Decision-making,

Values, and

Discursive Moments

in Alternative Futures Landscape Planning

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Abstract

The nature of decision-making within Alternative Futures landscape planning and how it shapes the planning process and outcomes is investigated. Alternative Futures is an increasingly widely used landscape planning technique that connects science and values to landscape management decisions in conditions of uncertainty. Although typically characterized as a rational planning process that separates deliberation from decision-making, a different interpretation employing concepts from deliberative planning identifies seven critical time periods, termed Discursive Moments, when deliberation and decision-making are inextricably linked. Analysis of two Alternative Futures projects in the U.S. Mountain West suggests three research findings that clarify the nature of the decisions and the roles of actors and institutions in the planning process.

Key Words

Alternative Futures – Landscape planning – Landscape architecture – Landscape resource management – Scenarios -- Decision-making – Deliberation – Discursive Moments

Preface

The motivation for this study was the increasingly complex debates about landscape resource management in the U.S. Mountain West. As principal investigator for several long-term planning projects, I came to suspect that many controversies had more to do with the nature of decision-making than with the management issues themselves. In particular, the deliberation that led to decision-making seemed to frame and limit what could or could not be discussed while at the same time it pre-determined the range of possible decisions that would eventually be made. It also influenced the relationships between people involved and their willingness or unwillingness to engage the process constructively.

My first exposure to an Alternative Futures project suggested a way to address these concerns by presenting alternatives rather than a single proposed solution. Yet this still emerging method offered several approaches to decision-making that had yet to be studied in detail.

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Abbreviations

EPA	United States Environmental Protection Agency
NGO	Non-government organization
OWEB	Oregon Watershed Enhancement Board
RFP	Request for Proposal
RHAA	Royston Hanamoto Alley and Alley landscape architectural firm
S-#	Interviewee designation for San Pedro case
SALSA	Semi-Arid Land-Surface-Atmosphere report
TRADOC	U.S. Army Training and Doctorate Command
UGB	Urban Growth Boundary
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
W-#	Interviewee designation for Willamette case

Chapter 1: Introduction

Section 1.1 Alternative Futures planning

This thesis examines decision-making in Alternative Futures landscape planning processes in the U.S. Mountain West. Every day people make decisions that have long-term impacts on the land. These landscape decisions affect availability of food, fiber, and minerals; air and water quality; biodiversity; and social interactions among individuals, groups, and nations. However, differing values about and desires for use of lands have led to conflicting agendas and economic and political debates (Weber, 2003; McKinney & Harmon, 2004). Elected officials and staff of public agencies are entrusted to represent and recognize the values of communities when managing decisions through policies, regulations and incentives (Dryzek, 2005a). Science provides information to help them while landscape planning offers tools to help citizens and leaders translate scientific data into policies (Nassauer & Opdam, 2008). Yet all players in this process face constant change and uncertainty about the future.

Alternative Futures, the substantive focus of this thesis, is an increasingly widely used landscape planning technique that attempts to connect science and values to landscape management decisions under conditions of uncertainty (Shearer, 2005). It refers to a landscape planning approach that employs scenarios and describes the future to which each scenario would lead. *Scenarios* are decisions and management actions that hypothetically could take place over time, thus altering the landscape (Hulse, Branscomb & Payne, 2004, p. 325). For example, a scenario could describe extremely heavy urban development in an area over a fifty-year timeframe and include specific decisions and actions that would encourage urbanization over time. The landscape conditions that result from decisions and actions outlined in a scenario are called a *future* (Steinitz, et al, 2003; Nassauer & Corry, 2004; Shearer, 2005). For example, a future could describe such things as the amount of river floodplain that is damaged or restored. Different scenarios lead to different, or alternative futures.

The broader field of landscape planning within which this Alternative Futures model has developed evolved in the United States as part of the landscape architecture profession in the later part of the 19th century and early part of the 20th century (Steiner, 2008). Early practitioners such as Frederick Law Olmsted and Warren Manning focused on open space planning – especially state and national parks – and community and city planning. Importantly, they brought a designer's interest in aesthetics and physical form to their work at these scales (Ndubisi, 2002, pp. 9-14, 243). In the mid-20th century, Ian McHarg of the University of Pennsylvania's landscape architecture program developed the landscape suitability approach (McHarg, 1968). This approach generated overlays, each of which documented and analyzed a discrete landscape system. Compiling the overlays into a composite enabled a more thorough understanding of the interconnected structure of the landscape with an emphasis on ecological systems (Ndubisi, 2002, pp. 34-47). As the landscape suitability approach was advanced (Steiner, 2008), a broader array of systems was added including visual preference, economic drivers, and other human behavior. This was accompanied by improved accuracy of spatially explicit information through computer applications (Ervin & Steinitiz, 2003).

One of the researchers building on McHarg's work, Carl Steinitz of the Harvard University landscape architecture program, is credited with crafting the Alternative Futures method (Steinitz, 1990; Steinitz, 1994; Steinitz, et al., 1996). The approach is a synthesis of various landscape planning approaches that draw from landscape suitability, applied-human ecology, applied-ecosystem and applied-landscape ecology (Ndubisi, 2002). Alternative Futures includes elements of allocation-evaluation models (Ndubisi, 2002, p. 94), but grows primarily out of a design perspective that asks a 'what if' question. This perspective focuses on "moving knowledge along…" (Martin, 2009, p. 64) through abductive thinking that looks for new data points and opens new worlds (Pierce, 1998). Alternative Futures also differs from many resource management approaches in its stronger focus on location in place and emphasis on the synthesis of science and human factors (Steiner, 2008; Ndubisi, 2002). This attention to human agency links Alternative Futures to deliberation and decision-making.

Decision-making in Alternative Futures is typically expert led (Hulse, Gregory, & Baker, 2002; Steinitz, et al., 2003), but the role of the experts in shaping the futures varies widely and there are a number of different models in which experts, decision-makers and other stakeholders interact in different ways. Hulse et al frame the process as science-informed public discourse. Here scientists engage with a range of stakeholders in a structured process of deliberation (Hulse, Branscomb, & Payne, 2004). Steinitz et al. focus on expert led landscape modeling of scenarios and the Alternative Futures they create (Steinitz, et al., 2003). Nassauer and Corry (Nassauer & Corry, 2004) and Nassauer and Opdam (Nassauer & Opdam, 2008) frame the Alternative Futures process in a similar way, as a scientific examination in which the hypothesis is proposed as a normative outcome about desired changes in the landscape that can be tested and validated. This puts the expert in the role of an independent scientist who then transmits the results to decision-makers.

Yet planning processes and landscape management decisions always require public discourse (Forrester, 1999; Demeritt, 1994) in a value-laden context (Flyvbjerg, 2001). Each approach leads to different dynamics between the experts involved, stakeholders, and the institutions which frame the process but there has been relatively little comparative investigation of decision-making and the roles of actors in Alternative Futures processes (Hulse, Branscomb, & Payne, 2004; Baker, et al., 2004). This study aims to improve that understanding in order to enable planners and agencies to choose decision-making approaches appropriate to the unique needs and goals of their Alternative Futures project.

Section 1.2 Research Problem

Current literature on Alternative Futures emphasizes the use of science to generate and evaluate scenarios (Palmer, et al., 2004). Scientific models have been used to express a variety of ecological systems and physical processes in Alternative Futures (Berger, 2006; Bolte J. P., Hulse, Gregory & Smith, 2006; Kempner, Semmens, Bassett, Mouat & Goodrich, 2004), including urban expansion into farmlands (Guzy, Smith, Bolte, Hulse, & Gregory, 2008), the connection between specific species and the water table (Sabo, McCluney,

Marusenko, Keller, & Syken, 2008), relationships between hydrological cycles and habitat (Mac Nish, Unkrich, Smythe, Goodrich, & Maddock III, 2000; Serrat-Capdevila, Valdés, Pérez, Baird, Mata, & Maddock III, 2007), and floodplain function (Gregory, Ashkenas, & Nygaard, 2007). Other scholars have focused on the spatial conceptions of landscapes (Opdam, Steingrover, & Rooij, 2006). The literature acknowledges the importance of stakeholder participation (Hulse, Gregory, & Baker, 2002; Nassauer & Corry, 2004; Shearer, 2005; Baker, et al., 2004, p. 314), and studies have investigated the role of vision and worldview as influences on the envisioning process (Costanza, 2000), the use of a strategic choice methodology (Khakee & Stromberg, 1993), the process of developing of scenarios (Lui, et al., 2008), and decision-making through scenario development processes (Shearer, Mouat, Bassett, Binford, Johnson, & Saarinen, 2006).

However, the deliberative dimension in Alternative Futures has received only limited critical attention (Shearer, 2005; Hulse, Branscomb & Payne, 2004). While these scholars introduce questions of deliberation into the Alternative Futures literature, the disputed nature of landscape management and its growing significance for social wellbeing suggests the need for greater understanding of decision-making in Alternative Futures processes. This understanding is needed to manage the contested public process involved in making landscape management decisions so that planners and agencies can better anticipate the decisions that need to be made and when they should be made. Without such knowledge and insight, it is much harder to manage stakeholder participation effectively and know how to prepare participants for the kinds of decisions needed during each specific phases of the process. Most important, without this understanding planners and agencies lack the tools to consciously choose decision-making approaches appropriate to their unique needs and society's values and to design their projects accordingly.

Section 1.3 Research Question

This thesis therefore asks: what is the nature of decision-making within Alternative Futures landscape planning and how does it shape the planning process and outcomes? Specifically, it asks when and how important decisions are made, who makes them, what are the relationships between those involved in making decisions, and what consequences the decision-making has for the overall planning process.

Two key terms used throughout the study are decision-making and deliberation. *Decision-making* refers not only to ultimate policy decisions made by public officials and agencies after the Alternative Futures process is complete, but also to decisions made by agencies, planning teams, and stakeholders during the Alternative Futures planning process (Dryzek, 2005a). *Deliberation* consists of political dialogue that involves critical listening, inquiring and learning about differences of opinion, and thus "arguing *and* acting together" (Forrester, 1999, pp. ix, 3-6).

The conceptual basis for the investigation is drawn from the theories of communicative planning and deliberative democracy (Dryzek, 2000; Forrester, 1999; Healey, 1996). Communicative and deliberative planning were chosen as the analytical lens because of their focus on the context in which decisions are made. They make use of concepts from critical theory (Habermas, 1970) that seek an understanding of biases, communication, and socially constructed understanding (Leonard, 1990). By using this lens, one can dig deep into decision-making processes.

Deliberative planning seeks reasoned consensus through open processes of discourse. It builds on the turn away from conflict resolution toward collaborative decision-making in recent decades (Dryzek, 2005b; Hajer, 2003; Forrester, 1999; Healey, 1996). A key feature of deliberative planning is the separation of political decision-making from deliberation over possible options for those decisions (Dryzek, 2005a, p. 226). As in deliberative planning theory, Alternative Futures assumes the technical process of developing Alternative Futures

is best carried out separately from the subsequent political process of deciding which scenario to adopt for implementation policies and mechanisms (Hulse, Branscomb, & Payne, 2004; Steinitz, et al., 2003). Thus planning and decision-making are separated into two distinct phases.

This study challenges the premise that decisions should and can be separate from deliberation, arguing this fails to address the many points during planning processes when decision-making takes place implicitly or explicitly. Instead, I suggest deliberation - i.e. the analysis and dialogue surrounding controversial management issues – and political decision-making always intersect and interweave in practice (Walther, 1987; Sharkansky & Friedberg, 2002; Preston & 't Hart, 1999). I argue that decision-making in Alternative Futures planning is inextricably interwoven throughout the whole process of scenario-development to implementation planning and is expressed in a series of crucial time periods. I use the term 'Discursive Moments' – a term derived from its more casual use in discourse analysis (Reed, 2005; Bridge & Manns, 2000; Bislev & Salskov, 2001) – to describe these time periods. Each moment impacts the nature and content of subsequent decision points and hence the outcomes of the overall process. Cumulatively, the moments shape the character of the planning process. Decisions made in the early stages are particularly important. The cumulative impact of Discursive Moments also influences the degree to which the planning process leads to implementable policies that improve environmental outcomes. This re-conceptualization of Alternative Futures as a series of Discursive Moments and the challenge it poses to conventions of communicative and deliberative planning has both theoretical and practical implications.

Section 1.4 Research Objectives and Approach

The research objectives are to:

1. Develop a theoretical perspective drawn from Alternative Futures, communicative planning, and deliberative planning to analyze the nature of decision-making processes;
2. Use this framework to identify the nature of decision-making processes in Alternative Futures planning, critically examining when, how, and who is involved in shaping scenarios and futures; and
3. Investigate the impacts of decision-making embedded in the planning process on the subsequent phases of the process and the planning outcomes.

Insights from deliberative and communicative planning literature (Healey, 1996; Forrester, 1999; Dryzek, 2005a; Hajer, 2003) are applied to critically examine two Alternative Futures projects (Hulse, Gregory, & Baker, 2002; Steinitz, et al., 2003). The research strategy is interpretive and based on a comparative case study design (Francis, 2001; Gerring, 2007; Yin, 2003) to develop deep biographies of each case. The case study provides a systematic investigation (Francis, 2001, p. 16) that directs the logic of investigation and sampling, frames the methods and techniques for data collection, and organizes data analysis (Yin, 2003, p. 14). It is employed to ask how and why conditions exist, especially when examining contemporary events (Yin, 2003, p. 5). The aims of this study are particularly well aligned with a case study design that seeks insight as opposed to description (Gerring, 2007, p. 7) .

Two cases that took place in the U.S. Mountain West in the latter part of the 1990's and early years of the 2000's were selected for investigation. They are the Willamette River Basin in Oregon (Hulse, Branscomb, & Payne, 2004) and the San Pedro River Basin in Arizona and Sonora, Mexico (Steinitz, et al., 2003). These cases were selected because they represent extremes that offer the potential to examine the broad range of decision-making approaches in Alternative Futures projects (Gerring, 2007, pp. 101-102). They provide

controlled heterogeneity in which the planning approach and geographical region remain constant while other variables differ (Yin, 2003, p. 53). Crucially, sufficient research has taken place prior to this study to provide a body of literature that can serve as data (Baker, et al., 2004; Bolte, Hulse, Gregory, & Smith, 2006; Hulse, Branscomb & Payne, 2004; Kempner, Semmens, Bassett, Mouat & Goodrich, 2004; Steinitz, et al., 2003; Toth, et al., 2006; Nassauer & Corry, 2004).

In each case, analysis of interviews with key informants is combined with data from documentary sources to map the interrelationship between deliberation and decision-making in a series of Discursive Moments. The Discursive Moments are: 1) identification of project scope and planning method; 2) selection and assembly of the planning team; 3) determination of the project design; 4) data collection; 5) selection and testing assumptions of scenarios; 6) impacts of scenarios; and, 7) selection of implementation strategies. These moments were developed through a synthesis of the theoretical literature of Alternative Futures and deliberative planning. Analysis of each Discursive Moment in the case studies is informed by six questions that describe the tactics of decision-making. Drawn from both the deliberative and Alternative Futures literature, they are: 1) what is being decided; 2) who is involved in making the decision(s); 3) what kind of communication takes place; 4) the process by which or how decisions are made; 5) what decision results; and, 6) what are the impacts or implications for subsequent phases of the planning process? Within each moment I use concepts of trust, understanding, and inclusion (Cox, Arnold, & Tomas, 2010; Bryson, Crosby, & Stone, 2006; Healey, 1996; Forrester, 1989) to indicate the degree of deliberation in relationships between players. Taken together with questions from the deliberative literature, Discursive Moments therefore provide the theoretical framework that drives analysis of decision-making in the Alternative Futures case studies.

Section 1.5 Layout of the Study

Chapter 2: Theoretical Framework introduces the theory of scenario-based studies and Alternative Futures, and four basic components of Alternative Futures projects are defined

(Hulse, Branscomb, & Payne, 2004). The deliberative and communicative planning literature is traced to Habermas' concept of communicative rationality (Habermas, 1991-1992) and is contrasted with expert driven approaches grounded in an instrumental rationality common to choice theories (Boston, 1996). The Discursive Moments are then synthesized and developed from an examination of processes found in the Alternative Futures and deliberative and communicative planning literature. A theoretical framework is developed as the lens to select, collect, sort, and analyze data so it can be applied to the research question. The framework is presented at the end of the chapter.

Chapter 3: Methodology describes the interpretive approach and its use as a research strategy. The case study design is explained as well as the justification for choosing these particular cases. Specific interview methods and techniques are described as well as ways of assuring the confidentiality of interviewees. Three phases of the study are explained as documentary analysis of cases, comparative analysis of cases, and theoretical reflection and conclusions.

Chapter 4: The Willamette Basin, Oregon and Chapter 5: Upper San Pedro River Basin, Arizona and Sonora, Mexico present the case studies. Each chapter begins with a general overview followed by a description of the decision-making approach. This is followed by an analysis of deliberation and decision-making during each Discursive Moment and their impacts on subsequent phases of the project. A final section summarizes the decisions and decision-making approach in each case.

Chapter 6: Discussion and Conclusions restates the research question and proposition. This is followed by an examination of research findings. Original contributions to Alternative Futures are highlighted. The chapter concludes with a summary of theoretical and practical significance and suggests further research questions raised by the study.

Chapter 2: Theoretical Framework

Section 2.1 Introduction

This chapter outlines the theoretical framework for the investigation and explores the proposition that Alternative Futures landscape planning combines deliberation and decision-making in a series of Discursive Moments whose character and cumulative effects shape the outcomes of the overall process. Section 2.2 introduces the history of scenario-based studies, and develops the definitions of scenarios and Alternative Futures more fully as used in the Alternative Futures process. Finally, the four components basic to all Alternative Futures projects are described. Section 2.3 examines the roles of institutions and actors and why they are important in Alternative Futures. Section 2.4 introduces key concepts of deliberative planning drawn from critical theory. Questions derived from the deliberative and Alternative Futures literature are proposed that analyze the character of deliberation in each Discursive Moment. Key concepts of trust, understanding, and inclusion are identified that indicate the degree of deliberation. Section 2.5 describes approaches to deliberation in the Alternative Futures literature. Components of these approaches are synthesized into seven Discursive Moments. Section 2.6 combines the Discursive Moments and questions in earlier sections to create the theoretical framework used in later chapters to select, collect, sort, and analyze data so that it can be applied to the research question. Section 2. 7 summarizes the chapter.

Section 2.2 Scenario-based studies and Alternative Futures

Alternative Futures planning approaches employ scenarios to apply science to landscape management problems (Palmer, et al., 2004; Nassauer & Corry, 2004). Scenario-based studies have a history dating back to at least the 1950's when Herman Kahn used the term to identify long range depictions of the future concentrating on "causal processes and decision points" (Kahn & Weiner, 1967). While Kahn envisioned scenario-based studies for a wide range of applications, planners have adapted them to aid resource management

decision-making. In defining scenarios, Shearer identifies four common principles: 1) they are fictional descriptions of processes in the future; 2) the situations they describe are contingently related; 3) they describe what could happen as opposed to what will happen or even is likely to happen; and, 4) they organize information within explicitly defined frameworks (Shearer, 2005, p. 68). Wright et al. expand on this definition with six characteristics of scenarios: 1) they aid understanding of a situation; 2) they enhance creativity; 3) they are process-focused; 4) they require input from multiple actors; 5) they are focused on perceptions and opinions; and, 6) they contain an analytical component that is qualitative (Wright, Cairns, & Goodwin, 2009, p. 323).

Scenario-based studies are rooted in our lack of knowledge about future landscape conditions. While that knowledge is uncertain, it is still very important to us (Shearer, 2005). Most people believe decisions made today by individuals and societies could, and probably will, impact future conditions which we and future generations will inherit. Therefore, a tool that helps visualize possible conditions in the future would be valuable to inform decisions we make today. Scenario-based studies attempt to identify alternative courses of events that could lead to different versions of the future. They are based on assumptions about what actions might take place, but use scientific models to evaluate the impacts of those assumptions (Wright, Cairns, & Goodwin, 2009). By anticipating possible future conditions and time frames, they can assist decision-makers as they choose those actions and make the decisions likely to lead to the desired outcomes (Schwartz, 1991; Schoonenboom, 1995; Samson & Knopf, 1996; Peterson, Cummings & Carpenter, 2003; Hulse, Branscomb & Payne, 2004; Nassauer & Corry, 2004; Kemper, Semmens, Bassett, Mouat & Goodrich, 2004). As Shearer notes, “An approach to help manage the inherent uncertainties of decisions based on assumptions, rather than on facts, is to examine several alternatives of how the future might unfold and compare the potential consequences of different future contexts” (Shearer, 2005, p. 68).

Scenario-based studies help anticipate human impacts on a wide array of environmental and social concerns (Schwartz, 1991; Caza & Kaarik, 1994; Sala, et al., 2000; Tilman, et al.,

2001; Peterson, Cummings, & Carpenter, 2003; Liu, et al., 2008). Thus, as scenario-based approaches, Alternative Futures acknowledge forms of knowledge beyond science, including socio-economic matters.

In landscape planning, scenarios are distinguished from Alternative Futures (Steinitz, et al., 2003; Nassauer & Corry, 2004; Shearer, 2005). *Scenarios* describe different sets of assumptions that underlie potential change in landscape pattern (Emmelin, 1994; Ahern, 2001; Wachs, 2001, Hulse, Gregory & Baker, 2002; Oppam, Foppen & Vos, 2002; Nassauer & Corry, 2004). Normative landscape scenarios describe futures that should exist or are preferable (Nassauer & Corry, 2004, p. 344). They lead to processes of making alternative decisions and actions that could result in courses of events. Therefore, they describe change that could, but not necessarily will, take place over time. As a consequence, scenarios can "inspire policy by providing images of landscapes that could meet societal goals" (Nassauer & Corry, 2004, p. 344). Scenarios result in *futures,* which describe the functional consequences of scenarios (Nassauer & Corry, 2004, p. 344). Thus scenarios can be thought of as processes while futures can be seen as results of processes. In other words, futures can be thought of as potential cross-sections of time that express the functional conditions initiated by alternative scenarios. From this perspective, futures can be analyzed at many different times from near future to very distant future. The future at any given time (the conditions) is uniquely based on the scenarios (assumptions, decisions, actions, and events) that lead to it.

This study differentiates the specific Alternative Futures approach (capitalization intentional) from the more general category of scenario-based studies that identify possible alternative futures (not capitalized). Alternative Futures as used here refers to the specific scenario-based landscape planning approach pioneered by Steinitz (1990) and further developed by a number of research teams (Hulse, Eilers, Freemark, Hummon & White, 1997; Hulse, Branscomb & Payne, 2004; Tress & Tress, 2003; Santelman, et al., 2004; Toth, et al., 2006) with particular attention paid to those studies located in the U.S. Mountain

West. Whenever referring to more generalized, possible alternative futures, the term 'futures' will be used to avoid confusion.

The Alternative Futures approach recognizes both the move toward addressing larger scale patterns and processes and the concept that human beings create the future through decisions and actions (Hobbs, 1997). Alternative Futures projects employ scientific knowledge of landscape pattern, structure, and function to identify the trajectory of landscape change (Baker, et al., 2004), identify pathways towards desired future conditions (Shearer, Mouat, Bassett, Binford, Johnson, & Saarinen, 2006, p. 362) and evaluate the impacts of landscape change on places and conditions that communities value (Baker, et al., 2004, p. 315). Alternative Futures studies rely on public values to construct the assumptions upon which scenarios are based (Hulse, Branscomb & Payne, 2004). The advantage and appeal of identifying multiple futures, rather than proposing a singular outcome, is it can accommodate a range of assumptions where knowledge is uncertain and enables comparative evaluation of alternative solutions. To begin to understand the nature of decision-making, it is helpful to review existing literature on Alternative Futures.

There is a rich history of analysis of Alternative Futures planning approaches based on a number of studies completed by a range of researchers including Steinitz in Pennsylvania (Steinitz, 1994), California (Steinitz, Binford, Cote, Edwards, Jr., & Ervin, 1996), Las Paz Mexico, (Steinitz, et al., 2005), and Arizona and Sonora, Mexico (Steinitz, et al., 2003); Toth in Utah (Toth, et al., 2006); Hulse in Oregon (Hulse, Eilers, Freemark, Hummon, & White, 1997; Hulse, Gregory, & Baker, 2002); Santelman in Iowa (Santelman, et al., 2004); Price in Illinois (Price, et al., 2003); and others. In each study, the potential ecological and human impacts and patterns of futures are spatially described so the relative merits of futures can be compared.

Although these teams vary in approach, Hulse et al. identify four common components: "1) defining future scenario assumptions, 2) depicting spatially explicit alternatives through land and water allocation models using parameters from scenario assumptions, 3) modeling

the effects of alternative land and water use patterns on key natural and cultural resources…, and 4) producing synthesis products which characterize the differences between the alternatives" (Hulse, Branscomb & Payne, 2004). Although Hulse et al. refer specifically to land and water systems, any landscape system can be modeled.

Section 2.3 Institutions and roles in Alternative Futures planning

Alternative Futures projects invariably involve a number of institutions including government agencies (Steinitz, Binford, Cote, Edwards, Jr., & Ervin 1996; Hulse, Eilers, Freemark, Hummon & White, 1997; Santelman, et al., 2004), non-governmental organizations (NGO's) (Hulse, Branscomb & Payne, 2004), and professional and trade organizations (Hulse, Gregory & Baker, 2002; Steinitz, et al., 2003). Further, informal institutions arise in landscape management when individuals and groups focus on common issues (Etzioni, 1995; Yaffe, 1996; Wondolleck & Yaffee, 2000; Weber, 2003). However, in this investigation the term *institution* refers to a formal organization for clarity. A great deal of literature contributes to our understanding of institutions (March & Olsen, 1989; Wilson, 2000; Verma, 2007) and actors (Murdoch, 1997; Law, 1986; Latour, 1983; Callon & Latour, 1981). Like all organizations, institutions involved in Alternative Futures projects "develop and implement strategies to meet their objectives" and "deliberate over the strategies that should promote their organizational and political imperatives" (Dalton, Rocchia, & Rohrschneider, 2003, p. 746). Within these institutions deliberation takes place between and among individuals and groups of individuals. Wilson, who refers to these individuals as 'operators', notes "…what operators do will depend on the situations they encounter (what they see as the 'critical environmental problem'), their prior experiences and personal beliefs, the expectations of their peers, the array of interests in which their agency is embedded, and the impetus given to the organization by its founders" (Wilson, 2000, p. 27). These factors comprise the organizational culture. That, in turn, determines the degree of discretion they have in implementing their work. This study uses the term *actors* to refer to entities, either individuals or informal groups, who influence the process.

Proponents of Actor-Network Theory (ANT) have expanded our understanding of actors and institutions. ANT emphasizes the reciprocal impact of actors upon each other (Latour, 1983; Law, 1986; Callon & Latour, 1981). These approaches replace the "human – nature dualism" (Sommerville, 1999, p. 8) with a more fluid interaction of the "social", the "technical" and the "natural" into a seamless web (Murdoch, 1997, pp. 732 - 733). "What the actor-network theorists seek to investigate, then, are the means by which associations between actors and entities come into existence and how the roles and functions of subjects and objects, actors and intermediaries, humans and non-humans are attributed and stabilized" (Murdoch, 1997, p. 69). This understanding of actors is especially instructive when examining Alternative Futures planning processes because of the complex web of government and non-government institutions, the planning team, and stakeholders, not to mention natural and cultural systems as well as existing policies and laws.

These references to deliberation in the literature on institutions and actors suggest a need to better understand deliberation in Alternative Futures. The increasing popularity of Alternative Futures studies as a tool for management of public lands in the U.S. Mountain West makes this need all the more pressing. Therefore, the next section identifies key deliberative concepts drawn from critical theory that provide a theoretical structure on which to base this investigation.

Section 2.4 Discourse and deliberation in the planning process

A growing body of planning theory highlights the importance of vigorous and open processes of discourse and deliberation in collective planning processes (Healey, 1996; Forrester, 1999; Dryzek, 2000; Dryzek, 2005; Hajer, 2003). The deliberative planning approach considers planning as a process of discourse rather than a process of technical problem solving or imposed regulation (Forrester, 1999). It draws upon critical theory (Forrester, 1993), a philosophical premise that seeks greater rationality in communication (Habermas, 1991 - 1992), in which all views and perspectives are given voice free of power bias (Leonard, 1990; Dryzek, 1987; Dryzek, 2000)

Critical theory has been particularly helpful to those planners seeking to comprehend the sometimes-controversial public process of making decisions that shape the physical environment. Max Horkheimer first used the term critical theory in the essay, "Traditional and Critical Theory" (Horkheimer, 1982). In its original form, critical theory focused on reaction against orthodoxies within disciplines that intended to simply describe the world as it really is. Critical theory claimed any understanding of the world is based on biases, communication, and socially constructed understanding (Leonard, 1990). Thus, in its original manifestations as well as its many permutations today, critical theory tends to focus on injustice, emancipation, and societal change. Among other disciplines, the theory has been applied to feminism, theology, and planning (Leonard, 1990).

In planning, John Forrester observes critical theorists study selectivity, ideology, inclusion and exclusion, power, and representation (Forrester, 1989). He notes that, "...social beings construct their meaningful worlds through language and myth, ideology and tradition, through systems intertwining knowledge and power" (Forrester, 1999, p. x). This interest in interrelated systems of language, myth, tradition, knowledge and power has led Forrester and others to pay special attention to discourses in the planning process.

"A discourse is a shared way of apprehending the world" (Dryzek, 2005, p. 9). Based in communication, especially language, discourses assemble information into descriptions of meaning, accounts, and stories (Foucault, 1972). As Habermas notes, "Language mediates and shapes the interaction and presupposes agreement on a range of claims about ourselves and the world" (Habermas, 1989, p. 17). Thus one can examine storylines that are 'spoken' by individuals or groups. Storylines are associated with political power in that they can be used by individuals or groups to control the discussion, allow or not allow certain information to be used, persuade others, or get their way (Forrester, 1989). Discourses also reveal worldviews that organize social life, including planning processes (Thompson, Ellis, & Wildavsky, 1990). Critical theorists acknowledge all communication is influenced by the point of view of the speaker. Yet they believe it is possible to be aware of one's own and other's biases so mutual understanding is possible (Forrester, 1989, p. 140).

Habermas' concept of *communicative rationality* in an *authentic public sphere* provides an instructive framework from which to understand this process (Habermas, 1984). This concept, developed in a series of publications (Habermas, 1970; Habermas, 1971; Habermas, 1973; Habermas, 1981; Habermas, 1989), builds on his idea of the public sphere in which individuals autonomously interact, "consider what they are doing, settle how they will live together, and determine … how they might collectively act" (Keane, 1984, pp. 2 - 3). An authentic public sphere is one in which the *ideal speech situation* exists, that is, where "discourse proceeds among actors with equivalent degrees of 'communicative competence'" (Keane, 1984, p. 3).

The ideal speech situation is unconstrained in the sense of being free from "domination, self-deception, and strategic interaction" (Dryzek, 1987, p. 660). The ideal speech situation in the public sphere depends on *disinterested discourse* (Dryzek, 1987, p. 662) among an informed public (Habermas, 1962; Held, 1980, pp. 260 - 263). Disinterested discourse, in turn, relies on *generalizable* rather than *particular interests*. "A generalizable interest exists beneath the surface of misconceptions of actors. In offering an argument on behalf of a candidate for generalizable status, an individual is in effect claiming it should be a moral law, to which all rational, uncoerced, and knowledgeable individuals would subscribe in the situation at hand" (Dryzek, 1987, p. 675). Particular interests, on the other hand, represent the specific interests of individuals or groups without respect to the interests of other individuals or groups. Particular interests are not particularly bad; they are simply limited because they represent only one of many points of view. When people engage generalizable interests, they transcend their own particular interests to take into account the interests of others. In doing so, they make it possible to find solutions that are agreeable – or at least tolerable – to the entire group. The ideal speech situation depends on reasonable, rational argument as the only means of resolving differences. Or, in Habermas' words, "All that counts … is 'the forceless force of the better argument'" (Dryzek, 1987, p. 665). Deliberation is, therefore, "the mild voice of reason" (Bassette, 1994, p. 2). Habermas calls solutions based on communicative rationality *reasoned consensus* (Dryzek,

1987). Reasoned consensus does not require everyone to agree or even like the eventual decision. Rather it means after consideration of all points of view, participants can live with a given course of action as the best course given the situation.

Habermas' concept of communicative rationality can be critically compared with the instrumental rationality found in various other theories that see little hope for reasoned consensus. Public choice theories (Buchanan & Tullock, 1962; Michell, 1988; Niskanen, 1971; Olson, 1965) propose, "... all human behavior is dominated by self-interest. Individuals, in other words, are rational utility maximisers… Following this approach, voters can be likened to consumers; pressure groups can be seen as political consumer associations or sometimes as co-operatives. Political parties become entrepreneurs who offer competing packages of services and taxes in exchange for votes; political propaganda equates with commercial advertising; and government agencies are public firms dependent upon receiving or drumming up adequate support to cover their costs… Further, concepts like 'public spirit', 'public service', and the 'public interest' have not figured very prominently in the public choice literature" (Boston, 1996, p. 17). These approaches emphasize limitations on government so powerful interest groups cannot take control. They attempt to 'immunize' government from the dangers of special interests. Agency Theory (Bendor, 1988; Chan & Rosenbloom, 1994; Levinthal, 1998) is one of these choice approaches. Proponents of this theory propose a different form of instrumental rationality in the form of 'contracts' that "minimize the likelihood of violations resulting from opportunism on the part of the agent (e.g. due to shirking, deception, cheating, and collusion)" (Boston, 1996, pp. 19 - 20). In the planning realm, advocates of this approach seek control devices such as zoning and ordinances.

These instrumental approaches see little hope for Habermas' ideal speech situation, disinterested discourse, generalizable interests, and reasoned consensus. Instead they focus on controls that provide protection from self-interest. These controls, expressed in various theoretical approaches, all require experts to define and impose the requirements (Boston, 1996). Yet the concept of *alternatives* in Alternative Futures strongly implies a deliberative

element based in communicative rationality. Figure 2.1 contrasts Habermas' concept of communicative rationality with public choice processes based on instrumental approaches that fail to engage disinterested discourse. I use the term, *interested discourse,* to describe the opposite of Habermas' disinterested discourse. While the deliberative process on the left concludes with reasoned consensus that can lead to shared land use management decisions, the processes on the right hand side almost always result in regulations intended to control particular interests to limit their impact on other particular interests (Kemmis, 2001; Durant, Fiorino, & O'Leary, 2004; Boston, 1996). This raises questions, outside the scope of this study, whether planning outcomes of deliberative processes contain less regulation or different types of regulation, or whether deliberative processes result in more or less litigation.

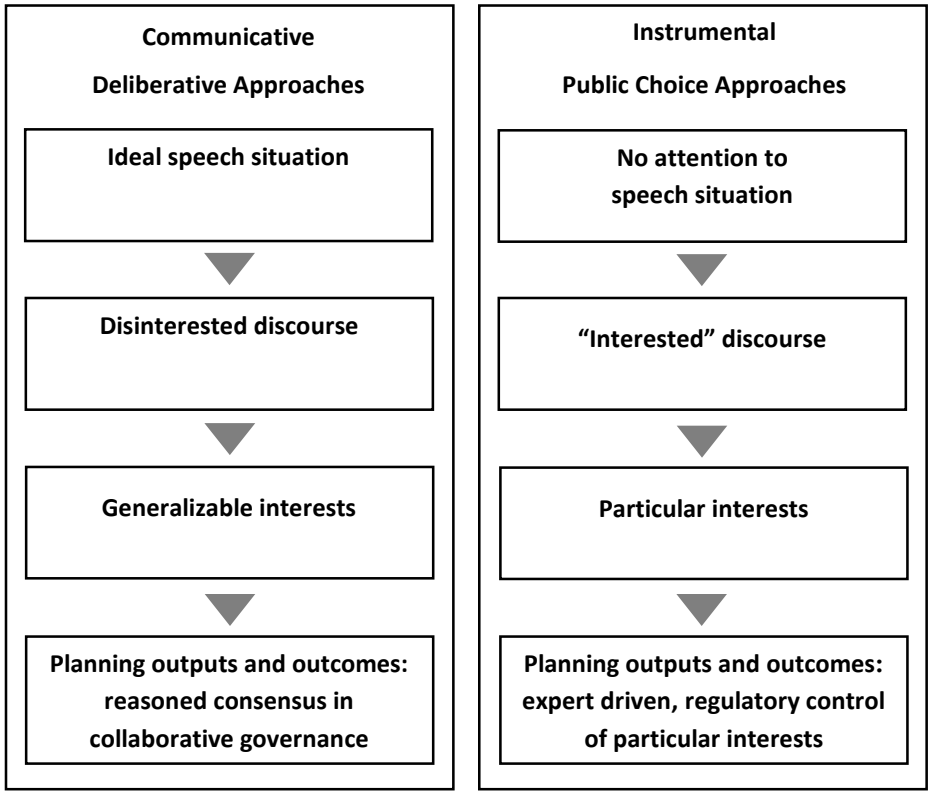

Figure 2.1. A planning model comparing Habermas' concept of communicative rationality within an authentic public sphere to an instrumental rationality common to public choice theories.

Deliberative and communicative planning approaches rely implicitly, and in some cases explicitly, on the concepts of communicative rationality within an authentic public sphere to provide a context for open dialogue free of power biases and other distortions (Dryzek, 1987; Forrester, 1989). Communication can be used consciously or unconsciously to control or influence communication. It can, and frequently does, serve to get or maintain power, control, or influence in the planning setting. Critical theorists seek to isolate and reveal the power involved in this distorted communication by using ordinary communication. This requires the possibility of "mutual understanding" through use of a communication theoretically free from the distortions (Forrester, 1989, p. 139).

Of course, actual human discourse always or nearly always falls short of Habermas' ideal concept of communicative rationality within an authentic public sphere. Habermas offers his concept as a counterfactual device against which empirical observations of communication can be compared. Rarely, if ever, does a planning discourse take place in the ideal speech situation. Both public and commercial actors and institutions tend to perpetuate themselves and extend their power, exclude particular groups, confuse the role of science and technology in political processes, and control and restrict argument and participation in public life (Forrester, 1989, p. 141). People engage generalizable interests to varying degrees and in varying ways. Therefore, reaching a reasoned consensus is difficult. Yet adherents of deliberative planning believe it is possible for people to change their position during the course of the planning process, at least to the extent needed to move forward.

The principles of deliberation serve as useful indicators of the degree of communicative rationality in Alternative Futures discourses. Enumerated by a number of theorists (Bryson, Crosby, & Stone, 2006; Cox, Arnold, & Tomas, 2010; Innes & Booher, 2010), they can be distilled to trust, understanding, and inclusion. Those discourses that more successfully incorporate these concepts fall on the deliberative side toward Habermas' reasoned consensus that results in collaborative governance. Those less successful at integrating these indicators tend to be more expert driven and result in regulatory control of particular interests common to choice perspectives.

Forrester observes *trust* concepts assess "myriad mundane social rituals that provide planners and those with whom they work, with the means of 'checking each other out" (Forrester, 1989, pp. 159 - 60). Dryzek emphasizes deliberative planning is "capable of bringing about reflection in a non-coercive manner" (Dryzek, 2005a, p. 224) so that "only the force of the better argument applies" (Dryzek, 2000, p. 24). "Trusting relationships are often depicted as the essence of collaboration. Paradoxically, they are both the lubricant and the glue — that is, they facilitate the work of collaboration and they hold the collaboration together" (Bryson, Crosby, & Stone, 2006, pp. 47-48). Hence trust is a useful

indicator of Habermas' ideal speech situation and a deliberative approach to landscape planning.

Understanding is an indicator of disinterested discourse. It assures competing values are stated and articulated. Understanding concepts communicate the "clear and obscure language but also the far more subtle questions about the abilities of affected citizens to raise and articulate issues and concerns in the first place" (Forrester, 1989, pp. 159 - 160). They also recognize the way knowledge in general and scientific information in particular is managed (Weber & Khademian, 2008; Forrester, 1989, pp. 240-241; Weber, Memon, & Painter, 2011).

Inclusion requires that planning outputs adequately address the range of competing values. Gutmann and Thompson call for openness to persuasion by critical argument. They also insist the content of the debate as well as the motive of the participant must be reasonable (Gutman & Thompson, 1996). Dryzek calls for "openness of political dialogue" (Dryzek, 1987, p. 664) in which arguments are "capable of linking the particular experience of an individual or group with some more general point or principle" (Dryzek, 2005a, p. 224). Healey refers to the "inclusionary argument" that "accepts the contributions of all members of a political community and recognizes the range of ways they have of knowing, valuing, and giving meaning" (Healey, 1996, p. 219). Cox et al. argue for collective choice arrangements in which individuals impacted by potential decisions participate in setting the rules for deliberation (Cox, Arnold, & Tomas, 2010). *Inclusion* therefore provides an indicator of generalizable interests.

Figure 2.2 aligns these three principles from the literature with Habermas' concept of the authentic public sphere.

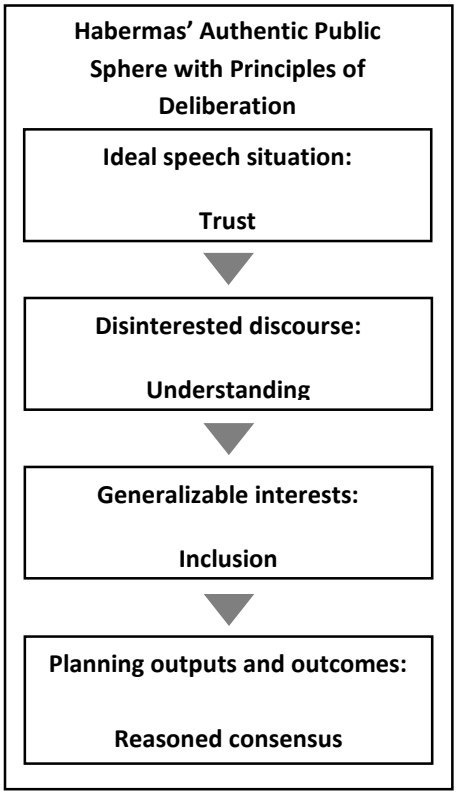

Figure 2.2. Principles of deliberation added to Habermas' concept of the authentic public sphere.

If one were to draw a continuum with extremes representing highly deliberative approaches on the one side representing communicative rationality and those strongly expert driven representing instrumental rationality on the other side, the key indicators of deliberation – trust, understanding, and inclusion - would serve as the theoretical filter to determine where on that continuum discourses occur. Figure 2.3 illustrates how the key indicators were used as the theoretical filter along the continuum in this study.

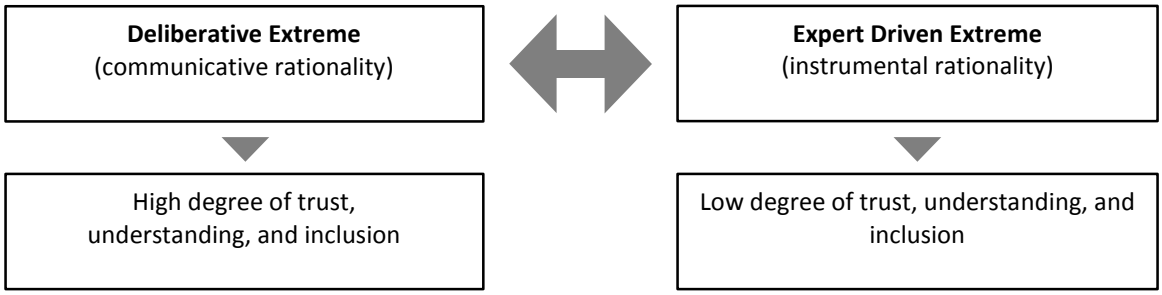

Figure 2.3 Theoretical filter used to determine location of discourses on the deliberative continuum.

Dryzek promotes the separation of deliberation from decision-making in an effort to foster authentic communication (Dryzek, 2005a) arguing deep differences in preferred outcomes can be deliberated partially by separating "the deliberative and decisional moments of democracy, locating deliberation in engagement of discourses in the public sphere at a distance from the sovereign state" (Dryzek, 2005a, p. 226). He bases this on the assumption that public decision-making is an all or nothing endeavor. Decision-making, therefore, has no room for the back and forth dialogue that takes place in democratic deliberation. Further, voting blocs tend to seek to reinforce their identity in the all or nothing decision-making process. By separating deliberation, one allows for a more nuanced set of proposals that are more likely to be informed by reasoned argument. This approach also reflects the traditional separation of executive administration whose role is to advise from the decision-making role of elected bodies (Preston & 't Hart, 1999).

However, separating decisions from deliberation fails to address the many points during landscape planning processes when decision-making takes place implicitly or explicitly. Deliberation – i.e. the analysis and dialogue surrounding controversial management issues – and political decision-making always intersect and interweave in practice (Walther, 1987; Sharkansky & Friedberg, 2002; Preston & 't Hart, 1999). Careful analysis of Alternative Futures planning processes reveals both deliberation and decision-making to be iterative. In this sense, Alternative Futures projects represent mega-discourses containing a series of internal discourses, each dependent upon the one before it. Decisions build on each other.

The manner of reaching those decisions impacts future deliberation, which, in turn, impacts subsequent decision-making. Each internal discourse can be seen as a fork in the road with many options for moving forward.

The next section analyzes the literature on Alternative Futures to better understand the nature of these decision points.

Section 2.5 Approaches to deliberation in Alternative Futures

A comparison of approaches in four well-reported theorists of Alternative Futures reveals common patterns of deliberation and decision-making. For clarity, I shorten the nomenclature of the sources to Steinitz (Steinitz, 1990; Steinitz, et al., 2003), Baker/Hulse (Baker, et al., 2004; Hulse, Gregory, & Baker, 2002), Nassauer and Corry (Nassauer & Corry, 2004), and Shearer (Shearer, Mouat, Bassett, Binford, Johnson, & Saarinen, 2006; Shearer, 2005) respectively. Despite individual variations in vocabulary and process, these teams share a similarity of approach relevant to the study. The literature analyzing their approaches is both accessible and plentiful. In this sense, they appear at or near the center of current trends in Alternative Futures theory.

Steinitz poses six questions repeated throughout the Alternative Futures process (Steinitz, 1990; Steinitz, et al., 2003). Each question leads to decisions about how to model the landscape. 1) How should the landscape be described spatially and temporally? Answers to this question are developed into representation models. 2) How does the landscape work functionally and structurally? Answers to this question are developed into process models. 3) How does one know whether the landscape works well? Answers to this question are developed into evaluation models. 4) What would change the landscape (this involves both following the current trend and other possible, accomplishable strategies)? Answers to this question are developed into change models. 5) What differences would the changes cause? Can they be modeled? If so, answers lead to impact models. 6) How is one potential alternative chosen over another? Answers to this question lead to decision models.

The first three questions describe landscape extent and function while the second three address change and implementation. The questions are repeated three times, first in the sequence described to establish the need for the study and identify available and needed resources. The second iteration occurs in reverse order to design the study. The final iteration proceeds in the original sequence to complete the work. The project is designed based on the decisions that need to be made. Thus Steinitz acknowledges the presence of both deliberation and decision-making throughout the planning process, and highlights their interconnections (Steinitz, et al., 2003). Figure 2.4 illustrates the iterative nature of the six questions.

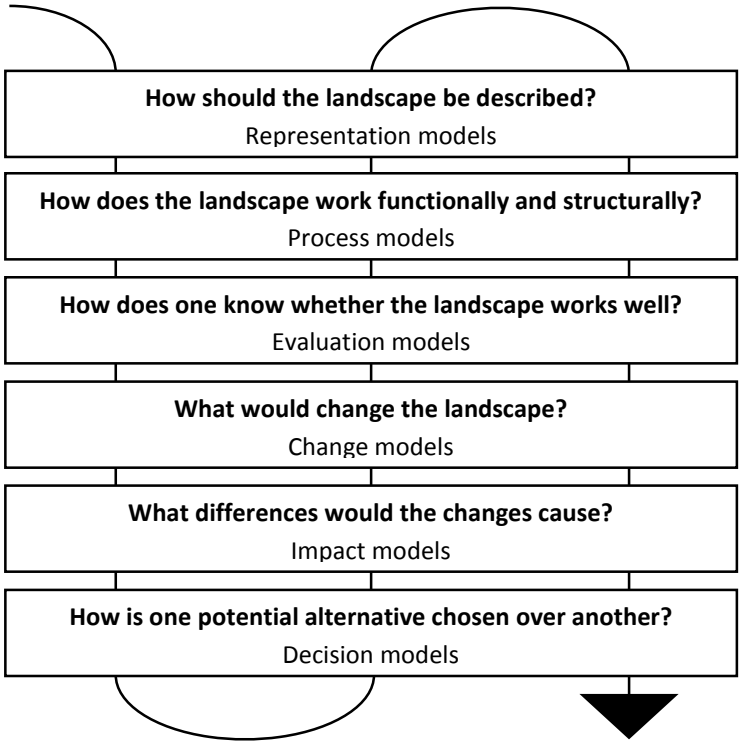

Figure 2.4. Steinitz' six questions used iteratively (Steinitz et al. 2003).

In contrast, *Baker/Hulse* depict four phases in Alternative Futures projects (Baker, et al., 2004). The first establishes a trajectory of landscape change during which ecological and socio-economic systems – described as landscape conditions - are first described in the past and then compared to those of the present. Landscape conditions are spatially and

quantitatively explicit (Hulse, Branscomb & Payne, 2004). The second phase develops scenarios – the assumptions, decisions, and management actions that could take place over time, thus altering the landscape (Hulse, Branscomb & Payne, 2004, p. 325). The third phase evaluates the impacts of potential scenarios, spatially and quantitatively, at given points in time called futures (Hulse, Branscomb & Payne, 2004, p. 326). The fourth and final phase synthesizes the products so the relative merits of each scenario can be examined (Hulse, Branscomb & Payne, 2004, p. 326).

Each of these phases is a period of deliberation and decision-making. Since it is impossible to analyze and spatially model all possible landscape conditions, the first phase, trajectory of change, requires the planning team and sponsoring agency to agree which landscape conditions will form the basis of the study. Phase two, development of scenarios, requires making coherent sets of assumptions while developing scenarios. An example of an assumption would be the relative percentages of development likely to occur within and outside urban growth boundaries. Hulse et al notes a spectrum of approaches in reaching these assumptions (Hulse, Branscomb & Payne, 2004). A central concern is who makes these assumptions (Hulse, Branscomb & Payne, 2004; Gregory & Slovic, 1997; Johnson & Campbell, 1999). Phase three, evaluation of impacts, involves interpretation of data such as determining an appropriate set of characteristics that represent, the attributes of the actor relevant to the model, and a set of actor behaviors that capture the decisions or actions of the actors in the system (Bolte, Hulse & Gregory, 2006). The final phase, evaluation of merits, involves making judgments based on societal values. Figure 2.5 summarizes the Baker/Hulse process.

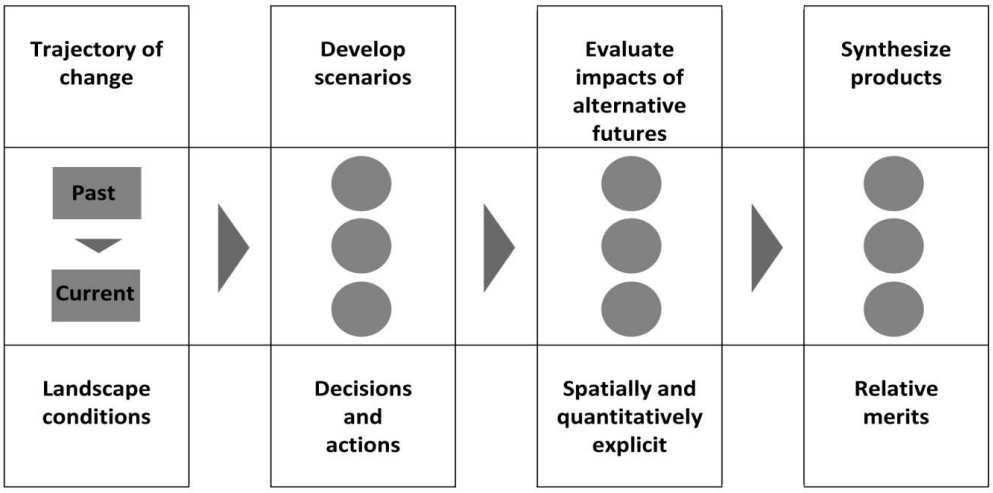

Figure 2.5. Four phases in Baker/Hulse (Baker, et al., 2004; Hulse, Branscomb & Payne, 2004). The top and middle portions of the diagram describe actions in each of Baker/Hulse's phases. In the bottom portion, I describe the outcomes of each phase.

The four phases of Baker/Hulse correlate roughly to *Nassauer and Corry's* four questions for policy makers that, in turn, correspond to four actions for science (Nassauer & Corry, 2004, pp. 345 – 346). The first question, "what is relevant about the existing landscape and it's past?" corresponds to the scientific task of collecting data. The second question, "how should the landscape change?" corresponds to formulating and operationalizing hypotheses. A third question, "what is relevant about how the landscape should change?" corresponds to generating new data. Nassauer and Corry consider this the "heart of normative scenario design" (Nassauer & Corry, 2004, pp. 345) because it is dependent on societal values. The fourth question, "how do they [the alternatives] perform?" corresponds to testing the hypotheses. As in the previous models, this process is iterative and involves stakeholder participation. Figure 2.6 summarizes Nassauer and Corry's questions.

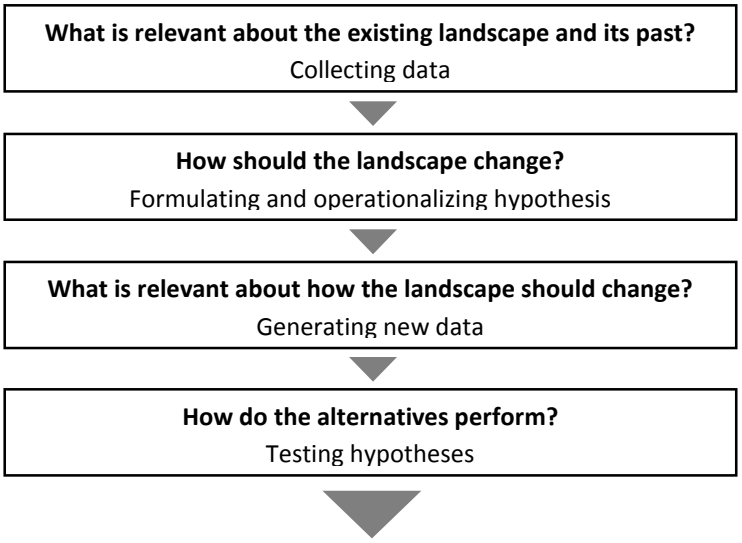

Figure 2.6. Nassauer and Corry's four deliberative questions that correspond to actions in science (Nassauer & Corry, 2004)

Finally, *Shearer* identifies three questions more deeply embedded in the fundamental structure of Alternative Futures studies (Shearer, 2005). First he asks questions of method, suggesting the general approach be examined to look for assumptions about the extent of stakeholder involvement. On a deeper level, he asks whether studies are normative, meaning investigating futures that are preferable such as preservation of biodiversity - or exploratory, meaning simply futures that could happen. Related to this, he asks whether projects rely on deductive or inductive logic. Deductive approaches start with the desired future (landscape conditions) and 'reverse engineer' actions that would lead to those results. Inductive approaches start by describing likely scenarios that lead to a set of future conditions. Shearer next questions the internal logic of Alternative Futures studies. For example, he asks whether a study assumes the processes of development will remain constant. Could, for example, totally new or unexpected development patterns result from a scenario? What if a scenario makes development more attractive in an unexpected location? Does the internal logic account for such changes or does the modeling remain

constant? Finally, Shearer asks whether the context of a study, in the largest sense of that term, is reflected in its design. Figure 2.7 summarizes Shearer's questions.

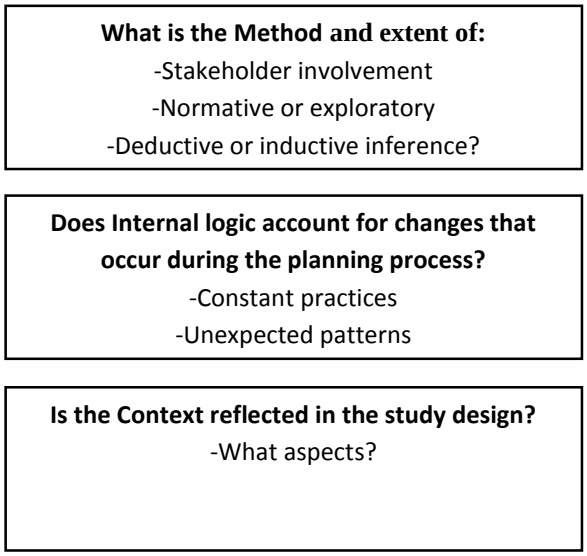

Figure 2.7. Shearer's embedded questions (Shearer, 2005).

Section 2.6 Discursive Moments

Each of the approaches discussed in Section 2.5 acknowledges value judgments that necessarily involve multiple groups and individuals with unique and often differing points of view. Each example provides a vehicle for hearing and, hopefully, responding to competing public demands for resource management, recreation, wilderness preservation, and urbanization. Yet not all perspectives and desires can be acted upon. Each group of researchers demonstrates that deliberation and decision-making are required throughout the planning process to move the project forward. The six questions used to shape the process by Steinitz require iterative debate and decision-making. The periods of interaction in the processes developed by Baker/Hulse and Nassauer and Corry determine detailed assumptions leading to scenario development and evaluation. The questions from Shearer, while not overtly part of the daily planning activities, introduce concepts deeply embedded in the underlying purpose, design, and context framing of the study.

Given the similar emphasis on discourse and deliberation in the four examples, I asked whether it were possible to derive one coherent approach to analyzing decision-making in Alternative Futures. Like many other planners, I see the task of managing the relationships between and among multiple institutions and actors as essentially a deliberative process. As Etzioni observes, "… people need a more deliberative approach to life that balances a sense of rights and responsibilities. They believe that approach is learned, nurtured, and expressed through the institutions of community" (Etzioni, 1995, p. 14). As stated in the research proposition, I argue deliberation and decision-making are integral throughout the alternative making process. Together they determine such things as which public values will construct assumptions and how and when scientific knowledge be applied. Further, I argue the character and cumulative effect of decision-making moments shapes the outcomes of the overall process.

I have synthesized the four examples from the previous section with the deliberative literature to create a new framework for analyzing decision-making in Alternative Futures landscape planning processes. That framework is based on *Discursive Moments*. A number of scholars have used the term 'discursive moment' in discursive analysis when referring to significant junctures in communication (Reed, 2005; Bridge & Manns, 2000; Bislev & Salskov, 2001). In this study, I adapted the term to describe the seven critical time periods when decisions are made that impact all remaining portions of the planning process. Figure 2.8 illustrates the relationship between the seven Discursive Moments, the four examples in this section, and the deliberative literature grounded in Habermas' concept of the authentic public sphere.

Discursive Moments:	**1) Identification of project scope and planning method**	**2) Selection and assembly of the planning team**	**3) Determination of project design**	**4) Data collection**	**5) Selection and testing of scenarios**	**6) Impacts of scenarios (Futures)**	**7) Selection of implementation strategies**
Steinitz			Project design workshop	• How should landscape be described? • How does landscape function? • How does one know whether landscape works well?	What would change the landscape?	What differences would the changes cause?	How is one potential alternative chosen over another?
Baker/ Hulse				Trajectory of change	Develop scenarios	Evaluate impacts	Synthesize products
Nassauer/ Correy				Collecting existing data	Formulating and operationalizing hypotheses	Generating new data	Testing hypothesis
Shearer	Context, method and extent		Internal logic				
Deliberative Literature	Culture, context, internal conditions	Approach outside or inside					

Figure 2.8. Proposed Discursive Moments.

1) *Identification of project scope and planning method:* This moment occurs before the project can begin. Shearer's questions about normative versus exploratory and deductive versus inductive approaches set the framework for the study. Benhabib claims background culture often generates pressing issues (Benhabib, 2002, pp. 108 - 112). "Context counts; content alone is practically meaningless" (Forrester, 1989). The institution(s) must become aware of a landscape management problem. The institution is likely to be motivated by key constituents. Previous studies might have defined underlying goals to be achieved. Bryson et al. call attention to the importance of initial conditions including social turbulence, competitive institutional elements, and structural embeddedness of actors in networks. (Bryson, Crosby, & Stone, 2006, pp. 44-46). During this moment, questions about who decides, and how, may have lasting influence on the nature of communication throughout the project.

2) *Selection and assembly of the planning team:* While this may seem self-evident, the manner of selecting and assembling the planning team can vary widely, as well as the disciplines and institutions represented. The makeup of the team or the manner of selection can impact subsequent phases. For example, a planning team from within the region might be more or less effective in establishing stakeholder cooperation than one "from the outside." "Outside" teams might have a tendency to fit national or international criteria without regard for the uniqueness of the place (Healey, 1998, p. 2). The selection of the planning team can be construed as an act of collaboration or an act of power (Forrester, 1989), thus influencing its reception by local stakeholders.

3) *Determination of the project design:* Although Alternative Futures projects share the four characteristics identified by Hulse (Baker, et al., 2004), each focuses on unique ecological and social issues, incorporates distinctive approaches to stakeholder groups and public agencies, and utilizes its own data management system. Further, the fundamental rationale for approaching scenarios and assumptions is defined during

project design. Steinitz, for example, describes an intensive workshop devoted to making these decisions (Steinitz, 2004).

4) *Data collection:* This moment relies on scientific inquiry and data compilation to establish the existing landscape conditions and trajectory of change occurring to landscape conditions (Hulse, Branscomb & Payne, 2004; Nassauer & Corry, 2004). Data is spatially explicit so it can be mapped (Hulse, Branscomb & Payne, 2004). Because scenarios will propose policies and actions that could cause changes, this data will serve as the baseline for remaining portions of the project. Steinitz' questions about landscape description and function as well as judgments about how the landscape functions will indicate the level of deliberation needed (Steinitz, 1990; Steinitz, et al., 2003).

5) *Selection and testing of scenarios:* During this moment, scenarios are developed and tested to determine if they are plausible (Mahmoud, et al., 2009, p. 800). Although there are an infinite number of possible scenarios, it is only feasible to pursue plausible ones. The makeup of individuals and groups making these decisions and the process involved can determine the number of scenarios, the ease of modeling ecological and cultural systems, and the degree of political acceptance of the report (Hulse, Branscomb & Payne, 2004; Shearer, 2005). Once scenarios are defined, detailed quantitative and qualitative information is developed that will impact the ultimate landscape conditions implied in the scenarios (Mahmoud, et al., 2009, p. 803).

6) *Impacts of scenarios:* Once scenarios are developed and the assumptions tested, new data is generated by modeling potential impacts on landscape conditions of each scenario at given points in time. Nassauer and Corry call this generating new data (Nassauer & Corry, 2004). Baker/Hulse refer to evaluating impacts (Baker, et al., 2004). Steinitz asks what would change the landscape (Steinitz, et al., 2003). This results in futures (hence the term, Alternative Futures) that can be evaluated and compared to each other in the seventh and final moment.

7) *Selection of implementation strategies:* This is perhaps the most difficult moment to examine. Both the length of time required for political institutions to implement decisions and the time required for implementation to result in changes to landscape conditions on-the-ground make it difficult to document on-the-ground environmental change. Nevertheless, Steinitz, Baker/Hulse, and Nassauer and Corry each include a phase that compares futures and evaluates them on the basis of the original intent of the study. While this can be considered a planning output, environmental outcomes on the ground can sometimes be inferred from policies and actions actually taking place and documented in either the literature or the interviews.

Section 2.7 Theoretical framework

This section describes a theoretical framework developed to sort and code raw data during the first two phases of the project, *documentary analysis* and *comparative analysis and synthesis.* This framework was used as a worksheet for each Discursive Moment on each case prior to entering analysis into the thesis report.

From the Alternative Futures and deliberative and communicative planning literature, I synthesized a series of analytical questions that describe the discourse and help determine the degree of trust, understanding, and inclusion of each Discursive Moment. These questions are: 1) *what* is being decided; 2) *who* is involved in making the decision(s); 3) *what kind of communication* takes place, 4) the process by which or *how decisions are made*, 5) *what decision results;* and, 6) *what are the impacts or implications* for subsequent phases of the planning process? While it was useful to ask them separately, the queries frequently overlapped, one question often addressing several others in the line of inquiry. Further, the resulting data (answers) were sometimes nuanced so they spread over aspects of several or all questions combined. Therefore this framework was used as a flexible tool. At times, discussion in one category could have been included elsewhere but was considered under one question for the sake of simplicity and clarity. Whenever possible, a summary discussion of findings for all questions combined was included in the thesis text to identify broad patterns of discourse. Taken as a whole, the answers to these questions

informed the analysis of decision-making in each Discursive Moment. The following paragraphs expand the description of each question.

1. What is being decided? In describing their processes, Alternative Futures authors focus extensively on *what* is being decided at each phase (Steinitz, 1990; Baker, et al., 2004; Nassauer & Corry, 2004). Deliberative and communicative planners seek a more contextualized content. They ask whether there might be unspoken subject matter such as power relationships (Dryzek, 2005a; Forrester, 1989) or place-based issues (Healey, 1998) that underlies the more overt topic. The study addressed both the process content of as described by the Alternative Futures documentation and its deeper meaning alluded to by deliberative planners. The key insights of this study presented in Chapter 6 offer a provisional list of the decisions made during each Discursive Moment.

2. Who is involved in making decisions? Participation of all affected members – inclusion in its largest sense - is a fundamental tenet of deliberative and communicative planning theory (Healey, 1996). Forrester goes beyond inclusion to distinguish "pragmatic criteria by which we can assess public communications and arguments" in order to clarify the planner's role in either perpetuating or correcting distortions in communication (Forrester, 1989, p. 156). This interest in distinguishing *who* is involved is shared in the Alternative Futures literature. Hulse notes, "Who makes these assumptions is central to the mapped patterns that emerge" (Hulse, Branscomb & Payne, 2004).

Nassauer and Corry emphasize the role of testing society's values through hypothesis driven scenarios (Nassauer & Corry, 2004). Presumably, the process provides a mechanism for listening to society. This study focused not only on who gets to speak (or write), but also who requests the input and how they request it. In particular, the role of the institution and the planning team actors was addressed so a broad understanding of *who is involved in decision-making* could be analyzed. This question directly relates to the issue of inclusion in the landscape planning process.

3. What kind of communication? Healey discusses the style of communication and strategies to create new discourses for spatial and environmental change (Healey, 1996, p. 223). She asks what gets discussed and how rooms are arranged, who speaks when, and how conversation is concluded, recorded, and introduced at subsequent meetings. Forrester calls these the rituals of policy discussion (Forrester, 1993). The *kind of communication* in Alternative Futures projects varies greatly and includes surveys (Steinitz, et al., 2003), multiple stakeholder groups and public workshops (Hulse, Gregory, & Baker, 2002), and community presentation forums (Toth, et al., 2006). Further, all Alternative Futures projects rely heavily on meetings of teams of experts, including scientists. The study also explored what deliberative planners call "clear and obscure language but also the far more subtle questions about the abilities of affected citizens to raise and articulate issues and concerns in the first place" (Forrester, 1989, p. 160) and communicative ethics in rules of debate (Dryzek, 1987). The kind of communication, therefore, contributes to the degree of trust, understanding, and inclusion between actors in the planning process.

4. How are decisions made? Weber, a proponent of informal, collaborative forms of governance, identifies influences on *how* decisions are made: formal institutional structure and process, informal institutions such as participant norms, enculturation of virtue, and commitment to broad-based accountability by leadership (Weber, 2003, p. 30). Fisher and Ury strive for objective criteria separate from the interests of each party (Fisher & Ury, 1981). Forrester seeks to distinguish verifiable information that relies on evidence from social and political issues that rely on justification (Forrester, 1989, p. 241). This corresponds to Hulse' careful separation of scientific decisions from those based on social values in Alternative Futures projects (Mahmoud, et al., 2009). How decisions are made relates most directly to understanding, but also impacts trust and inclusion.

5. What decision results? While it seems intuitive to ask what decision results, Steinitz emphasizes the importance of that decision for each subsequent phase of the project (Steinitz, 1990). This study examined whether and how results from each Discursive Moment influenced succeeding planning activities.

6. What are the impacts or implications? Steinitz' sixth question – how is one potential alternative chosen over another – gets to the heart of the question of implementation. Dryzek's suggestion to separate deliberative moments from decisive moments, rejected in this study, nevertheless points toward the political and physical implementation stage. Therefore, an examination of policies, institutions, and actions that would result in on-the-ground environmental change can shed light on the deliberative processes. A key question in this research is whether impacts and implementation are more successful in one or the other of the extreme approaches to decision making (deliberative or expert driven).

Figure 2.9 presents these questions in an analytical framework used for the study. Discursive Moments are aligned along a horizontal axis at the top while research questions align along a vertical axis on the left. The final row at the bottom highlights the evidence to support the analyses. The framework provides a focus for the investigation of literature, planning outputs, and interviews for each Discursive Moment in each of the cases examined. It also enables a comparison between cases to see if differences could provide insight into the research question. Finally, it helps clarify whether and to what degree the principles of trust, understanding, and inclusion were present in discourses. Overall, while analysis and conclusions throughout the thesis are necessarily interpretive, they are grounded in the case based evidence by a systematic application of the framework in Figure 2.9.

Discursive Moments:	**1) Identification of project scope and planning method**	**2) Selection and assembly of the planning team**	**3) Determination of project design**	**4) Data collection**	**5) Selection and testing of scenarios**	**6) Impacts of scenarios (Futures)**	**7) Selection of implementation strategies**
What is being decided?							
Who is involved?							
What kind of communicati on?							
How are decisions made?							
What decision results?							
What are impacts?							
Evidence							

Figure 2.9. Theoretical framework used to inform analysis.

The strength of this framework was its ability to distinguish aspects of decision-making that were related in practice. However while it was useful to ask each of the six questions separately, they needed to be synthesized in order to reach coherent conclusions about decision-making in each case. Therefore, a further layer of analysis was added by applying the indicators of deliberation: trust, understanding, and inclusion. The presence of these indicators pointed to deliberative decision-making processes while its absence suggested more expert driven processes. Evidence of trust included descriptions of meetings and communication styles – Forrester's rituals of planning (Forrester, 1993), Healy's arrangements of meeting spaces (Healey, 1996), and Dryzek's environment of non-coercion (Dryzek, 2005a). Evidence of understanding was expressed by the acknowledgement of both scientific and other forms of knowledge (Weber & Khademian, 2008; Weber, Memon, & Painter, 2011) and the ability of stakeholders to express issues (Forrester, 1989). Inclusion was evidenced by the inclusion of competing values (Gutman & Thompson, 1996), the degree the process addressed individuals affected by potential decisions (Cox, Arnold, & Tomas, 2010), and the extent the process linked concerns of individuals and groups (Dryzek, 2005a).

Section 2.8 Summary

This chapter provided a theoretical framework to investigate decision-making in Alternative Futures landscape planning processes. It identified key questions about the extent to which decisions shape futures and what role those involved play in selecting the alternatives.

Scenario-based studies were defined as long-range depictions of the future based on hypothetical or assumed decisions and actions. Alternative Futures landscape planning is a specific scenario-based approach that defines future scenario assumptions, depicts spatially explicit alternatives, models the effects on key natural and cultural resources, and synthesizes products to characterize the differences between alternatives. Although

Alternative Futures literature acknowledges both deliberation and decision-making, the relationship between them is unclear both in theory and in practice.

The deliberative planning literature suggests three principles - trust, understanding, and inclusion - that summarize concepts from Habermas' theory of the authentic public sphere and can inform analysis of nature of decision-making. Some deliberative planning theorists suggest deliberation should be separated from decision-making. This is accomplished in Alternative Futures by developing scenarios as a tool for subsequent decision-making by other groups. However, this study argues deliberation and decision-making are iterative and inextricably connected throughout the planning process during a series of key time periods. From a careful analysis of the Alternative Futures literature, I identified seven key time periods that I termed 'Discursive Moments', a term derived from the deliberative literature. In each Discursive Moment, the nature of the deliberative - choice continuum is established. The character and cumulative impact of these moments shapes the outcomes of the overall process. Thus a reconceptualization of Alternative Futures that pays attention to Discursive Moments could have profound implications for Alternative Futures theory and practice.

The next chapter describes the methodology employed in the study.

Chapter 3: Research Strategy and Methodology

Section 3.1 Introduction

This study utilizes an interpretive research strategy (Deming & Swaffield, 2011; Gerring, 2007; Weed, 2008; Crotty, 1998) to examine two recent cases in the Willamette River Basin in Oregon and The Upper San Pedro River Basin in Arizona and Sonora, Mexico (Hulse, Gregory & Baker, 2002; Steinitz, et al., 2003). Both cases occur in the U.S. Mountain West. Three sources of data provide evidence: 1) scholarly literature; 2) planning outputs including reports, web pages, and policy outcomes; and, 3) intensive interviews of key informants. The analytical framework, based on the concept of Discursive Moments developed in Chapter 2, is used to sort, code, and evaluate the data.

Section 3.2 describes the interpretive approach and its use as a research strategy. Section 3.3 presents the case study design and provides justification for choosing the particular cases. Section 3.4 provides detailed descriptions of specific methods and techniques employed. It also notes the assumptions and limitations of the methods and the way in which ethical issues were resolved. Section 3.5 summarizes the chapter.

Section 3.2 Interpretive approach

Interpretivism is broadly defined as the "study of human meanings and intentions," but is more narrowly "the attempt to interpret human behavior in terms of the meanings assigned to it by the actors themselves" (Gerring, 2007, p. 214). An interpretive approach "produces knowledge by identifying, naming, and assigning significance or meanings to dimensions, themes, or narratives within a data set (Deming & Swaffield, 2011, p. 51). It is often used to investigate social relationships (Deming & Swaffield, 2011, p. 152.) because "rarely, if ever, does the evidence speak for itself" (Gerring, 2007, p. 70). Gerring notes the social sciences focus on 'decisional behavior' because "actions by human beings and humanly created institutions are not biologically programmed" (Gerring, 2007, p. 70).

The interpretive approach incorporates aspects of both inductive and deductive research strategies on the one hand, and objectivist and subjectivist approaches on the other (Deming & Swaffield, 2011, pp. 8 - 9). Inductive strategies generate descriptions and explanations based on experience and empirical evidence. Deduction bases explanations on theory and systematic testing through experimentation, evaluation, and argumentation. Between these extremes, reflexive outlooks attempt to describe theory and practice interactions. This study utilizes a reflexive approach in that the researcher moves "back and forth between deductive and inductive perspectives, revising their understanding of the evidence (its categories, and its meaning and significance) in light of theoretical concepts and exploring new possibilities of understanding and new ways of knowing" (Deming & Swaffield, 2011, p. 8).

Interpretive strategies also lie between objectivist and subjectivist strategies (Crotty, 1998, pp. 42 - 64). While the objectivist position seeks understanding independent of the investigator, the subjectivist position presumes reality is the product of individuals and society. Objectivist strategies are typically associated with the sciences that attempt to separate the role of the researcher from that which is studied. Subjectivist strategies are typically associated with the fine arts, humanities, and some social disciplines that immerse the researcher in the creation of knowledge. Deming and Swaffield use the term constructionist to describe an intermediate position that is a characteristic of interpretive strategies where "the interaction between the investigators (and their society) and a reality (or realities) ...exists but that can never be known independently of the presumptions of the investigators" (Deming & Swaffield, 2011, pp. 8-9). Figure 3.1 shows the interpretive approach used in this study within Deming and Swaffield's matrix of nine broad research strategies.

	Inductive (theory building)	**Reflexive (theory/practice interactions)**	**Deductive (theory testing)**
Objective	Description	Modeling and correlation	Experimentation
Constructive	Classification	Interpretation	Evaluation and diagnosis
Subjective	Engaged Action	Projective design	Logical systems

Figure 3.1. The interpretive approach lies at the center of Deming and Swaffield's matrix of research strategies (Deming & Swaffield, 2011, p. 9).

This study takes deductive theory building and testing as its starting point but the overall approach lies at the center of Deming and Swaffield's chart. It relies on iterative evaluations that allow for revisions and refinements based on ongoing research (Castells, 1983). The "iterative process of analysis and theoretical sampling" increases "the breadth and depth of the sample of studies being synthesized" (Weed, 2008, p. 19). The investigator is engaged in interpreting the meaning of the data (Deming & Swaffield, 2011, p. 152) and seeking an interpretive synthesis (Weed, 2008, p. 19). "…when theoretical sampling ceases to add any further insights to the analysis, 'theoretical saturation' is assumed to have been reached, and the final synthesis takes place" (Weed, 2008, p. 19). The goal is objectivity without the positivist bent for statistical objectivity on which some proponents insist (Wolf, 1986; Wood, 2000). Thus the researcher searches for 'meaning in context' (Mishler, 1979) in what Weed calls 'meta-interpretation' (Weed, 2008).

The resulting insights are never completely independent of the researcher. Such flexibility allows for exploration of new avenues that can add richness to previous findings and reactions to new ones that arise while staying within the general methodological

perspective established at the beginning of the process. Thus, the research question and proposition can be revised as new data is collected. In this sense, the study and methodology evolve as the researcher 'learns' throughout the project. Nevertheless, a consistent methodological structure is needed to guide collection, sorting, and analysis of information. The concept of Discursive Moments generated in Chapter 2 provides an instrument to analyze and evaluate decision-making in the planning process.

Section 3.3 Case study design

Booth et al. identify three general characteristics of research: arguments, reasons, and evidence (Booth, Colomb, & Wilson, 2003). Each characteristic builds on and supports the previous one so reasons are given for arguments and evidence supports reasons. In this study, these concepts are developed around a case study design derived from Francis, Gearing and Yin to develop deep biographies of each case (Francis, 2001; Gerring, 2007; Yin, 2003) . Case studies are used in many professions including landscape architecture (Francis, 2001, p. 15). "A case study is a well-documented and systematic examination of the process, decision-making and outcomes of a project that is undertaken for the purpose of informing future practice, policy, theory and/or education" (Francis, 2001, p. 16). As a research design, the case study directs the logic of investigation and sampling, frames the methods and techniques for data collection, and organizes data analysis (Yin, 2003, p. 14).

As Deming and Swaffield note, case studies are "particularly well suited for landscape architectural research, as the focus of interest of the discipline is typically complex, multidimentional, and embedded in a wider context, and thus hard to separate discrete factors" (Deming & Swaffield, 2011, p. 84). The aims of this study are particularly well aligned with a case study design in that "The product of a good case study is *insight*" (Gerring, 2007, p. 7) . The case study is employed when asking how and why conditions exist especially when examining contemporary events (Yin, 2003, p. 5). For these reasons, case study is employed as the primary research strategy for this study. More specifically, this study uses a cross-case design (Gerring, 2007, p. 20) comparing two cases. A cross-case design favors breadth over depth (Gerring, 2007, p. 48) in an attempt to represent the

range of possibilities in Alternative Futures projects, yet understands "an example is not a theory" (SP-8, 2010). The selection of the two cases as theoretical samples is discussed in the next section.

The choice of cases:

Two Alternative Futures cases that took place in the U.S. Mountain West in the latter part of the 1990's and early years of the 2000's were selected for investigation. They are the Willamette River Basin in Oregon (Hulse, Branscomb, & Payne, 2004) and the Upper San Pedro River Basin in Arizona and Sonora, Mexico (Steinitz, et al., 2003). These cases were selected because they appeared to represent extremes (Gerring, 2007, pp. 101-102) that provided examples of different types of decision-making ranging from deliberative approaches, drawing on communicative rationality (Habermas), and expert driven approaches aligned with instrumental rationality (choice theories). Therefore, the broadest range of decision-making approaches was represented. Extremes often offer more clear-cut evidence for comparison so insights can be garnered from the analysis. As Gerring observes, "concepts are often defined by their extremes…" thus, "the *methodological* value of this case, and others like it, derives from its extremity (along some dimension of interest), not from its theoretical status or its status in the literature on the subject" (Gerring, 2007, p. 101). Nonetheless, the research design acknowledges that the use of extremes requires a certain caution that allows for more nuanced conclusions in the larger number of actual cases not located at the extremes of the continuum (Gerring, 2007; Flyvbjerg, 2001).

The choice of two cases provided sufficient variety while still limiting the number of variables that can be investigated (Yin, 2003, p. 53). Multiple-case designs avoid the 'all your eggs in one basket' pitfall that can yield limited results. Two-case designs run the risk of coincidental duplication that misses the variety richness in the plethora of available samples. This potential pitfall is avoided by the choice of cases with clearly different approaches to the research question. Therefore, careful attention was made to select cases that "provide insight into a causal relationship across a larger population of cases" (Gerring, 2007, p. 86) . Figure 3.2 shows the location of the two cases in the U.S. Mountain West.

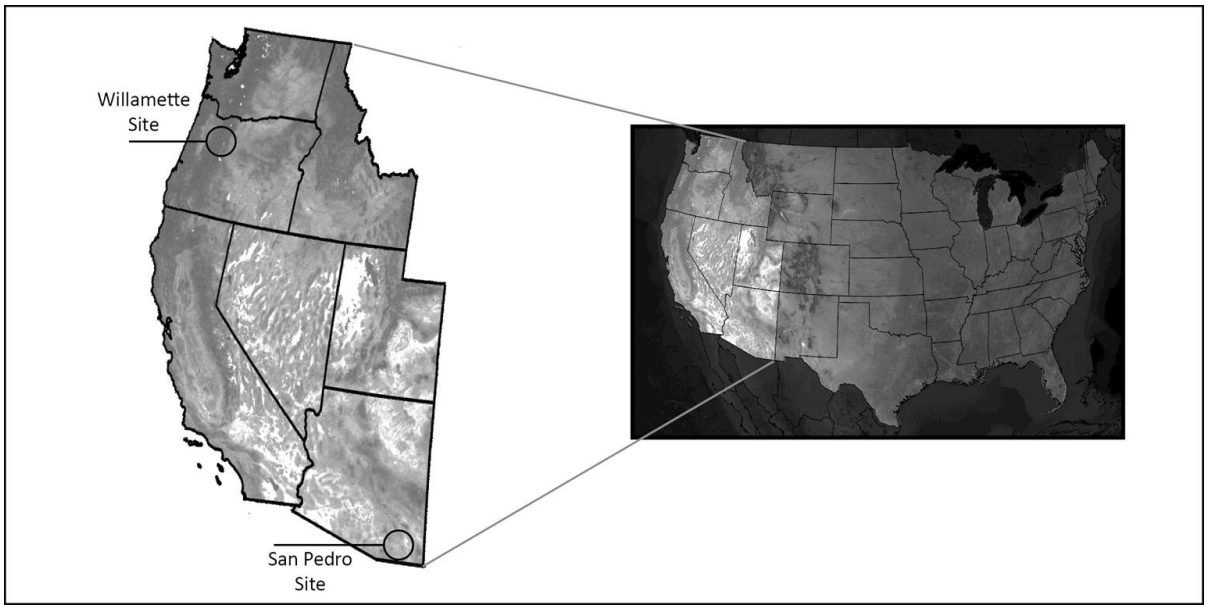

Figure 3.2. Location of two cases in the U.S. Mountain West

Availability of research literature was a final selection criterion. Literature concerning these studies is accessible and relevant to current analysis of Alternative Futures (Baker, et al., 2004; Bolte, Hulse, Gregory, & Smith, 2006; Hulse, Branscomb & Payne, 2004; Kempner, Semmens, Bassett, Mouat & Goodrich, 2004; Steinitz, et al., 2003; Toth, et al., 2006; Nassauer & Corry, 2004).

In summary, the two cases represent extremes that offer the potential to examine the nature of decision-making in Alternative Futures projects. They provide controlled heterogeneity in which the planning approach and geographical region remain constant while other variables differ. Finally, sufficient research has taken place prior to this study to provide a body of literature that can serve as data.

Section 3.4 Methods

The case study design was formulated around three phases, each focused upon a different combination of methods and techniques.

Phase one: documentary analysis and key informant interviews.

This step developed a deep biography of each case. A complex description (Deming & Swaffield, 2011, pp. 77 - 79) of the project was developed from data collected from a broad array of sources including the research report, scholarly articles, web sites, and other planning outputs. These sources not only answered who, what, and when questions related to basic documentation, but also drew connections between theory and case reports. This phase sought a detailed understanding of Alternative Futures issues, definitions, relationship to other scenario-based studies, evidence of discourse and decision-making in Alternative Futures projects and potential constructs for a framework for data analysis.

Step one also included intensive interviews of key informants per case. Also known as unstructured interviews, they were conducted to "elicit from the interviewee … rich, detailed materials that can be used in qualitative analysis" (Lofland & Lofland, 1995, p. 19). The goal was to uncover the interviewee's experience of the project to augment other descriptive sources of data. Interviews were conducted inductively without a set hypothesis to test or theory to which to match data (Seidman, 2006, p. 117).

Five categories of interviews were conducted seeking differing types of information. First, principal investigators and other members of the research teams were interviewed to seek process and content information. Process information was oriented toward management of the process such as how the planning team was selected for the project, who was involved and their roles, which participants would be appropriate to interview, what was the sequence of events, when and where did process take place. Content information as oriented toward issues such as which environmental issues were addressed and why, and what were the environmental outcomes.

Second, representatives from sponsoring agencies were interviewed to concentrate on the seven Discursive Moments in the process. Special attention was paid to the relationship of the institution's impact on the process to the role of individual actors in the process. These interviews sought process information such as how the research teams and stakeholder participants were selected, how the Alternative Futures were chosen, how meetings were

managed, and what implementation strategies emerged both within the institution and more generally.

Third, interviews were conducted with employees of other agencies and NGO's. They sought issues information such as what stakeholder positions were brought forward, how competing interests were considered and addressed, whether individual positions changed during the process, whether consensus was reached, and the role the institution played during each phase of the process. They looked for worldviews, perspectives, interpretations of the process and interested and disinterested discourse. They also sought information about implementation such as who was involved in implementation, and timeframes for that implementation. Interviews inquired what roles the sponsoring institution, other institutions and individuals played during implementation, what issues determined which implementation strategies would be acted upon, and what, if anything, prevented action. Finally, they sought to find out what on-the-ground implement took place and the current status.

In the fourth category, other stakeholders not representing an agency or NGO were interviewed to ascertain how they were involved, how they were contacted, what information was shared with them, and how that information impacted them. This category included members of the business community not representing a professional organization or simply active citizens who were involved in the process. They were especially helpful in describing what Forrester calls the rituals of planning such as meeting time, place, and arrangement of the rooms (Forrester, 1993). Special care was made to inquire about their overall reaction to the process and how it impacted them.

In the fifth category, an independent Alternative Futures theorist not involved in the two cases was interviewed. This interview sought contextual information comparing the two cases and focused on this researcher's understanding of what occurred during each Discursive Moment (the term Discursive Moment was never used nor was the researcher made aware of the Theoretical Framework for the study).

The content of all interviews ranged considerably based on responses during the interview process. In general, interviews sought to understand the interviewees' views about whether one scenario was better than another or whether they expressed their opinions or changed their opinions during the process. These interviews also sought to solidify documentary information such as the degree of compromises, mutual understandings, reasoned or discursive consensus. Figure 3.3 describes the lists the number of interviews in each category.

Type of interviewee	Willamette	San Pedro
Research team members	4	6
Sponsoring agency	3	1
Other agencies and NG0's	2	2
Other stakeholders	1	1
Alternative Futures theorists	1	1
Total	11	11

Figure 3.3. Five categories of key informant interviews.

Potential interviewees were first contacted by email to introduce the project, provide copies of the Lincoln University Human Ethics Committee Research information and release forms, and to establish a time for the interview. Interviews were conducted by telephone. They were not recorded. At the end of the interview, interviewees were asked to identify any participants who might potentially be interviewed to provide further information.

Interview guides were prepared in advance to provide a semi-structured format for the interviews. However, they were used cautiously – interview questions were open ended to the extent possible (Crotty, 1998, p. 83) – so the interviewee remained 'on topic' while still free to bring up whatever information he or she thought was relevant (Seidman, 2006, p. 92). Handwritten notes were taken during each interview. They were transcribed to the computer immediately following the interview. Figure 3.4 shows a typical interview guide

for a research team member. Figure 3.5 shows the outline of interview template from a specific interview with the content removed. Comparison of these documents indicates the degree of latitude within interviews as individuals told their stories.

Initial Researcher Interview Guide:

Date:
Time start:
Time finish:
Name and title of interviewee:
Institution:
Contact information:

Tell me about how the project got started.

- How planning team contacted sponsor or vice versa.
- Project manager contact information and role/relationship. Which office? Frequency and nature of contact?
- Regional or national executive involved in project, role/relationship, contact information.
- Your role in project.

Tell me about the content of the report.

- How did you determine landscape condition in the past and present?
- Were there other reports?
- What were the primary outcomes? What does it mean? How do you know?
- Did any new institutions or interest groups emerge as part of the process? What parts are being implemented? How and by whom?

Which players in the process do you think I should interview to get a full picture of the planning process and issues? Why these particular players?

- Research team
- Team that chose ecological issues
- Stakeholders (individuals and groups)
- Implementation (political) players

Anything else?

Figure 3.4. Typical interview guide.

Intensive Researcher Interview Notes:

Date:
Time start:
Time finish:
Name and title of interviewee:
Institution:
Contact information:

Your role in [this project]:

Selection of the planning method:

Selection of the research team:

Project Design:

Scenarios assumptions:

Implementation:

Government contacts:

Figure 3.5. Outline of interview notes template with the content removed.

During logging of interview notes, verbatim accounts were distinguished from paraphrased recall (Lofland & Lofland, 1995, p. 93). Interview notes also sought to distinguish, to the extent possible, the interviewee's immediate descriptions and observations from the researcher's reflections afterward. Therefore, whenever possible direct quotes from interviewees are included in this report. As a further precaution, the interview format was designed to roughly follow the Discursive Moments. This allowed the logged interview notes to be coded and sorted after the fact into the theoretical framework (Figure 2.9 page 40). By focusing attention on the questions within each Discursive Moment, the story being told could be separated from the researcher's assumptions. Further, the framework emphasized evidence as provided by the interviewee. When evidence was unclear or contradicted expectations, follow-up interviews were conducted to verify and clarify the claim and the evidence. There were two follow-up interviews in the Willamette case and three follow-up interviews in the San Pedro case. Another cautionary task was conducted regarding the possibility of latent (Lofland & Lofland, 1995, p. 115) or misleading information from interviewees. In each case the interviewee was taken at face value meaning it was assumed they were telling the truth as they saw it. This seemed justified since nearly all interviewees were professionals representing an institution. Finally, the concept of saturation was employed to guard against finding only what the researcher wanted to seek (Mason, 2010; Guest, Bunce, & Johnson, 2006). When the same concept arose from several interviewees with differing interests, the concept was assumed to have value.

Interviews sought evidence of the relative presence or absence of key indicators of deliberation – truth, understanding, and inclusion (Figure 2.2). A checklist of evidence for these indicators is shown in Figure 3.6.

Indicator	Checklist of evidence
Trust	• open meetings that encouraged multiple communication styles (Forrester, 1993) • arrangements of meeting spaces that were easily accessible and avoided reserved seating or other arrangements that implied hierarchy, (Healey, 1996) • attempts to avoid the appearance of coercion or bullying (Dryzek, 2005a).
Understanding	• acknowledgement of both scientific and other forms of knowledge (Weber & Khademian, 2008; Weber, Memon, & Painter, 2011) • willingness of the research team to learn about the site from stakeholders (Healey, 1998) • ability of stakeholders to express issues (Forrester, 1989).
Inclusion	• competing values expressed (Gutman & Thompson, 1996) • process addressed individuals affected by potential decisions (Cox, Arnold, & Tomas, 2010) • process linked concerns of individuals and groups (Dryzek, 2005a).

Figure 3.6. Checklist for evidence of truth, understanding, and inclusion.

In several instances, it was difficult to contact potential interviewees. In all but one case contacting the person by email and mentioning that another interviewee had recommended them overcame this. In one isolated case, a potential interviewee refused to be interviewed, but clearly indicated his/her perspective of the project in the email message. This encounter was not recorded in the case study.

Each interviewee was given a label indicating the case (W for Willamette and SP for San Pedro) and a number to protect confidentiality. Willamette interviewees were labeled W-1 through W-11 while San Pedro interviewees were labeled SP-1 through Sp-11. All references used the anonymous label system. In addition, whenever use of a name could reveal a source, the name was removed from quotes and replaced with "XXXX." Sections of quotes that could reveal the confidentiality of the interviewee or other interviewees were eliminated and replaced with "…" or "XXXX" if a name was used. In other cases, information

that could reveal the identity of a source was eliminated and replaced with "[more general information]."

Phase two: comparative analysis and synthesis.

In phase two, sorted and coded data for individual cases was compared to find thematic connections and differences across both cases (Seidman, 2006, p. 125). This process noted what was of interest and value and labeled it. These notes were entered into the Theoretical Framework. Both conflicting information and shared points of view were noted and recorded (Seidman, 2006, p. 24). Repeat or follow-up interviews were conducted with some participants so missing data could be collected and conflicting information could be explained or elucidated. Throughout the first two steps, initial analysis and interpretation were recorded for theoretical implications in step three. Information for steps one and two are presented for each individual case in chapters four and five respectively.

Phase three: theoretical reflection and conclusions.

Rival explanations were considered to uncover patterns, build explanations, explore logic models, and identify the most significant aspects of decision-making (Yin, 2003, pp. 116 - 138). This included the question whether other dimensions besides the deliberative to expert driven continuum might explain decision-making in Alternative Futures. This possibility will be addressed in Chapter 6. Finally, summary conclusions were drawn and compared to existing literature to determine significance and implications for decision-making in Alternative Futures landscape planning processes and in planning processes generally. As a final step, the theoretical framework was used to identify typical decisions made in each moment. Step three is documented in chapter six of this report. Table 3.7 shows the case study process.

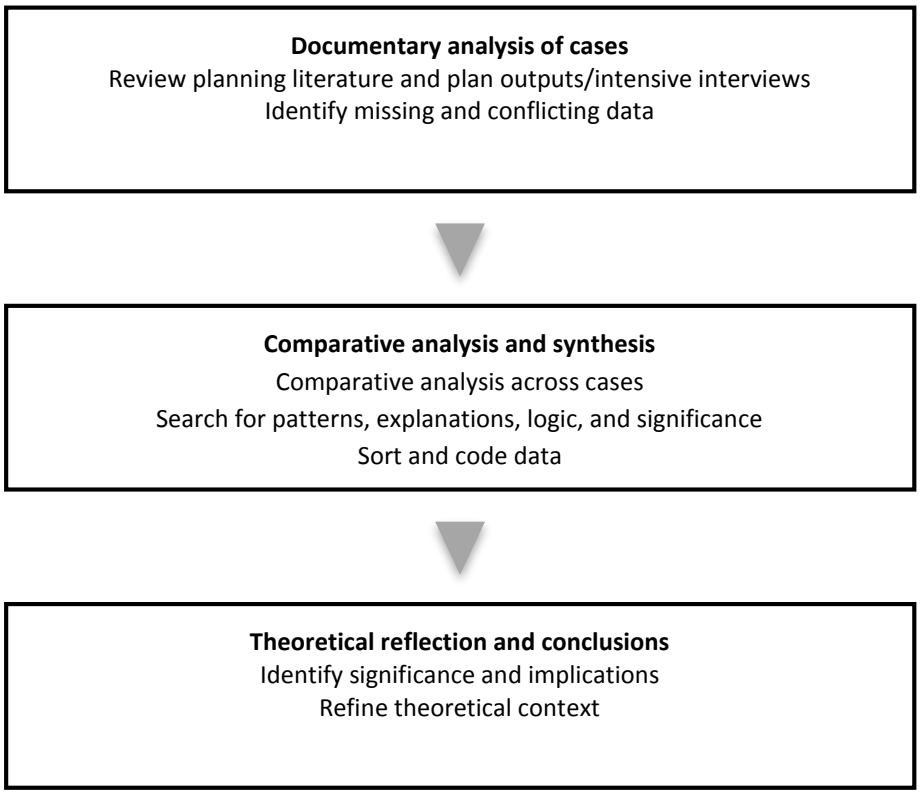

Table 3.7. Case study analysis process.

Section 3.5 Summary

This chapter explained the methodological approach and the design of the study. The study utilized an interpretive research strategy that moved iteratively between observed data and theoretical constructs. Interpretive approaches are reflexive – they incorporate aspects of both inductive and deductive approaches – and they are constructive in they integrate aspects of both objective and subjective approaches. Therefore the insights of interpretive research are never fully independent of the investigator.

The investigation used a cross-case analysis of two Alternative Futures projects in the U.S. Mountain West to develop deep biographies and answer questions of how and why, in order to produce insight into the research question about decision-making. The two cases were chosen to provide controlled heterogeneity and represent extremes along a conceptual range from deliberative to expert approaches. They provided a consistent

planning method while involving differing environmental issues, context of the planning culture, institutional settings, project funding, and approaches to discourse. They were also chosen because the literature was accessible and relevant to theoretical, scientific, and policy literature related to current analysis of Alternative Futures.

The study design included three phases. Phase one, *documentary analysis*, relied on complex description from a broad array of sources and key informant interviews to collect data. In phase two, *comparative analysis and synthesis*, data was sorted and coded for each case into the theoretical framework and analyzed along a continuum of deliberative to expert driven. Phases one and two are recorded for each case respectively in chapters four and five. Phase three, *theoretical reflections and conclusions*, developed synthetic outcomes from step two to uncover patterns, build explanations, explore logic models, and identify the most significant aspect of each Discursive Moment in each case. Summary conclusions were drawn and compared to existing literature to determine significance and implications for Alternative Futures landscape planning and for planning in general. Phase three is recorded in chapter six of this report.

The next two chapters present, sort, and code data for each of the two cases in the study.

Chapter 4: Case One: The Willamette River Basin, Oregon

Section 4.1 Introduction

This chapter analyzes the Willamette River Basin Alternative Futures project. Section 4.2 provides a general overview of the project location, funding sponsor, and Alternative Futures that were developed. Section 4.3 characterizes the decision-making approach taken in the project. Section 4.4 provides a critical analysis of deliberation and decision-making in each Discursive Moment including the decisions taken and the roles of those involved in selecting the alternatives. Section 4.5 provides a discussion of the cumulative impacts of deliberation and decision-making throughout the project.

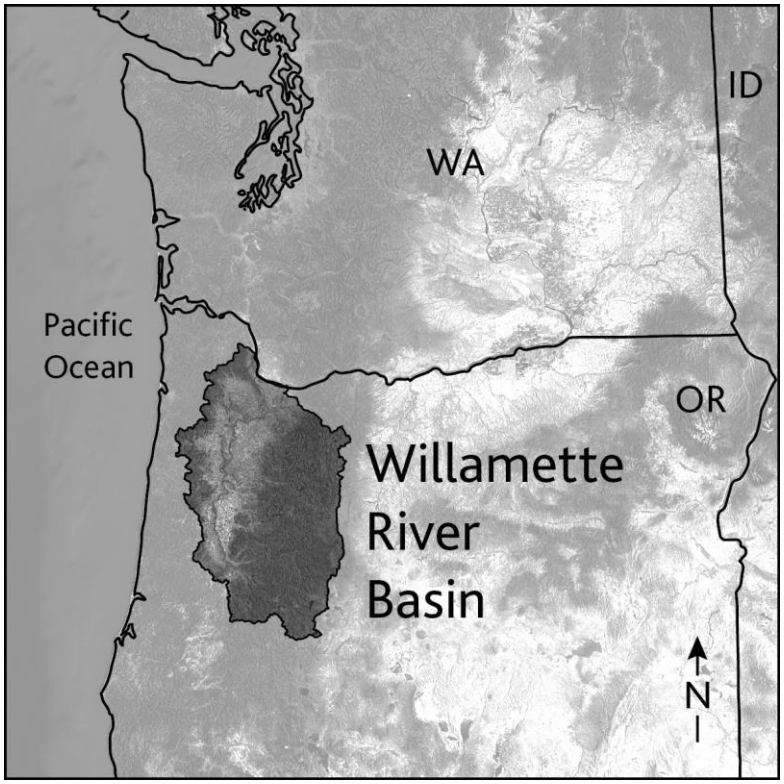

Figure 4.1. Location of Willamette River Basin in Oregon, USA.

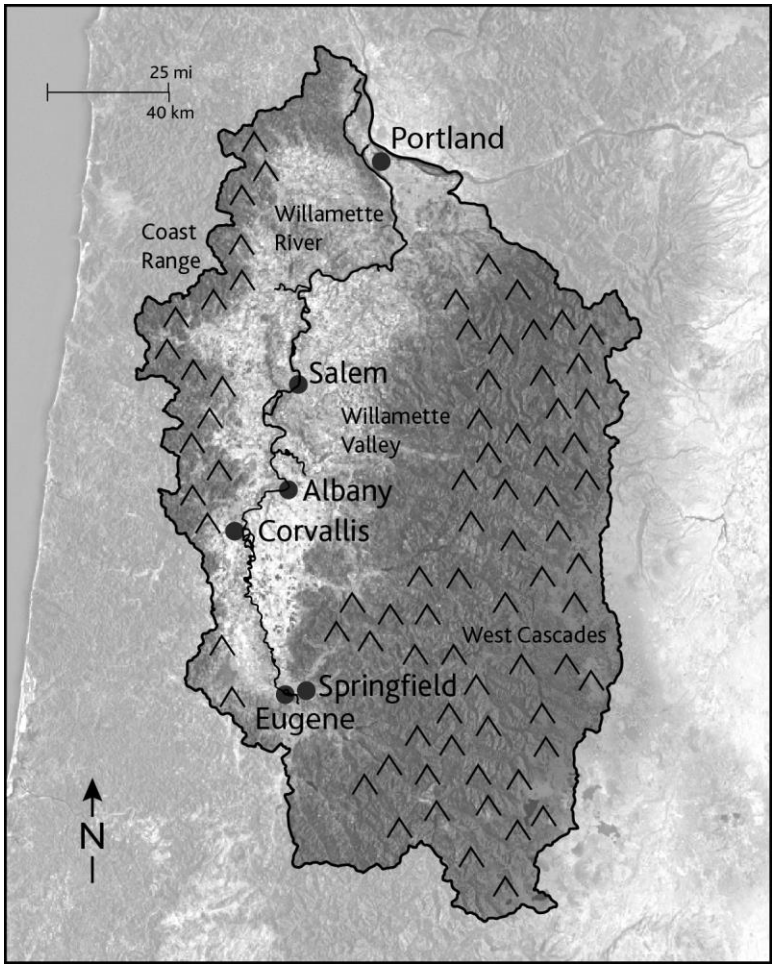

Figure 4.2. The Willamette River Basin is bounded by the Coastal and West Cascade ranges.

Section 4.2 Project Overview

The Willamette River Basin Alternative Futures study began in 1998 and the report was published in 2002 (Hulse, Gregory & Baker, 2002). The Willamette River Basin encompasses 11,478 square miles or about 12% of the State of Oregon in an area approximately 180 miles long and 100 miles wide (Hulse, Gregory, & Baker, 2002, pp. 2 – 3). Cool, wet winters are balanced by warm, dry summers. Major communities include Portland, Salem, and Eugene. The study area is bounded on the west by the Coastal Range and on the east by the Cascade Mountain Range. Two thirds of the area is forested, primarily in upland areas, while

much of the valley has been converted to agricultural use. The area supports 68% of the state's population, 45% of the market value of agricultural products, and 31% of timber harvests. Population is expected to nearly double by 2050 (Hulse, Branscomb, & Payne, 2004, p. 4). This population growth is expected to place enormous demands on water and land resources. Accommodation of this growth while improving surface water quality and sustaining populations of threatened and endangered species, including the Northern Spotted owl and salmon species, is a key challenge addressed in the study (Hulse, Gregory, & Baker, 2002, p. 4),

The study was funded by the U. S. Environmental Protection Agency (EPA) and completed by the Pacific Northwest Ecosystem Research Consortium (Research Consortium) (Hulse, Gregory, & Baker, 2002, p. ii). The consortium included researchers at Oregon State University, the University of Oregon, the University of Washington, and the U.S. EPA. The research intended to "1) create a regional context for interpreting trajectories of landscape and ecosystem change, 2) identify and understand critical ecological processes, and 3) develop approaches for evaluating outcomes of alternative future land and water use, management, and policy" (Hulse, Gregory, & Baker, 2002, p. ii).

Section 4.3 Project Approach

The Willamette Basin represented the deliberative case in the research design. It took place in a context generally accepting of landscape planning (Walth, 1994). Landscape management problems had largely been identified by public dialogue that had resulted from previous studies (Royston Hanamoto Alley and Abey, Landscape Architects, 1974; Lawrence Halprin and Associates, 1972). Several existing, governor-appointed stakeholder groups were available as a starting point for public participation (Hulse, Branscomb, & Payne, 2004). Selection of the planning team and planning method took place through iterative deliberation, including previous working relationships that established the credibility of key researchers (W-5, 2009). This was augmented by an open request for proposal (RFP) process, negotiated scope of work, and inclusion of researchers from the

sponsoring agency on the planning team (W-7, 2011). The project design included multiple stakeholder and technical feedback groups, each with unique mandates for different decision points (Hulse, Branscomb, & Payne, 2004). Three scenarios resulted that offered differing impacts on futures. Of these, the Conservation 2050 has been used by the Oregon Watershed Enhancement Board as a diagnostic tool that identifies real activities for their grant program to land trusts and watershed councils (W-3, 2010).

Figure 4.3. Farmland and small towns occupy much of the Willamette River Basin (Hulse, Gregory & Baker, 2002, p. 6).

Figure 4.4. Portland is the largest city in the Willamette River Basin (Oregon State University Libraries).

Figure 4.5. Alpine ecosystems border the basin (Hulse, Gregory & Baker, 2002, p. 6).

Teams of scientists modeled the likely impacts for the following landscape conditions: natural vegetation, riparian areas, agricultural land use, forestry land use, urban land use, and rural residential land use. In addition, ecosystem change was evaluated in terms of mainstem river, water availability, aquatic life, terrestrial wildlife habitat and biodiversity, and terrestrial wildlife populations (Hulse, Gregory & Baker, 2002, p. 4 – 5). Three visions of the future were created through the year 2050 (Hulse, Gregory & Baker, 2002). *Plan Trend 2050* identified future landscape conditions assuming the current policies are implemented as written and current trends continue. *Development 2050* allowed fewer restrictions on market forces impacting landscape conditions while *Conservation 2050* put greater emphasis on ecosystem protection and restoration. During the research process, efforts were made to assure that all scenarios would include plausible decisions and management practices as defined by stakeholders (Hulse, Branscomb, & Payne, 2004; W-5, 2009).

Section 4.4 Analysis of Discursive Moments

Discursive Moment One: Identification of project scope and planning method

The Willamette report builds on a long tradition of planning in the State of Oregon as well as several significant pieces of land management legislation impacting this region. Governor Tom McCall is credited as an early champion of planning and restoration in the Willamette River Basin (Walth, 1994; Schwantes, 1996). Early studies during his terms such as the *Willamette Valley: Choices for the Future* report (Lawrence Halprin and Associates, 1972) and the *Willamette River Greenway Study* (Royston Hanamoto Alley and Abey, Landscape Architects, 1974) occurred during this time period along with Oregon's state land-use planning and growth management act in 1973 (Hulse, Branscomb, & Payne, 2004, p. 330). That legislation, the nation's first such act, identified 19 statewide planning goals that included preservation of agriculture, forestry, and natural resource lands as well as establishment of urban growth boundaries to separate areas allocated to future urban development from rural areas. Every county and city in Oregon is required to develop and maintain a local comprehensive plan consistent with these goals (Hulse, Gregory & Baker,

2002, p. 4). Two further actions set a context for the study. The Oregon Forest Practices Act, passed in 1971, set standards for clear-cut sizes, riparian buffers to protect fish-bearing streams, and retention of wildlife habitat (Hulse, Gregory & Baker, 2002, p. 4). This was followed by the Northwest Forest Plan (Forest Plan) (United States Department of Agriculture [USDA] Forest Service, the United States Department of the Interior [USDI] and the Bureau of Land Management [BLM], 1994) that required extensive efforts to protect riparian areas and fish and wildlife populations through forest management practices (Regional Ecosystems Office, 2011). During the 1990's the state initiated efforts to integrate development, conservation, and restoration. As part of this effort, the Willamette Restoration Initiative was tasked to develop basin-wide strategies for the protection and restoration of fish and wildlife species, water quality enhancement, and floodplain management (Hulse, Gregory & Baker, 2002, p. 4).

The combination of these studies and legislation set a context conducive to landscape planning by increasing public understanding of concepts such as stakeholder participation, comprehensive plans, rural residential zones, and urban growth boundaries (UGB's) (Hulse, Branscomb, & Payne, 2004, p. 330; W-5, 2009). They also called public attention to the relationships between economic growth, ecosystem protection, and quality of life. Several citizen advisory groups were established during this time period. These included the governor-appointed Willamette Valley Livability Forum (Livability Forum) set up to represent varying interests familiar with the issues while maintaining political awareness (Hulse, Branscomb, & Payne, 2004, p. 328; W-5, 2009). A second, smaller, governor-appointed citizen group, the Willamette Restoration Initiative (Restoration Initiative), was charged with developing a state-sanctioned recovery plan for threatened salmon in the Willamette River Basin (Hulse, Branscomb, & Payne, 2004, p. 328). Establishment of these groups provided ready-made stakeholder groups that had missions and skill sets compatible with the Alternative Futures study.

Importantly, previous studies and legislation established the Willamette River Basin as the landscape that could most effectively address federal and state ecosystem protection goals

(Walth, 1994; Schwantes, 1996). This focus not only defined the geographic location most likely to impact and be impacted by future population growth, but also defined the scale and scope required for further landscape planning studies. Finally, significant federal funding – approximately $5,000,000 U.S. – was directed to the EPA as part of the Forest Plan agreement to be used as the source of funding for what became the Alternative Futures study. This magnitude of funding allowed for a four-year, in-depth study as well as publication of a high-quality, large-format report and numerous scholarly articles.

> "At the same time, President Clinton established the Northwest Forest Plan. This was related to the spotted owl. It allocated huge funding to agencies; $5 million over 5 years to toward the Willamette" (W-7, 2011).

These contextual issues drove the decision to undertake a large study focused on the Willamette River Basin. The purpose of the study was to address both quality of life and environmental issues such as future land and water use, management, and policy. The decision was deliberated among EPA staff and with other agencies during finalization of the Forest Plan.

> "The funding came from the Northwest Forest Plan for ecological research, so that's why the project was heavy on modeling. The EPA is not a forest-oriented agency, so they decided on a multi-use project. They wanted multiple scales, especially to integrate the large scale of a watershed basin, but they didn't have enough funding to do alternatives in Washington. [The EPA] set up a meeting with the state [Oregon] Department of Environmental Quality. Together [these agencies] selected the Willamette Basin. The state agency wasn't involved after that. Working at this scale was new for the EPA; their previous experience was Muddy Creek. [They] looked at the philosophy of using science to influence policy and involve participants" (W-2, 2011).

Prior to selection of the planning team no specific planning method was identified as preferable over another. The Alternative Futures method seems to have emerged from a

long process of deliberation that began well before the RFP was developed, and continued throughout team selection and project design.

> "The RFP didn't specify the Alternative Futures method or any specific approach. There was no specific scope. Dave Hulse was the convincing force to use the Alternative Futures approach. He was the only one who had previous experience in Alternative Futures. The team was trying to include more science in the Alternative Futures approach" (W-2, 2011).

The Alternative Futures approach also reflected a wider professional and scientific context involving a web of professional encounters and relationships developed first at Harvard University, and then between EPA staff and researchers in Oregon. One researcher noted:

> "Dennis White was at Harvard …… [and then] worked as in-house contractor in the Corvallis office of the EPA in late 1980's. Through his contact with Carl Steinitz, he had an interest in Alternative Futures as a means of evaluating impacts of growth in the Willamette River Basin on ecosystems. Through Dennis' influence they provided initial seed money for smaller research projects (ranging from $100,000 to $150,000) in the early 1990's including [the] Muddy Creek study. Stan Gregory was … funded on some of these projects. In retrospect, I think these projects served as proof-of-concept studies for the later Willamette River Basin study. They also served to introduce us to each other as well as to familiarize EPA staff with both the method and the researchers. Finally, they showed a record of small successes" (W-5, 2009).

Another researcher shared previous professional contacts and research interests:

> "I met Carl Steinitz on [several] …. projects ….. [and] was familiar with Dave Hulse' Muddy Creek project, [and]….. was part of the Willamette study…… Steinitz' conceptual model of alternatives paved the way for me. Then I learned about

> landscape design and community planning, then environmental/ecosystem models" (W-8, 2012).

Yet another researcher reported,

> "I got a job with … Harvard. We worked on National Park Service projects at … national parks developing GIS tools and analysis. [Later] I joined the EPA lab… [where] I was asked to figure out a problem … with human population growth in second homes and communities. The county was concerned about recreational amenities and ecosystem resources ... The EPA was impressed" (W-7, 2011).

The interview quotes above reveal aspects of decision-making. The team that ultimately won the contract award suggested the Alternative Futures landscape planning approach (W-2, 2011). Yet the decision was logical because key project researchers and EPA staff had been exposed earlier to the Alternative Futures method with Professor Carl Steinitz at Harvard University (W-5, 2009; W-7, 2011; W-8, 2012). Further, the principal investigators had completed a number of smaller research projects independent of each other that served as proof of concept studies. These projects increased EPA staff confidence in the approach (W-5, 2009). These studies further served to introduce the principal investigators to each other's work so they felt comfortable joining together to prepare a research proposal. Whereas landscape modeling was developed at Harvard, it was the long-term relationships of what would become the Willamette team that seemed to foster deliberative decision-making.

In summary, the context in which the study took place was characterized by public awareness of planning principles, public values that generally accepted landscape planning as a mechanism for clarifying relationships between economic development and ecosystem health, and ready-made citizen advisory groups both familiar with the issues and possessing political acumen. Public dialogue had been broadly encouraged by then Governor McCall in his vision for the Willamette River Basin. Previous planning studies had identified the

Willamette River Basin as the landscape most likely to impact and be impacted by population growth. They further defined the physical scale and depth of study required for a comprehensive resource management plan. Finally, the Northwest Forest Plan agreement provided a large funding source for the in-depth resource management plan envisioned. Therefore, the Alternative Futures study took place in a context in which many of the preliminary scoping decisions had either been previously made or, at a minimum, the issues were fundamentally established through public dialogue and agency actions. These resulted in general public acceptance of landscape planning as a way to explore societal values.

The choice of the Alternative Futures landscape planning method was logical because key project researchers and EPA staff had previously worked on earlier projects and felt comfortable joining together to prepare a research proposal. Therefore, when the researchers submitted a research proposal based on the Alternative Futures approach, there was already widespread appreciation for this method among EPA staff.

Discursive Moment Two: Selection and assembly of the planning team

> "By the early 1990's the Corvallis research laboratory [of the EPA] had gained expertise in forest ecosystem research. By 1994 they had completed research for their portion of the *Presidential Northwest Forest Plan*. Their portion dealt primarily with private land, largely lowlands and riparian lands. The BLM and USFS completed portions dealing largely with public lands. The centerpiece of this document [Forest Plan] was the creation of the Pacific Northwest Ecosystem Research Consortium [Research Consortium]" (W-5, 2009).

Funding from the Forest Plan was directed toward several agencies (USDA Forest Service and the USDI Bureau of Land Management, 1994). As W-2 described in Discursive Moment One above, the EPA chose to allocate its funds toward a multi-use project that integrated the large scale of a watershed basin. The original intent was to include parts of the state of Washington in the study; however, once the team had been selected and scoping was

complete, funds were insufficient to do alternatives in Washington (W-2, 2011). An RFP was prepared to solicit research proposals from qualified teams. The RFP sought proposals that would use science to influence policy and involve participants (W-2, 2011). Interestingly, the RFP did not specify the Alternative Futures method or any specific approach nor was a specific scope of work identified. However, the RFP did seek to create a level playing field in which each team of researchers had an equal opportunity to present its team members and process to achieve EPA goals.

> "Early in the 1990's the notion of some kind of Alternative Futures project was generated inside that EPA office. The Lab director at the time was Tom Murphy. He knew Dennis White who had been involved in Alternative Futures projects. They wanted a project in which the science had policy implications … They also wanted a trans-disciplinary [multi-disciplinary] project ... They talked it up in-house and convinced the management in Washington D.C. that this was a good idea. One of the goals was to combine in-house expertise with outside expertise. Since the 1980's when this team was working on acid rain research, they have been dedicated to peer review to solve problems. When in doubt, [they] get a workshop together with people who don't necessarily agree with each other. So it was natural to use an RFP process with a selection panel. Pre-proposals were solicited and reviewed by a selection panel to select those that would go to the full proposal. There were other credible proposals. All proposals were reviewed by scientists. The selection committee then selected the winning proposal" (W-10, 2012)

Key decision-making characteristics emerge from the interview quotations above. First, staff in the Corvallis EPA laboratory collectively chose a project that a) translated science to policy, and b) was trans-disciplinary in nature. However, they consciously avoided choosing a planning method. Then they convinced management in Washington to approve such a project. Second, principal investigators selected their team of researchers based on their anticipated tasks and proposed an in-depth, multiple-year project (W-5, 2009; W-7, 2011; W-8, 2012). Third, the Alternative Futures method was chosen after the team was selected

through a participatory process in which both EPA staff members and research team members took part. Among the research team, Dave Hulse was the convincing force to use the Alternative Futures approach (W-2, 2011) due, in part, to his previous EPA funded Alternative Futures project at Muddy Creek (Hulse D. W., 1997). In addition, at least two EPA staff members had previous experience with Alternative Futures projects (W-7, 2011). Therefore, EPA staff was open to the idea of using an Alternative Futures approach.

Following the selection of the winning proposal, the EPA in consultation with the governors of Oregon and Washington set up the Research Consortium as a partnership between a federal agency (the EPA) and university researchers (W-2, 2011; W-5, 2009). It lasted from 1998 until 2002 although it continued to complete publications related to the study after these dates (Gregory, Ashkenas, & Nygaard, 2007; Gregory S. , 2012).

The most important implication of this process for the remainder of the project was cultural and social. Because the Research Consortium was set up as a *partnership* between the EPA and university researchers, each entity fully shared participation in the research, preparation of the report, and publication of results. The planning report lists both EPA members and university members alongside each other in the research team section of the acknowledgements (Hulse, Gregory & Baker, 2002, p. ii). The three editors of the report include both university researchers and an EPA researcher. Both EPA staff members and university researchers have served as primary authors while each has also been listed as a co-author with the others on scholarly publications (Baker, et al., 2004; Hulse, Branscomb, & Payne, 2004). This intertwining of team members from the client and consultant contrasts markedly with previous studies of the Willamette River Basin as well as the other case in this thesis.

The participatory approach was even expressed in the way team members refer to the report they published. During every interview conducted, interviewees referred to previous reports not by their official titles, but by the consultant's name (W-2, 2011; W-3, 2010; W-4,

2010; W-5, 2009; W-7, 2011). For example, the *Willamette Valley: Choices for the Future* was referred to as "the Halprin Report." One interviewee reported,

> "The Halprin and Royston reports occurred during this time" (W-5, 2009).

Another said,

> "The Atlas is part of a long legacy of planning in Oregon that goes back to Tom McCalls' Willamette Vision, RHAA's Willamette Plan, and Lawrence Halprin's earlier plan" (W-3, 2010).

However, interviewees universally referred to the *Willamette River Basin Planning Atlas* as "The Atlas," which is a shortened version of the official title. By the time the research proposal was accepted, the client – consultant relationship had shifted from the typical adversarial approach in which each entity provides checks and balances to the other, to a collaborative approach in one unified team. There was concurrence between EPA staff members and research team members that the collaborative Alternative Futures approach provided the most effective tool for decision-makers to translate science into policy, especially if the science and public participation components could be strengthened. That collaborative approach appears to have been an outcome of the deliberative setting in Oregon at the time as well as a product of the deliberative inclinations of many of the participants.

Finally, since the researchers were all located in the Willamette Valley, they all had a familiarity with the planning context and environmental issues that had emerged. This place-based experience of the selected team represents a form of deliberation deeply rooted in the particular characteristics of place including relationships, understanding of issues and perspectives, and cultural awareness (Healey, 1998; Healey, 1996). It appears to have predisposed the team to include stakeholders more genuinely in subsequent Discursive Moments described below.

In summary, establishment of the Research Consortium created a partnership between the EPA and university researchers into one team. This translated to a deliberative approach to research that was made possible by a fair, competitive selection process, by the credibility established through earlier projects, by the familiarity with Alternative Futures approaches on the part of some team members in both the EPA and the university, and by a common goal to strengthen the science component of the Alternative Futures method. The deliberative approach seems to have resulted in deep trust as uncertainties arose during subsequent phases of the project. One example, determination of the level of public participation, will be discussed in Moment Three below.

Moment Three: Determination of the project design

The Willamette River Basin project followed a normative design (Nassauer & Corry, 2004) that evolved from previous studies and legislation and the Forest Plan directives. It was normative in the sense that a narrow range of environmental outcomes framed the possible directions from which scenarios were developed. Potential scenarios that would not achieve these objectives were not pursued. Accommodation of population growth while improving surface water quality and sustaining populations of threatened and endangered species, including the Northern Spotted Owl and salmon species was a key challenge addressed in the study.

"The key challenge will be to accommodate the expected population growth while sustaining and improving the features of the basin that we value. Already at least 1400 miles of streams in the basin do not meet water quality standards, largely because of runoff associated with human use of the land. Seventeen plant and animal species in the basin are listed under the federal Endangered Species Act, including the Northern Spotted Owl, spring Chinook salmon, and upper Willamette River steelhead" (Hulse, Gregory & Baker, 2002, p. 4).

An additional impetus for the project was based on efforts "initiated by Oregon Governor John Kitzhaber, to produce an integrated strategy for development, conservation, and

restoration in the basin" (Baker, et al., 2004, p. 315). Four key environmental endpoints were selected to evaluate scenarios and Alternative Futures: 1) water availability; 2) Willamette River including channel structure and streamside vegetation and implications for fish communities in the main river; 3) stream condition including stream habitat and composition and diversity of native fish and benthic invertebrate communities; and, 4) terrestrial wildlife including amount of habitat, and the abundance and distribution of selected wildlife species (Baker, et al., 2004, p. 316; Hulse, Gregory, & Baker, 2002, p. 5). There were three further intentions of the project: "politically plausible scenarios, scientifically researchable alternatives, and results that increase capacity for community based environmental planning" (Hulse, Branscomb, & Payne, 2004, p. 338).

Cumulatively, these desired goals limited the range of futures to those that could possibly achieve the desired outcomes. Through its cooperative approach, the team developed these environmental goals for the project based on the previous studies.

> "The research team selected the ecological issues, but there had been a great deal of previous research as well as state and EPA interest in these issues" (W-4, 2010).

The basin-wide scale was determined by needs identified in previous studies and the EPA decision to do a multi-use project (Baker, et al., 2004; W-2, 2011). The decision to work at this scale captured the likely area of growth as well as the likely area of impact. Therefore, it fulfilled one of the goals of the Forest Plan because it allowed analysis of generalized and interconnected systems that span political and agency boundaries (USDA Forest Service and the USDI Bureau of Land Management, 1994).

Design of scenario development was based on plausible assumptions. Here the team applied a participatory approach in which researchers developed scenarios and asked citizen's groups to respond to their level of plausibility (W-5, 2009; Hulse, Branscomb, & Payne, 2004). If the assumptions underlying a scenario were seen to be implausible, the scenario was revised. Initially the researchers debated the extent of public participation because one believed researchers were better prepared to test assumptions (W-4, 2010).

> "Initially, I wanted the team to identify the land use assumptions. Dave insisted that would result in just another academic exercise that had little impact because if both the ecological and economic goals of the stakeholders were represented in the assumptions, the study would have greater credibility. This created great social impact. The study has broad implications for how Oregonians view resource conservation" (W-4, 2010).

This argument was convincing enough that one researcher was assigned leadership of public participation for the project (W-5, 2009).

> "I defer to David on these issues. The team didn't want stakeholders to be hit with the hammer of science. Therefore the modelers didn't attend meetings unless they were invited to answer specific questions" (W-4, 2010).

As a result, an extensive range of public participation was devised to achieve the broadest possible range of representation (Hulse, Branscomb, & Payne, 2004, p. 338). Four separate citizen groups were established, each with a unique charge and contribution to the study (Hulse, Branscomb, & Payne, 2004, p. 338).

- *Possible Futures Working Group* (Futures Working Group):

The task of defining plausible scenarios was given to the Possible Futures Working Group (Futures Working Group), a group of 20 citizens chosen by the Research Consortium based on expertise, constituency affiliation, and representation. They received advice from technical expert groups and presentations from researchers. They held monthly meetings over a two and one-half year period.

> "This group defined assumptions. An example of an assumption would be what fraction of new people will live inside or outside Urban Growth Boundaries (UGB's) in 2050" (W-5, 2009).

- *Willamette Valley Livability Forum* (Livability Forum):

  The previously existing Willamette Valley Livability Forum (Livability Forum), comprised of approximately 100 civic leaders appointed by the governor, held quarterly forums over a 3-year period. This group reviewed Futures Working Group assumptions.

- *Willamette Restoration Initiative* (Restoration Initiative):

  Quarterly presentations were made to the Willamette Restoration Initiative (Restoration Initiative). This 27-member group was appointed by the governor and represented both public and private sector citizens. It was originally charged with developing a state-sanctioned recovery plan for threatened salmon in Willamette River Basin. The Research Consortium made quarterly presentations to this group over a two-year period. The group provided critiques of the Futures Working Group Conservation 2050 scenario assumptions.

- *Technical expert groups:*

  Several technical expert groups of 2 to 30 specialists in transportation, agriculture, forestry, urban development, water, and biodiversity requirements held sporadic meetings, conference calls, and e-mailings on one or more questions. These groups provided specific quantities for scenario assumptions judgments on habitat area requirements, and future land and water use practices.

- *Public conferences:*

  Quarterly conferences were held and information was taken back to the Futures Working Group.

  > "As the scenarios got close to development, quarterly conferences were held. These were daylong events attended by 200 to 300 people. These events were open to the public. Reactions varied greatly. Clicker technology was used to get immediate feedback on scenarios. [The team] often started each conference with an

> introduction to the process that identified the purpose. [They] emphasized the purpose was to identify plausible outcomes, not to decide what was preferable. You don't start out by asking what is a preferable future. Plausible comes before preferable" (W-5, 2009).
>
> An eight-page newspaper insert to 465,000 households summarized findings in later stages of the project. This extensive citizen participation created widespread social impact and a stronger likelihood that implementation policies and practices would reflect findings of the study. As a result, the study today has broad implications for how Oregonians view resource conservation. "There was a change in public attitude because the study showed that 20 – 40% of riparian areas can be restored while still accommodating growth of 2 million people in the basin. This model significantly impacts willingness of communities and agencies to engage in the restoration" (W-4, 2010).

As important, the team developed a pragmatic decision-making process in which the project investigators acknowledged each other's strengths and empowered each other to take the leading role in their areas of strength. This system of empowerment seems to have enhanced the collaborative model already begun in the team selection process.

Design of mapping and scientific modeling are beyond the scope of this study. Nevertheless, interviewees indicated leadership on this task was delegated so that one principal investigator served as the lead for mapping and scientific modeling while the other took leadership of public participation, see above (W-2, 2011; W-4, 2010; W-5, 2009). Each was still involved in all phases of the project, but deferred to the other in their area of leadership (W-4, 2010). Interestingly, even these decisions involved a level of public participation through technical review groups that deliberated specific topics (Hulse, Branscomb, & Payne, 2004).

In summary, the project appears to have been designed in a collaborative and participatory model in which many individuals participated, each taking a leadership role for various

aspects. A multi-layered stakeholder process was designed to address scenario plausibility, offer general critiques, provide technical answers, and reach a widespread public audience.

Discursive Moment Four: Data collection

One of the first goals of Alternative Futures projects is to establish a trajectory of change from past to present. Therefore one of the first decisions a research team must make is how to find past data and which of those data provide the most useful information. To obtain a baseline, the team relied on data gathered in the decade after 1850 by the U.S. General Land Office survey of the land base and rivers of much of the West (Hulse, Branscomb, & Payne, 2004, pp. 18-50). The Willamette River network and its riparian vegetation were mapped in this survey. Surveys of the Willamette River by the U.S. Army Corps of Engineers in 1895 and 1932 provided further data. These surveys included information about channel configuration, floodplains, and edge vegetation used in the water resources and biotic systems sections. Data points were not as specific for past populations and richness of fish species. Data were estimated from combinations of museum records, agency reports, research databases, and field collections. Data about extirpated species, species of concern, and introduced species appear to be based on current databases only, but inferences can be made based on habitat gain or loss over time (Hulse, Gregory & Baker, 2002, pp. 18 – 50).

Population density was based on the 1990 U.S. Bureau of the Census. Population pyramids by county were based on surveys from 1930, 1970 and 1990 to provide trends. Land use zoning and ownership were based on local comprehensive plans and state plans. The land use and land cover maps combined and synthesized all data for 1990 (Hulse, Gregory & Baker, 2002, p. 52 – 66).

The information above was made available to the public on a web site through the Institute for Natural Resources at Oregon State University (Oregon University System, 2010-2011). The decision to make data available contributed to the participatory relationship between the EPA and researchers. It also represented a way to reach the project goals to provide politically plausible scenarios, scientifically researchable alternatives, and results that

increased capacity for community based environmental planning (Hulse, Branscomb, & Payne, 2004, p. 338).

Discursive Moment Five: Selection and testing assumptions of scenarios

The three scenarios represented a continuation of current resource management policies in *Plan Trend 2050*, a loosening of restrictions on market forces impacting landscape conditions in *Development 2050*, and greater emphasis on ecosystem protection and restoration in *Conservation 2050* (Hulse, Gregory & Baker, 2002).

While development of spatially explicit scenarios was conducted by the team, the underlying assumptions were tested extensively by the multi-layered system of citizen groups (Hulse, Branscomb, & Payne, 2004). The task of defining plausible scenarios for land and water use was given to the Futures Working Group. The previously existing Livability Forum reviewed Futures Working Group assumptions. The Restoration Initiative provided quarterly critiques of Futures Working Group *Conservation 2050* scenario assumptions. Several technical expert groups provided specific quantities for scenario assumptions, judgments on habitat area requirements, and future land and water use practices.

After researchers presented scenarios to a group, comments and requests from stakeholders were discussed and suggestions were sent back to the research team who revised the scenarios to be tested again. In this process, stakeholders were required to imagine potential policies and evaluate whether or not the changes those policies were realistic (Hulse, Branscomb, & Payne, 2004). One participant said of the stakeholder meetings,

> "The researchers framed the questions. David Hulse presented the assumptions and asked if the group agreed or disagreed. David asked the group to, 'Imagine a big dial and you are going to turn the dial of development up or down.' There were different visions, but we pretty well checked our guns at the door. It wasn't contentious. There was spirited debate about the type of growth (compact development for

example) and the rate of growth. Some types of density weren't practical because they couldn't be attained given the current land in Oregon. The most spirited debate centered on what to call the alternatives. Some names were politically flavored. They tried to avoid the "bad guy" connotation about the development scenario. The conservation scenario was seen as the "white hat" scenario. Everybody tried to step back and see alternatives at face value" (W-6, 2011).

Hulse describes one case in which a group of 30 scientists and natural resource planners called the Biodiversity Technical Group proposed a target of acquiring 58,700 ha of floodplain forest along the Willamette River and its tributaries for the Conservation 2050 scenario (Hulse, Branscomb, & Payne, 2004, pp. 334 - 336). The Futures Working Group expressed concern that this proposal would be politically impractical and impossible to achieve in these areas of highly productive agricultural lands. "As one member of the Futures Working Group noted, doing so would disproportionately affect farmers with lands in certain areas and would require reconverting some entire farms back into floodplain forest" (Hulse, Branscomb, & Payne, 2004, p. 335).

The Biodiversity Technical Group recommended the research team bring together two seemingly conflicting concepts for riparian areas. On the one hand, the scientific definition of riparian areas focused on the interdependence of physical processes, such as flooding, with biological processes, such as nutrient exchanges that link water and land habitats. Delineation of this conception of riparian is typically based on the spatial extent of these processes. On the other hand, the policy conception of riparian is based on human uses of the land-water interface and is usually expressed in designated widths and setbacks. The research team linked these concepts by connecting floodplain forest patches along the Willamette River with riparian protection zone widths. While the Futures Working Group approved the concept, they initially rejected the specific protection zone widths because they might unfairly impact some farmers. The team was able to present existing policy precedents for riparian protection zones in forest areas and for urban streams in the

Portland Metropolitan area. Understanding these precedents, stakeholders felt more comfortable with fixed-width riparian protection zones that varied by jurisdiction.

The research team was then assigned to revise the mapping and to spatially describe the differing riparian conceptions. These revisions were influenced both by scientific data – for example, the USDA Natural Resources Conservation Service helped define areas that were most likely to be annually flooded – and political/social values in the process of establishing protection widths in various land use categories. This data was compiled into revised, spatially explicit scenarios that were once again brought to the Futures Working Group for testing. Now the Futures Working Group was concerned there was insufficient land placed in conservation and restoration opportunities (CRO) compared to what the Biodiversity Technical Group originally estimated was needed. Another iteration of discourse and revisions was required to resolve this issue.

The example above illustrates the respective roles of researchers, technical expert groups, and citizen or stakeholder groups. It also demonstrates the difference between generating scenarios and testing their plausibility. “In this project, citizen stakeholders were the plausibility experts. A structured research approach provided the [Futures Working Group] continuing and iterative exposure to relevant questions and data, allowing them to consider questions of plausibility in depth, both topically and spatially, and then to have their assumptions critiqued by other lay and technical groups” (Hulse, Branscomb, & Payne, 2004, p. 339). The process was time consuming. “Of the five-year project schedule [this timeframe appears to include negotiations before the contract officially began, but not deliberation leading to the decision to undertake a project], two and one-half years were allocated to defining the scenario assumptions” (Hulse, Branscomb, & Payne, 2004, p. 338). Yet it appears to have provided a system of ongoing checks or corrections that deepened the relevance of each of the scenarios.

This rich, iterative process had several profound impacts on subsequent phases of the project. First, questions of whether one scenario should be implemented over another could be separated from whether the scenarios were inherently plausible.

> "You don't start out by asking what is a preferable future. Plausible comes before preferable" (W-5, 2009).

Second, the process resulted in a high degree of citizen confidence that the assumptions underlying the scenarios were plausible. As a consequence, discussions further in the process could focus on significance of the scenarios rather than the underlying plausibility.

Third, the iterative process required candid communication in forms usable by non-technical citizen groups. The research team found ways to "condense spatial complexities into quantities suitable for examining policy issues at a basin-wide scale and are also relevant in contemporary debates between land use planning and free market advocates" (Hulse, Branscomb, & Payne, 2004, p. 338). In other words, data was distilled into formats that could be used by non-experts in pubic dialogue and future policy decision-making.

Fourth, the process created cultural and political legitimacy by overcoming a dilemma inherent in public participation: committee size. Stakeholder groups must be relatively small to function effectively. Yet a small committee cannot possibly represent the broad spectrum of public interests in such a large river basin.

This was solved by layering several groups into the participation process, each with its own roles and levels of technical or political understanding and each with its own unique function. One participant observed,

> "In broad public meetings, some people came with an agenda. They were vocal if the assumptions either agreed with or challenged their agenda. However, this didn't occur in the stakeholder groups. For example, each community had to make assumptions about expanding its UGB [Urban Growth Boundary] in response to population growth. They did so quite deliberately … In Menville, they realized

> changing the UGB would result in an unacceptable loss of prime agricultural land. The community reached out to Portland to see if the growth might be better accommodated there. In the end, they worked cooperatively with Portland to locate the growth in Portland's expanded UGB" (W-4, 2010).

Several of these groups reviewed the work of other committees to test and/or validate their recommendations. Participation was expanded further by the use of quarterly conferences that were open to the public and by inserting an eight-page summary into regional newspapers. All of these impacts also contributed to one of the primary goals of the project: increase capacity for community-based environmental planning. Such legitimacy will be addressed below in Discursive Moment Seven: Impacts of Scenarios.

Discursive Moment Six: Impacts of Scenarios

Teams of scientists modeled the likely impacts for the following landscape conditions: natural vegetation, riparian areas, agricultural land use, forestry land use, urban land use, and rural residential land use. In addition ecosystem change was evaluated in terms of mainstem river, water availability, aquatic life, terrestrial wildlife habitat and biodiversity, and terrestrial wildlife populations (Hulse, Gregory & Baker, 2002, p. 4 - 5). In *Plan Trend 2050* and *Conservation 2050*, population growth was largely accommodated in compact development within urban areas, thus minimizing conversion of farmland and natural areas to built structures. While the population within UGBs nearly doubled in these futures, the amount of built land expanded by less than 25% relative to 1990. In contrast, there was a 56% increase in the amount of built land and a decrease of 24% of prime agricultural land in *Development 2050*. *Conservation 2050* showed a substantial improvement of the natural resource condition, including a 20 – 70% recovery of losses sustained since EuroAmerican settlement. *Plan Trend 2050* and *Development 2050* showed little gain or loss of natural resource conditions. In general, terrestrial biodiversity responded more strongly to the differences between scenarios than did aquatic indicators (Hulse, Gregory & Baker, 2002, p. 128 – 129).

The team carefully maintained a separation of the scientific modeling and spatially explicit mapping from the dialogue about cultural values that led to plausibility.

> "The team didn't want stakeholders to be hit with the hammer of science. Therefore the modelers didn't attend meetings unless they were invited to answer specific questions" (W-4, 2010).

While it is not the purpose of this study to describe impacts of scenarios in detail, those impacts influenced subsequent phases of the project. The biggest surprise was the ability to restore 20 to 40% of riparian areas while still accommodating growth of 2 million people in the basin in the *Conservation 2050* scenario. This was to have impacts on subsequent decision-making for implementation strategies by several agencies. "There was a change in public attitude because the study showed that 20 to 40% of riparian areas can be restored while still accommodating growth of 2 million people in the basin. This model significantly impacts willingness of communities and agencies to engage in the restoration" (W-4, 2010).

Discursive Moment Seven: Selection of implementation strategies

One participant observed,

> "It is hard to draw a straight line to outcomes, but there appear to be several indirect outcomes" (W-5, 2009).

Nevertheless, perhaps the clearest direct evidence of on-the-ground environmental impacts was its use by other agencies as a tool for increasing community capacity for decision-making. Since publication in 2002, the *Willamette River Basin Planning Atlas* was adopted as the framework for the Oregon Watershed Enhancement Board (Enhancement Board) to meet the goals of restoring channel complexity and flood plain recovery (W-3, 2010; Hulse, Branscomb, & Payne, 2004, p. 339).

> "[They] work jointly with the Meyer Memorial Trust. [They] fund local agencies such as land trusts and watershed councils … Project funding ranges from $100,000 to

> over $1 million. $6 million is funded for this biennium. In addition, The Meyer Memorial Trust grants $1.5 mil per year for 7 years … [They] chose metrics from the Atlas that could be measured and documented. Fortuitously, the Meyer Trust chose similar metrics at the same time. The Atlas is part of a long legacy of planning in Oregon that goes back to Tom McCalls' Willamette Vision, RHAA's Willamette Plan, and Lawrence Halprin's earlier plan" (W-3, 2010).

While the Enhancement Board does not use the *Atlas* as a blueprint, it does use the underlying principles of the *Conservation 2050* scenario that can be measured as a diagnostic tool or coarse filter that identifies real activities that can occur now so they result in ecological outcomes in the future (W-3, 2010; Hulse, Branscomb, & Payne, 2004, p. 339).

The McKinsey River Trust also used the Atlas as a guide for implementation:

> "The McKinsey River Trust, a non-governmental organization, used information from the study to guide one of the largest river restorations to date. Approximately 1,000 acres on the Green Island south of Eugene is being restored" (W-4, 2010).

A further example of increased capacity involved the terrestrial elements of a recovery plan developed by the Willamette Restoration Initiative, the 27-member group appointed by the governor that also provided stakeholder input throughout the process. These elements were based on the Conservation and Restoration Opportunities component of the *Conservation 2050* scenario from the study (Hulse, Branscomb, & Payne, 2004, p. 339). Significantly, each of the strategies listed above resulted in or will result in measurable, on-the-ground environmental change either now or in the relatively near future.

A less direct, but nevertheless significant, impact of the study appeared to be the inspiration of other agencies to conduct Alternative Futures studies concerning additional landscape issues in the region. The research produced two spin-off futures analyses, one sponsored by the Oregon Department of Transportation evaluating transportation futures and traffic congestion (Baker, et al., 2004, p. 321). The other project, initiated by 1000

Friends of Oregon, assessed the implications of landscape futures for infrastructure costs (e.g., road, sewer, and water services) as well as losses of farm and forestry lands (Baker, et al., 2004, p. 321).

The project also seems to have influenced legislation (Hulse, Branscomb, & Payne, 2004, p. 339). "The 2001 Sustainability Act was passed by Oregon legislature. It established the Institute for Natural Resources at Oregon State University. It serves as a clearinghouse for scientifically based natural resource information" (W-5, 2009).

A number of studies have built on the concepts in the study (Hulse, 2004; Dole, 2004; Allan, 2004) and the report has 157 citations (Google Scholar).

The impact on agencies was perhaps most evident at the EPA. First, the Willamette River Basin Atlas impressed the agency.

> "It (the report) was the prize gift given to dignitaries who visited … The Atlas is an icon. Political appointees … may not be aware of it. In a general sense, however, this approach is known to upper management. The polish of the report helps a lot. Also the professionalism of the team and the ground impacts" (W-7, 2011).

Second, the project influenced the kind of projects pursued by the agency.

> "The Ecosystems Program has five or six place-based projects based, in part, on the Willamette study. The EPA Ecosystems Services website has a poster (2003) featuring six projects" (W-7, 2011).

Third, the project influenced EPA research.

> "The study influenced the science part of the EPA. In the late 1990's, research managers at higher levels were told not to do any more of these projects because they weren't research. As a result of the Atlas, it became clear there was value. The

> new manager of Ecosystems Management used it. They have changed their mind at a higher level" (W-7, 2011).

Others credit the project with shifting the focus of permitting and regulations to the watershed scale by providing the big picture that is valued (W-2, 2011).

> "Yes, the people who do permits and regulations were impacted by the report. Innovative people now look at the watershed scale. This report provided the big picture and that is valued. Translating the big picture into regulations is difficult. This report shows how to bring science into policy" (W-2, 2011).

A final impact of the study concerns the personal changes that took place in those individuals who participated in the project. For some there is now a greater appreciation for the scientific potential in Alternative Futures approaches. As one scientist observed,

> "Other approaches don't have the depth. The questions aren't as comprehensive" (W-7, 2011).

Stakeholders learned about their region, the interactions between natural, cultural, and economic systems, and the varying interests of other systems. One stakeholder noted the diverse nature of the group meant they learned from each other.

> "I learned tools for analysis. You could visualize the future and imagine what would this look like… The process of developing the tool influenced the people who developed it. Many of the participants have a better understanding of the Willamette Basin. It changed the way I do business and the NGO's on which I serve on boards. I now have a broad picture of the Willamette Basin …The Atlas acts as a counter balance during economic downturns when planning rules tend to be loosened because if a use produces jobs, it gets the benefit of the doubt" (W-6, 2011).

These changes of attitude seem to focus in large part on what level of conservation is possible.

> "The most significant is a change in the understanding of the possibility of the Conservation 2050 plan. That is, the belief that the conservation assumptions can possibly be attained even with the anticipated doubling of the population in the region. People believe in the worthwhileness of pursuing that future. Prior to this study, people didn't believe that level of conservation could be achieved" (W-5, 2009).

Section 4.5 Discussion of decision-making and deliberation

The Willamette River Basin study represented the deliberative extreme. The *project scope and planning method* emerged from a strong planning context in Oregon characterized by public awareness of planning principles and ready-made, experienced citizen advisory groups. These groups were familiar with the issues and possessed considerable political acumen. Previous planning studies established the scale, location, and depth of study required for a comprehensive resource management plan. Finally, the Northwest Forest Plan agreement provided a large funding source for the in-depth resource management plan that was envisioned. The study took place in a context in which many of the preliminary issues were fundamentally established through public dialogue and agency actions. These resulted in general public acceptance of landscape planning as a way to explore societal values.

The *planning team was selected* through a request for proposal process. Once the team was selected they formed a collaborative partnership with EPA staff. This partnership appeared to inform decision-making for the remainder of the project. Together they selected the Alternative Futures method and designed a highly deliberative project that included stakeholder and citizen participation and widespread dissemination of the results.

The normative *project design* limited the range of scenarios to those that would plausibly attain the project goals. The extensive emphasis on public participation focused on testing the assumptions that underlie each scenario as well as the more general goal of keeping the public informed and engaged. This created a stronger likelihood implementation policies and practices would reflect findings of the study and the study would influence how Oregonians view resource conservation.

In keeping with the deliberative approach throughout the project, all *data collected* were made available to the public through the Institute for Natural Resources at Oregon State University. Data were further informed by stakeholder understanding of place.

An iterative system for *selecting and testing assumptions* took place through interaction between the research team and several layers of stakeholder groups. Questions of plausibility were separated from those of preferability. This discourse resulted in a high degree of citizen confidence that the assumptions underlying the scenarios were plausible. As a consequence, discussions later in the process focused on significance of the scenarios rather than the underlying plausibility. Participation was expanded further by the use of quarterly conferences that were open to the public and by inserting an eight-page summary into regional newspapers. During the iterative process, the research team found ways to communicate in forms usable by non-technical citizen groups in pubic dialogue and future policy decision-making. Cumulatively, this process created cultural and political legitimacy and increased capacity for community-based environmental planning.

Articulation of competing values was both sophisticated and surprisingly free of controversy in interviews from a wide range of stakeholders. Presumably, this can be partly attributed to the long tradition of previous planning studies. These studies must certainly have provided a platform for competing values to come into contact with each other repeatedly. Yet this context fails to explain the seeming absence of controversy. The most controversial events seemed to be the open public forums.

The highly deliberative expression of values – Habermas' quiet voice of reason – appears to have resulted from the carefully tiered organization of stakeholder participation (Hulse, Branscomb, & Payne, 2004). This organization not only assured broad participation, but it also meticulously structured the *timing* and *range* of deliberation engaged by each group (Hulse, Branscomb, & Payne, 2004). Thus a large presentation open to the public was scheduled toward the beginning of the project to explain the process, issues, and potential outcomes of the process. Stakeholder meetings, on the other hand, occurred after data was gathered and draft scenarios were developed. The goal of these meetings – the deliberative decision - was to question plausibility, not preferability.

Likewise, technical groups understood their task was to act as experts who provided technical information, not opinions about plausibility or preferability. This is not to suggest their activities were devoid of values. On the contrary, their role as experts was embedded in the values of their respective knowledge areas. Yet their mandate was limited to providing technical expertise that explained the workings of scenarios or the technical outcomes of scenarios. It especially did not include deliberative decision-making about the plausibility or preferability of scenarios.

At each stage, researchers managed the expectations of participating groups to assure they put the stakeholders meeting into the context of the entire process and the stakeholders understood what questions would be addressed in that meeting. The result was a clear definition of the deliberative task and the associated decision point(s) that bracketed deliberation.

Evaluation of impacts of scenarios on landscape conditions was expert driven with a clear separation between this task and the public task of testing assumptions. *Conservation 2050* allowed for restoration of 20 – 40% of riparian areas while still accommodating growth of 2 million people in the basin. It showed a 20 – 70% recovery of losses sustained to the natural resource condition. *Development 2050* increased the amount of developed land by 56% and

decreased prime agricultural land by 24%. *Plan Trend 2050* and *Development 2050* show little gain or loss of natural resource conditions.

The clearest direct *implementation strategy* involved stream channel complexity and recovery. Several non-governmental organizations used portions of the underlying, measurable principles of the *Conservation 2050* scenario as a diagnostic tool that identified real activities for their grant programs to land trusts and watershed councils. These strategies resulted in or will result in measurable, on-the-ground environmental to stream channel restoration change either now or in the relatively near future.

The study also appears to have influenced other agencies to conduct Alternative Futures studies concerning additional landscape issues in the region and to have influenced the 2001 Oregon legislature to establish the Institute for Natural Resources at Oregon State University. The EPA viewed the project as a seminal study showing how to bring science into policy. This seems to have legitimatized the Alternative Futures approach as a way to deepen and broaden scientific inquiry and bring it to bear on questions of natural resource policy.

Finally, the study appears to have influenced public perception about the possibility of achieving both conservation and development, especially using the *Conservation 2050* scenario (W-6, 2011).

Chapter 5: Case Two: The Upper San Pedro River Basin, Arizona and Sonora, Mexico

Section 5.1 Introduction

This chapter summarizes the Upper San Pedro River Basin Alternative Futures study (San Pedro). Section 5.2 provides a general overview of the project location, funding sponsor, and Alternative Futures that were developed. Section 5.3 characterizes the decision-making approach taken in the project. Section 5.4 provides an analysis of deliberation and decision-making in each Discursive Moment including the decisions taken and the roles of those involved in selecting the alternatives. Section 5.5 provides a discussion of the cumulative impacts of deliberation and decision-making throughout the project.

Section 5.2 Project Overview

In 1997, the Department of Defense's Legacy Resources Management Program approved and funded the proposal for the Upper San Pedro River Basin (Steinitz, et al., 2003, p. xiii). Work began in 1998 and was substantially complete by 2002. Published in 2003 (Steintz, et. al., 2003), the study addressed impacts of human activity on the related systems of hydrology and biodiversity. The San Pedro River flows northward from its headwaters in Mexico. It is one of the few free flowing rivers in the Colorado River system. While little water flows above ground during parts of the year, subsurface flows support a rich riparian habitat (Stromberg & Tiller, 1996; Glennon & Maddock III, 1994). Increased groundwater pumping resulting from development has resulted in a cone of depression in the aquifer near Sierra Vista and Fort Huachuca (Steinitz, et al., 2003, pp. 9 – 12).

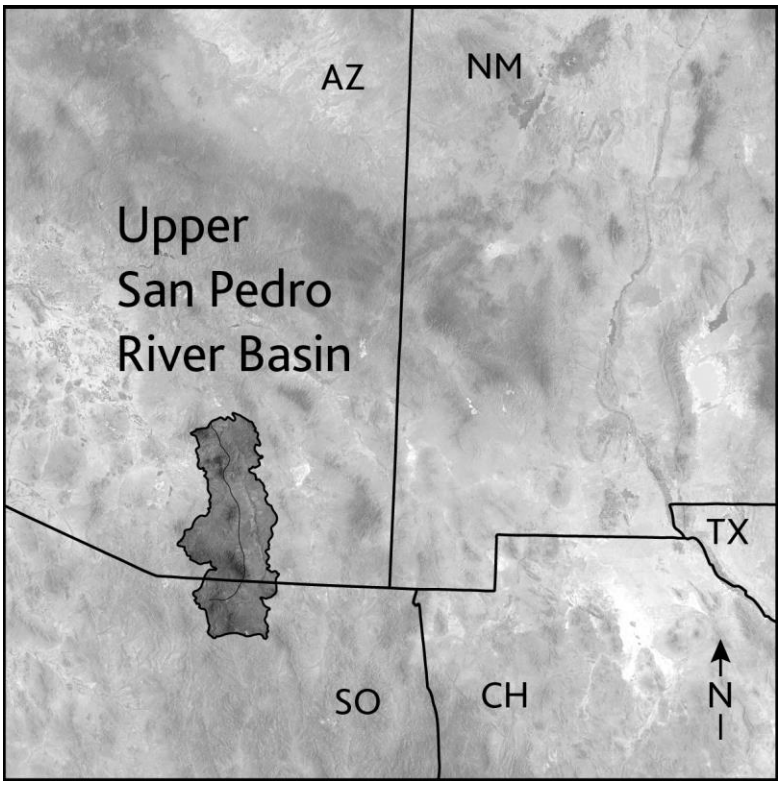

Figure 5.1. The study area lies in the U.S. Mountain West and crosses the U.S. – Mexico border.

Located in the semi-arid region in southeast Arizona and northern Sonora, Mexico, the study area contains nearly 4,100 square miles (10,660 square kilometers) including both riparian and upland areas (Steinitz, et al, 2003, pp. 9 – 12) in a mixture of grassland and desert ecosystems with a semiarid climate (Browning-Aiken, Vardy, & Moreno, 2003, p. 613). Potential evapotranspiration exceeds precipitation by more than a factor of ten (Goodrich, et al., 2000, p. 6). Arid to semi-arid uplands contrast markedly with lush riparian zones along the San Pedro River that consist of mesquite *bosques,* Fremont cottonwood/Gooding willow forests, and riverine marshlands or *cienegas* (Secretariat for the Commission for Environmental Cooperation, 1999, p. 15).

Located within the study area are the United States Army Training and Doctrine Command's Fort Huachuca, the community of Sierra Vista in Arizona, and the community of Cananea in Sonora, Mexico. Of the approximately 114,000 people living in the basin, the largest

concentrations are located in Sierra Vista, U.S.A. with 38,000 who are primarily employees or retirees from Ft. Huachuca (U.S. Census Bureau, 2000), and Cananea, Mexico with 32,000 (Varady, Moote, & Merideth, 2000).

The San Pedro Riparian National Conservation Area (Conservation Area), created in 1988 and administered by the U.S. Bureau of Land Management, is also located within the study area. Spanning roughly forty miles of river course and covering approximately 56,000 acres, the Conservation Area contains some of the highest levels of biodiversity in North America including critical habitat for neo-tropical migrating birds (U.S. Bureau of Land Management, 1998).

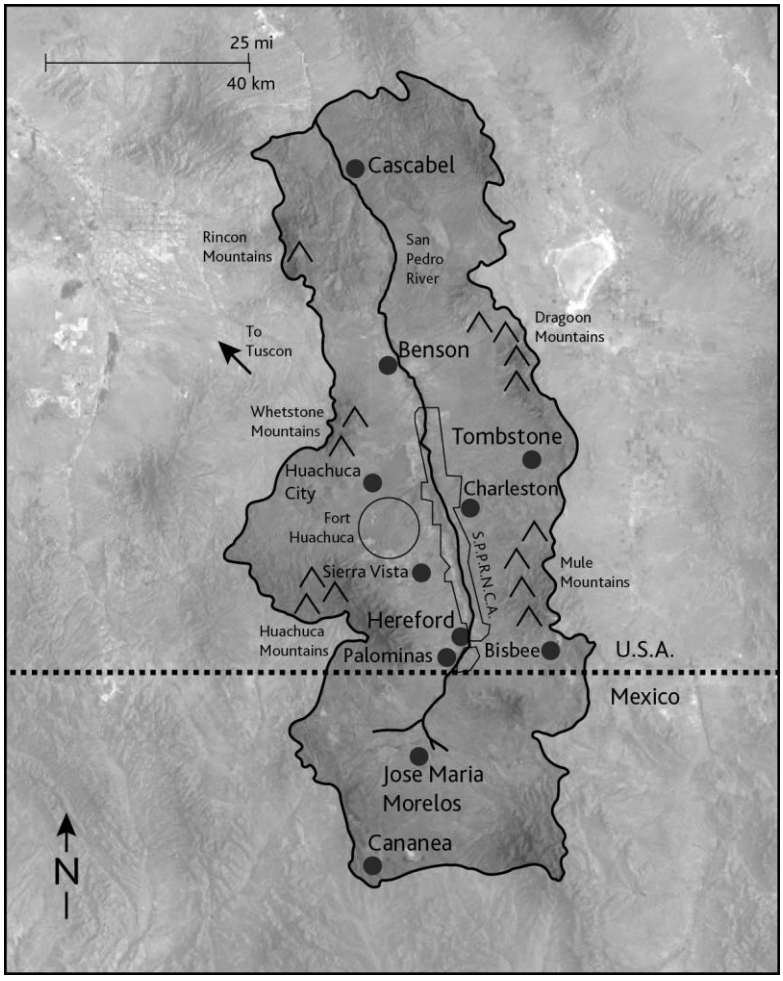

Figure 5.2. The San Pedro River Basin is bounded by the Wheatstone and Huachuca Mountains on the west and Dragoon and Mule Mountains on the east.

A team assembled from Harvard University Graduate School of Design, the Desert Research Institute, the University of Arizona, Instituto del Medio Ambiente y el Desarrollo Sustentable de Estato de Sonora, the United States Army Training and Doctrine Command, and the United States Army Engineer and Development Center conducted research. The aim of the study was to "investigate issues relating to possible future development in Arizona and Sonora and its potential impacts on regional hydrology and biodiversity" (Steinitz, et al., 2003, p. 11). The study limited its role to research as opposed to consulting or planning services (SP-7, 2012; SP-8, 2010).

Figure 5.3. Overview of the San Pedro River Basin. No major urban areas occur within the basin (Scott Bassett, used by permission).

The San Pedro report identified three major scenarios with variations of each to provide more nuanced understandings. The *Plans* scenario projected the current trajectory of change in development and water use. *Plans 1* doubled the expected population growth,

while *Plans 2* maintained expected population growth in Arizona, but doubled the expected population growth in Sonora. *Plans 3* projected expected population growth but limited it to urbanized areas. In the *Constrained* scenario, growth was lower than forecast in Arizona and limited to previously urbanized areas. *Constrained 1* used the same limited growth but doubled the population on the base at Fort Huachuca. *Constrained 2* used the limited growth and closed Fort Huachuca. Fewer controls on development were imposed in the *Open* scenario. This resulted in population growth fifty percent higher than expected. *Open 1* maintained current development controls in rural areas and closed Fort Huachuca. *Open 2* doubled the population of Fort Huachuca as well as towns in Sonora based on increased mining activities.

Figure 5.4. The San Pedro River flows northward providing rich riparian habitat. Surface flow is closely linked to subsurface hydrology (Scott Bassett, used by permission).

Figure 5.5. Grasslands and juniper- pinyon communities provide additional habitat as well as grazing for local ranchers (Scott Bassett, used by permission).

Section 5.3 Project Approach

San Pedro represented the expert driven case in the research design. It took place in a context largely unaware of landscape planning. The general population was suspicious of resource management agencies and university researchers (Steiner, Blair, McSherry, Guhathakurta, Marruffo, & Holm, 2000). Landscape management problems that had been identified by previous university studies were viewed as politically biased (Browning-Aiken, Vardy, & Moreno, 2003). Ranchers, conservationists, and the mining communities in Mexico focused on the availability of water for their own interests and viewed each other as competitors (Varady & Moorehouse, 2003; Varady, Moote, & Merideth, 2000). Although staff at Fort Huachuca was aware of resource management issues, they had not formulated a course of action. Selection of the planning team and planning method was imposed through the actions of one person in the U.S. Army Training and Doctrine Command (TRADOC). The project was designed by a small group of researchers during a workshop

completed within two or three days. Data collected during the study was not shared with the public. Three scenarios resulted that offered differing impacts on futures. Of these, none has been adopted by public agencies or non-governmental organizations to guide future decision-making and actions.

Section 5.4 Analysis of Discursive Moments

Discursive Moment One: Identification of project scope and planning method

The San Pedro study built on several previous planning studies that made conservation and planning recommendations. The most significant of these were the international Semi-Arid Land-Surface-Atmosphere (SALSA) report (Goff, Goodrich, & Chehbouni, 1998) and The *Ribbon of Life* (1999) report by the Commission for Environmental Cooperation (CEC) (Secretariat for the Commission for Environmental Cooperation, 1999). These studies connected the decline wildlife habitat in the basin with depletion of the water table by human uses and called for coordinated management responses.

These studies do not appear to have created a shared discourse. Rather, despite these international efforts, the overall context lacked a tradition of collaborative planning. In a 2006 study, Bryson et al. called attention to the importance of initial conditions that included social turbulence and competition between institutions (Bryson, Crosby, & Stone, 2006, pp. 44-45). A nearly exclusive focus on the single socio-ecosystem condition of water availability for municipal, fort, and agricultural uses contributed to conflicting attitudes about water issues on the U.S. side of the border (Morehouse, et al., 2008, p. 280; Browning-Aiken, Vardy, & Moreno, 2003, p. 61). The legacy of the frontier left an "independent spirit" that partially explains a pro-development attitude of many residents (Varady & Moorehouse, 2003, p. 19). More specifically, water resource allocation issues related to human use and environmental systems had become critical issues that "sparked divisiveness among water users and water-management entities" (Browning-Aiken, Vardy, & Moreno, 2003, p. 616). Traditional uses such as ranching, agriculture, mining, and recreation continued to be replaced by urbanization. "Expanding suburban and urban areas

within the San Pedro basin have placed acute demands on the area's limited water supply" (McSherry, Steiner, Ozkeresteci, & Panickera, 2006, p. 83). Increased reliance on groundwater had drawn down aquifers in cones of depression (Steinitz, et al., 2003, pp. 9 – 11). In 2008, total demand continued to exceed average supply by approximately 6 – 10 million cubic meters per year, a stress that will be exacerbated by further development (Morehouse, et al., 2008, p. 279).

Across the border, the town of Cananea in Mexico pumped wastewater from mines to nearby towns that have become dependent on this water source. Increased use at mines further reduced water returning to the river. The town was known for its history of social activism that made compromise difficult (Browning-Aiken, Vardy, & Moreno, 2003, p. 615).

These conflicts were complicated by differing perspectives on either side of the US/Mexican border in which each side harbored suspicions that the other side was seeking more water (Morehouse, et al., 2008, p. 279; Secretariat for the Commission for Environmental Cooperation, 1999, pp. 7-8). Sierra Vista residents suspected increased water use at the Cananea mine would dry up the San Pedro River Natural Conservation Area (Conservation Area) and contaminants from the mine would flow into the United States. At the same time, Mexican communities thought the Sierra Vista residents wanted them to conserve water so Sierra Vista could develop (Browning-Aiken, Vardy, & Moreno, 2003, p. 618). A statement by a public figure heightened tensions:

> "About the same time, Oliver North made a statement, why should we care about Mexico? They [Mexico] don't have any influence over us [the United States]" (SP-5, 2011).

Disagreements about human uses were exacerbated by landscape conservation demands. "The crux of the San Pedro's stream flow problem is competition over allocation of water. But … this disagreement is not simply between consumer communities. Instead, this water use conflict illustrates an increasingly common tension: competition between consumptive human uses and conservation of landscape and habitat" (Varady, Moote, & Merideth, 2000,

p. 225). Steiner, et. al. noted dewatering the river would not only damage economic prosperity of the basin, but would also be a profound loss to global biodiversity (Steiner, Blair, McSherry, Guhathakurta, Marruffo, & Holm, 2000, p. 138). Local citizens resented retirement of traditional grazing and agricultural land to create the Conservation Area. This and other environmental conservation efforts were seen as outside interference in local resource issues (Secretariat for the Commission for Environmental Cooperation, 1999, p. 8; Morehouse, et al., 2008, p. 279). Concern about loss of biodiversity and the ecological health of biotic communities in the Conservation Area resulted in a series of legal maneuvers brought by the Center for Biodiversity that continue today (SP-5, 2011; SP-9, 2011; Center for Biodiversity, 2012).

These controversies resulted in a highly polarized social context.

> "By the time the project got going, a lot of people had made up their mind that saving the river wasn't worth losing jobs. Sides were already taken. Before planning got started, there were people who didn't want any outside planning teams. That included economic studies as well as environmental studies. They thought they were being treated like guinea pigs… People thought they had to take sides: either they shut down the Fort or they allowed unfettered development" (SP-9, 2011).

Controversies were further exacerbated by relatively ineffective resource conservation organizations (Morehouse, et al., 2008, p. 279) and a history of distrust of hydrological studies that disagreed with some constituents' interests (Glennon & Maddock III, 1994).

> "The project was already funded when I was contacted… [He] informed me that there had been controversy about … previous modeling of the San Pedro Basin and I told him that he might want to contact someone else." (SP-3, 2010).

Although Active Management Areas (AMA's) and Irrigation Non-Expansion Areas (INA's) had been in effect in Arizona since the 1980's to prohibit extension of irrigated agriculture, they

had not been adopted for the San Pedro basin in large part due to conflicting private interests (McSherry, Steiner, Ozkeresteci, & Panickera, 2006, p. 84). Nevertheless, the Upper San Pedro Partnership, formed in 2000, served as an advisory group for some organizations, as a collector and sponsor of research and, in some cases, a fund raising organization (Browning-Aiken, Vardy, & Moreno, 2003, p. 270).

The practical impact of these circumstances for subsequent stages of the Alternative Futures study was a context characterized by suspicion, competition, and substantially entrenched positions.

> "Several groups didn't work together well. There was contention between stakeholders. I have never seen a place so contentious. For example, the Center for Biodiversity and the water companies both attacked the research team… The Center for Biodiversity perceived that the team was trying to help Ft. Huachuca. Water companies attacked because the [research team] hydrologist was not considered a friend of the water companies. The Nature Conservancy was considered to be right [conservative politically] by the Center for Biodiversity, but left [liberal politically] by the water companies" (SP-5, 2011).

As a consequence, this setting was far less conducive to cooperative planning efforts than other comparative Alternative Futures projects. Stakeholders had little understanding of, or appreciation for, each other's perspectives. Further, these contentious attitudes were unforgiving of perceived or real misunderstandings or mistakes that any planning team would make during the planning process. A project scope – the key decision needed – had not yet emerged

Selection of the Alternative Futures method and the planning team contributed another layer of friction to this already controversial situation. In this case, selection of the planning method and planning team took place as one contiguous action. Therefore, they will be treated together in Discursive Moment Two below.

Discursive Moment Two: Selection and assembly of the planning team

Selection of the Alternative Futures approach and planning team resulted largely from the efforts of one person. One interviewee suggested,

> "Talk to Bob Anderson because the project was his idea in the first place. He was a funding officer at Fort Monroe, Department of Defense. He knew about the Pendleton project and said we need this. He saw this as a crisis, and I agree that it was" (SP-8, 2010).

This statement is significant because as a funding officer at TRADOC headquarters in Ft. Monroe, Virginia, Bob Anderson was able to direct funding to projects at Army facilities. He had previously been familiar with the earlier Camp Pendleton Alternative Futures Study in California.

> "He [also] knew about the controversies between Ft. Huachuca and the Center for Biodiversity regarding water consumption and biodiversity issues... So [he] asked [team members] if [they] would be interested if he could get Legacy funding… [He] specifically wanted Harvard involved" (SP-5, 2011).

Based on the success at Camp Pendleton, Anderson was able to convince the command structure at Ft. Huachuca to cooperate with an Alternative Futures study led by the Camp Pendleton research leader.

> "Bob Anderson knew about the Camp Pendleton study as well as significant environmental issues in the San Pedro Basin. He got the funding ($1.7 million) from the Department of Defense" (SP-3, 2010).

What kind of deliberation would account for these decisions? Three interviewees provided insight. One interviewee focused on Anderson's role as an individual,

> "Bob Anderson in Virginia got the funding. He called meetings and would present when the Harvard Team was present. He grounded the Fort people, briefed the commander. Bob is articulate and charismatic" (SP-9, 2011).

Another person focused on the power relationships at Fort Huachuca,

> "Prior to 2002, TRADOC was the biggest tenant on the base and therefore, in effect, had the most influence on how it ran. Bob Anderson at TRADOC Headquarters pushed for the Alternative Futures study for some time. He applied for and received a grant, contracted with Harvard, and told people at the fort to do it" (SP-7, 2012).

Yet another comment reflected on the gridlock in the Basin,

> "I respect Bob's attitude toward the lack of interest in starting the project by Ft. Huachuca. I see it as an effort to get a decision support process in southeastern Arizona" (SP-5, 2011).

Funding for San Pedro was directed through the Desert Research Institute (DRI) in Nevada, which is part of the state university system. However, project leadership effectively took place through Harvard University.

> "Carl [Steinitz] was the number one guy on the project. He called the shots meaning he was responsible for the research design, team selection, and supervision of research… but he wasn't the PI [principal investigator]" (SP-5, 2011).

Thus the funding principal investigator was a DRI scientist, while the de facto project principal investigator managing daily research activities was located at Harvard.

> "He [Bob Anderson] specifically wanted both the Alternative Futures method and Carl Steinitz as the project lead" (SP-6, 2010).

Planning team members were selected by Carl Steinitz based on recommendations from the other scientists.

> "Carl set up the team and asked opinions of people" (SP-1, 2011).

Several team members were people recruited to the Harvard Graduate School of Design as graduate students in order to work on the project.

> "When the group came together, [several people] conspired to get [one of the researchers] to go to Harvard and be paid by this project" (SP-5, 2011).

Selection of other team members was based on technical competence and scientific reputation.

> "At a conference in 1997, [a team member] asked [a hydrologist] of the University of Arizona to recommend a hydrologist. [He] recommended Tom Maddock as the best in the world. Tom took his PhD from Harvard and got along well with Carl" (SP-5, 2011).

This approach contributed to certain pre-existing controversies. Ft. Huachuca staff, water companies, and the Upper San Pedro Partnership objected to the choice of hydrologist.

> "The fort didn't want certain controversial hydrologists involved, but they were put on the team. This created controversy… Most of us fought at the beginning to keep this from being a hydrological study, but it became much more than that under Harvard" (SP-7, 2012).

However, not all entities appear to have been equally concerned by the choice of team members.

> "The county was contentious until the team went with Maddock as its hydrological modeler. The Nature Conservancy was extremely open… The city was neutral. The water companies didn't want to talk. The Fort was contentious at the beginning, better at the end" (SP-1, 2011).

In spite of these objections, the team stayed with its original choice of hydrologist to respect the integrity of the science.

> "The team enjoyed (the hydrologist) and respected his reputation. It would have been inappropriate to drop him… The team agreed it's important to listen to stakeholders, but not necessarily to respond to their requests" (SP-5, 2011).

From the point of view of local stakeholders, selection of both the Alternative Futures method and planning team took place outside their control or influence. This perceived failure contributed to acrimonious relationships, especially between staff at the fort and the team.

> "At the time, Ft. Huachuca was going through environmental litigation and was finishing its work as part of the 1995 BRAC [Base Realignment and Closure] process. In my opinion … the planning team failed to take into account current staff time commitments" (SP-7, 2012).

One person reported,

> "The team's going in position was poor with regard to stakeholders. There was limited involvement because they [stakeholders] refused to use [the hydrologist's] data" (SP-6, 2010).

Another indicated,

> "At the start, [a certain fort employee] was not overly excited about… outsiders coming in and the environmental people weren't happy. The active duty people had no problem" (SP-1, 2011).

In summary, stakeholders had the perspective that selection of approach and team members took place outside their influence. This perception was to have lasting impact on subsequent phases of the project. The background planning context of suspicion,

competition, and substantially entrenched positions appears to have hardened and focused on the Alternative Futures planning team. One team member fueled passions further by saying, "the water companies were ostriches with their heads in the sand and called them fools" (SP-5, 2011). Stakeholders felt so ostracized that they referred to the team as "the Harvard group" or simply "Harvard" (SP-2, 2011; SP-7, 2012; SP-9, 2011; Silver, 2000). 'Us versus them' lines were drawn with 'them' being the planning team. Yet this adversarial position failed to unite various stakeholder groups as often happens when a common enemy is identified. Rather, various stakeholders took the position that the planning team was somehow aligned with other, competing stakeholders. As a result, from the beginning of the project the planning team and the Alternative Futures approach lacked support or buy in from nearly every interest group.

Discursive Moment Three: Determination of the project design

Project design took place during a multi-day workshop that used Steinitz' six questions as a framework for determining key landscape variables (Steinitz, 1990; Steinitz, et al., 2003; Steinitz, 2004). Scientific advancement was assumed to be the primary purpose of the study.

> "The author[s] told me the study was important for academic research, not necessarily for practical reasons. I describe his attitude as science for science's sake. The impacts on people and policy were not important" (SP-2, 2011).

Seven team members attended the meeting (SP-8, 2010).

> "The team was responsible for design of the study because: 1) it allowed the research to be independent, and 2) it allowed the team to get going before relationships with the stakeholders could warm up… At the start stakeholders were cool toward the project and team... Another consequence was to reinforce the decision for the research team to take responsibility for the scope of the project since it allowed the team to get going before the relationship could warm up. It

> takes about one and one-half years for the relationship to warm up if the team members are outsiders. However, building relationships didn't work" (SP-8, 2010).

Both the framework and multi-day workshop concept had been developed for previous projects and were adapted to San Pedro.

> "The [leader] runs the key meeting to design the study… You go through the framework. You make a blackboard of the framework as you expect it to work out. If you don't do this: 1) you collect too much information, and 2) you get results you can't integrate. You narrow the variables that are indicators of landscape health" (SP-8, 2010).

The team had a clear project concept prior to the workshop that determined much of the design.

> "When I begin a study, I know my final presentation will be 45 minutes long, will have 20 meters of exhibit, and about 80 slides. That means you need more than 5 and less than 15 scenarios. You need complexity with simplicity. One strategy is to do the study in stages. You are really only going to vary 2 to 4 things in the landscape. The problem is to find key issues that will respond to sensitivity analysis. This is hard. You don't need the public in this. You need the public in politics" (SP-8, 2010).

In the workshop, Steinitz' six questions were repeated three times. The first time the questions were asked in the sequence described to establish the need for the study and identify available and needed resources (Steinitz C., 1990; Steinitz, et al., 2003). The second iteration occurred in reverse order to design the study. The final iteration proceeded in the original sequence after the workshop to complete the work (Steinitz, et al., 2003, pp. 13 – 22). The team reached the following conclusions that framed the project design:

1) *How should the landscape be described spatially and temporally*?

The project design confirmed, among other things, a cross-national study area, land use/land coverage data available from the Desert Research Institute, and the georeferencing system (Steinitz, et al., 2003).

2) *How does the landscape work functionally and structurally?*

A development model was established for evaluating attractiveness of five kinds of development: commerce-industry, urban residential, suburban residential, rural residential, and exurban residential. It identified five inter-related impacts on hydrological cycles: "change in agricultural pumping, change in municipal and industrial pumping, average daily groundwater storage based on changes in the water table, changes in flow of the San Pedro river, and change in the length of perennially flowing segments of the river" (Steinitz, et al., 2003, pp. 18 – 20). The vegetation model developed in the workshop accounted for changes in development as well as changes in fire, soil moisture, and riparian corridor. Six species of vertebrates were chosen so each vegetative community would be inhabited by at least one of these animals. Threatened or endangered status and reintroduction proposals were also considered. Models for species richness were identified. Finally, a visual preference model was developed based on preferences that would be expressed by residents of the San Pedro region (Steinitz, et al., 2003, pp. 18 – 20).

3) *How does one know whether the landscape works well?*

"Whether the current landscape is working well or not is answered by evaluation models" (Steinitz, et al., 2003, p. 20). Data modeled for each scenario was compared to landscape conditions during the period 1997 – 2000. This baseline was referred to as 2000 throughout the study (Steinitz, et al., 2003, p. 20).

4) *What would change the landscape?*

Answers to this question were developed into three groups of scenarios that would be modeled. "The questions addressed the development of the area, water use, and land management. The answers, interpreted into a set of assumptions and choices about policy,

became a range of scenarios. A separate but similar question set that concerns the Sonoran part of the basin was applied to the Mexican portion" (Steinitz, et al., 2003, p. 21).

5) *What differences would the changes cause? Can they be modeled?*

"Applying the process models to the Alternative Futures for 2020 and comparing the results with the reference year 2000 yields impact assessments… Both direct and indirect impacts are assessed, with each of the impact assessments revealing one aspect of how an alternative future is predicted to change the landscape" (Steinitz, et al., 2003, p. 21). The study identified urbanization and agriculture as the major environmental stresses impacting the San Pedro River Basin. Water use, irrigation, plowing, paving, and grading caused direct impacts. Indirect impacts included changes in vegetation, altered hydrology, and fire suppression (Steinitz, et al., 2003, p. 21).

6) *How is one potential alternative chosen over another?*

Like other Alternative Futures research, the study was not designed to make or recommend landscape management choices. "This research is intended to inform these decision-making processes, rather than to recommend specific solutions or policies" (Steinitz, et al., 2003, p. 21).

Several conclusions about deliberation and decision-making can be drawn from this description. First, the team leader took charge from the start through use of the methodological approach. This contributed a clear vision of what was needed and how to proceed. Second, the project proceeded from a "science for science's sake" (SP-2, 2011) perspective as opposed to a tool for practical implementation. This point of view was shared by more than half of interviewees including both stakeholders and team members. Third, key stakeholders such as Ft. Huachuca environmental staff, Upper San Pedro Partnership, water companies, and county planning officials were notably absent from the workshop. This absence was a conscious action on the part of the research team that confirmed an expert driven approach. In this schema, the planning team made the decisions based on its own deliberations separate from stakeholders.

Yet each decision reached in the workshop was the result of considerable expert deliberation. However, deliberation took place among a small subset of the research team that excluded external stakeholders or even the staff at Fort Huachuca. As a result, decisions could be made during a short, two or three-day workshop that resulted in clarity, focus, and rapid momentum. From stakeholders' points of view, however, this separation appears to have reinforced their sense of being left out of the study.

> "This study took place as a separate enterprise from the fort staff's agenda and other projects. Staff tried to advocate for a different approach and timeline so it wouldn't be put on the shelf" (SP-7, 2012).

The perception by stakeholders that they were left out of the process did not differ substantially from the understanding expressed by members of the planning team, although it had a very different connotation. Nevertheless, the language used was different in each case. The planning team used the term *scientific integrity* to convey the concept of independent investigation that would lead to modeling possible landscape conditions. They viewed their role as collecting and modeling data that could be mined later during multiple decision-making processes. Further, their role would contribute to the body of knowledge that could be analyzed by independent researchers and cited in future studies.

> "The primary outcomes are the academic citations" (SP-8, 2010).

Stakeholders, on the other hand, used the term *science for science's sake* to convey something inaccessible and vaguely mysterious. For various reasons – use of the hydrologist with whom they disagreed, lack of participation in the process, or simply lack of access to the data – they considered the process to be disconnected from the decisions they had to make.

In summary, a small subset of the research team designed the project during a two-day workshop. The workshop was conducted with a clear concept of the planning outcomes that would eventually result. The team adopted an expert driven approach that, in their

opinion, maintained scientific integrity and research independence. It also allowed them to move the research forward quickly and with a high degree of focus. However, stakeholders felt marginalized by this approach, feeling the project was outside their control or influence, and they wanted greater participation in the design and execution of the project. Staff at Ft. Huachuca believed the timing was inconvenient for them. Further, they and other stakeholders wanted a process that could more easily result in practical applications.

Discursive Moment Four: Data collection

Data were collected on four major systems: human demographics, hydrology, land cover, and human visual preference. Historic human population trends were based on 1980 and 1990 U.S. Census data (Steinitz, et al., 2003, p. 47). A Lowry development model (Lowry, 1965) was used that was "designed to generate estimates of retail employment, residential population, and land use for sub-areas of a bounded region." (Steinitz, et al., 2003, p. 47).

The purpose of the biophysical data was to establish a baseline of landcover as it impacted wildlife biodiversity. Historic spatial distribution and dynamics of vegetation was gathered from Hastings and Turner (Hastings & Turner, 1965), Bahre (Bahre, 1991), McClaren and Van Devender (McClaran & Devender, 1995), Mouat and Lancaster (Mouat & Landcaster, 1996), and Kepner, et al (Kepner, Watss, Edmonds, Heggem, & Wade, 2000). This information was used to establish potential habitats for wildlife.

The team established a baseline of potential wildlife habitats for six single species so that potential scenarios could be modeled to determine impacts (Steinitz, et al, 2003, pp. 85 – 110). Similarly, the team studied potential habitat of seven threatened and endangered species (Steinitz, et al, 2003, pp. 111 – 115). To indicate levels of diversity so scenarios could be tested for levels of biodiversity, the team developed a species richness model (Steinitz, et al., 2003, pp. 116 – 123). A Wildlife Habitat Relations (WHR) model was first created to identify areas in which specific species could live. Vegetative species classification was obtained from the species-specific Arizona WHR GAP Analysis program to provide the basis

for species distribution (Kunszmann, No date). Potential habitat for each species was identified using land cover, distance to water, landform, and area.

Before the introduction of human-caused stress prior to 1940, the hydrological system was considered a steady state. A study by Goode and Maddock (Goode & Maddock III, 2000) was used to establish baseline pumping from 1940 – 1997 using the MODFLOW computer model (MacDonald & Harbaugh, 1988) to compute the hydraulic head or water level for each cell in the GIS grid (Steinitz, et al., 2003).

The goal of the visual preference model was to identify areas of scenic value as expressed by residents' preferences and to assess how they might change in the future. The team combined preference with visual exposure using the U.S. Forest Service methodology (U. S. Department of Agriculture Forest Service, 1995). This was a variant of the Scenic Beauty Estimate (SBE) method. Fourteen people living in southeastern Arizona at the time responded to a field of forty photographs illustrating built elements, vegetative communities, and landforms in the study area (Steinitz, et al., 2003, p. 124). This relatively small sample size indicates a limited stakeholder input into the process.

Interestingly, the database used for landscape modeling does not appear to have been shared with the public.

> "They were generous in their willingness to take input of data, but stingy with outputs of their model. They wouldn't share the results of their models" (SP-7, 2012).

Whether this was a conscious decision or an oversight is an open question. When asked, one team member replied,

> "The scientific data question is an interesting one... My guess is that it simply wasn't considered. I do not know who has the original photos and maps... Have you checked with [another team member] by any chance?" (SP-1, 2011).

Control of data is, thus, another component of the expert driven approach.

In summary, data were collected for four major systems: human demographics, hydrology, land cover, and human visual preference. As in other Alternative Futures projects, data was compiled from other sources by the team. The exception was the visual preference model that relied on a Scenic Beauty Estimate method in which fourteen people responded to a field of forty photographs. Data was not made available to the public.

Discursive Moment Five: Selection and testing assumptions of scenarios

The three scenarios represented a continuation of current resource management policies in *Plans* scenario, lowered growth in *Constrained*, and increased growth in *Open*. Subsets of each scenario provided more nuanced responses to potential development.

Scenarios were developed, selected and tested by the expert team, guided in part by a survey of stakeholders (Steinitz, et al., 2003).

> "Stakeholder scenario guides were the primary tools for collecting stakeholder input. There were probably 80 or so" (SP-8, 2010).

> "A public meeting was held to inform the public the guide would be published to solicit their input. A pre-guide was administered to city officials and staff. The revised draft guide mostly became the final guide. Four to five public meetings were held during the process. 200 guides were printed, but approximately 50 to 100 were distributed in meetings. There was also a link on the team's project web site and on the US Army Corps of Engineers web site" (SP-6, 2010).

> "… There was a very, very minimal web page set up for the project, which basically said that it existed. On the page was a link that allowed people to request a copy of the Scenario Guide, but not to complete it on-line… The form was tested and worked, but no one opted to use it" (SP-11, 2012).

At the meetings, the team,

> "… explained that the product would not be a vote. Rather, the team wanted to observe the pattern of responses and range of opinions. … The local water use group was notified. Nature Conservancy contacts attended meetings. The team notified these groups about the meetings and Fort Huachuca posted meeting dates in the newspaper. The Sierra Vista newspaper covered the meetings, but published no advance notice. Meetings were held around lunchtime to encourage public employees who might not attend night meetings to attend. They were held in the library, city hall, and community center. At the first meeting, 20 to 25 people attended. Up to 50 to 75 people attended most meetings. The base scheduled one at night. They didn't really do much in Mexico" (SP-6, 2010).

The team used information from the Scenario Guides to collect the range of possible scenarios, not the desirability of any particular scenario.

> "Responses were a rather diverse group with answers that disagreed. The team asked how to make scenarios reflecting diverse points of view. No public meetings were held to digest the guides. The team brought scenarios to public meetings to check answers, not to discuss contents. Stakeholders did not change their mind. All saw it as a zero sum game meaning 'your gain is my loss'" (SP-8, 2010).

> "There was [also] concern by locals that the team might be rigging the results" (SP-6, 2010).

The San Pedro team tested assumptions internally.

> "The team didn't start with population forecasts. Rather, they built the futures piecemeal from information in the Scenario Guides and meetings. They emphasized stuff actually being discussed in the region. For example, there was a question in the guides about Fort Huachuca closing. This was different than the other questions in

> that it was descriptive rather than normative. Most questions were normative" (SP-6, 2010).

In summary, while stakeholders were involved in identifying the range of scenario options, they were not involved in testing whether the scenarios described actions that would or could actually take place. The decision not to include stakeholders in questions of plausibility appears to have separated stakeholders from a sense of ownership.

Discursive Moment Six: Landscape impacts of different scenarios

The three *Constrained* scenarios directed most future development into previously urbanized areas. They had the lowest negative impacts on hydrology, reduced loss of groundwater, improved river flow, and increased riparian vegetation. However, they had the least attractiveness to development. The three *Open* scenarios had the most appeal to development and the greatest negative impacts on groundwater storage and recharge. They resulted in futures that had a diffused pattern of development and were the least environmentally sustainable. The *Plans* scenarios continued existing management policies that fell somewhere between the extremes of *Open* and *Constrained*, but were closer to the *Constrained* futures. Although they slowed loss of groundwater, the water table continued to decline. This resulted in a slow decline of several environmental systems (Steinitz, et al., 2003, pp. 130 – 131).

> "The full blown futures with impacts were presented at a public meeting. The same information was given to the base commander and his planning staff beforehand. My recollection is we had the on-base part early in the morning and then the public presentation late morning/lunch time. I can still imagine the room and think it was in the recently built public library, although it might have been the community center" (SP-11, 2012)

Changes in public perception represented a subtle impact.

> "It was a double edged sword in that it changed a vague awareness into a pressing consciousness of the price of inaction. It also changed the concept of the fort as the root of all evil to the positive impact of the fort… The scenarios proved that if you close the fort, the river is doomed because a large acreage is no longer subject to the Endangered Species Act or the water management practices of the fort… The canyons managed by the fort are very desirable locations and without the fort they would get developed, thus impacting species and draw down of water… The public became thankful the fort existed" (SP-7, 2012).

Discursive Moment Seven: Selection of implementation strategies

Scenarios do not appear to have been adopted as frameworks for implementation by agencies or NGO's. Interviewees were unable to identify direct implementation strategies.

> "I rarely hear any mention of the Alternative Futures plan or research. It appears not to be directly incorporated into policy or actions. If it is, it is very diffuse" (SP-9, 2011).

Rather, the primary direct outcome of the study appears to be planning outputs in the form of academic studies, dissertations, and citations. For example, graduate student, Kay Baird, developed a method for modeling evapotranspiration in a later dissertation at the University of Arizona based, in part, on information in this study (Baird, 2005).

Interviewees acknowledged the academic outcomes of the planning process. The study was cited 133 times (Google Scholar).

> "The primary outcomes are the academic citations. There are no other outcomes that I know about… Raising awareness is a substantial success, but not a change on-the-ground" (SP-8, 2010).

> "The fair number of citations of the report in scholarly articles indicates the report had scholarly outcomes as a research tool" (SP-6, 2010).

Yet a number of subsequent studies have built on concepts in the study. These include policy studies (Morehouse, et al., 2008; McSherry, Steiner, Ozkeresteci, & Panickera, 2006), vegetation (Jones, et al., 2008), impacts of land use and landcover (Nie, Yuan, Kepner, Jackson, Erickson, & Nash, 2011), and hydrology (Serrat-Capdevila, Valdés, Pérez, Baird, Mata, & Maddock III, 2007).

The report also seems to have contributed to the way scholarship is used in the basin.

> "The study also changed the way some scientists present information. They now have a visual way of showing drawdown of water and cones of depression. This impacted the fort's conservation program. They concentrate on the red/orange areas" (SP-7, 2012).

However, people also noted a long-term change in public perception.

> "…over time there has been an acceptance of outside science and conservation that is a change in perceptions from the previous polarization. You don't see as much polarization. People are getting used to scientists" (SP-9, 2011).

> "The report sets out pitfalls of not seeing the big picture in terms of time and ecological systems" (SP-7, 2012).

In addition, there have been subsequent, tangentially related activities aimed at stabilizing the aquifer.

> "I'm not sure of any direct results of the study, but there are a few things happening. The fort supported the research. The county installed a public [waste water] reuse plant with wetlands for aquifer recharges... The USGS sponsored a Trans-boundary Aquifer Assessment Act whose purpose is to research aquifer on both sides of the border. Some of the information is shared with the public. This is an effort to create a bi-national water model" (SP-2, 2011).

> "I think Ft. Huachuca used the study some. It was clear that certain development patterns would impact biodiversity by influencing habitat size and corridors. The Nature Conservancy allocated approximately $1 million to acquire riparian easements. But the outcomes have been more educational" (SP-5, 2011).

While most people cited planning outputs as the most identifiable results, there is circumstantial evidence that on-the-ground environmental outcomes occurred subsequent to the study.

> "The commander has great weight, so yes, water conservation has gone down below what anybody thought possible. The Fort has reduced water consumption for ten years – to probably half what it was. This also saves electricity for pumping. They reduced leaks and demolished inefficient World War II buildings. They changed out showerheads and washing machines and placed restrictions on sprinkling. They also addressed recharge through water reuse, recharge on golf course and parade fields, better irrigation technology, and water capture in parking lots, roofs, retention basins. They reused sewer water for irrigation or to basins for recharge and diverted storm water to basins" (SP-9, 2011).

These are real outcomes of significance. It is possible, though unclear, that the subtle changes in perceptions led, however indirectly, to these outcomes. A final interview response poignantly summarized the potential connection between change of perception and subsequent on-the-ground changes.

> "The team had more enemies at the end of the project, so maybe some people did change their minds or at least woke up. The study seemed to create a fear of change or made clear that the landscape would change" (SP-8, 2010).

Section 5.5 Discussion of decision-making and deliberation

The San Pedro represents the expert driven case in the research design. Decision-making processes were largely restricted to deliberation within the research team. From their point

of view, this approach maintained scientific integrity so findings would be impartial. Stakeholders perceived the planning process, from selection of the planning team and method through delivery of final product, took place without their input and outside of their control. The project was surrounded by controversy from early stages onward. None of the three scenarios examined in the study appears to be used by any agencies as a framework for resource management. One researcher noted San Pedro was the most problematic project in a long and successful career. Lacking a context of trust, understanding, and inclusion that could lead to reasoned consensus, the project seems to have limited implementation outcomes on-the-ground, but there have been longer-term shifts in awareness.

Project scope and planning method reflected international suspicions in which citizens on each side of the border assumed the other side was taking more than its share of water. Thus, the deliberative planning concept of 'trust' based on Habermas' ideal speech situation' was absent. As a consequence of these conflicts, stakeholder groups were ineffective and unable to build a *scope* around an accepted mutual understanding and goals, what Habermas termed disinterested discourse and deliberative planners call understanding. These groups failed to identify Habermas' generalizable interests that rely on inclusion.

Selection of the planning team and selection of the Alternative Futures *method* took place as one connected discourse initiated largely by one person who convinced leadership at Fort Huachuca to hire the team and adopt the method. From the local stakeholders' point of view, this decision was seen as outside interference that removed them from the process from the start. Further, stakeholders objected to selection of the team hydrologist based on their distrust of his scientific reports. By this time, an expert driven approach to decision-making had emerged. These factors contributed to a lack of trust and absence of the joined concepts of inclusion and generalizable interests. As a result, from the beginning of the project the planning team and the Alternative Futures approach lacked trust or support from nearly every interest group.

Project design took place during a multi-day workshop attended by a subset of the research team. By this point, the expert driven approach to decision-making was well established. While this approach excluded local stakeholders, it was not without a deliberative element. Rather, there was considerable deliberation among a select group of experts. This had the positive effect of moving the project forward rapidly with a carefully defined set of issues, a clear scope of work, and a predictable range of products.

Data collection took place among experts as it does in most Alternative Futures studies. The key difference in decision-making was that data were not shared with the public or major stakeholders. This reinforced the expert driven approach. It limited the ability of stakeholders or other researchers to verify and/or use this data for better understanding and decision-making. Public availability of data seems to have been so unimportant that it didn't occur to the research team members as an issue until the interviews conducted for this thesis nine years after conclusion of the study.

Selection and testing of assumptions of scenarios was limited to the research team. However, the team solicited the possible range of scenarios from the public through a survey instrument distributed at public meetings. Although a website was established, nobody used it. The meetings at which these surveys were distributed appear to have been the primary means of including stakeholders and informing them to improve their understanding. The number of surveys collected, between 50 and 100, is not unusual for this type of survey. However, it is unclear whether the sample was representative of the full range of perspectives represented among stakeholders.

The research team scientifically modeled the *impacts of the scenarios*. Despite the polarized context of the study, or perhaps because of it, these impacts appear to have subtly changed the direction of public perception. They appear to have been a wake up call to constituents, particularly staff at Ft. Huachuca who subsequently took these issues seriously.

Nevertheless, the planning process and *selection of implementation strategies* appear to be disconnected. Not even the U.S. Army, who commissioned the study, used it as a tool to implement policy. Rather, policies to address the hydrological and biodiversity issues appear to have emerged gradually after later studies and separate discursive processes. Given the deliberative principles of trust, understanding, and inclusion were largely absent from the project, it might be assumed that regulatory control would be the only possible result. However, this was not the case either; the visible outcomes were academic. Nevertheless, the controversies surrounding the project appear to have raised awareness that something had to be done and eventually a change in perceptions appears to have resulted in water conservation at Fort Huachuca. Those outcomes were both real and significant. Circumstantial evidence indicates a connection between the change of perception stimulated by the San Pedro study, and subsequent actions at Fort Huachuca. Yet none of the interviewees cited the study as a direct model for on-the-ground changes.

Having reviewed decision-making and deliberation in the two cases, the next chapter will discuss their similarities and differences in the context of the wider literature and theory on Alternative Futures and deliberative planning, and draw theoretical and practical conclusions.

Chapter 6: Discussion and Conclusions

Section 6.1 Introduction

This chapter provides a discussion and insights about the nature of decision-making in Alternative Futures that emerged from the application of a theoretical framework derived from landscape planning alternative futures literature to the investigation of two case studies in the US Mountain West. Section 6.2 briefly reviews the research problem, question, objectives, and proposition. Section 6.3 summarizes and discusses the research findings pertinent to each research question against the wider backdrop of the theoretical debate about deliberation and decision-making, and notes practical implications. Section 6.4 raises questions for further research. Section 6.5 offers final conclusions of the study.

Section 6.2 The research problem, question, objectives, and proposition

This thesis examines the nature and role of decision-making within Alternative Futures landscape planning and how it shapes the planning process and outcomes. It asks when and how important decisions are made, who makes them, what the relationships are between those involved in making decisions, and what consequences such decision-making has for the overall planning process and its outputs and outcomes.

Alternative Future models are typically based on the assumption that development of Alternative Futures should be kept separate from the decision about which pathway to adopt. While the literature acknowledges the importance of stakeholder participation to the success of this technique (Hulse, Gregory, & Baker, 2002; Nassauer & Corry, 2004; Shearer, 2005; Baker, et al., 2004, p. 314), the deliberative dimension in Alternative Futures has received only limited critical attention (Shearer, 2005; Hulse, Branscomb, & Payne, 2004). Yet the contested nature of landscape management and its growing significance for social wellbeing suggests the need for greater understanding of decision-making.

The study uses insights from deliberative democracy and communicative planning literature (Healey, 1996; Forrester, 1999; Dryzek, 2005a; Hajer, 2003) to critically examine two

Alternative Futures cases chosen to represent extremes in decision-making approaches. This analysis explores the linked proposition that: Alternative Futures landscape planning combines deliberation and decision-making in a series of Discursive Moments whose character and cumulative effects shape the outcomes of the overall process.

The specific research objectives are to 1) develop a theoretical perspective drawn from communicative and deliberative planning to analyze the nature of decision-making processes in Alternative Futures planning, 2) use this framework to identify the nature of decision-making processes in Alternative Futures planning, critically examining when, how, and who is involved in shaping scenarios and futures, and 3) investigate the impacts of decision-making embedded in the planning process on the subsequent phases of the process and on the planning outcomes.

Section 6.3 Research Findings

The research resulted in three key insights that, in combination, affirm the opening proposition while throwing insight upon its expression in practice:

1) Decision-making and deliberation in alternative futures landscape planning are iteratively linked in a series of Discursive Moments.

2) Decisions made in each Discursive Moment build upon each other and impact the remainder of the process as well as cumulative outputs and outcomes, which challenge Dryzek's separation of deliberative moments from decisional moments (Dryzek, 2005a, p. 226).

3) Theoretical differences between the two cases are more nuanced than might be suggested by the deliberative and expert based extremes. Context and legacy are critical factors that shape how these nuanced differences play out in practice.

Research finding 1: Decision-making and deliberation are iteratively linked in a series of Discursive Moments

The work of four Alternative Futures theorists, Steinitz (Steinitz, et al., 2003), Baker/Hulse (Baker, et al., 2004; Hulse, Branscomb, & Payne, 2004), Nassauer and Corry (Nassauer & Corry, 2004), and Shearer (Shearer, 2005), combined with deliberative planning literature (Dryzek, 2005b; Forrester J. , 1989; Healey, 1996), was synthesized to develop a theoretical framework that served as an analytical lens to describe and understand the critical time periods when decisions were made. Steinitz' six questions (Steinitz, et al., 2003) overlapped with concepts from Baker/Hulse's four phases (Baker, et al., 2004) and Nassauer and Corry's four actions for science (Nassauer & Corry, 2004) to identify four Discursive Moments. Shearer's deeply embedded questions (Shearer, 2005) suggested three more. This synthesis of the seven Discursive Moments was described in Figure 2.8 on page 33.

Six questions taken from deliberative planning and Alternative Futures theory informed the analysis of decision-making in each Discursive Moment. These questions were: 1) *what* is being decided (Steinitz, 1990; Forrester, 1989; Healey, 1998); 2) *who* is involved in making the decision(s) (Hulse, Branscomb, & Payne, 2004; Healey P. , 1996); 3) *what kind of communication* takes place (Toth, et al., 2006; Forrester, 1993), 4) the process by which or *how decisions are made* (Mahmoud, et al., 2009; Fisher & Ury, 1981), 5) *what decision results* (Steinitz, 1990)*;* and, 6) *what are the impacts or implications* for subsequent phases of the planning process (Steinitz, et al., 2003; Dryzek, 2005a)? Taken together, the Discursive Moments and six questions created a theoretical framework shown in Figure 2.9 on page 40.

This study found that decision-making in the case studies occurred as described in the theoretical framework. However, in practice, the decision-making progression was more complex than the framework suggested. This was particularly true in the beginning phases of a study when scope, method, and selection of the planning team sometimes overlapped. For example, in the Willamette study individual actors played roles that sometimes changed

the anticipated sequence. Several actors knew each other or knew each other's work prior to the Willamette study (Discursive Moment 1 *Scope and Method*). This prior knowledge influenced some members' decision to submit a proposal together, thus shaping the composition of the team and partially shaping the scope and proposal (Discursive Moment 2 *Selection of planning team*). Other people familiar with the method and individuals associated with it worked for the sponsoring agency. Prior knowledge also influenced selection of the Alternative Futures method once the planning team had been selected. Further, during Discursive Moment 3 *Project design* the planning team incorporated scientists from the EPA as full-fledged members of the team. Yet all this was difficult to sort out because the participatory and collaborative approach used in the case partially obscured the traditional separation between the submitting team and sponsoring agency employees. The sequence of initial decision making in the San Pedro case was very different because an outside person imposed both method and planning team in a single Discursive Moment.

The case studies also revealed more complexity in the final discursive moment, Discursive Moment 7 *Selection of implementation strategies*. In particular, the various relationships between planning *outputs* such as data, reports, and articles and *outcomes* such as changes in perception, policy, or on-the-ground changes in the environment were critical. In the Willamette study, a causal relationship could be drawn from the Conservation 2050 scenario to policies that are currently being implemented to produce environmental change. In the San Pedro case, the relationship was indirect. However, data, reports, and articles in San Pedro may have had an impact a number of years after the completion of the study by changing perceptions. This eventually resulted in water conservation practices at Ft. Huachuca that could, in turn, reduce losses of riparian land cover. Although the relationship was indirect, the interviews nonetheless suggested a causal connection.

In summary, the cases provided insight upon the way in which decision-making moments in alternative futures planning are interrelated, and this has enabled development of an

improved synthetic model of the process. Discursive Moment 1- renamed *Institutional Commitment* -now focuses solely on decisions about whether to do a study, the intended purpose and metrics of success, and criteria for selecting the method and team. Context is one of the important influences on these decisions as will be discussed below. Discursive Moment 2 combines *Selection of planning team and method*. Discursive Moment 4 is better named *Data collection and management*. Discursive Moment 5 also required a change of title to *Develop, select, and test of scenarios*. Finally, in both case studies, it was hard to differentiate planning outputs from outcomes that led to *Selection of implementation strategies*. This characteristic differentiates landscape planning from the form-giving implementation processes of landscape design. Therefore Discursive Moment Seven was more accurately termed *Outputs and outcomes* to clarify the breadth of decision-making. Figure 6.1 shows these adjustments to the original Discursive Moment framework.

Original Discursive Moment Framework	**Identification of project scope and planning method**	**Selection and assembly of the planning team**	**Determination of project design**	**Data collection**	**Selection and testing of scenarios**	**Impacts of scenarios (Futures)**	**Selection of implementation strategies**
Revised Discursive Moment Framework	**Institutional commitment**	**Selection of planning team and method**	**Project design**	**Data collection and management**	**Develop, select, and test scenarios**	**Impacts of scenarios (Futures)**	**Outputs and outcomes**

Figure 6.1. Revisions to Discursive Moments based on case analysis.

Research finding 2: Decisions made in each Discursive Moment build upon each other and impact the remainder of the process.

The framework challenges deliberative planning by highlighting the way in which deliberation and decision-making are interwoven. Dryzek (2005a) argues for the separation of deliberation and decision-making, assuming that public decision-making is an all or nothing exercise. In this approach, the advisory and implementation roles of executive administration are separated from the decision-making role of elected bodies (Preston & 't Hart, 1999). Thus the power of the state enforces planning decisions through processes separate from deliberation about what those decisions might be (Teitz, 2007). Alternative Futures theorists accomplish this by developing multiple scenarios from which, in a separate process, elected officials set policies and direct actions to affect future landscape conditions (Hulse, Branscomb, & Payne, 2004; Steinitz, et al., 2003). Yet the development of alternatives suggests a softening of the command and control approach to landscape management (Holling & Meffe, 1996). " To be effective, those with a stake in the problem (stakeholders) need to be actively engaged in the assessment, planning, and design of the solution" (Baker, et al., 2004). Thus dialogue surrounding management issues always intersects with political decision-making in practice (Sharkansky & Friedberg, 2002; Walther, 1987).

The cases confirmed the many points during Alternative Futures landscape planning when decision-making takes place prior to political direction from elected officials. Those decisions, framed in this study as Discursive Moments, built upon each other and impacted subsequent decision-making. The linear process shut off certain decisions as it directed the project toward other opportunities. Yet it allowed for iterative loops so aspects of some decisions recurred in future Discursive Moments. The Alternative Futures process can be seen as a mega-discourse containing a series of internal discourses, each of which embodies Habermas' authentic public sphere to a greater or lesser degree.

Figure 6.2 condenses decisions found in the two cases and catalogues them into each Discursive Moment as the process progresses. I suggest this list as a starting point or checklist for landscape planners designing Alternative Futures projects. By addressing

each question in sequence, they will be better prepared to manage the many tasks involved in the planning process including the time needed.

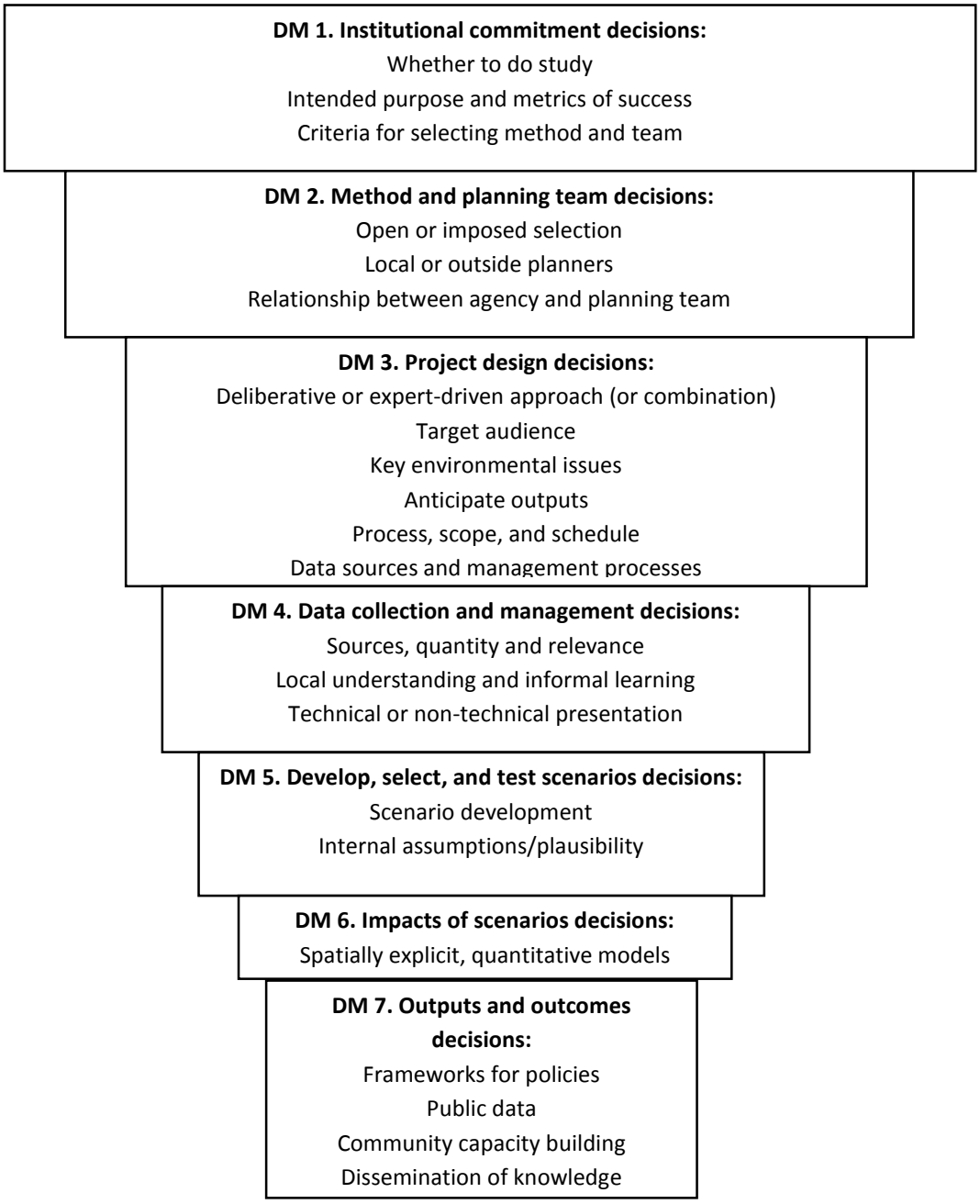

Figure 6.2. Preliminary list of decisions during each Discursive Moment.

In the cases, decisions made during the first two Discursive Moments, *Institutional commitment* and *Selection of planning team and method,* set the tone for the remainder of the project. These moments synthesized Shearer's questions embedded in the fundamental structure of the project (Shearer, 2005). The impetus to attempt a study, its purpose and metrics of success, the method of selecting a planning team, and the composition of the planning team identified in Discursive Moments 1 and 2 influenced the logic of the remainder of the study. The cases exhibited widely disparate approaches to these decisions. Willamette grew out of a long history of participative planning and deliberation about the nature and purpose of the study (Lawrence Halprin and Associates, 1972; Royston Hanamoto Alley and Abey, Landscape Architects, 1974). Decisions in these Discursive Moments established a deep commitment to the deliberative approach. San Pedro came as a surprise to the stakeholder community both in its scope and purpose. The expert driven approach was part and parcel to choice of planning method and team.

Decisions in Discursive Moment 3, *Project design*, correlated with Shearer's interest in internal logic (Shearer, 2005). In part, this determined whether the study was deductive leading to normative scenarios or inductive leading to open ended scenarios. Both cases started from a deductive position identifying goals that resulted in normative scenarios (Nassauer & Corry, 2004). Environmental issues related to water were well defined in Willamette through decades of deliberation (Hulse, Gregory, & Baker, 2002). In San Pedro, Steinitz's six questions identified the key environmental issues and landscape conditions upon which the study focused (Steinitz, et al., 2003). In each case, these issues and conditions provided the focus for the remainder of the study. Finally, the decision-making approach established in Discursive Moment 1 and 2 deeply impacted choices during Discursive Moment 3 about target audience, stakeholder participation, approach to collecting and managing data, and presentation of findings. The nuances of these decisions will be discussed below in Research Finding 3.

Decisions about how to collect and manage data in Discursive Moment 4 had a reciprocal impact between the planning team and stakeholders. On the one hand, researchers learned a great deal from stakeholders' on-the-ground knowledge in Willamette (Hulse, Branscomb, & Payne, 2004). Thus other forms of knowing the landscape augmented scientific knowledge (Weber, 2003; Weber, Memon, & Painter, 2011). The lack of stakeholder participation in San Pedro limited the local knowledge obtained by the research team (W-7, 2011). On the other hand, stakeholders gained new perspectives about their respective landscapes in both cases due to the user-friendly reporting formats (Hulse, Branscomb, & Payne, 2004; Steinitz C. , 2004). In Willamette, this learning was further augmented by the Oregon State University web site (Oregon State University Libraries).

The degree to which stakeholders participated in ground truth of data in Discursive Moment 4 impacted the degree of their involvement in scenarios in Discursive Moment 5. Without the deep understanding of data in Willamette, it would have been impossible for stakeholders to deliberate about the plausibility of potential scenarios (Hulse, Branscomb, & Payne, 2004). The more limited stakeholder understanding in San Pedro corresponded to their limited role in scenario development, selection, and testing (SP-1, 2011). In addition, stakeholder participation in data management greatly impacted the degree of trust in the overall project and its outputs and outcomes (W-9, 2012).

Spatially explicit modeling in Discursive Moment 6 took place as an iterative loop with scenario development in Willamette (Hulse, Branscomb, & Payne, 2004). Thus decisions were tightly interwoven between the two moments. The more linear process in San Pedro separated the tasks between the moments to a greater degree (SP-1, 2011). In both cases scenarios were developed by different team members that those modeling the scenarios (W-4, 2010; SP-1, 2011). Spatially explicit scenarios provide the content for output and outcome decisions in Discursive Moment 7.

The cumulative effect of decisions impacted the outputs and outcomes in Discursive Moment 7. The nuances of these impacts will be discussed in Research Finding 3 below.

Since each Alternative Futures project responds to unique circumstances, planners will need to modify the checklist in Figure 6.2 accordingly. Contextual issues are especially influential to the decisions in the first three Discursive Moments. By the end of *Project design* the nature of decision-making will be largely determined for the remainder of the project. The final two Discursive Moments are particularly important in determining the legacy of the project. Therefore, it is to context and legacy that I now turn.

Research finding 3: Theoretical differences between the two cases are more nuanced than might be suggested by the deliberative and expert based extremes. Context and legacy are critical factors that shape how these nuanced differences play out in practice.

The two case studies were chosen to represent opposite extremes in decision-making approaches. On the one hand, the deliberative approach in Willamette reflected concepts of Habermas' theory of communicative rationality (Habermas, 1989; Habermas, 1981; Habermas, 1973; Habermas, 1971). On the other hand, the expert driven approach in San Pedro was based on an instrumental rationality common to public choice theories (Michell, 1988; Niskanen, 1971; Olson, 1965; Buchanan & Tullock, 1962).

The study made clear that both approaches have strengths and weaknesses. The most salient strength of the deliberative approach was its ability to build social capacity for landscape planning (Hulse, Branscomb, & Payne, 2004; Baker, et al., 2004). This seemed to enable the second strength, a more direct link to on-the-ground environmental outcomes. The greatest weakness, the longer time required to complete the project, was a consequence of not being able to predict or control what level of deliberation would be needed by stakeholders or how long that deliberation would last. Deliberative processes are by nature open ended in the sense that people need to be heard (Healey, 1998). Therefore the process was unpredictable no matter how carefully it was designed.

By contrast, the salient strengths of the expert driven approach were its shorter time frame and ability to quickly focus the project design (Steinitz, 2004). This allowed for greater control of daily activities because researchers could estimate the time it would take them to complete tasks without lengthy delays. Its weaknesses were exactly the opposite of the deliberative approach's strengths. It failed to build social capacity for landscape planning (although it was impossible to know whether that was possible in this case regardless of decision-making approach) and on-the-ground outcomes were either absent or very indirect.

The cases also threw light on particular aspects of each approach.

1. Complexity of deliberation.

The deliberative approach of Willamette expressed rich layers of interaction. One type was between professionals and the wider community through a variety of formats including newspaper notices, public meetings, and in four more formalized stakeholder groups. A second type of deliberation occurred between groups of professionals such as research staff of the EPA and US Forest Service in delineating responsibilities for implementing the Northwest Forest Plan. The third type of deliberation was internal to the EPA. Finally, there was deliberation internal to the research team. It seems that deliberation feeds upon itself, and grows stronger

In contrast, deliberation in San Pedro was limited to that within the group of experts. Even then, the number of people making decisions was extremely limited because in the earliest phases Bob Anderson made almost all decisions. Deliberation during other phases took place internal to the research team members. In the few instances when stakeholder participation was sought, the input was treated as data to be collected and discussed by research team members at a later time. This one-way data harvesting lacked the back and forth complexity of the Willamette case. Whether an attempt to encourage broader deliberation could have been successful is discussed later in this chapter

2. Timeframe for decisions.

One trade off between approaches was time: the deliberative approach of Willamette took more time than expert based approach in part because it paid more attention to the controversial aspects of making public decisions (Forrester, 1999). The Willamette project took nearly nine years from initial funding to complete the project and some members of the team continue to be involved in stakeholder meetings to this day (W-5, 2009). Discursive Moment 1 *Institutional commitment* lasted several years. More than a year was devoted to Discursive Moment 2 *Selection of planning team and method*. Discursive Moment 5 *Develop, select and test scenarios* took thirty months. To deliberative planners, the time commitment is worthwhile because of the broad-based learning and stakeholder buy-in that results. To them, these characteristics provide the foundation for increased community capacity for landscape planning.

By contrast, San Pedro took less that five years from funding to completion (SP-5, 2011). Nevertheless, it proceeded with greater focus and understanding of the planning outputs from the very beginning of the project (SP-8, 2010).

A practical implication might be the opportunity to customize the approach according to time constraints with the caveat that each approach has advantages and disadvantages.

3. Local verses outsider knowledge base.

The deliberative approach views knowledge differently than the expert driven approach. The Willamette team encouraged local stakeholders to ground-truth base data with local understandings (Hulse, Branscomb, & Payne, 2004). This provided an interpretive layer to raw data. The team also sought to understand local political and social acceptance of scenario assumptions. This knowledge became public through a web site that continues to this day (Oregon State University Libraries; Oregon University System, 2010-2011). In contrast, the expert driven approach at San Pedro seemed to view base data and scenarios either as scientifically removed information for use by agencies or as

counterfactual evidence that would serve as a wake up call to local stakeholders (SP-7, 2012; SP-8, 2010). This pattern conformed to literature citing use of science and other forms of knowledge in planning processes (Weber & Khademian, 2008; Weber, Memon, & Painter, 2011)

Nevertheless, both teams found ways to make the report findings accessible to non-scientists. Willamette accomplished this with an oversize binding that provided glance recognition of related information. This was augmented by the website. San Pedro developed bird's eye view video sequences that showed change over time (Steinitz C. , 2004).

4. Level of direct impacts.

A direct causal link between planning outputs and on the ground outcomes is difficult to demonstrate in Alternative Futures partly because the ultimate output provides *alternatives* – not recommendations – for policy decision-making. Nevertheless, Willamette more clearly resulted in implementation strategies that impact environmental systems. Most significant was the increased community capacity for decision-making. The Oregon Watershed Enhancement Board (OWEB) and The Meyer Memorial Trust adopted the Conservation 2050 scenario as a framework to restore channel complexity and floodplain recovery (W-3, 2010). These non-governmental organizations grant funds for channel restoration of the Willamette River. While they do not use the Atlas as a blueprint, they use the underlying principles of the *Conservation 2050* scenario that can be measured as a diagnostic tool or coarse filter that identifies real activities that can result in ecological outcomes.

A further example of capacity building involved the terrestrial elements of a recovery plan developed by the Willamette Restoration Initiative, the 27-member group appointed by the governor. These elements were based on the Conservation and Restoration Opportunities component of the *Conservation 2050* scenario from the study (Hulse, Branscomb, & Payne, 2004, p. 339). Significantly, each of the strategies listed above

resulted in measurable, on-the-ground environmental change either now or in the relatively near future.

A less direct, but nevertheless significant, impact of the study appeared to be the inspiration to conduct additional Alternative Futures studies. The research produced two spin-off futures analyses, one sponsored by Oregon Department of Transportation evaluating transportation futures and traffic congestion (SP-7, 2012; SP-4, 2011). The other project, initiated by 1000 Friends of Oregon, assessed the implications of landscape futures for infrastructure costs (e.g., road, sewer, and water services) as well as losses of farm and forestry lands (SP-5, 2011).

Indirect impacts on the EPA research culture were also significant. Some people credit the Atlas with shifting the focus of permitting and regulations to the watershed scale by providing a larger picture (W-2, 2011). There is a renewed interest in large scale, place-based projects (W-7, 2011). Finally, the polish of the report made it a prized gift to visiting dignitaries (W-7, 2011).

The project also seems to have influenced legislation (Hulse, Branscomb, & Payne, 2004, p. 339).

> "The 2001 Sustainability Act was passed by Oregon legislature. It established the Institute for Natural Resources at Oregon State University. It serves as a clearinghouse for scientifically based natural resource information" (W-5, 2009).

Another impact in Willamette was the change in perceptions. Some scientists acquired a greater appreciation for the scientific potential of Alternative Futures approaches (W-7, 2011). Stakeholders learned about their region, the interactions between natural, cultural, and economic systems, and the varying interests of other groups (W-6, 2011). Others credit the study with changing the perception of what level of conservation is possible in the Willamette Basin (W-5, 2009).

A final impact in Willamette was academic outputs in journal articles on topics ranging

from policy research (Guzy, Smith, Bolte, Hulse, & Gregory, 2008) to stakeholder processes (Hulse, Branscomb, & Payne, 2004) to modeling techniques (Bolte, Hulse, & Gregory, 2006) to stream ecosystems (Gregory, Ashkenas, & Nygaard, 2007) and channel dynamics (Gregory S. , 2012).

By contrast, academic outputs appeared to be the primary, or at least most visible, output of the San Pedro study. Google Scholar lists 133 citations (Google Scholar). A number of subsequent studies built on concepts in the study. These included policy studies (Morehouse, et al., 2008; McSherry, Steiner, Ozkeresteci, & Panickera, 2006), vegetation (Jones, et al., 2008), impacts of land use and land cover (Nie, Yuan, Kepner, Jackson, Erickson, & Nash, 2011), hydrology (Serrat-Capdevila, Valdés, Pérez, Baird, Mata, & Maddock III, 2007), and the planning report (Steinitz, et al., 2003). The San Pedro study was cited in nearly all subsequent Alternative Futures projects (Hulse, Gregory & Baker, 2002; Price, et al., 2003; Santelman, et al., 2004). In addition, a graduate student, Kay Baird, developed a method for modeling evapotranspiration in a later dissertation at the University of Arizona based, in part, on information in this study (Baird, 2005). Less direct impacts included the way scientists present data in the basin using the interactive, three-dimensional approach mentioned above.

Interviewees confirmed the primacy of academic outputs.

> "The primary outcomes are the academic citations" (SP-8, 2010).

> "The author[s] told me the study was important for academic research, not necessarily for practical reasons. I describe his attitude as science for science's sake. The impacts on people and policy were not important" (SP-2, 2011).

Yet, today there is circumstantial evidence the project contributed to significant indirect impacts years after completion. Several activities are aimed at stabilizing the aquifer. The county installed a public water reuse plant with wetlands for aquifer recharges and the United States Geological Survey sponsored a Trans-boundary Aquifer Assessment Act

whose purpose is to research the aquifer on both sides of the border (SP-2, 2011). Ft. Huachuca instituted a water conservation program that included reducing leaks, demolishing inefficient buildings, changing out wasteful water fixtures, and placing restrictions on sprinkling. They also addressed recharge through water reuse, recharge on golf course and parade fields, better irrigation technology, and water capture in parking lots, roofs, retention basins (SP-9, 2011). The study generally is not given credit for these later changes. It is difficult to know the contribution the study made, yet a change of attitudes after the project resulted in on the ground changes over time seems to have occurred.

5. Social capacity for landscape planning.

Approaches based on communicative and instrumental rationalities serve differing goals for decision-making. Communicative approaches, grounded in Habermas' concept of the authentic sphere, tend toward highly nuanced deliberative processes (Habermas, 1984) that attempt to make science and planning approachable to everyday citizens by employing trust, understanding, and inclusion. In doing so, deliberative planners hope to engage everyday people in a dialogue that motivates them to action. They also address a local audience in an effort to achieve environmental change. This helps explain the sophisticated and yet tenacious adherence to deliberation in Willamette. As one interviewee explained,

> "When I encountered ecological restoration, I began to realize that restoration wasn't going to come about because organizations such as agencies and [non-governmental agencies] change their behavior. Rather, ordinary folks need to change their behavior. The expert driven approach is largely targeted at organizations. Most organizations grow out of a positivistic orientation. Those are good things, but they aren't the whole picture. It's the every day decisions people make that have the biggest impact" (W-11, 2012).

By contrast, instrumental approaches tend to adopt expert driven methods that target organizations, especially regulatory agencies that enforce planning decisions (Weber, 2003). These organizations rely on evidence that can be defended by expert testimony to justify regulation and control (Teitz, 2007). Because expert driven approaches target agencies more than everyday citizens, they adopt a shortened and less nuanced form of stakeholder deliberation and can take less time. San Pedro represented an extreme example that failed to expand citizens' understanding of the basin or to achieve widespread buy-in.

As might be expected, the deliberative approach fostered greater stakeholder acceptance. Because the cases were selected to represent extremes, the difference in acceptance was correspondingly pronounced. Baker credits much of the success at Willamette to the deliberative approach, "Did people listen? Were the tools or results used? Did stakeholders change their way of doing business? In each case, the answer is yes… The essence of the Alternative Futures approach is that scenarios reflect stakeholder values, assumptions, and visions" (Baker, et al., 2004, pp. 320-321). Fostering trust, understanding, and inclusion resulted in more successful outcomes.

In contrast, none of these things can be said of the San Pedro project and one can point to the expert driven approach as a contributing factor to that deficiency. On-the-ground outcomes were difficult to identify. Community capacity for further planning was not developed. To the extent people listened, it was to decry the project and planning team as outsiders. What was lost in citizen engagement was gained in clarity of approach that demanded acknowledgement, even if that attention was negative. Rather than increase community-based capacity, it served as a wake up call that the landscape would inevitably change whether that change was planned or not. To use a metaphor, San Pedro acted like a boxer's left jab while Willamette was a dancer's waltz.

Could San Pedro have achieved any level of stakeholder buy-in given the independent spirit and context of suspicion? This question will be addressed in the final section below.

6. Context and legacy.

At first glance, the Willamette project can be considered the more successful of the two cases in a number of ways. For example, it resulted in more direct and observable outcomes on-the-ground. It built social capital in stakeholder groups and public forums. It fostered subsequent Alternative Futures projects within the EPA and it became a model project that EPA staff used as an exemplar of their work.

Yet several factors require a more nuanced interpretation of the comparison between the two cases. First is the limitation of a two-case analysis. As one person noted at the beginning of an interview,

> "A case is not a theory" (SP-8, 2010).

Could an expert driven study have achieved more success in different circumstances? For example, several interviewees (SP-1, 2011; SP-6, 2010) directed attention to the Camp Pendleton, California, Alternative Futures project (Steinitz, et al., 1996) that had more successful outcomes. This project had many similarities to San Pedro including a military sponsor, cautious stakeholder expectations, and an expert driven approach. As in San Pedro, the research team was able to quickly identify environmental issues, design the process with a clear focus, and proceed. However, unlike San Pedro, at Camp Pendleton the expert driven approach resulted in implementation strategies to protect biodiversity. This was possible because the base commander gave orders for strong environmental policies that had on the ground impact for several species. The military chain of command assured the orders would be implemented. At Camp Pendleton, it appears that an expert driven approach worked to advantage.

> "At the end of the [Camp Pendleton] study, camp officials were happy because of the awards the study won and the local officials were appreciative" (SP-8, 2010).

What could explain the difference and could this provide a justification for the expert driven approach?

This analysis suggests that Discursive Moment 1, *Institutional Commitment* might provide an answer. Reviewing the overall evidence, it appears the context of suspicion, litigation, and libertarian personal independence in San Pedro created virtual gridlock on resource management issues. Had an authoritarian, outside influence not imposed the project, it is unlikely the gridlock would have been resolved.

> "I see it as an effort to get a decision support process started in southeastern Arizona" (SP-5, 2011).

In this sense, San Pedro did have long-term impacts that seem to have changed the context.

> "The team had more enemies at the end of the project, so maybe some people did change their minds or at least woke up. The study seemed to create a fear of change or made clear that the landscape would change" (SP-8, 2010). And, eventually, on the ground change did occur.

Baker proposes expert driven processes play another important role. "Such expert-based scenarios… can play a critical role in broadening the debate and altering entrenched ways of thinking… Thus, the optimal approach may be to blend the two, introducing expert-based designs early on in the process, to stimulate stakeholder thinking about other options and hopefully lead to stakeholder-defined scenarios that incorporate many of the same principles and ideas" (Baker, et al., 2004, p. 332). In this quote Baker seems to concur that expert driven approaches that impose new ideas are sometimes necessary.

Yet the decision to impose an expert driven project also posed an almost insurmountable challenge because staff at Fort Huachuca – the client institution – resisted it. They resented the imposition and timing of the planning effort. At Camp Pendleton, on the other hand, staff embraced the Alternative Futures project.

> "The Marines at Camp Pendleton got it, but the San Pedro groups didn't connect" (SP-5, 2011).

The advantage the military chain of command offers in terms of ordering change and having those orders obeyed only works if the commander wants to give the command.

The discussion in this section has so far addressed the question of how context and legacy influenced the when and how of decision-making and its consequences for the overall planning process. The analysis also helped clarify these roles by identifying actions of individual actors in relation to the institutions involved. The relationship of actors to institutions emerged as an important factor in decision-making. Two aspects are worth noting. First strong actors with a clear sense of purpose and ability to impact events are an important part of context and equally important to implementing a legacy of on-the-ground-outcomes. The second aspect is the role of the institution in decision-making that leads to the legacy of outcomes.

It would be tempting to think that individual actors would play a stronger role in expert driven processes, especially in the first Discursive Moments *Institutional commitment* and *Selection of planning team and method*. There is no doubt an outside actor played a strong role in San Pedro by imposing the *method* and *team* in one action. Similarly, the approach was reinforced by the strong role of the principal investigator during *Project design* and continuing throughout the project.

By comparison, no decisions in Willamette were made by one or two individuals alone. Yet Willamette offers a more nuanced understanding of strong actors. For example, the context involved strong political actors who laid the groundwork for the study. Years earlier, Governor McCall established a high priority on planning by initiating numerous studies. Further, he established the Willamette Basin as the focus of debate about quality of life in Oregon. Likewise, President Clinton established the Northwest Forest Plan that allocated certain responsibilities and funding to the EPA. Shortly thereafter, strong actors within the EPA sponsored the Alternative Futures study. Each of these actions resulted from long and intense deliberation, but one cannot doubt the role of strong actors providing leadership.

A second role for a strong actor at Willamette was the leadership required to maintain the focus of stakeholder groups. It was essential each group understand its role in testing the plausibility of assumptions about scenarios, rather than selecting preferable scenarios, and this required sustained leadership and guidance (W-6, 2011). Thus, a deliberative approach does not preclude strong actors. Rather, it requires them.

Both cases also relied on institutional relationships. This is not surprising since historically the discipline of planning has relied on institutions to enforce planning policy (Teitz, 2007). As mentioned, strong actors from the outside imposed the San Pedro study during the critical early Discursive Moments. Yet the study relied on Ft. Huachuca to distribute funds. Ft. Huachuca staff felt left out even though the fort acted in effect as the sponsoring agency. However indirectly, it was the fort that implemented the most impactful water conservation program in response to the environmental stresses identified by the San Pedro study and subsequent research (*Outputs and Outcomes*).

Once again, Willamette presented a more nuanced approach. While it relied heavily on institutional context and policies to fund and initiate the study, it also fostered deliberation in multi-layered groups. In some cases the groups were formal arrangements sanctioned by the state and in other cases the planning team assembled less formal arrangements. The EPA served as both sponsoring agency and full partner in planning and research. Much of the implementation took place by non-governmental agencies that used the planning results as frameworks for their goals.

In summary, the analysis showed that the context in which planning takes place and the legacy left by the planning effort are critical factors in determining effective Alternative Futures. Strong actors and engaged institutions contribute to each. Therefore, context and legacy should be major considerations in deciding how to design a particular Alternative Futures process.

Section 6.4 Questions for further research and implications of the research

The cases raised questions about individual actors and institutions not addressed in this research. To what extent do the temperament and experience of the sponsor and planning team influence the general approach to decision-making? Proponents of culture theory argue that culture is the basis of social and political identity (Ross, 1997). Are some investigators simply prone to either the deliberative or expert driven slant? Thompson et al describe the "different perceptual screens through which people interpret or make sense of their world" that explain "why people want what they want and how they go about getting it (Thompson, Ellis, & Wildavsky, 1990, pp. xii, 97). Does the institution they represent influence their predilection? Brule et al suggest the influence of both cultural dynamics and social movements (Brulle & Jensen, 2007). Wilson identifies both the limitations and impacts of institutional culture on the individuals within them (Wilson, 2000). Is it important for the leadership to have a strong inclination in one or the other direction?

The study also leaves room for further examination of cases that represent the middle ground between deliberative and expert driven or a different multi-modal approach altogether. Presumably there is an infinite continuum of possible approaches between the extremes examined in this study. Further research would contribute to understanding of decision-making generally, and to the range of possible approaches specifically. This research could be applied to the growing number of completed Alternative Futures projects (Toth, et al., 2006; Steinitz, et al., 2005; Santelman, et al., 2004; Price, et al., 2003).

The study also raises methodological questions about the selection of cases. While it was helpful to use extremes to clarify differences in approaches, the range of evidence they offered was limited. This was especially true in the San Pedro case. Anecdotal evidence from Camp Pendleton deepened understanding of the potential for positive outcomes in

expert based decision-making. Might it not be helpful to examine more than one case at each extreme to avoid missing important information?

A further question concerns the theoretical dichotomy upon which the study is based. Habermas' theory of communicative rationality is contrasted with choice theories based on an instrumental rationality. Figure 6.3 shows this dichotomy as a continuum.

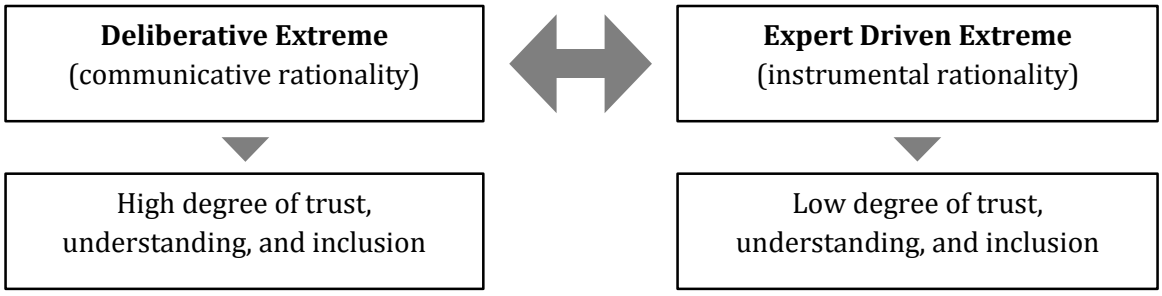

Figure 6.3 Continuum of decision-making approaches addressed in this study.

Recent literature suggests the emergence of a third rationality based on values (Flyvbjerg, 2001). Anecdotal evidence from the Cache Valley project in Utah, USA, suggests a strong engagement in community values that might fall in this category (Toth, et al., 2006). Could other models of Alternative Futures projects exist that rely more on this rationality?

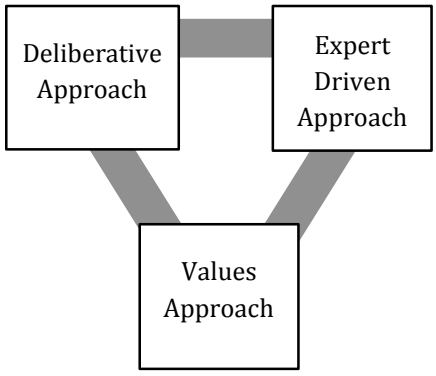

Figure 6.4 Potential values-based lens.

A final question is whether the Discursive Moment framework can be applied to other planning processes. Can it be applied to other social processes? My initial hunch is yes, all

social processes contain discursive moments (lower case intentional) that, if examined, will reveal valuable information about decision-making. While these questions are beyond the scope of this study, the answers would have value to those employing Alternative Futures as a landscape planning method.

6.5 Conclusion

This study examined decision-making in Alternative Futures through a deliberative lens. It showed that the nature of decision-making was a choice made by institutions and actors. Further, it showed that decisions built on each other throughout the process and impacted the overall outputs and outcomes. The theoretical framework based on Discursive Moments provided a useful tool that could help future planners and agencies make conscious and well considered choices in their Alternative Futures projects. As they design their projects, they can consider the desired level of deliberation during each Discursive Moment based, in part, on the social context and time available to complete the project. They can set goals for the level of on-the-ground outcomes they expect as well as whether they intend to increase social capacity for landscape planning. Most important, they can shape the project to influence the legacy they desire.

Beyond these practical implications, the study added a deliberative lens to Alternative Futures theory that challenged the separation between deliberation and decision-making found in both the Alternative Futures and deliberative planning literature. It contributed a more nuanced understanding of actors by focusing on their actions in each Discursive Moment. Finally, it identified strengths and weaknesses in the deliberative and expert driven approaches.

Each of these contributions deserves further study as Alternative Futures theory matures and additional projects are undertaken. The unique context and desired legacy in each project will influence the nature of decision-making that will, in turn, impact each Discursive Moment that follows. At that point, the landscape planning process will express the values of the community.

APPENDIX

Research Information Sheets

Lincoln University Policies and Procedures

Lincoln University

Division: **Environment Society and Design**

Research Information Sheet

You are invited to participate as a subject in a project entitled

Name of project: Agency Roles in Alternative Futures Plans: An Investigation of the Interactions among Agents in Ecological Planning.

The aim of this project is: To better understand the relationship of the sponsoring institution and individual participants in the Alternative Futures planning method. *The Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change* that you participated in was an Alternative Futures planning method.

Your participation in this project will involve: Talking about your experience and understanding of *The Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change* planning process in an interview that will take about 1 ½ hours.

As a follow-up to this activity, you will be asked to*:* There might be a follow-up interview or telephone conversation to clarify questions. This would take about 1 additional hour.

In the performance of the tasks and application of the procedures, no risks are foreseen.

The results of the project may be published, but you may be assured that your identity will remain anonymous. To ensure anonymity and confidentiality the following steps will be taken:

Names will not be used in any publications. Rather, pseudonyms such as “Participant A” or “Interest Group B” or “Pro – something Group” will be used.

All interview notes will be kept in a locked, metal filing cabinet. After six years, these notes will be destroyed.

The project is being carried out by:

Mark Hoversten 1539 Pine Cone Road, Moscow Idaho USA 83843
hoverstm@uidaho.edu
(702) 245-0653
He will be pleased to discuss any concerns you have about participation in the project.
Name of Supervisor/ Group Leader/Division Director
Simon Swaffield
PO Box 84, Lincoln University, Lincoln 7647, Canterbury, New Zealand
64-3-325- 8442

The project has been reviewed and approved by Lincoln University Human Ethics Committee.

Lincoln University Policies and Procedures

Lincoln University

Division: **Environment Society and Design**

Research Information Sheet

You are invited to participate as a subject in a project entitled
Name of project: Agency Roles in Alternative Futures Plans: An Investigation of the Interactions among Agents in Ecological Planning.

The aim of this project is: To better understand the relationship of the sponsoring institution and individual participants in the Alternative Futures planning method. *The Alternative Futures for Changing Landscapes: The Upper San Pedro River Basin in Arizona and Sonora* that you participated in was an Alternative Futures planning method.

Your participation in this project will involve: Talking about your experience and understanding of *The Alternative Futures for Changing Landscapes: The Upper San Pedro River Basin in Arizona and Sonora* planning process in an interview that will take about 1 ½ hours.

As a follow-up to this activity, you will be asked to*:* There might be a follow-up interview or telephone conversation to clarify questions. This would take about 1 ½ additional hours.

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