem definition components as an organizing mechanism for systematically identifying and analyzing stakeholder interests, perspectives, and priorities. The framework is designed to help decision makers find common ground for negotiation and decision making. It is a tool for deconstructing their interests and perspectives concerning the cause of the problem, the harms and difficulties experienced by different affected populations, their concepts for desired future conditions and favored solutions, and their criteria for defining successful resolution of the problem.

Figure 3 illustrates the way that someone would use the problem-definition approach to help stakeholders move past an impasse. Using knowledge of stakeholder perspectives gained from comparing their problem definitions, managers, analysts, and decision makers can compare individual problem definitions to identify interests that stakeholders hold in common, interests that complement each other, and interests that diverge. This understanding can become the basis for negotiating and developing policy, for planning and design, for making decisions, and for taking action.

Having presented a preliminary stakeholder analytic framework, the next step consists of a case study to test the framework. Chapter Three synthesizes Yin’s case study and Kvale’s research-interview methods into a case study design for testing the framework. It also presents the reasons for selecting Zion National Park for the case study.
Table 2. Preliminary Stakeholder Analytic Framework

<table>
<thead>
<tr>
<th>Problem Definition Component</th>
<th>Problem Definition Content (what the definition says)</th>
<th>Problem Definition Analysis (what the definition does, explicitly or implicitly)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal Story</td>
<td>A statement about the undesirable condition’s origin that:</td>
<td>How a stakeholder’s causal story:</td>
</tr>
<tr>
<td></td>
<td>• Describes the current condition</td>
<td>• Creates an image of the problem calculated and manipulated to gain support for the stakeholder’s problem definition</td>
</tr>
<tr>
<td></td>
<td>• Identifies specific factors causing the problem</td>
<td>• Invokes imagery of cultural values or world views through language and symbols</td>
</tr>
<tr>
<td></td>
<td>• Assigns responsibility for creating the problem</td>
<td>• Emphasizes or reinforces the priorities placed on various personal and cultural values</td>
</tr>
<tr>
<td></td>
<td>• Assigns the cause to one of four types proposed by Stone (1989)—mechanical, accidental, intentional, or inadvertent</td>
<td>• Demonstrates a comprehensive understanding of the condition and its context</td>
</tr>
<tr>
<td></td>
<td>• Relates important elements of the problem to one another</td>
<td></td>
</tr>
<tr>
<td>Harms and Difficulties</td>
<td>A statement about the undesirable condition that:</td>
<td>How the harms and difficulties identified by the stakeholder:</td>
</tr>
<tr>
<td></td>
<td>• Identifies and describes who or what is harmed or affected by the problem</td>
<td>• Link the problem to effects on core cultural values</td>
</tr>
<tr>
<td></td>
<td>• Describes the extent, severity, incidence, and immediacy of the problem</td>
<td>• Establish the problem’s proximity or relevance to people’s interests</td>
</tr>
<tr>
<td></td>
<td>• Explains the consequences if the problem is not reduced or eliminated</td>
<td>• Demonstrate knowledge of the relative strength and consequences of competing claims and perspectives</td>
</tr>
<tr>
<td>Problem Definition Component</td>
<td>Problem Definition Content (what the definition says)</td>
<td>Problem Definition Analysis (what the definition does, explicitly or implicitly)</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Evidence of the Problem</td>
<td>A statement about the nature of the harms and difficulties that:</td>
<td>How evidence cited by the stakeholder:</td>
</tr>
<tr>
<td></td>
<td>• Explains the triggering event(s), if any, that focused managerial, public, governmental, or media attention on the condition at this time</td>
<td>• Establishes the correctness of their position</td>
</tr>
<tr>
<td></td>
<td>• Describes objective features of the undesirable condition and its effects on the target population (things that can be observed, measured, or calculated)</td>
<td>• Frames the policy debate in objective and technical terms</td>
</tr>
<tr>
<td></td>
<td>• Cites objective indicators of the problem's severity using empirical evidence such as polls, surveys, studies, statistics, historical analyses</td>
<td>• Establishes ownership of the problem by identifying the expert knowledge needed to understand the context and specifics of the problem and, by implication, the solution</td>
</tr>
<tr>
<td>Favored Solutions</td>
<td>An actionable statement that:</td>
<td>How the favored solution:</td>
</tr>
<tr>
<td></td>
<td>• Proposes a solution, describing the desired future condition and a course of action</td>
<td>• Establishes jurisdictional or moral ownership of the problem and the solution</td>
</tr>
<tr>
<td></td>
<td>• Assigns responsibility for implementing the solution</td>
<td>• Invites participation by some parties while excluding others</td>
</tr>
<tr>
<td></td>
<td>• Explains how the solution will reduce or eliminate the problem while minimizing negative consequences to related conditions</td>
<td>• Makes assumptions or arguments about how people act or should act that are compatible with past experience, current sentiments, and cultural values</td>
</tr>
<tr>
<td></td>
<td>• Provides measures of success (criteria) to gauge whether the solution has achieved its intended results</td>
<td>• Focuses on ends or means through use of instrumental or expressive language</td>
</tr>
<tr>
<td></td>
<td>• Describes resources needed to implement the solution</td>
<td>• Redistributes power or wealth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Meets the test of availability, acceptability, and affordability</td>
</tr>
</tbody>
</table>
Develop Individual Problem Definitions for a Group of Stakeholders

<table>
<thead>
<tr>
<th>Stakeholder Problem Definition</th>
<th>Stakeholder Problem Definition</th>
<th>Stakeholder Problem Definition</th>
<th>Stakeholder Problem Definition</th>
<th>Stakeholder Problem Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal Story</td>
<td>Causal Story</td>
<td>Causal Story</td>
<td>Causal Story</td>
<td>Causal Story</td>
</tr>
<tr>
<td>Harms &amp; Difficulties</td>
<td>Harms &amp; Difficulties</td>
<td>Harms &amp; Difficulties</td>
<td>Harms &amp; Difficulties</td>
<td>Harms &amp; Difficulties</td>
</tr>
<tr>
<td>Evidence</td>
<td>Evidence</td>
<td>Evidence</td>
<td>Evidence</td>
<td>Evidence</td>
</tr>
<tr>
<td>Favored Solution</td>
<td>Favored Solution</td>
<td>Favored Solution</td>
<td>Favored Solution</td>
<td>Favored Solution</td>
</tr>
</tbody>
</table>

Analyze and Compare Problem Definitions to Identify:

- Perspectives
- Interests
- Approaches

Analyze Perspectives and Interests to Develop:

- Policies, Plans, Alternatives, Designs, and Actions

Figure 3. Application of the Framework
CHAPTER THREE

CASE STUDY DESIGN

In order to test the analytic framework, a situation involving multiple resources and stakeholders where attempts to develop a solution to a problem had reached an impasse was found.

Selection of Zion National Park

As noted in Chapter One, staff at Zion National Park reached an impasse over long-term landscape management policies for the Zion Lodge area. Early in 2003, a group of National Park Service (NPS) and concessioner staff agreed to a broad statement of desired future conditions and design guidelines for the Zion Lodge area (Table 3; NPS, 2003b). The NPS wanted to create a model landscape for the Zion Lodge area, where visitors can learn about sustainable landscaping practices (NPS, 2004a). Despite development of these broad guidelines, there has been no final agreement on policy. Conversations with NPS staff during 2004 suggested that individuals held divergent views about the nature of the problem and the range of acceptable solutions. They also entertained different approaches to the final form of a sustainable landscape. As a result, management had not formulated any specific plans for developing a sustainable landscape, nor had they assigned any of their limited personnel to resolve the issues.

Historic Basis for the Impasse at Zion National Park

The current impasse over the Lodge landscape traces its origins to the broader nature versus culture debate described at length in Chapter One. Congress created Zion National Park at the end of the Progressive Era, after the idea of preserving public lands for their aesthetic value had gained wider acceptance. Early NPS policy at Zion reflected preservationist values and beliefs.
Table 3. Guidelines Developed by the National Park Service (NPS, 2003b)

<table>
<thead>
<tr>
<th>ZION LODGE LANDSCAPE PLANNING (February 2003)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESIRED FUTURE CONDITION</td>
</tr>
<tr>
<td>The Zion Lodge landscape represents National Park Service (NPS) values through balance and integration of the following principles:</td>
</tr>
<tr>
<td>• Preservation of the integrity and character of the historic district (structures and landscape).</td>
</tr>
<tr>
<td>• Sustainable practices ensuring sensitivity to the natural environment and conditions.</td>
</tr>
<tr>
<td>• Compatibility with visitor use and concession operations.</td>
</tr>
<tr>
<td>• Maintain a safe environment for all users.</td>
</tr>
<tr>
<td>DESIGN GUIDELINES</td>
</tr>
<tr>
<td>Policy</td>
</tr>
<tr>
<td>• Comply with laws, regulations, and policies (National Environmental Policy Act, National Historic Preservation Act, etc.) (See reference below).</td>
</tr>
<tr>
<td>• Comply with NPS design guidelines (NPS Policies 9.1) (See reference below).</td>
</tr>
<tr>
<td>• Comply with ADA guidelines and standards.</td>
</tr>
<tr>
<td>Vegetation</td>
</tr>
<tr>
<td>• Use native and adapted historic plants, as much as possible.</td>
</tr>
<tr>
<td>• Carefully consider plant materials to avoid poisonous, prickly, nonnative invasive, fire prone, and water consuming plants.</td>
</tr>
<tr>
<td>• Plan for hazard tree maintenance and tree replacement.</td>
</tr>
<tr>
<td>• Create a natural setting that is compatible with the natural environment; avoid a manicured look.</td>
</tr>
<tr>
<td>Historic Preservation</td>
</tr>
<tr>
<td>• Utilize the following features of historic integrity in order to preserve the area’s character:</td>
</tr>
<tr>
<td>o Overhead shade/partial shade canopy—consists of cottonwoods, ash and other planted trees. Some are native some are not. Although a plan for hazard tree removal and tree replacement needs to be considered, we must keep retaining the canopy in mind.</td>
</tr>
<tr>
<td>o Open understory—should be able to stand at one end of the cabin area and see through to the other end (north to south). Native plants can be integrated into the understory including cacti, other succulents, etc. However, planting beds (mulch, bedding boarders, etc.) and an overall &quot;manicured&quot; look to the landscape must be avoided. Any new planting should have a natural look in the arrangement; it should maintain the openness and dispersed vegetation appearance.</td>
</tr>
<tr>
<td>o We may be able to reintroduce some features like the low log railing or other barriers shown in the photos.</td>
</tr>
<tr>
<td>o Existing sidewalks.</td>
</tr>
<tr>
<td>• Historic structures must be protected (from water, fire, etc.).</td>
</tr>
<tr>
<td>• Consider landscape lighting that ensures safety, maintains the historic integrity and night sky values.</td>
</tr>
</tbody>
</table>
Table 3 (continued). Guidelines Developed by the National Park Service

<table>
<thead>
<tr>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Keep implementation and maintenance costs to a minimum.</td>
</tr>
<tr>
<td>• Provide access for emergency and service vehicles.</td>
</tr>
<tr>
<td>• Provide for recreational open space.</td>
</tr>
<tr>
<td>• Create use patterns to reduce trampling of soil and vegetation.</td>
</tr>
<tr>
<td>• Design must not impede everyday maintenance activities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sustainable Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Consider educational opportunities.</td>
</tr>
<tr>
<td>• Conserve and restore ecological integrity.</td>
</tr>
<tr>
<td>• Design should maximize water conservation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>• http:ceq.eh.doc.gov/nepa/nepanet.htm</td>
</tr>
<tr>
<td>• <a href="http://www.nps.gov">www.nps.gov</a></td>
</tr>
<tr>
<td>• Interim Landscaping Plan for Zion Lodge (Benjamin, 2002)</td>
</tr>
</tbody>
</table>

that recreation and tourism were the legitimate highest use for public lands of exceptional scenic and cultural value.

The landscape of Zion National Park demonstrates the conversion of a landscape shaped by nature and Euro-American settlement into a landscape shaped by those preservationist values. In 1862, Mormon pioneers settled Zion Canyon and constructed cabins, farm buildings, irrigation ditches, fences, trails, and other infrastructure. Once the NPS took control, its landscape architects and managers set to work transforming the inhabited, working landscape of the Mormon era into a scenic, undomesticated landscape considered characteristic of a national park.

Visitor facilities constructed at Zion responded to the demands of recreation-minded automobile tourists of the 1920s and 1930s. Extensive modifications completed by the NPS during this time developed Zion into a scenic recreation area for public use. In the process, the NPS obliterated virtually all traces of the Mormon-era landscape (Jones, 2003b; Sellers, 1997; Steen, 1999).

The Lodge area landscape acquired a distinctly resort-like character during the 1920s and 1930s. Most notably, a swimming pool and bathhouse were constructed in 1928. An expanse of
native grasses, called the Lawn, was enlarged to two acres, leveled, and reseeded with nonnative
Kentucky bluegrass. The Lawn provided room for softball, croquet, and golf (on a large putting
green at the northern edge of turf). Trees, shrubs, and more grass were planted to beautify the
grounds around the Lodge and cabins. Many features remain in the Lodge area from this early
phase of development. The first parking area adjacent to the DeLuxe cabins still serves visitors,
as does the Grotto trailhead designed by NPS landscape architect Harry Langley in 1932.
Remnants of original retaining walls, curbing, boulders for automobile traffic control, stairways,
flagstone walkways, and light fixtures can still be seen around the Lodge and cabins, as well as
mature trees from period plantings (Jones, 2003b).

Facilities that directly served tourists represent only a small but highly visible part of the
landscape modifications that took place in and around the Lodge area in the 1920s and 1930s.
The NPS also engaged in major modifications to natural processes operating within the canyon
as it attempted to make the canyon safer, more comfortable, and more attractive for tourists.
Beginning in the 1920s, NPS landscape architects and engineers embarked on a program to
protect the floor of the Valley Road, Zion Lodge, and other infrastructure from damage caused by
erosion and flooding. They straightened and channelized the river along much of its length,
initiating major changes to the natural flow of the river and the surrounding riparian habitat. These
facility-protection policies continued well into the 1960s as the NPS repaired existing control
devices and experimented with new techniques (Steen, 1999).

Few significant changes occurred around the Lodge between 1940 and 1966, until a 1966 fire
destroyed the original Lodge. This began an era characterized by wholesale shifts in NPS policies
towards tourist facilities and the landscape, corresponding to changes in American society during
the Environmental Era, as described in Chapter One. Policy debates after 1966 focused on four
main aspects of tourism within the park: (1) appropriate forms of recreation that should be allowed
within the park, (2) types of visitor facilities and concessions that should be retained in or
removed from the park, 3) traffic congestion and its management, and 4) impacts of visitors on
natural and cultural resources.
According to Don Hummel, retired national park concessioner, former mayor of Tucson, and former Chairman of the Conference of National Park Concessioners, Zion National Park became the guinea pig for implementation of NPS environmental policies in the early 1970s to protect natural and cultural resources by removing people from the parks. He claimed that the NPS capitalized on the desire of the Utah Parks Company to get out of the concessions business by nationalizing all concessioner-built facilities in Zion in 1972 and announcing that all visitor accommodations would be phased out of the park by 1975. In the ensuing uproar, Congress officially sanctioned the NPS for this plan and managed to save the lodge at Zion. But the NPS ignored Congressional protests and continued to destroy many visitor facilities throughout the park (Hummel, 1987). In 1974, the first historic cabins were removed. By 1986, all 66 historic standard cabins designed by architect Gilbert Stanley Underwood had been declared unsafe, removed, and replaced by motel units; only the 15 original DeLuxe cabins remain today. In 1975, the Underwood-designed pool and bathhouse were removed. In response to traffic congestion, noise, and air pollution, a shuttle bus system replaced private transportation in the Upper Canyon during the peak tourist season and the Loop Drive. Loop Drive, part of the original 1924 landscape, was closed in front of the Lodge and converted to pedestrian use. Historic revetments, check dams, and other bank protection structures have been removed or allowed to deteriorate as the NPS attempted to restore large portions of the river to a more natural state (Jones, 2003b).

Opportunity for Testing the Stakeholder Analytic Framework

As this brief history of the Zion Lodge landscape suggests, the nature versus culture debates faced by managers at Zion National Park reflect those experienced by the NPS throughout the 20th century. The current impasse over landscape-management policy represents a localized version of the debate. Stakeholders at Zion National Park have taken positions with respect to management policy for the Lodge, the Lawn, the river, cabins, trees, visitor experience, and other aspects of the landscape, which will be described in detail in Chapter Four.
The NPS attempts to resolve some aspects of the debate in its 2003 General Management Plan by incorporating some of these conflicting positions. The Plan assigns highest priority to restoring the natural processes of canyon formation (e.g., erosion and flooding) and recommends designating 90% of Zion as wilderness. Yet it also states that the park will be managed from an ecological perspective to protect both natural and cultural resources, as well as its visitor experience. The Plan and its implementation also perpetuate some aspects of the debate. The Plan recognizes overnight stays at the Lodge as traditional and integral parts of the visitor experience, yet preserves the option of removing the Lodge or converting it to other uses. The Plan states that historic structures will be protected, but water conservation measures were allowed to damage the 100-year-old landscape in the Lodge area while the NPS continued to defer identification and preservation of its historic landscapes. It should be noted that the NPS finally obtained funding for a cultural landscape inventory in 2005, but the inventory had not been completed by the time that this case study was completed. Questions also remain over recreational use of the North Fork of the Virgin River, channelization, and protection of canyon infrastructure (NPS, 2003a).

The situation at Zion—an impasse involving multiple stakeholders and multiple resources—has created an opportunity for testing the stakeholder analytic framework. Multiple resources at Zion include natural and cultural resources. Natural resources encompass the native vegetation, wildlife, and hydrologic system associated with the North Fork of the Virgin River in Upper Zion Canyon. Cultural resources encompass a historic district comprised of cabins, structures, walls, and small-scale features from the 1920s and 1930s, a historic road, more recently built visitor facilities, and possible archaeological sites. The situation involves past and current operational, safety, and maintenance concerns, as well as issues related to visitor experience. Multiple stakeholders are involved, representing interests in natural and cultural resource management, visitor and interpretive services, landscape architecture, maintenance, and concession operations. For purposes of the test, stakeholders were defined as employees of the NPS and Xanterra Corporation, the concessioner, with organizational responsibilities related to landscape-management policy, planning, or practices.
Based on a reading of its 2003 General Management Plan, the NPS also faces many of the barriers to collaboration identified by Wondollock and Yaffee (2000), especially ones related to conflicting organizational goals, missions, and objectives; constrained resources; and organizational norms and culture. If successful, the test will help managers and staff to understand interests underlying stakeholder positions with respect to the landscape, clarify goals and objectives, identify possible options for creating a sustainable landscape, and demonstrate that a problem-definition approach can aid environmental problem solving in a forward-thinking manner.

Selection of the Case Study Approach

The problem of testing the stakeholder analytic framework lends itself to a case study approach. Stake (1995, p. 12) asserts that a case study is appropriate when trying "hard to understand how the actors, the people being studied, see things... (when) the qualitative researcher tries to preserve multiple realities, the different and even contradictory views of what is happening" (original emphasis). His statement succinctly captures the problem-definition approach embodied in the framework. The approach emphasizes stakeholders' knowledge and perceptions of the situation, not those of the researcher. Physical and technical information comes from the stakeholder, not the researcher, who collaborates with individual stakeholders to articulate and preserve different problem-definition components, including priorities and solutions as a precursor to policy development or decision making.

Case studies are also the preferred research method when a "'how' or 'why' question is being asked about a contemporary set of events, over which the investigator has little or no control" (Yin, 2003, p. 9). By little or no control, Yin means a current, not historical situation in which researchers study people, events, and artifacts in their real-life settings, not in a laboratory or other artificial context. The framework test at Zion reflects these conditions.

Finally, the original research question posed in Chapter One is a "how" question: How can we identify, clarify, and communicate stakeholders' underlying interests in a way that facilitates an end to an impasse?
Five case study approaches were considered: Creswell (1998), Groat and Wang (2002), Francis (1999), Stake (1995), and Yin (2003). Francis (1999) developed his case study method specifically for built works of landscape architecture, such as the Zion Lodge landscape originally developed in the 1920s and 1930s (Jones, 2003a). He refers briefly to both Yin (1993) and Stake (1995). However, Francis focuses too narrowly on the success or failure of a specific design, so his method was eliminated from further consideration. Creswell (1998) based his case study discussion on Stake (1995), with secondary references to Yin (1989). Groat and Wang (2002) primarily base their discussion of case studies on Yin (1994), with minor references to Stake (1998) and Creswell (1998). Since Creswell (1998) and Groat and Wang (2002) are based on Stake and Yin, respectively, they were also eliminated from further consideration.

Yin and Stake propose comprehensive but contrasting approaches to case study design. Stake (1995) defines two types of case study: instrumental and intrinsic. He adopts the intrinsic approach in which research focuses on understanding the case being developed on its own merits, not as an attempt to prove or investigate some larger issue or theory. By contrast, Yin (2003) focuses on what Stake calls the instrumental case study, that is, a study explicitly designed to investigate or prove a larger issue and to generalize results to a broader theory. He describes a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context...(that) relies on multiple sources of evidence...and benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin, 2003, p. 13-14). When using Yin's approach, researchers compare empirical results from the case to previously developed theory, while maintaining a chain of evidence that allows external observers to follow the derivation of evidence leading from hypothesis to conclusions.

Because this study compares results of the framework test at Zion National Park to the research question and propositions developed in Chapter One, Yin's approach was selected to guide the case study.
Elements of Yin's Approach to Case Study Design

Yin (2003) emphasizes five components of case study design that have been incorporated into this study—the study questions, propositions, unit of analysis, logic linking data to propositions, and criteria for interpreting the findings. The study question and propositions for this case study were developed in Chapters One and Two. Component three—the unit of analysis—refers to the individual, group, organization, decision, program, or other topic that is the focus of the study. The unit of analysis relates directly to the initial research question. For example, if the case is about a small group, then members of the group must be distinguished from those who are outside the group (Yin, 2003). The last two components, linking data to propositions and criteria for interpreting findings, explain what will be done with data after it has been collected. Yin also recommends specific tactics to improve the reliability and validity of case studies (Yin, 2003).

- To test for external validity, Yin recommends constructing a theoretical base for single case studies such as the framework test at Zion National Park and developing replication logic for multiple case studies. A single case study is similar to conducting a single experiment: the previously developed theory becomes a template with which to compare empirical results from the case. The framework in Chapter Two serves as the theoretical base for the Zion National Park case study.

- To test for construct validity, Yin suggests using multiple sources of evidence and establishing a chain of evidence during the data collection phase. During the report composition phase, which begins concurrently with data collection and analysis, he recommends having participants and key informants review drafts of the report to corroborate essential facts and evidence and to ensure adequate representation of differing perspectives. Construct validity is addressed as part of the selection of data sources, identification of representative stakeholders, and design of a feedback loop in this study.

- To test for reliability, Yin advocates the use of a case study protocol and creation of a case study database. The protocol presents an overview of the case study project: field procedures, case study questions, table shells for the data, potential sources of...
information, and interview guidelines. The case study protocol presented here focuses on field procedures, potential sources of information, and interview guidelines. Chapters One and Two serve as the study overview. The research design for the Zion National Park case study, incorporating Yin's approach and recommendations, is presented in the next section.

**Case Study Research Design**

The key to successful testing of the analytic framework lay in constructing and comparing individual stakeholder problem definitions. The study was designed by answering three primary questions: which data types suggested by Yin (2003) will provide the best information for constructing the problem definitions, which stakeholders should be included in the test, and how should problem definitions be collected and analyzed?

**Selection of Data Types**

Chapter Two ended with a preliminary stakeholder analytic framework organized into four problem-definition components: the causal story, harms and difficulties, evidence, and favored solution. These components serve as the mechanism to link data collection back to the original research question and propositions developed in Chapter One. Table 15 in Appendix I relates the components to six data types identified by Yin (2003). The table also illustrates the relative importance assigned to each data source based on the researcher's familiarity with both the sources in general as well as their availability at Zion National Park. Interviews clearly emerged as the most important source of information about stakeholder perceptions of and interests in the Lodge area landscape, as well as their favored solutions. Quantitative data (e.g., measurements and surveys) and direct observation of buildings, structures, objects, vegetation, and activities also were likely to produce information to illustrate or corroborate stakeholders' problem definitions. All data sources mentioned by stakeholders during their interviews were analyzed without regard for initial estimates of their importance.
Selection of Stakeholders to Interview

Selection of stakeholders involved defining the unit of analysis, specifying a range of perspectives needed, and targeting specific individuals by organizational responsibilities, experience, and/or training. Because the framework test centers on the utility of problem definitions for identification of common, compatible, and divergent stakeholder interests, problem definitions from a group of stakeholders were needed for comparison and analysis. Therefore, the group constitutes the unit of analysis whereas each individual stakeholder represents a unit of data collection.

After determining that the unit of analysis was the group, a preliminary list of stakeholders likely to hold diverse perspectives was compiled. For test purposes, it was not necessary to find a stakeholder subscribing to every possible perspective. The study only required sufficient diversity for comparative purposes. To identify a diverse range of perspectives relevant to sustainable design of the Zion Lodge landscape, the tables of contents, recommendations, and proposed actions from three NPS documents were examined (NPS 1993, 2003a, 2003b). These documents represent official NPS policy at the national and local levels with respect to resource management and sustainable design. From these documents, key policy topics and concepts were identified and organized into six categories: ecology; natural resources; cultural resources; site design and development; interpretation and visitor experience; and safety, operations and maintenance. These categories represent the range of perspectives that were explored in interviews with individual stakeholders. Table 16 in Appendix I presents this analysis.

Based on the document review and discussions with the project coordinator at Zion National Park, specific individuals were invited to participate in the study. For test purposes, stakeholders are people associated with Zion National Park who have organizational responsibilities related to landscape-management policy, planning, or practices; participated in development of the 2003 design guidelines; have line responsibility for implementing one or more technical areas included in the guidelines; or could provide context-related information. Those stakeholders who agreed to participate in the interviews are referred to as respondents.
Interview Method

Interviews followed the method proposed by Kvale (1996) who approaches qualitative research interviews as conversations between two people—researcher and subject—with a mutual interest in a topic and who work together to construct a coherent statement of the subject's perspective on the topic. This type of interview seeks to understand the world from the subject's point of view and provide researchers with relevant and precise information for subsequent analysis. Following Kvale's recommendations, semi-structured interviews were conducted, meaning that they were neither as open-ended as conversations nor as rigidly controlled as surveys and questionnaires. An interview guide with themes, suggested questions, and prompts keyed to the four problem-definition components helped keep interviews focused on landscape issues. The semi-structured format allowed subjects to express ideas in their own words, while the researcher reflected on the meaning, clarity and relevance of the material as the interview was taking place. This helped ensure that each subject's perspective was captured as clearly and accurately as possible. The interview guide appears as Table 17 in Appendix I. The guide includes an introduction to the research project, thirteen questions with prompts related to the four problem-definition components, three exit questions, a debriefing outline, and three questions obtaining feedback. Table 18 in Appendix I links the interview questions from the guide to problem-definition components. This table helped ensure that the interview guide contained at least one question designed to elicit information for constructing every problem-definition component and that every question served a purpose tied directly to data needs.

Test Protocol

This study adhered to the policies and procedures of the University of Nevada, Las Vegas (UNLV) regarding use of human subjects. Prior to conducting interviews, the interview guide and study proposal were approved by the UNLV Social Science/Behavioral Institutional Review Board on November 5, 2004. After receiving UNLV approval and a research permit approved by the NPS, Zion National Park, the framework test took place in two phases between December 2004 and September 2005: a framework application phase and a framework evaluation phase.

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The first five of Kvale's six steps of analysis form the basis of the framework application phase (Kvale 1996). In the first step, respondents were interviewed and asked to describe the situation in the Lodge area, with little or no explanation from either the respondent or researcher. Second, respondents were encouraged to discover new relationships and connections in what they saw or did in the landscape. Third, the researcher condensed and interpreted what the respondent described, fed the interpretation back to the respondent, and sought confirmation during the interview. Fourth, the transcribed interview notes were interpreted by the researcher, alone and in conjunction with members of her thesis committee. This step involved structuring the large amount of interview material into individual problem definitions according to the preliminary analytic framework; clarifying the material and making it amenable to analysis (e.g., eliminating redundancy and summarizing reference material provided by or cited by the respondents); and analyzing the interview material to bring the respondents' interests to light. The fifth step, a re-interview, consisted of a workshop and briefing at which Zion staff provided feedback on the utility of the problem-definition approach. At the same time, all respondents were provided an opportunity to submit comments on the study results in writing, by email, or by telephone. This study briefly touched on Kvale's sixth step, action, in which respondents begin to act on the basis of knowledge produced during the interviews.

Chapter Four presents results from the framework-application phase, which began with a pilot test in December 2004 as described in Appendix I that produced a few minor changes in interview techniques. Chapter Five covers the framework-evaluation phase, presenting conclusions about the utility of the framework and recommending ways to adapt it for use in nonacademic settings.
CHAPTER FOUR

FRAMEWORK APPLICATION PHASE: PROBLEM DEFINITIONS AND INTERESTS

In June 2003, Jack Burns led a tour of the Lodge area as a prelude to researching the history of the Lodge landscape. Jack is Assistant Chief of Resource Management and Research for the National Park Service (NPS) at Zion National Park. As he walked, he pointed out features, both large and small, that figure prominently in the story of the landscape: the canopy of aging cottonwood trees, the fifteen surviving cabins now listed on the National Register of Historic Places, the only original light fixture on its pole by the Women’s Dormitory, and reproductions of the original hickory-pole rocking chairs on the front porch of the Lodge. He also pointed out other, less picturesque or desirable features: an active termite infestation on one of the cabins, patches of dirt where visitors had trampled vegetation down to bare mineral soil, and tree roots undermining foundations of buildings. As he walked, he talked about the landscape and problems in deciding on a future course of action. Nearly two years later, in March 2005, little had changed. The rough area adjacent to the road had been cleared of deadfall as a fire prevention measure. Hazard trees had been flagged for removal, but still remained in place. The Lawn looked green but little vegetation survived around the cabins except the trees.

People interviewed during this study offered many perspectives on why the landscape has declined, why it continues to decline, and what needs to be done. This chapter presents and analyzes their perspectives, using the preliminary stakeholder analytic framework proposed in Chapter Two. It begins with a brief description of the study area, then summarizes and compares the contents of four problem-definition components: causal stories, harms and difficulties, evidence, and favored solutions. The chapter concludes with identification of respondents’ underlying interests and discussions of the most likely sources of the impasse over landscape
management policy. Figure 4 depicts a simplified view of the iterative and expected process for converting interview information and stakeholder interests into problem definitions. However, the reality of analyzing the information proved much more complicated, as the final evaluation of the framework will demonstrate in later in this chapter.

The Respondents

Fifteen respondents agreed to interviews between December 2004 and April 2005, as shown in Table 4. The complete texts of their individual problem definitions (one for each respondent) are included in Appendix II. Seven women and eight men granted interviews. Thirteen respondents were employees of the NPS, and two were from Xanterra Parks and Resorts, the Park concessioner. The length of their association with Zion National Park ranged from less than one year (one respondent) to six with personal or family ties going back twenty to eighty or more years. Three held senior management positions; the rest served in a technical capacity or as midlevel supervisors. Two respondents chose to be interviewed while walking through the Lodge area landscape, eleven in their private offices, and two in a private office provided by the NPS Resource Management Division. Interviews took from 45 minutes (two interviews) to over three hours (one interview), but generally lasted about one-and-one-half hours.

The Study Area

The study area extends from the Grotto Trail on the north to the end of the cabin area on the south, and from the canyon wall on the east to the road on the west. Respondents differentiated three spaces within the study area (Figure 5) and numerous site features (Figure 6). The Lodge area includes the Lodge itself, the large grassy area in front of the Lodge known as the Lawn, the shuttle stop, a small parking area for visitors, and the Grotto Trailhead. The cabin area includes the A and B motel units, fifteen historic cabins (sometimes called the DeLuxe or Western cabins), two visitor parking areas, and numerous planter islands. A buffer zone, referred to as the rough area, separates the Lodge and cabin areas from the road. Figures 6 through 9 depict site features as they appeared during this study.
1. Conduct interviews to understand respondents' perspectives

2. Construct a problem definition for each respondent using analytic framework

3. Compare problem-definition components
   3A. Isolate most commonly cited causes of problems
   3B. Identify tangible and intangible harms experienced by affected populations
   3C. Visualize favored solutions

4. Reanalyze problem definitions to identify respondents' interests
   3A.
   3B.
   3C.

5. Define common and compatible interests

6. Define divergent interests at the center of the impasse

Evaluate utility of approach to moving decision-making process forward

Figure 4. Simplified Flowchart for Applying and Evaluating the Analytic Framework
Table 4. Distribution of Respondents Interviewed

<table>
<thead>
<tr>
<th>Key Policy Topics and Concepts (from Appendix I, Table 1)</th>
<th>Number of Respondents Interviewed *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology</td>
<td>1</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>4</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>3</td>
</tr>
<tr>
<td>Site Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>Interpretation and Visitor Experience</td>
<td>1</td>
</tr>
<tr>
<td>Safety, Operations, and Maintenance</td>
<td>5</td>
</tr>
</tbody>
</table>

* The number of respondents is greater than fifteen because some respondents had responsibilities in more than one policy area.

Respondents defined these areas based on visitor-use patterns. The Lodge area serves as a destination for both overnight and day-use visitors to the canyon, which numbered nearly 2.7 million in 2004. Visitors spend time in and around the Lodge: they dine at the restaurant and snack bar, picnic, play, and rest on the Lawn, attend events in the auditorium, and browse through the gift shop. The shuttle provides access to two of the most popular trails, the Grotto and Emerald Pools Trails, as well as the staging area for horseback rides along the river. In contrast, only overnight visitors frequent the cabin area, primarily walking between their lodgings and the Lodge or shuttle stop. They do not spend appreciable time outdoors in the cabin area, but when they do, they usually are seen relaxing on their front porches or balconies. Visitors rarely use the rough area except to cross it to access the corral, visitor parking, or Emerald Pools Trail on the west side of the road.
Figure 5. Three Major Subdivisions of the Study Area Defined by Respondents
(Photograph provided by L. Ogden, NPS, 2005)

Figure 6. Features of the Study Area Mentioned Most Frequently by Respondents
Figure 7. A View of the Lawn Looking Toward the Lodge, With One of the Large Planter Islands of Turf and Two Modern Benches in the Foreground (Photograph by S. Jones, August 2003)

Figure 8. View of the Cabin Area Looking West from the Women's Dormitory Stairs NOTE: The modern concrete sidewalks, bare compacted soil adjacent to the sidewalks, and an original light pole on the right, at arrow (Photograph by S. Jones, April 2005)
Ambiguity Within Problem Definitions

The next part of this chapter presents analyses of the four components of respondents' problem definitions, starting with their causal stories and ending with their favored solutions. This straightforward presentation masks the complications and difficulties actually encountered during the analysis.

One major complication arose because respondents sometimes assigned multiple meanings and more than one role in their problem definition to the same landscape feature. Sometimes trees, for example, were seen as members of an affected population, as the cause of a problem, as evidence of harm or cause, or as a symbol of something else entirely. Not only did perception of the same feature vary among respondents, but individual respondents often expressed many views of the same feature within their problem definitions. Stone (1997) referred to this phenomenon as ambiguity, that is, the ability for a single object to hold multiple meanings.

The Lawn and trees, in particular, stood out as features with many positive and negative meanings in the minds of respondents. Analysis of these meanings provided valuable insights into causes, harms, and solutions, and therefore, to respondents' interests. Some people
associated positive feelings with the Lawn, stemming from their childhood memories and personal or family ties to the park; their appreciation of the historic landscape design; their perception of the Lawn as an important part of the visitor experience; and the opportunity it provides for dialog on ecologic and historic preservation issues. Table 5 summarizes the positive meanings that respondents ascribed to the Lawn. Negative meanings were associated with the Lawn because some respondents perceived it as evidence of poor planning and maintenance practices; a symbol of lost NPS traditions and values; a reflection of outdated ways of thinking; or an attractive nuisance for wildlife (Table 6).

In a similar manner, some respondents attached positive meanings to trees as evidence of a healthy ecosystem; as important historic artifacts that require preservation; as unfortunate victims of natural climate change and human actions; or as important contributors to beauty and visitor experience (Table 7). Others attached negative meanings to trees, reflecting perceptions of them as current or potential hazards to people and structures; as evidence of poor maintenance, planning, and water management practices; and as symbols of longstanding problems with NPS management of the park (Table 8).

Recognition of ambiguity in the meaning of trees and the Lawn provided essential clues for interpreting respondents' problem definitions. It led to identification of organizational and technical issues embedded in the definitions, as well as broader philosophical differences among respondents with respect to sustainability, ecological integrity, historic character, and visitor experience. These broader differences pointed toward specific interests underlying the impasse. These differences will be discussed later in more detail, after discussion of the four individual problem-definition components.

Problem Definitions: Causal Stories

Stone (1989) identified four types of simple causal stories in her typology, based on whether actions were taken on purpose and whether the consequences were intended. She also recognized that this typology did not apply to all causal stories. Some situations require more
complex models of causes if they are to be explained satisfactorily. She proposed three such models: complex systems, institutional, and historical/structural.

Table 5. Positive Meanings Ascribed to the Lawn

<table>
<thead>
<tr>
<th>Positive Meanings Ascribed to the Lawn</th>
<th>Respondents' Statements about the Lawn</th>
</tr>
</thead>
</table>
| An opportunity to improve dialog over NPS image and sustainability | • The Lawn presents an opportunity to send a better conservation message to the public by reducing the size of the Lawn and using less water for irrigation.  
• The Lawn provides a focal point for debate over what exactly constitutes an historic or cultural landscape.  
• Debate over the Lawn served as the triggering event for broader dialog over the meaning of historic character, sustainability, and visitor experience.  
• The Lawn serves as a focal point for dialog over size and species composition that, in turn, leads to dialog about what constitutes a sustainable landscape. |
| Nostalgic symbol of people's personal past | • The Lawn symbolizes people's historic ties to Zion, including their personal history with the area.  
• Some respondents retain childhood memories of the Park, especially the public part, including the swimming pool that could be enjoyed by people who were not staying in the cabins.  
• To others the Lawn symbolizes lost landscapes of the past—part of a landscape remembered fondly as composed of more lawns, the "old" lodge and cabins, and the pool and bathhouse. |
| An important historic artifact requiring preservation | • The Lawn is a historic feature of the Lodge landscape, an artifact of historic design intent that should never be removed.  
• The Lawn is one contributor to the historic character and look of the Lodge area. |
| An important contributor to visitor experience | • The Lawn has been an important part of the Park experience since the Park was created. It still serves as a focal point for visitors.  
• The Lawn is a heavily used visitor amenity that serves a sociological function. It serves as an actively used public space and outdoor living space loved by visitors, and it also is used by them as if it were an urban park for sleeping, picnicking, and reading.  
• The Lawn is a popular place for visitors especially in the summer. |
Table 6. Negative Meanings Associated with the Lawn

<table>
<thead>
<tr>
<th>Negative Meanings Ascribed to the Lawn</th>
<th>Respondents' Statements about the Lawn</th>
</tr>
</thead>
</table>
| Evidence of poor planning and maintenance practices | • The Lawn is one example of the hodge-podge of ideas that have lead to the poorly designed city park-like atmosphere in the Lodge area.  
  • The landscape of the Lodge and cabins used to reflect early NPS design traditions in which man-made elements were subordinated to natural features. Today the Lawn typifies the overly manicured urban environment we have created around the Lodge.  
  • The Lawn's poor condition symbolizes poor maintenance practices, e.g., no regular schedule for irrigation or aeration. |
| Evidence that NPS values have been lost | • The Lawn is a bizarre and ridiculous thing in a desert environment that casts a negative image of the NPS a conservation agency.  
  • It demonstrates that Xanterra is catering to the wishes of visitors and only wants a landscape that looks good and is easy to maintain without regard for NPS traditions or values. |
| A reflection of outdated ways of thinking about the land | • The Lawn is an artifact of people's feelings in the 1920s and 1930s that they needed a lawn, even in the desert. It's a habit that's hard to give up and now the Lodge Lawn has achieved historic status. |
| An attractive nuisance for wildlife | • The Lawn symbolizes visitor's unrealistic expectations that things will always stay the same in the Park as they remember from previous visits.  
  • The Lawn attracts wildlife (deer and turkeys) that becomes habituated to humans, which creates unsafe conditions for both the people and the animals. |

Only five respondents attributed Lodge-landscape problems to a simple cause. One respondent (ZNP-010\(^1\)) told a story based primarily on accidental (natural) causes. According to this respondent, an unusual combination of climate conditions and river morphology created a one-time opportunity to generate the cottonwood canopy during the few decades before and after

\(^1\) Respondents were assigned numbers to preserve their anonymity. Citations in this format indicate that the information or quotation can be found in the appropriate problem definition located in Appendix II.
1900. Now the combination of time and climate change is causing the canopy to die and precluding natural recruitment of new trees. Four respondents cited intentional causes, that is, purposeful actions by the NPS as the cause of landscape problems. These respondents placed

Table 7. Positive Meanings Associated with Trees

<table>
<thead>
<tr>
<th>Positive Meanings Ascribed to Trees</th>
<th>Respondents' Statements about Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence of a healthy ecosystem</td>
<td>• Cottonwoods are remnants of special climate conditions in the late 19th and early 20th centuries created in this one shot to get the cottonwood canopy that is now considered by some as a component of visitor experience. During this time, the river meandered and created perfect seed beds for cottonwoods. As the river became channelized (whether natural or man-made), seeding was cut off. Now the cottonwoods have matured and reached senescence. They are no longer being recruited.</td>
</tr>
</tbody>
</table>
| Unfortunate victims of natural climate change and human actions that deserve our sympathy | • Trees are victims of poor maintenance by poorly trained seasonal landscape staff.  
• Trees are affected by natural cycles of climate change and altered river morphology.  
• Dead and dying trees reflect the natural aging process, as well as effects of drought and poor irrigation practices. |
| Important contributors to historic character | • The tree canopy and open understory are part of the original NPS design intent to create pleasant and usable facilities in our hot desert climate.  
• Trees contribute to historic character of the Lodge area, especially the big cottonwood in the Lawn and tree canopy.  
• The tree canopy is part of the historic landscape and a character-defining feature of the cultural landscape. |
| Important contributors to visitor experience | • The tree canopy is part of the beauty of the place.  
• The tree canopy and shade are important parts of visitor experience. |
Table 8. Negative Meanings Associated with Trees

<table>
<thead>
<tr>
<th>Negative Meanings Ascribed to Trees</th>
<th>Respondents' Statements about Trees</th>
</tr>
</thead>
</table>
| **Current and potential hazards to people and structures** | • Hazard trees pose a direct threat to people and cabins.  
• Trees create fire hazards from deadfall and from twigs and leaves that collect on roofs. Tree roots and branches create hazards to structures.  
• Dropping limbs create safety hazards for visitors, as well as potential structural damage to structures.  
• Deadfall also makes the landscape look messy. |
| **Evidence of poor maintenance, planning, and water management practices** | • Dead and dying trees are evidence of an unhealthy landscape caused by the concessioner’s poor management, maintenance, hiring practices, and lack of attention to the landscape.  
• Cottonwoods exemplify inappropriate plant choices—they are not natural to the area and need too much care and water.  
• Trees are evidence of technical disagreement among experts, e.g., whether or not trees are deeply rooted and effects of reduced irrigation.  
• Lack of a tree replacement program provides evidence of NPS lack of planning, lack of foresight, and lengthy decision-making process. |
| **Symbols of longstanding problems with NPS management policies** | • The tree issue demonstrates the way problems escalate at Zion National Park: the water issue became a tree issue and now the tree issue has become a safety issue.  
• Loss of trees to construction and lack of care symbolize a more general dissatisfaction with the way NPS is managing the Lodge area.  
• Trees symbolize Xanterra’s concern that the NPS will make them do things that previously have produced bad experiences, such as ordering Xanterra to replace cottonwoods with more cottonwoods.  
• Trees symbolize the basic argument between those who want to use only native plants and those who place higher priority on visitor comfort. Those who favor visitor comfort want to see more trees throughout the landscape. Those who take a more écologie approach would restrict trees to places where they are found naturally.  
• Trees symbolize general problems with water management. |

blame directly on the NPS for its failure to have a landscape management plan (ZNP-004); its conscious decisions to move away from its traditional conservation and design values (ZNP-012); its failure to instill a park-wide fire-management culture; and a declining conservation ethic among individual NPS employees (ZNP-015). These stories offered a new perspective on sources of the
impasse, one in which management practices (planning, training, contracting, and priority setting) play a significant role. They suggest that management practices also need attention, because they cannot be resolved on a technical level or through strictly physical changes to the landscape.

The other ten causal stories constructed by respondents are more complex and therefore more closely resemble either Stone’s complex systems model or her institutional model. The complex systems model assumes that solutions to modern problems are inherently so complex that it is impossible to anticipate all events and effects. Failure also involves so many components and people that it is impossible to assign blame. Seven causal stories matched the complex systems model, in which respondents integrated two or more of Stone’s causal-story types to weave more complex images of conditions, blame, and priorities.

For example, one respondent recalled past decisions that seemed good at the time but seemed like poor choices in retrospect because they led to unintended consequences (ZNP-005). The respondent proposed a chain of events leading to the degraded landscape of 2005, articulating a causal story that best fits the complex systems model: “The cabin area landscape was remodeled about 1990. At that time the NPS asked the concessioner to put sod around the cabins because it wanted a more manicured look in cabin area (NPS blamed for management decision). When cabins were remodeled about 1996 or 1967, we noted extensive damage, primarily from water draining towards the foundations of the cabins. I was here in 1990 when the sod was placed around the cabins (mechanical cause). No one thought about damage to the cabins from irrigation then” (inadvertent cause) (ZNP-005).

The respondent continued to develop this complex causal story for some time, weaving additional decisions and events from the past into the story: “Sometimes choices are dictated by the state of technology at the time. Later technology changes can make old decisions look bad. For example, new technology has made wood windows feasible in terms of energy efficiency. Ideas cycle through time. What seems good one day seems bad later and vice versa” (no one to blame; technology gets more complex but also opens up new opportunities) (ZNP-005). The next excerpt from problem definition ZNP-005 provides the clearest example of a respondent who manipulated an image of a problem in order to shift blame away from their organization, as
described by Stone (1989; 1997). Note how the cause shifts from the realm of purposeful actions (shutting off irrigation) to the realm of unguided actions and unintended consequences (a low water table caused by the drought): “We wanted to prevent further damage to the cabins so we shut off the irrigation around the cabins. We haven’t done any watering for three or four years (purposeful action). Plants are dying or dead (unintended consequence). Because of the drought, the water table is unusually low. Normally it’s high enough to flood the basement of the historic Men’s Dormitory, where the sump pump usually runs all the time” (accidental cause) (ZNP-005). Finally, the respondent completed a new image of the problem by blaming the NFS for a lack of action: “A few years ago, we drew up a landscaping plan. We proposed to landscape two or three cabins...as samples from which the NFS could select its preferred option. The NFS didn’t allow this.... We should have started a tree replacement program 25 years ago.... It’s taking a long time to make a decision. NFS has to decide what to do. They are responsible for developing the landscape plan” (NPS blamed for lack of action) (ZNP-005).

Respondents whose causal stories most closely resembled the complex systems model wove complicated histories about past decisions, changing technologies, climate changes and drought, visitor impacts, planning and design changes, personnel issues, and changing concepts of the national park mission. Often, no one was blamed for the problem: conditions and decisions were attributed to impersonal forces like changing priorities, changing ideas about the environment, or changing technologies. Or respondents split the blame between the NFS and the concessioner, past and present, using language such as “No single action or decision has lead to the current state of the landscape” (ZNP-006).

Stone (1989) referred to the second complex cause as the institutional model. These problems arise from large, long-standing organizations with ingrained patterns of behavior. The three causal stories that fit this model reflect continuing disagreement over interpretation of the NFS mission as established in its enabling legislation, as well as questioning the need for the Lodge and cabins and accusing the NFS of perpetuating unecological choices made long ago under different social or political conditions. References to complicated, mandated federal management processes (e.g., management plans covering every conceivable aspect of park
operations, environmental assessments, and impact statements) also fit this model, as well as the historical pattern of using concessioners to operate the parks.

Stone labeled the third cause the historical or structural model. This model supposes that patterns of behavior tend to reproduce themselves: “People with power and resources to stop a problem...benefit” from the conditions that create the problem (Stone, 1989, p. 288). As a result, they have no incentive to solve it. Meanwhile, affected populations feel powerless to change the situation, so they also lack the motivation to change. No causal stories at Zion fit this model, although advocates of complete ecological restoration (ZNP-003, ZNP-013) somewhat resembled Stone’s powerless affected population—they don’t advocate their favored solution openly because of the political difficulties they perceived in implementing such a radical choice.

Problem Definitions: Harms and Difficulties

Respondents painted a complex picture of current and potential harms and difficulties to a surprising array of affected populations. As noted in Chapter Two, when adapting problem-definition theory to environmental studies, the definition of affected populations expanded from harms to humans to include harms to plants, animals, and nonliving components of the environment. As expected, most respondents enumerated physical harms, such as termite damage, wood rot, and dying trees in their discussions of harms and difficulties, and, therefore, most respondents counted resources such as trees and cabins, among their affected populations. Table 9 summarizes the nature of harms and difficulties experienced by different affected populations. Other affected populations included visitors and employees at risk of injury or discomfort; the entire ecosystem affected by alterations to the river and invasion of nonnative plant species; wildlife that have lost their fear of humans; and water that is wasted through poor irrigation practices. However, respondents also expanded the definition of harm to include intangible effects, such as loss of a sense of place that affects both visitor experience and character of the landscape; loss of beauty as the landscape deteriorates from poor maintenance and overuse; harms to NPS organizational image and a loss of public trust; and harms to working relations between the NPS and Xanterra (Table 10).
Just as respondents varied in their perceptions of harms, difficulties, and affected populations, they also varied in their perceptions of the severity of the situation. Of the eleven respondents who offered an opinion, three thought the situation critical with respect to tree replacement, water usage for the Lawn, general messiness, and structural problems with the cabins. Some trees are dying and more will. Respondents were concerned that the NFS has no tree replacement program. Some thought that the size and species composition of the Lawn were also critical because of ongoing water shortages. NFS has seen cabins sinking from water problems and wants to prevent similar problems, so structural and foundation problems in the cabin area are also critical. Some respondents were concerned that the longer they delay decisions, the more resources it will take to fix the landscape because conditions will continue to worsen. Furthermore, they believed that actions are needed now to prevent the NFS from doing something fast and inappropriate if a crisis does occur.

Five respondents thought that the overall situation was serious, but not a crisis. They identified a few specific aspects of the landscape that need attention now—hazard trees, tripping hazards (e.g., paths in disrepair), fire management, tree irrigation, and water conservation. The remaining three respondents did not think that landscape issues are time sensitive because threats are not immediate because temporary solutions are available, or because an integrated solution will require five to ten years to implement.

Problem Definitions: Evidence

Evidence consists of statements about the nature of harms and difficulties that explain triggering events, describe objective features of undesirable conditions and their effects on affected populations, and cite objective indicators of a problem's severity. Objective features include things that can be observed, measured, or calculated. Objective indicators refer to empirical evidence such as surveys, polls, studies, statistics, and historical analyses.
Table 9. Summary of Tangible Harms Identified by Respondents

<table>
<thead>
<tr>
<th>Type of Harm</th>
<th>Affected Population</th>
<th>Nature of Harm or Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical harm</td>
<td>Buildings and structures, especially the Lodge, historic cabins, and motel units</td>
<td>• Damage from wood rot, termites, sinking foundations, and hazardous trees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential damage or loss from fire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loss of historic design intent through addition of nonhistoric or removal of historic features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential demolition with a change in NPS policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Threats from floods affecting infrastructure, such as bridges, the road, trails, and buildings</td>
</tr>
<tr>
<td></td>
<td>Visitors and NPS and Xanterra employees</td>
<td>• Discomfort from lack of shade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Injury from falling limbs and trees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tripping hazards on poorly lit and maintained paths and sidewalks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Injury from wildlife, especially deer and will turkeys, habituated to humans</td>
</tr>
<tr>
<td></td>
<td>Entire ecosystem within Zion Canyon</td>
<td>• Altered flow regime along the river which has or reduced the amount of riparian habitat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lodge area has been disconnected from the river system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Invasion of nonnative species, especially exotic grasses and bromes</td>
</tr>
<tr>
<td></td>
<td>Wildlife</td>
<td>• Loss of their fear of humans, which has altered the behavior of deer and wild turkeys</td>
</tr>
<tr>
<td></td>
<td>Potable water</td>
<td>• Overuse of resource to maintain a nonnative mix of plants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wasted though poor irrigation practices</td>
</tr>
<tr>
<td></td>
<td>Turf, shrubs, and groundcovers</td>
<td>• Plants dying from lack of water from drought and poor irrigation practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Turf and groundcovers degraded or destroyed from trampling by visitors</td>
</tr>
<tr>
<td></td>
<td>Trees</td>
<td>• Overly dependent on irrigation and less drought resistant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Getting old and dying</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Poorly trimmed and maintained</td>
</tr>
<tr>
<td>Economic harm</td>
<td>Concessioner</td>
<td>• Higher housekeeping efforts and costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential loss of income from removal of overnight accommodations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Increased costs from deferred maintenance</td>
</tr>
<tr>
<td></td>
<td>Springdale merchants</td>
<td>• Loss of income when visitors use facilities in the park, e.g., restaurants, lodgings, and gift shop</td>
</tr>
</tbody>
</table>
Table 10. Summary of Intangible Harms Identified by Respondents

<table>
<thead>
<tr>
<th>Type of Harm</th>
<th>Affected Population</th>
<th>Nature of Harm or Difficulty</th>
</tr>
</thead>
</table>
| Loss of a sense of place             | Visitors            | • Deprived of a unique national park experience  
• Sights and sounds of park operations and maintenance activities interfere with enjoyment of nature  
• Excessive lighting impairs views of the night sky |
| Lodge-area landscape                 |                     | • Wild character compromised by an overly manicured landscape and urban feel  
• Character of a national park compromised by the addition of small-scale features that could be found anywhere  
• Historic character compromised through addition of nonhistoric features and use of nonhistoric materials  
• Historic integrity compromised by removal or widespread changes to historic features |
| Harm to aesthetics or beauty         | Lodge-area landscape| • Ratty, unkempt appearance from deadfall and weeds, social paths created by visitors  
• Loss of lush green tree canopy       |
| Harm to NPS image and culture        | Individual NPS employees and the entire NPS organization | • Loss of image as environmental leaders  
• Failure to fulfill the conservation and protection mission in the NPS enabling legislation  
• Loss of NPS design traditions  
• Loss of public trust because NPS individuals do not practice conservation in their private lives  
• Loss of public trust because NPS organization does not practice conservation in its operations |
| Harm to NPS and Xanterra relations   | NPS and Xanterra employees and organizations | • Frustration derived from Inability of NPS to make a decision and provide clear direction to the concessioner  
• Confusion and wasted resources from changing NPS policies |

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As noted in the discussion of causal stories, only one respondent felt that a single event (drought) triggered landscape problems, whereas all respondents described objective features of undesirable conditions. The most commonly cited features consisted of personally observed physical conditions, e.g., dead and dying trees, damage to buildings, social paths, modern-looking benches and lights, and leaf and twig litter on roofs, as noted in the summaries of harms and difficulties in Tables 9 and 10.

Interviews included specific questions asking respondents for referrals to reports, surveys, studies, or other written information to support their perspectives. The only studies mentioned by more than one person were the 2003 irrigation study by Professor Frank Williams of Brigham Young University, an interim landscaping plan by Benjamin (2002) of the NPS, and the history of the Lodge landscape by Jones (2003a). Williams did not provide a written report, but copies of Benjamin's plan and Jones' history were widely distributed by the NPS. Seven respondents referred to or provided studies and documents other than Williams, Benjamin, or Jones. These included NPS and Xanterra publications, scientific studies, and visitor surveys. They are identified in respondents' problem definitions (Appendix II) and are listed in a special section of the References. Respondents also indicated they used other evidence, such as unspecified historic photographs for ascertaining historic design intent and repeat photography for examining changes in river morphology.

Only a small number of respondents referred to technical studies conducted in Zion by researchers, the NPS, or its consultants over the years. Many respondents referred to historic character throughout their interviews. But only two referred indirectly to evaluation of the site against criteria for assessing historic integrity established by the Secretary of the Interior. They did this by referring to Jones (2003a), which was based on criteria for cultural landscapes, and to McDonald (1997), which assessed historic structures. This result seems particularly surprising because the cabin area lies within the Zion Lodge and Birch Creek Historic District, which is listed on the National Register of Historic Places. One respondent referenced McClelland (1998), an authoritative source for evaluating national parks as historic and cultural landscapes, in describing ways to reintroduce traditional NPS rustic design into the Lodge landscape.
So many people invoked harms to visitor experience as part of their problem definitions that respondents were asked specifically for referrals to visitor studies that investigated visitors' perceptions of the Lodge area, its landscape, and its importance to their enjoyment of the park. No such studies have been done, based on review of visitor surveys performed at Zion over the last ten years (Lee, 1996; NPS, 1992; Machlis et al., 1997; Northern Arizona University, 1997; University of Idaho, 1998, 2000, 2001, 2002, 2003). It seems that harms to visitor experience identified by respondents represent personal and professional opinions of the respondents, not any specific objective indicators of visitor perspectives.

Several reasons could explain why there were so few referrals to technical studies or other documents. First, questions about other studies may have been phrased in a way that produced a negative response. Second, expectations probably were overly high because problem-definition theory developed through and continues to rely heavily on the study of documents. Third, technical studies may not receive widespread distribution within the NFS beyond the department that commissions them. Fourth, the Lodge area comprises only about one percent of the total area of the Park and, therefore, may receive less research attention than the back country. Finally, it's likely that information from reports has been absorbed into the general knowledge base of employees at Zion, particularly in their areas of responsibility, and they no longer consciously attribute that knowledge to a specific author, report, or study.

Evidence of Success

Respondents described how they would define, measure, or gage the success of the new landscape in achieving their vision for the future. The most commonly mentioned indicators of success were reduced water consumption for landscape purposes and greater use of native plants.

Three respondents offered specific ideas for measuring success through an integrated monitoring program. Quantitative indicators of success included measurements of water use before and after a new landscape is installed and measurements of maintenance needs of vegetation and buildings. For example, one respondent suggested calculating before and after
maintenance hours based on maintenance-employee timesheets (ZNP-004). Other suggestions included measuring the effects of water use on structural problems, monitoring abatement of structural problems, and monitoring growth and health of new vegetation (ZNP-001). One respondent proposed surveying visitor reactions to the aesthetics of a sustainable landscape as a qualitative measure of success, i.e., measuring how visitors perceive the new landscape; whether they notice it or appreciate it and gauge their reactions and responses (ZNP-004).

Unfortunately, there may be no way to track water savings from a new landscape. As one respondent pointed out, there are no current or historic data about water used specifically for the landscape. Until or unless a new water source is developed, all water flows through a single meter. There is no way to determine the percentage of savings attributable to landscape use because Xanterra stopped watering the cabin area, installed low-water toilets, and made other changes at the same time (ZNP-005).

An annual sustainability report issued by Xanterra identifies the primary metrics used company-wide to track their environmental performance (Xanterra, 2003). They track four metrics: energy usage (including electricity, natural gas, propane, fuel oil, gasoline, and diesel fuel); primary greenhouse gas emissions (CO\textsubscript{2}); criteria air pollutant emissions; and solid waste generation and recycling. They consider annual totals as well as totals per room night. Xanterra also has adopted numerous national and international environmental standards as corporate policy, such as ISO 14001 (the international standard for environmental management) and the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) guidelines (Xanterra, 2003) (see problem definition ZNP-005 in Appendix II for a complete summary of corporate policy).

One unusual measure of success was offered by a member of the NPS (ZNP-009). A sustainable landscape could be judged successful if 10 or 20 years from now, the NPS is not having this debate all over again. For this respondent, sustainable means that in 2025, the NPS will not be debating over what to do about landscape changes made in 2006. Other measures of success in restoring historic character and determining original design intent can be inferred from respondents’ favored solutions, which are discussed in the next section.
Problem Definitions: Favored Solutions

Many respondents' causal stories focused on organizational problems, such as planning, hiring, and training. In contrast, their solutions primarily addressed physical features, such as vegetation, lawn size, lighting, and pedestrian paths. Figure 10 illustrates the range of solutions proposed by respondents, which lie along a continuum from re-creating much of the character of the 1930s historic landscape to complete ecologic restoration of the Canyon. Respondents' approaches to sustainability, ecological integrity, historic character, and visitor experience directly affected their visions of the desired future landscape.

Respondent ZNP-012 recommended a landscape with the most authentic look and feel of the 1930s. In this solution, features documented in photographs and site plans of the Zion Lodge area, such as green shingle roofs and a cactus garden in front of the Lodge, would be re-introduced. Features not used at Zion Lodge in the 1930s would not be used in the new landscape. In this way, the solution comes close to a reconstruction of the 1930s landscape, as defined within the Secretary of the Interior's guidelines for preservation of historic landscapes. In contrast, Respondent ZNP-004 described a new landscape designed in the NFS traditional rustic style. Although this future landscape included features originally used at Zion, it also included features found at other national parks. In this way, the solution drew from the larger design vocabulary of the NPS rustic architectural style documented in McClelland (1998). Respondent ZNP-007 suggested a designed landscape positioned closer to the ecological end of the continuum. This solution emphasized an all-native plant palette. In particular, it removed all turf in the Lodge and cabin areas to create a landscape that would resemble the new Zion Visitor Center. Finally, Respondent ZNP-003 preferred a complete restoration of the Lodge area to a fully functioning riparian habitat, in which the Lodge, motel units, and cabins were removed. Only infrastructure related to pedestrian and vehicular traffic would be retained.

In summary, respondents' approaches to historic character ranged from complete removal of historic structures as part of ecological restoration to reintroduction of more historic, small-scale features that reflect NPS rustic design traditions. Their approaches to sustainability differed as
100% Restoration of the Historic Landscape of the 1930s

ZNP-012: Reintroduces historic features and feel of the original 1930s landscape at Zion National Park

ZNP-004: Creates a new landscape designed in the NPS traditional rustic style of architecture found at many national parks

ZNP-007a: Creates a designed landscape resembling the Zion Visitor Center using only native plants

ZNP-003b: Establishes a fully functional native riparian habitat with no visitor accommodations

100% Restoration of the Pre-Mormon Pioneer Ecosystem

Figure 10. Range of Favored Solutions Suggested by Respondents
NOTE: Solutions lie along a continuum from re-creating much of the character of the 1930s historic landscape to complete ecologic restoration of the Canyon.
much as their approaches to historic preservation. These differences are striking and will be examined more closely in the following sections, because they provide the most likely sources of the impasse over policy for the Lodge-area landscape.

Interests

All of these preceding analyses of problem-definition components have focused on respondents’ perceptions of the landscape as the basis for identifying their interests and as a means of moving past the current impasse over Lodge landscape policy (discussed in Chapter Five).

As noted in chapters One and Two, interests are the “underlying concerns, needs, desires, or fears behind a negotiator’s position, which motivate the negotiator to take that position” (Wondolleck & Yaffee, 2000, p. 128). They are the reasons behind the reasons voiced by stakeholders as they advocate their favored solutions. Interests also explain why respondents willingly engaged in dialog over the fate of the landscape at Zion Lodge. Some engaged because they wanted to recapture NPS traditions in design and environmental leadership. Others wanted to redirect NPS actions to preserve and protect the national parks according to their interpretation of the Park Service’s enabling legislation. Some wanted to provide visitors with their vision of a unique national park experience. Some engaged because landscape decisions affect their daily work while others were motivated by economics. Tables 11 through 13 convert respondents’ problem definitions into positive statements of their interests, and then categorize and describe them as common, compatible, dependent, or divergent.

Common interests are those shared by all respondents. There were only two: very general interests in conserving water and using more native plants (Table 11). More often, different respondents expressed different interests. When these interests differ from each other but can be addressed simultaneously, they are called compatible interests because they are not in conflict. Some compatible interests can be satisfied independently of physical changes to the landscape, e.g., making landscape management a priority. These are listed under as Compatible Interests Related to NPS Organizational Culture and Image in Table 11. Other interests require some type
of physical change to the current landscape, ranging from simple (e.g., replacement of modern benches or converting a turf island to a cactus garden) to highly complex (e.g., complete restoration of the ecosystem). Those that are compatible are included in Table 11 under the heading Compatible Interests Directly Related to Design.

Mutually exclusive interests that reflect strikingly different perspectives on sustainability, ecological integrity, historic character, and visitor experience alluded to earlier are categorized as Divergent Interests in Table 12. For example, restoring ecological integrity of Zion Canyon involves removing the Lodge, motel units, and cabins. This interest cannot be satisfied at the same time as an interest in preserving historic use of the Lodge for overnight visitor accommodations. Divergent interests lie at the center of the impasse and will be discussed in more detail in the next sections.

Finally, some interests may be compatible with or divergent from other interests depending on which divergent interest is supported in the final design. For example, management of fire hazards depends on whether the NPS plans to restore ecological integrity or accommodate overnight visitors in the Lodge area. In managing for ecological integrity, they can leave more deadfall in place to increase wildlife habit, whereas they must remove most deadfall to protect visitor accommodations from wildfire. These Dependent Interests are shown in Table 13.

Perspectives on Sustainability and Ecological Integrity

All respondents recognized that the Lodge currently consists of a highly modified designed landscape. They agreed that a future landscape should use less water and incorporate more native species of plants. At this superficial level, they seemed to be in general agreement over goals but in disagreement over technical details. While technical details do generate discussion, the impasse over landscape management policy revolves around a more fundamental disagreement over the definition of sustainability. One respondent summarized the situation this way: "I view the landscape as a continuum from what the Lodge looks like today to 100%
Table 11. Common and Compatible Interests Derived from Respondents’ Problem Definitions

<table>
<thead>
<tr>
<th>Interest</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Interests = Interests shared by all respondents</strong></td>
<td></td>
</tr>
<tr>
<td>Conserving water</td>
<td>Any action undertaken to reduce use of water for landscape purposes. Does not require retention of Lodge, motel units, or cabins for visitor accommodations or any other purpose.</td>
</tr>
<tr>
<td>Using more native plants</td>
<td>Turf and exotic species replaced by native species, with no attempt to restore riparian habitat. Does not require retention of Lodge, motel units, or cabins for visitor accommodations or any other purpose.</td>
</tr>
<tr>
<td><strong>Compatible Interests Related to NFS Organizational Culture and Image = Interests that differ from each other but can be addressed simultaneously because they do not conflict with each other</strong></td>
<td></td>
</tr>
<tr>
<td>Re-establishing NFS image as a leading environmental agency</td>
<td>Emphasizes &quot;green&quot; management—recycling materials and water and power conservation. Ensures that conservation real, not &quot;greenwash,&quot; i.e., if we say we are doing something, then we must do it. Builds the new landscape to a standard so that a new concessioner would inherit a sustainable park. Uses the most sustainable options that will work and be financially feasible.</td>
</tr>
<tr>
<td>Practicing conservation individually</td>
<td>Employees buy in to conservation and do the right thing for the environment even if no one sees us doing it. Employees practice conservation in their personal lives.</td>
</tr>
<tr>
<td>Reducing resource consumption</td>
<td>Uses fewer resources (e.g., water, fertilizer, and maintenance time). Regenerates itself with little or no human assistance once established. Does not require retention of Lodge, motel units, or cabins for visitor accommodations or any other purpose.</td>
</tr>
</tbody>
</table>
Table 11. (continued)  Common and Compatible Interests Derived from Respondents’ Problem

Definitions

<table>
<thead>
<tr>
<th>Common Interest</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making landscape management a priority for both the NFS and the concessioner</td>
<td>Allocates resources, makes contractual changes, and emphasizes the importance of the Lodge area landscape to the NPS. Implements a landscape management plan to establish an integrated approach and policies for future landscape design, construction, and maintenance. Prevents ad hoc approach of the past.</td>
</tr>
<tr>
<td>Considering impacts to visitors in all aspects of park operations</td>
<td>Minimizes disruptions to visitors’ enjoyment of the canyon by the sights and sounds of day-to-day operations and maintenance.</td>
</tr>
<tr>
<td>Improving plant care and landscape maintenance</td>
<td>Changes hiring and training practices, especially for seasonal staff. Improves understanding of plant needs. Updates and integrates infrastructure, such as irrigation system and water supply.</td>
</tr>
<tr>
<td>Managing interactions between visitors and wildlife</td>
<td>Any actions taken to discourage direct contact between people and wildlife and to prevent wildlife’s habituation to human presence</td>
</tr>
</tbody>
</table>

Compatible Interests Directly Related to Landscape Design
(These require a physical change to the landscape.)

<table>
<thead>
<tr>
<th>Interest</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintaining historic connections</td>
<td>Repairs and maintains the Emerald Pools and Grotto Trails. Does not require use of Lodge, motel units, or cabins for overnight accommodations.</td>
</tr>
<tr>
<td>Reducing modern and manmade look</td>
<td>Replacement of modern-looking small-scale features (e.g., benches of dimension lumber) with more rustic features.</td>
</tr>
</tbody>
</table>

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Table 12.  Divergent Interests

<table>
<thead>
<tr>
<th>Divergent Interests = Interests that reflect strikingly different and mutually exclusive perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restoring ecological integrity</strong></td>
</tr>
<tr>
<td>Controls are removed and the North Fork of the Virgin River is allowed to flow freely. Requires removal of the Lodge, motel units, and cabins. Exotic species have been removed. Native riparian habitat restored in approximately the same mix and density of species found prior to European contact. Genetic integrity emphasized during restoration.</td>
</tr>
<tr>
<td><strong>Removing exotic vegetation</strong></td>
</tr>
<tr>
<td>Actions taken to remove plants deemed nonnative to Zion Canyon, whether introduced as part of the designed landscape, by pioneer settlers, or other means.</td>
</tr>
<tr>
<td><strong>Protecting cultural resources</strong></td>
</tr>
<tr>
<td>Any action undertaken to protect the Lodge, cabins, motels, small-scale features, etc. from physical damage, such as fire, termites, pooling water. Supports use of the Lodge, motel units, or cabins for other uses or visitor accommodations. May compromise on historic integrity for additional protection.</td>
</tr>
<tr>
<td><strong>Preserving historic character</strong></td>
</tr>
<tr>
<td>Retains existing features and reintroduces others based on research into historic design intent at Zion National Park, documented by old photographs, plans, and drawings. Supports use of the Lodge, motel units, or cabins for other uses or as visitor accommodations.</td>
</tr>
<tr>
<td><strong>Preserving historic use of the Lodge and cabins</strong></td>
</tr>
<tr>
<td>Requires that the Lodge, motel units, and cabins continue to provide overnight visitor accommodations and other visitor services, which are the established historic uses for this part of the canyon.</td>
</tr>
<tr>
<td><strong>Honoring NPS rustic design traditions</strong></td>
</tr>
<tr>
<td>Adds features typical of NPS rustic architectural tradition described by Linda McClelland in <em>Building the National Parks</em> and <em>Wilderness by Design</em> by Ethan Carr. Creates a less manicured, less urban look. Features may or may not be documented as having been present at Zion in the past.</td>
</tr>
<tr>
<td>Dependent Interests</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Dependent Interests</strong> = Interests that may be compatible or divergent from other interests depending on other management decisions</td>
</tr>
<tr>
<td><strong>Providing a unique national park experience</strong></td>
</tr>
<tr>
<td>Creates an overnight stay in the park that differs from staying in town. Makes visitors feel as though they have stepped back in time. Preserves or enhances night-sky values and the natural soundscape.</td>
</tr>
<tr>
<td><strong>Replacing trees</strong></td>
</tr>
<tr>
<td>Any action or program undertaken to plant trees in the Lodge landscape. Does not require retention of Lodge, motel units, or cabins for visitor accommodations or any other purpose.</td>
</tr>
<tr>
<td><strong>Controlling pedestrian circulation</strong></td>
</tr>
<tr>
<td>Actions taken to reduce social paths, e.g., building new, wider paths where people actually walk or using vegetation, boulders, fences, or railings to direct foot traffic.</td>
</tr>
<tr>
<td><strong>Interpreting the new landscape</strong></td>
</tr>
<tr>
<td>Explains native plants and other landscape features so visitors can appreciate what they see and the efforts of NPS in creating a unique visitor experience.</td>
</tr>
<tr>
<td><strong>Creating demonstration gardens</strong></td>
</tr>
<tr>
<td>Uses labels in one or two areas to identify native plants that visitors will encounter throughout the landscape.</td>
</tr>
<tr>
<td><strong>Creating a landscape that is easier to maintain</strong></td>
</tr>
<tr>
<td>Actions taken to reduce the time and cost of operations and maintenance; reduce dust, dirt, and insect problems in facilities; or update infrastructure, such as the irrigation system. Does not require adherence to NPS rustic design traditions.</td>
</tr>
<tr>
<td><strong>Improving safety</strong></td>
</tr>
<tr>
<td>Actions taken to protect people from physical hazards, such as falling tree limbs and uneven sidewalks.</td>
</tr>
<tr>
<td><strong>Improving visitor comfort</strong></td>
</tr>
<tr>
<td>Provision of amenities, such as shade trees or additional seating, with no function other than to increase the enjoyment of visitors.</td>
</tr>
<tr>
<td><strong>Improving fire management culture</strong></td>
</tr>
<tr>
<td>Balances need for defensible space with historic character, shade for comfort, and aesthetic considerations. Reduces fuel hazards from deadfall, twig and leaf litter, and exotic grasses and bromes.</td>
</tr>
<tr>
<td><strong>Meeting visitor expectations</strong></td>
</tr>
<tr>
<td>Retention, addition, or removal of landscape features based on requests (real or perceived) from visitors.</td>
</tr>
</tbody>
</table>
A majority of respondents did not advocate such a radical reversion to natural conditions. Five of fifteen respondents described a sustainable landscape as one that achieves a more natural, less manicured look with fewer manmade influences. This landscape blends in with its more natural surroundings, but ecological integrity is not a goal. One respondent went so far as to decouple sustainability from any linkage to ecological integrity. Instead, he defined sustainability as visual compatibility with the surrounding natural landscape, and he linked sustainability to NPS design traditions (ZNF-012). Another defined a sustainable landscape as one that is realistic and works for the concessioner (ZNF-006). And finally, one person stated bluntly that the historic landscape is not sustainable, which was why the NPS has a problem and a debate (ZNF-009).

All respondents recognized that any landscape must be maintained over time. About half suggested that sustainable landscapes require little or no maintenance and that a sustainable landscape will take care of itself. Those with experience at the Visitor Center, however, disputed that view. They believed that establishing a more native landscape will take a lot of work and a commitment by management to provide staff and resources for perpetual care. While groundcovers and native wildflowers may eventually reseed themselves, these respondents did not believe that native trees would be recruited naturally. If NPS retains the tree canopy for visitor comfort or as part of historic character, then at a minimum they will need to replace trees as they age and die. The landscape will also need supplemental irrigation during times of drought. Even the respondents who preferred to let nature take its course recognized that periodic flood events will necessitate repairs to the remaining infrastructure, such as the road, bridge to the Emerald Pools Trail, or shuttle stop.

Perspectives on Historic Character

Historic character is a slippery concept. Respondents' perspectives on historic character and design intent varied as much as their ideas of sustainability. One respondent thought that retaining historic character was meaningless and asked: "What's historic? Is it the landscape from twenty years ago? Fifty years ago?" (ZNP-006).
Respondents also spoke of historic character in different terms. To paraphrase one respondent, many people have a paternal feeling for the Lodge based on their historic ties and personal history with the area. To these people, the Lodge represents a landscape of memory, and they express their problem definitions in emotional terms: “I remember the time when…” (ZNP-008) or “The area...contains my childhood memories of the park” (ZNP-009). Other respondents expressed themselves in the language of the historian or landscape designer. They visualized a future landscape that retains the design intent and character of the historic landscape as seen in old photographs and drawings or documented in historical studies. When speaking of historic, these respondents referred to character-defining features seen in the landscape of the 1920s and 1930s: the green lawn, cactus garden, tree canopy, inviting shade, and fire pit. They suggested solutions focused on historic design intent or character, rather than an exact restoration of the 1930s landscape. They tried to balance historic landscape characteristics and components with environmental responsibility. In this perspective, historic design intent constrains certain choices but leaves the way open to compromises in others. As a group, these respondents would retain the established historic uses of the Lodge and cabins for visitor accommodations and services. They would retain the Lawn as a public space, but would be willing to reduce its size and change the type of grass to conserve water. They preferred to retain the tree canopy and open understory in the cabin area, but advocated changing to a broader variety of native trees and ground covers than may have been used in the past.

Other respondents defined historic character in aesthetic or experiential terms. For these respondents, historic character meant the early NPS rustic design traditions in which man-made elements were subordinated to natural features. They believed that the Lodge area needs to look and feel like a lodge—the buildings should look like they have been nestled into a native landscape and be more in tune with the rest of the park. The landscape should give visitors a sense of the historical experience of the place. And the way to achieve this national park experience is to honor the early NPS design traditions, specifically NPS rustic architecture and small-scale features described by Linda McClelland (1998) in her definitive book Building the National Parks or by Ethan Carr (1998) in Wilderness by Design. These respondents would return
to a more rustic, less manicured landscape. They would reintroduce more rustic materials and features, such as benches of pole construction, the cactus garden, green shingle roofs, and the fire pit. They would retain and repair remnants of the past like the pool patio and wall and trails to the Grotto and Emerald Pools.

Still other respondents rejected historic character as a legitimate goal. About a third of the respondents challenged some aspect of the concept. A few felt that there are times when you can and should compromise on historic integrity based on current uses or conditions. For example, visitors spend a great deal of time using the Lawn for picnicking, socializing, relaxing, and playing. This group of respondents would retain the Lawn more-or-less in its current form or, perhaps, somewhat reduced in size. However, visitors spend little time in the spaces around the cabins; mostly they stay inside their cabin or on their private porches and balconies. Based on this use pattern, these respondents believed that the cabin area landscape could be converted from historic turf to xeriscape with little impact on visitors’ experience. In other examples, gutters could be added to the historic cabins to protect them from further water damage and wood shingles could be replaced by more fire-retarding roofing materials. While neither the gutters nor the shingles are historic, these respondents felt that it makes more sense to protect the cabins than to insist on a misguided desire for historic integrity.

The tree canopy also stimulates debate over historic character. As noted earlier, many respondents identified the canopy as an integral component of the original designed landscape. But, one person cited technical studies suggesting that climatic conditions in the late 19th and early 20th centuries created “this one shot to get the cottonwood canopy that is now considered by some as a historic component of visitor experience” (ZNP-010). This implies that historic character is a construct of NFS staff and subject to interpretation, not a fact that justifies perpetuating the canopy as an historic resource.

Some respondents went further and stated that the historic character of the landscape has never been defined; therefore it’s not surprising that conflict has arisen over what to do. Echoing the thoughts of Wallace Stegner, one person suggested that from an aesthetic perspective, it will be good for the NPS to “get away from mentality that we need large green areas at the Lodge or
anywhere else in national parks in arid areas" (ZNP-003). Going still further in stating cautious support for removing all development in the Lodge area, the same respondent flatly stated that it’s “not right to perpetuate non-ecological choices made long ago.”

Perspectives on Visitor Experience

The General Management Plan (NPS, 2003a) directs park managers to assure protection of key aspects of visitor experience related to the Lodge area landscape, namely, night-sky values, natural soundscape, and historic overnight experience. The approved strategy for the Lodge area acknowledges that the Lodge has been a traditional use in Zion for over 80 years. The Plan states that, “Park managers will continue to work with the concessioner to ensure that the historic experience was maintained” (NPS, 2003a, p. 38). Removal of the cabins would deprive future visitors of services and the experience of an overnight stay in the Canyon (ZNP-001). Yet some respondents continue to suggest that the NPS should either remove all accommodations or convert them to administrative or educational purposes.

Respondents’ perspectives also mingled four aspects of visitor experience (comfort, enjoyment, expectations, and the essence of that experience) with respect to past, present, and future visitors. When respondents offered opinions about visitor comfort, they referred to shade and seating, which are aspects of physical comfort. Respondents who favored a historic or traditional landscape expressed concerns that future visitors may be harmed if the tree canopy dies, which would create hotter, more uncomfortable conditions. Although the NPS originally planted trees to make its facilities more useable and pleasant in the days before air conditioning, shade remains important to visitor comfort (e.g., ZNP-001, ZNP-004). Some respondents saw this as justification for adding more trees and shade (e.g., ZNP-008), whereas others saw the issue of shade as a difficulty. They questioned whether it’s the Park Service’s job to provide facilities and amenities, such as overnight accommodations, the Lawn, or shade, just because visitors want them or because the amenity has been there since the beginning of the park (e.g., ZNP-003, ZNP-014). As one person noted, “the Lawn is an artifact of people’s feelings in the 1920s and 1930s that they needed a lawn even in the desert. It’s a habit that’s hard to give up. Now the
Lawn has achieved historic status in some people's eyes who believe that it should never be removed (ZNP-015).

Respondents expressed differing ideas about the essence of a national-park experience. Respondent ZNP-009 suggested that "the whole visitor experience should take you back in time." In particular, "lodgings in the park should feel like a park, not a hotel in town. If you are going to have visitor housing in a national park, then it should be different from what is commercially available outside a park. If it's not different, then why have it at all?" One thought that people come to national parks to see wildness, and, therefore, a manicured look would harm or change visitor experience (ZNP-012). But this respondent, like others, acknowledged that the NPS doesn't really know what visitors expect. However, lack of knowledge of visitor preferences didn't prevent others from believing that "lots of people have been coming here for generations and expect things stay the way they were" (ZNP-015). Some acknowledged that the NPS can't always meet their expectations for keeping things the way they used to be.

One respondent observed that visitor experience is harmed when operations and maintenance activities interfere with enjoyment of the resources, such as quiet morning hours, views, and relaxing on the Lawn. But another recognized that the Lodge is a difficult place to work: the best season for doing outdoor work is also the prime visitor season (ZNP-008). However, one self-proclaimed visitor advocate stressed that, "we should be conscious of the effects of our actions on visitors....We need to be (visitor) advocates in the little things like preventing visitors from being disturbed by noise from trash collection at 7 a.m." (ZNP-015). Why, he asked, does maintenance mow the lawn at peak times when visitors are enjoying it? Why not at slow times? Why was the maintenance crew washing the outside of the restaurant windows during a luncheon? Why couldn't they have done it at 11 or 3, before or after the main lunch time? Why did fire management have to use their chainsaws in the south campground at 8 a.m." (ZNP-015)?
Feedback from Zion Staff

Zion National Park staff members were asked to provide feedback on the utility of the study as the final step in the framework application phase. NPS and Xanterra staff provided their initial impressions of the results and process during a workshop and briefing in June 2005. The workshop was open to all NPS and Xanterra staff. The briefing included all senior Park managers. The presentation covered four major conclusions from this chapter:

1. Dialog over landscape details masks deeper concerns expressed by NPS and Xanterra staff about the harms and interests identified in Chapter Four. In particular, harms to NPS organizational culture and image need special attention.

2. Major differences in perspectives on sustainability, ecological integrity, historic character, and visitor experience provide the most likely source of the impasse over landscape-management decisions.

3. These perspectives drive different approaches to landscape design. The approaches lie along a continuum from 100% historic restoration to 100% ecological restoration.

4. Each approach allows a specific range of design options and precludes others.

Meeting attendees found it helpful to have someone organize the information because they do not have time to focus on the Lodge. They also thought it helpful to have a neutral, outside person look at the problem, someone not involved in day-to-day decision making. The attendees did not offer specific reactions to any of the tabulated results; they agreed they needed more time to study the results before offering an opinion. One attendee did state that the landscape history report (Jones, 2003a) may prove more valuable than this study. That report helped him realize that the Lodge landscape was never intended to be natural, as he had long argued. He now understands that the design intent has been a more manicured look since construction of the Lodge in 1925. The attendees made it clear that the real issue is the slowness of the NPS decision-making process. They noted that a similar discussion about the landscape took place three or four years ago and looked at basically the same options identified in this study.

In addition to the workshop and briefing, all respondents received an executive summary of the case study. They were invited to answer the three feedback questions from the interview.
guide (Appendix I). Only two provided responses. [This low response rate is consistent with Stake's experience that respondents rarely replied when he requested them to review a study (Stake, 1996)].

The first feedback question asked how the park might use the results of this study. Both staff members see the study a jumping off point for NPS action based on the data and range of viable solutions identified by the study. One person summarized the study in these key words: clarity, definition, direction, and viable solutions. Respondent ZNP-003 conveyed a general feeling that this study identifies all of the parameters of this complex problem clearly and with much more objectivity than park employees could generate among themselves. The utility of the approach lies in its ability to identify the problems, something that had proven difficult for park employees to do themselves.

The second feedback question asked how each individual might use the study results. The written responses indicated that these two respondents expect the full study to be a vital reference as the NPS moves towards a new landscape design. They also liked the reporting structure outlined in the study, sensing that it would be applicable to other complex multidisciplinary problems as well as less complicated ones.

The third feedback question asked what would make the results more useful. Meeting attendees wanted to know whether the problem-definition study could have been done internally by their staff, whether the process could be streamlined, and whether this thesis would instruct others in how to use the framework. The written comments requested that this thesis include a detailed view of the process, perhaps as an outline that could be applied more broadly to other problems.

An organization might be able to do a problem-definition study internally depending on the situation. Wondolleck and Yaffee (2000) observe that, "all stakeholders must perceive the facilitator to be legitimate and fair for that person to play an effective role" (p. 108). However, if the impasse involves an entire staff, if feelings are bitter, or if powerful parties to the impasse dominate all attempts at resolution, then it may be impossible to do a problem-definition study internally. Under conditions such as these, it may be impossible to find a person within the
organization who would be perceived and accepted by all parties as neutral. If a staffing shortage contributed to the impasse, as at Zion, then it may also be difficult to release an acceptable person from their regular duties to conduct the study. Neutrality and time requirements suggest that this process requires an outside party, someone not involved in the impasse. For example, a large organization, such as the NPS, might bring someone from another office to conduct the study.

Meeting attendees asked whether the process could be streamlined; that is, whether the study could be completed in less time and whether the process could be less complicated. Seven months elapsed from the first interviews in early December 2004 until results were presented in late June 2005. The duration reflects several factors: the part-time status of the researcher, a delay while the NPS processed the research permit application, logistical problems in scheduling the interviews, and difficulties inherent in applying a new process for the first time. The duration would be shortened as a person gained experience in applying the framework, if he or she were able to devote themselves to the problem full time, and if the researcher worked at the same location as most of the respondents.

However, the interviews themselves cannot be shortened or streamlined. As the pilot study showed, a researcher must allow sufficient time for respondents to become comfortable with the process, as well as time to organize and express their thoughts. In retrospect, this study would have benefited from additional interview time, perhaps even a second round of interviews with the same respondents to clarify or expand points in their problem definitions.

The analysis, however, could be streamlined by refocusing and clarifying parts of the preliminary framework and by translating the theoretical framework into a more generally applicable and usable process based on the tools and techniques developed in this study. These topics are the focus of the framework evaluation phase which is discussed in the next chapter.

In closing, the preceding analyses have shown that more than a pretty landscape is at stake at Zion Lodge. At Zion, debates about the Lawn and dying cottonwood trees have been masking disagreements over more fundamental concerns about NPS image and culture and diverting attention away from broader interests in ecological integrity and historic preservation.
CHAPTER FIVE

FRAMEWORK EVALUATION AND CONCLUDING REMARKS

In this chapter, I return to the original question and discuss the applicability of a problem-definition approach to environmental decision making. The chapter begins with an evaluation of the analytic framework from an academic perspective and a consideration of the framework as applied to the Zion Lodge problem. Then I discuss practical considerations for using the framework in other situations and suggest further work to refine the problem-definition approach.

Evaluating the Preliminary Framework

Using criteria established in Chapter One, case study results demonstrate how application of the preliminary framework helped clarify how individual stakeholders defined who or what was responsible for landscape problems; how they identified who or what was being harmed; what they think will happen if nothing is done; how they visualize the desired future condition; and how they define successful resolution of the problem. Use of the framework also helped decision makers understand competing visions of the problem and potential solutions; integrate scientific, cultural, and operational knowledge; and present information in a format amenable to identifying commonalities and differences among stakeholder interests.

At Zion, the four problem-definition components provided a useful, well-structured mechanism for ordering each respondent's thoughts in a way that supported individual and comparative analysis. Each component proved helpful, but in different ways. Each component also presented difficulties in application of the framework and analysis of the resulting interview information.

Overall the framework allowed me to uncover a plurality of perspectives and rephrase them concisely according to my understanding of respondents' views. At Zion, respondents tended to
focus on physical features of the landscape, such as lighting, the lawn, and paths, when asked to
describe the future landscape. However, when asked about causes, harms and difficulties, and
evidence, respondents identified a much wider variety of issues. Based on my own training as a
landscape architect, I do not believe that an outside consultant, using a standard design process
to develop a new landscape plan, would have identified the deeper cultural or organizational
issues uncovered through use of the analytic framework. Training in landscape architecture
predisposes a person to focus on design factors, which would influence the interviews,
development of problem definitions, and their analysis. However, the framework and the interview
guide derived from it provide a structure that keeps a researcher focused on respondents' words
and perspectives, not on preconceived notions.

By focusing positively on interests, the framework helped depersonalize the debate. Using the
framework shifted the emphasis of discussion away from personalities and positions and toward
interests. As noted in Chapter Two, this shift should foster collaborative decision making.
Respondents' interests, when restated in neutral positive terms, demonstrated that parties to the
Zion impasse held many common and compatible interests, such as deep concerns about
maintaining the NPS image as a conservation leader. Restating divergent interests in neutral
terms set the tone for a less emotional, more focused discussion over a smaller number of issues.

In developing their causal stories, Zion respondents identified who or what they thought was
causing harm. By asking respondents to assign blame, however, the problem-definition approach
potentially could undermine collaboration: blaming makes people angry, fearful, hostile, and
frustrated (Fisher & Ury, 1991). Blaming can become an impediment to decision making when it
hinders dialog over substantive interests of the parties. Blame can also lead people to focus on
manipulating their problem definition, which detracts from addressing people's interests and lets
undesirable conditions continue unabated (Stone, 1989). Understanding who or what causes
harm is not bad per se. In fact, understanding the harms being inflicted on an affected population
is requisite to devising ways to mitigate or remove those harms. The analytic framework helps
resolve an impasse by providing a mechanism for converting those negative statements of blame
into positive statements of underlying interests. For example, respondent ZNP-003 spoke of
causes this way: "I blame the NFS for the current condition of the landscape and for not having a plan. The Lodge landscape has not been a priority for the NFS, and they have not made the concessioner take care of it." I converted this statement into a positive statement of compatible interests shown in Table 11: "making landscape management a priority for both the NPS and concessioner." An analyst should treat causal stories and their assignments of blame as a prelude to identification of stakeholders' interests.

The process of identifying harms began to isolate respondents' interests underlying the Lodge landscape debate. However, respondents alluded to harms and affected populations throughout their interviews, not only when they were responding directly to questions about harms and difficulties. Anyone attempting to use the framework in the future, therefore, must be alert to this possibility, and consider a problem definition as a whole when identifying harms. Note also that harms always point to an affected population. Respondents may be direct and specific when identifying harms and affected populations, such as Zion staff's descriptions of harm to historic cabins caused by termites or exposing visitors to noisy maintenance operations early in the morning. But sometimes harms and affected populations must be inferred from indirect statements. For example respondent ZNP-009 noted that local merchants "screamed" to have lodgings removed from the Park when the NPS prepared an environmental impact statement in the 1970s. From this statement, I inferred that Springdale merchants were an affected population because they felt that they were losing business from competition by concessions within the Park. I restated the original comment in Table 9 as economic harm with Springdale merchants as the affected population. Harms and difficulties also proved to be the most valuable problem-definition component for identifying interests that have no direct physical manifestation in landscape design, such as the previously mentioned economic harm to businesses in Springdale.

Evidence consisted primarily of conditions observed at the site, rather than technical or quantitative documentation, as noted in Chapter Four. There may be several reasons why there were so few referrals to technical studies or other documents. First, questions about evidence and other studies may have been phrased in a way that produced a negative response. Many respondents indicated that the questions differed from or expanded the way that they had
previously thought about landscape issues. With more time to reflect on either the interview questions or their new insights, more respondents may have been able to offer in-depth responses with references to additional documentation to support their perspectives. Second, translating a document-based method into an interview-based method created unrealistic expectations about the types and quantity of evidence that respondents would cite. All of the references used to construct the analytic framework consisted of analyses of voluminous written evidence, such as congressional testimony, legislative histories, and scientific or engineering studies compiled over time periods measured in years and decades. In contrast, information from Zion respondents was collected during interviews that lasted roughly one to three hours each. Third, the Lodge area only comprises about 1% of the total land area of Zion National Park. While it contains the most visitor resources, it contains the fewest natural resources, limited cultural resources, and the most impact from development. Therefore, the lack of hard evidence and study may simply reflect that the Lodge holds less interest for most researchers, who have focused their attention on the more natural conditions found in the back country. Fourth, the few studies that have been performed in the Lodge area may not have received widespread distribution beyond the NPS department that commissioned them. Finally, it’s possible that information from technical reports has been absorbed into the general knowledge base of employees at Zion, who no longer consciously attribute that knowledge to a specific author, report, or study.

As with harms, respondents often embedded or alluded to evidence during discussions of other problem-definition components. For example, respondent ZNP-003 identified poor training of seasonal maintenance staff as a cause when describing current conditions and, at the same time, offered stubs of branches left on trees as evidence. In all interviews, respondents’ answers moved freely back and forth among the four components. During composition of the problem definitions, the framework provided a structure necessary for reorganizing disconnected interview information into a format suitable for subsequent analysis.

Questions about solutions generally elicited concrete recommendations, but visualizing those recommendations in the form of individual site plans made it easier to observe patterns among
the respondents' favored solutions. The process of constructing the plans also suggested the existence of intangible harms that could not be resolved through changes to the landscape.

Overall the preliminary stakeholder analytic framework withstood the test with only a few modifications. The revised framework is presented in Table 14. While developing respondents' causal stories, it became clear that assigning causes to Stone's types and models is part of the analysis, not part of the content. So that attribute was moved from the content (left) side of the table to the analysis (right) side. At the same time, respondents, not analysts, create and manipulate images of the problem, so that attribute moved in the opposite direction (from right to left). Within the harms component, I modified the content side of the table to clarify that each harm must be linked to one or more affected populations. Each affected population must also be described within the problem definition. On the analysis side, I added an attribute reflecting the way the analyst should categorize the types of harms (for example, as economic or physical). Finally, within the evidence component, I added a content attribute related to the sources of information from which respondents derive their perceptions. I made no changes to the favored solution component.

Applying the Framework

Several practical considerations emerged from the Zion case study that affected the feasibility of applying the framework within a nonacademic context. First, the person or group with authority to make a decision must be receptive to other ideas and not entrenched in his or her own position. He or she must be open to collaborative methods in general and responsive to the type of evidence identified by respondents through the problem-definition approach. At Zion, both the new superintendent and new concessions management specialist appeared willing to hear staff perspectives on the landscape problems.

Second, stakeholders must be motivated to move past the impasse, as was the case at Zion. As Mayer (2003) observed, impasses occur because people cannot or will not move forward, at least not with the same approach that led to the impasse, or because the parties derive some benefit from the impasse. In the first instance, the stakeholder analytic framework may provide
<table>
<thead>
<tr>
<th>Problem Definition Component</th>
<th>Problem Definition Content (what the definition says)</th>
<th>Problem Definition Analysis (what the definition does, explicitly or implicitly)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Causal Story</strong></td>
<td>A statement about the undesirable condition's origin that:</td>
<td>The causal story:</td>
</tr>
<tr>
<td></td>
<td>• Describes the current condition</td>
<td>• Invokes imagery of cultural values or world views through language and symbols</td>
</tr>
<tr>
<td></td>
<td>• Identifies specific factors causing the problem</td>
<td>• Emphasizes or reinforces the priorities placed on various personal and cultural values</td>
</tr>
<tr>
<td></td>
<td>• Assigns responsibility for creating the problem</td>
<td>• Demonstrates a comprehensive understanding of the condition and its context</td>
</tr>
<tr>
<td></td>
<td>• Relates important elements of the problem to one another</td>
<td>• Reflects one or more of the types and models of causes proposed by Stone 1989: mechanical, accidental, intentional, or inadvertent types and complex systems, institutional, or historic/structural models</td>
</tr>
<tr>
<td></td>
<td>• Creates an image of the problem calculated and manipulated to gain support for the stakeholder’s favored solution</td>
<td></td>
</tr>
<tr>
<td><strong>Harms And Difficulties</strong></td>
<td>A statement about the undesirable condition that:</td>
<td>Harms identified by the stakeholder:</td>
</tr>
<tr>
<td></td>
<td>• Describes the nature of each harm</td>
<td>• Categorizes the types of harm (e.g., physical, economic, tangible, intangible)</td>
</tr>
<tr>
<td></td>
<td>• Links each harm explicitly or indirectly to one or more affected populations (i.e., who or what is or may be harmed or affected by the undesirable condition)</td>
<td>• Link the problem to effects on core values</td>
</tr>
<tr>
<td></td>
<td>• Describes each affected population</td>
<td>• Establish the problem’s proximity or relevance to people’s interests</td>
</tr>
<tr>
<td></td>
<td>• Describes the extent, severity, incidence, and immediacy of the problem</td>
<td>• Demonstrate knowledge of the relative strength and consequences of competing claims and perspectives</td>
</tr>
<tr>
<td></td>
<td>• Explains the consequences if the problem is not reduced or eliminated</td>
<td></td>
</tr>
</tbody>
</table>

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Table 14 (continued). Revised Stakeholder Analytic Framework

<table>
<thead>
<tr>
<th>Problem Definition Component</th>
<th>Problem Definition Content (what the definition says)</th>
<th>Problem Definition Analysis (what the definition does, explicitly or implicitly)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence of the Problem</td>
<td>A statement about the nature of the harms and difficulties that:</td>
<td>How evidence cited by the stakeholder:</td>
</tr>
<tr>
<td></td>
<td>• Describes objective features of the undesirable condition and its effects on the target population (things that can be observed, measured, or calculated)</td>
<td>• Establishes the correctness of their position</td>
</tr>
<tr>
<td></td>
<td>• Cites objective indicators of the problem's severity using empirical evidence such as polls, surveys, studies, statistics, historical analyses</td>
<td>• Frames the policy debate in objective and technical terms</td>
</tr>
<tr>
<td></td>
<td>• Identifies the sources of stakeholder perceptions (e.g., documentation, archival records, interviews, direct observations, physical artifacts)</td>
<td>• Establishes ownership of the problem by identifying the expert knowledge needed to understand the context and specifics of the problem and, by implication, the solution</td>
</tr>
<tr>
<td></td>
<td>• Explains the triggering event(s), if any, that focused attention on the condition at this time</td>
<td>• Legitimizes certain types of evidence while devaluing others</td>
</tr>
<tr>
<td>Favored Solutions</td>
<td>An actionable statement that:</td>
<td>How the favored solution:</td>
</tr>
<tr>
<td></td>
<td>• Proposes a solution, describing the desired future condition and a course of action</td>
<td>• Establishes jurisdictional or moral ownership of the problem and the solution</td>
</tr>
<tr>
<td></td>
<td>• Assigns responsibility for implementing the solution</td>
<td>• Invites participation by some parties while excluding others</td>
</tr>
<tr>
<td></td>
<td>• Explains how the solution will reduce or eliminate the problem while minimizing negative consequences to related conditions</td>
<td>• Makes assumptions or arguments about how people act or should act that are compatible with past experience, current sentiments, and cultural values</td>
</tr>
<tr>
<td></td>
<td>• Provides measures of success (criteria) to gauge whether the solution has achieved its intended results</td>
<td>• Focuses on ends or means through use of instrumental or expressive language</td>
</tr>
<tr>
<td></td>
<td>• Describes resources needed to implement the solution</td>
<td>• Redistributes power or wealth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Meets the test of availability, acceptability, and affordability</td>
</tr>
</tbody>
</table>
the change in methods that a group needs to move forward. In the second, some factor outside
the framework must change that to remove the benefits of impasses.

Third, the organization must be willing to commit its time and resources to using the problem-
definition approach. Problem-definition theory offers a way to clarify interests because it
integrates stakeholder perspectives on problem causes, evidence, harms and difficulties, and
solutions. Unlike quantitative research, however, there are no set formulas for translating
qualitative research interviews into usable information. Kvale's six steps of analysis imply a linear
progression from interview through problem definition to interests. Figure 4 began to capture the
iterative nature of interpreting qualitative research interviews and problem-definition analysis. The
analysis required multiple passes through respondents' problem definitions with periodic checks
against the original interview notes. Key insights emerged at different times and usually led to a
reexamination of the problem definitions (Figure 11). In fact, the Zion study required at least
twelve complete passes through all fifteen problem definitions: one pass for each of the four
problem-definition components; for comparing design approaches; for identifying each
respondent's perspective on sustainability, ecological integrity, historic character, and visitor
perspective; for clarifying ambiguous meanings of the Lawn and trees; and for articulating
respondents' positions with respect to the landscape. Furthermore, each component provided
different clues to a stakeholder's position, interests, and values. At Zion, it was tempting to
bypass these time-consuming, tedious, multiple, in-depth examinations of respondents' problem
definitions. However, strict application of the analytic framework prevented a jump straight to
design solutions. As a result, the study uncovered concerns with organizational culture, NPS
image, and managerial concerns, whereas a more typical landscape-design approach probably
would not have identified these intangible harms and interests.

Fourth, as noted earlier, a problem-definition study should be conducted by a person
perceived as fair and neutral by parties to the impasse. Ideally, that person would be familiar with
interview and the other qualitative-research techniques similar to those used in this study. In
addition, it helps if the person conducting the study had some familiarity with management
Began the analysis with respondents' problem definitions

Struggled to compare and make sense of the problem definitions

Completed comparison and analysis of problem-definition components

Favored Solutions
Evidence
Affected Populations
Harms and Difficulties

INSIGHT: Respondents were identifying problems with NPS organizational culture that cannot be resolved through landscape design.

INSIGHT: The analyst must transform many negative components of a problem definition into positive statements of interest to support collaborative decision-making.

INSIGHT: Sometimes respondents ascribed multiple meanings to the same landscape feature.

Defined respondent interests

Ended the analysis after identification of respondents' common, compatible, dependent, and divergent interests.

Figure 11. Analysis of Respondents' Problem Definitions. This was a nonlinear process requiring multiple passes through the data, with key insights emerging throughout the process.
structures, processes, and technical subjects related to the organizations experiencing the impasse. For example, my managerial experience in the federal government and my education in natural and physical sciences, the humanities, and design all contributed to the success of this study. I could speak the same technical language, as most of the respondents had similar management experience and could place each individual’s information into a broader context of federal and environmental decision making. In addition, in 2003 I had developed the history of the Zion Lodge landscape and examined its potential as a cultural landscape. My detailed knowledge of the Lodge area aided my understanding of respondents’ references to features, places, and events associated with the Lodge and NPS culture.

Fifth, anyone using the problem-definition approach should understand that information will be incomplete and contradictory. Not every respondent will produce high-quality information for every problem-definition component. Respondents may contradict themselves as well as each other. The person conducting the study must be comfortable with ambiguity and contradiction. Finally, an impasse results from and may generate new negative feelings and communications. Researchers risk exacerbating an impasse if they focus too long on negative aspects of a problem—that is, causes, blame, and harms. A researcher’s most valuable contribution to environmental decision-making may well be the translation of negative and contradictory problem definitions into more neutral and less emotional statements of interests and clarification of real points of disagreement among affected parties.

Adapting to Nonacademic Settings

One weakness of the case study method is its potential for over complication because case studies concern themselves with real-life context (Groat & Wang, 2003). An academic study, such as this test of the problem-definition approach to stakeholder interests, seeks complexity and complication as a more robust test of theory. However, I suspect that managers do not have resources to devote to in-depth analysis, and they would welcome a more streamlined version of the method used in this study. For example, if you were an NPS manager with limited resources, it is unlikely that you would be willing to devote over eight months of staff time and significant
amounts of funding to develop an in-depth analysis of a single problem. It is more likely that you would settle for a more limited understanding of stakeholder interests and a timely approximation of these in-depth results.

Lessons learned at Zion National Park suggest that a users’ guide to the stakeholders’ analytic framework could be developed to help organizations conduct more streamlined studies more economically in terms of time and resources. This guide should provide:

- A short succinct summary of problem-definition theory sufficient to understand concepts behind the stakeholder analytic framework, derived from the literature review in Chapter Two.
- Guidance for conducting a scoping phase to develop familiarity with parties to the impasse, the general nature of the problem, and readiness of the organization to move forward past the impasse, similar to the initial site visit described at the beginning of Chapter Four.
- Templates, samples, and advice for constructing a sharply focused semi-structured research interview guide, selecting respondents, and conducting stakeholder interviews, primarily based on the method in Chapter Three and materials in Appendices One and Two.
- Techniques for constructing and analyzing simplified stakeholder problem definitions derived from materials presented in Chapter Four.
- Standard templates, samples, and advice for presenting results, also based on Chapter Four and the appendices.

A users’ guide should also address decision makers’ needs. It should illustrate how they might use information that comes out of the problem-definition approach. The Zion study results, for example, position the NPS to take additional steps towards resolving the impasse over sustainable landscape design as well as improving its overall management processes and image. For instance, interests listed in Table 11 related to NPS organizational culture and image could readily be converted into organizational goals and inserted into strategic or annual plans. Park managers could select approaches to the Lodge landscape embodied in divergent interests
(Table 12) or favored solutions (Appendix II) as the basis for design alternatives or environmental assessment. Dependent interests (Table 13) could serve as a checklist of features and characteristics that differentiate among alternative designs for assessing tradeoffs and the environmental impacts of those alternatives.

The framework and its users' guide should be tested in a broader range of applications, encompassing different types of organizations, different types of problems, and different analysts. Testing might begin with a few pilot tests. Pilot testing might take the form of role-playing, in which a person familiar with an environmental problem assumes the personae of different stakeholders and defines the problem from each one's perspective. Problem definitions would then be constructed, analyzed, and presented in accordance with the users' guide. Feedback from pilot tests could then be used to fine-tune the guide and apply it to a range of problems involving other federal or state land-management agencies and stakeholder groups that include external parties to the impasse, as well as agency personnel. Any land-based project likely to create conflict could serve as a venue for testing the framework, such as development of local and regional land-use plans, design guidelines and standards for improving highway aesthetics, management policies for off-highway vehicle use, or principles for preserving the character of historic neighborhoods.

Although the stakeholder analytic framework was developed to resolve existing impasses, its potential for averting conflict and impasses also should be explored. For example, at public meetings, stakeholders could provide briefings or statements of their interests organized according to the four problem-definition components. That might help ensure that a wider range of opinions were heard and not just those of the dominant members of the group. Likewise, it would focus dialog on interests and shift the emphasis of meetings away from personalities or positions. A problem-definition approach should help avoid or minimize the time spent on conflict and impasses and lessen confrontation and delays in environmental decision-making.

Concluding Remarks

Environmental problems do not exist on their own; they are socially constructed. Someone has to define a problem and then persuade others that it requires policy decisions and
management action. Nor is problem definition a purely technical activity. Problem definitions are always explicit or implicit statements of values. When stakeholders develop problem definitions based on their own assumptions and interests, decision making becomes a conflict between their different values and perspectives (Liberatore, 1995; Rochefort & Cobb, 1994b; Wondolleck & Yaffee, 2000). Environmental decision making, in particular, seems predisposed to conflict and impasses because it involves complex technical issues and attracts multiple stakeholders. Stakeholders bring their conflicting perspectives, interests, and values to the table. Decision making, therefore, becomes a balancing of these interests, as there is rarely one right choice or one clear technical solution (Wondolleck & Yaffee, 2000).

But research into stakeholders’ interests using the problem-definition approach embedded in the proposed analytic framework can alter the terms of an impasse over environmental policy. Analysis of problem definitions can frame policy debates and increase understanding of stakeholders’ arguments. A problem-definition approach can encourage stakeholders to visualize and express their interests, priorities, concerns, and favored solutions. It allows stakeholders to test whether other solutions might be acceptable without compromising their core values. And it provides a way for individuals involved in an impasse to let go of a position while retaining personal values inherent in their problem definition.

Finally, a problem-definition approach provides an organizing mechanism for systematically identifying and analyzing stakeholder interests, perspectives, and priorities. The framework is designed to help decision makers find common ground for negotiation and decision making. It is a tool for deconstructing stakeholder interests and perspectives. Using this knowledge, managers, analysts, and decision makers can identify interests that stakeholders hold in common, interests that are compatible, and interests that diverge. This understanding sets the stage for negotiating and developing policy, for planning and design, for making decisions, and, most importantly, for taking actions to protect our natural and cultural resources.
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