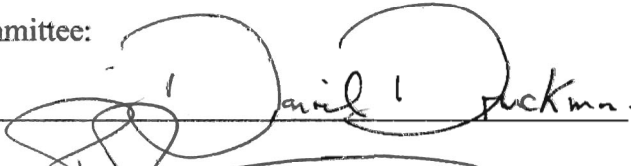
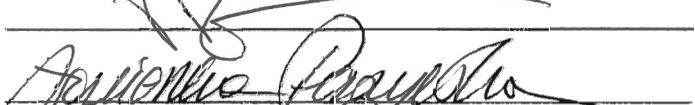




TURNING POINTS IN ENVIRONMENTAL NEGOTIATION:
DYNAMICS, ROLES, AND CASE-RELATED FACTORS

by

William E. Hall
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Committee:

Chair of Committee

Graduate Program Coordinator

Director,
Institute for Conflict Analysis
and Resolution

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Fall Semester 2007
George Mason University
Fairfax, VA

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A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at George Mason University

By

William E. Hall
Master of Science
George Mason University, 1999
Bachelor of Arts
University of Pittsburgh, 1989

Director: Daniel Druckman, Professor
Department of Public and International Affairs

Fall Semester 2007
George Mason University
Fairfax, VA

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DEDICATION

This dissertation is dedicated
to my loving wife,
Meg,
and
our wonderful children,
Noah and Elissa

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A large number of people provided assistance and support to me in completing this dissertation. One's dissertation committee is, of course, crucial to completing any dissertation, and I would first like to thank the members of my committee including, my committee chair, Dr. Daniel Druckman, Dr. Agnieszka Paczynska, and Dr. Peter Balint. Dr. Druckman guided me patiently from the earliest days of developing a proposal, offering helpful suggestions, insisting on a methodologically rigorous approach, and encouraging me to apply his turning points framework to a new area of negotiation. As any good mentor does, he confronted me with appropriate challenges to aid me in expanding my research skills and thinking, while never leaving me to fend completely for myself when facing difficulty. Dr. Paczynska advised me how to effectively structure the literature review to identify gaps in the existing research and describe how this project could make a contribution. Dr. Balint described methodological critiques that I should anticipate and ways to address them explicitly. All three of my committee members have made themselves available and been very responsive throughout the course of this research.

One of the most important components of this dissertation was testing the reliability of the coding procedure used in content analysis, and I could not have done it alone. Keilly Witman served as the second coder for the reliability testing procedure; she held her ground firmly when we disagreed on coding judgments, arguing the merits of her coding decisions persuasively and insisting on additional clarity in the coding framework where needed. Her contributions are immeasurable.

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Very few people achieve anything of consequence without their immediate family playing a central role in their life and I am no exception. My mother and father, Jacquelin and Edward Hall, instilled in me early on both a deep curiosity about the world and the value of finishing what you have started, however hard it may be. I hope they are proud of my accomplishment, as I also honor what they have achieved in their own lives. My brother, Arthur Hall, has been a source of friendship and entertainment throughout my life. His perspectives always serve to help restore balance to my own.

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loving wife in the dedication, know that I say it with these sacrifices in mind. It is time for us to continue in earnest the adventure we began together ten years ago.

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ABSTRACT

TURNING POINTS IN ENVIRONMENTAL NEGOTIATION: DYNAMICS, ROLES, AND CASE-RELATED FACTORS

William E. Hall, Ph.D.

George Mason University, 2007

Dissertation Director: Dr. Daniel Druckman

In the more than three decades since the environmental movement began, environmental negotiation has emerged as a means for interested stakeholders to prevent and resolve conflict about natural resource use and environmental degradation. Most literature on environmental negotiation has taken the form of prescriptions for practice or descriptive case studies. Research has tended to emphasize the role of neutral third parties and outcomes (e.g., settlement rates). Only a few studies have compared large numbers of environmental negotiation cases across different dimensions, and systematic analysis of the negotiation process, especially the changes that occur in the process over time, has received little attention.

Focusing on the dynamics of environmental negotiation, this dissertation explores three questions: First, what changes take place in the interactions among environmental negotiators as they progress toward agreement? Second, what influence do different

types of actors, such as parties, attorney representatives, government agencies, and mediators, have on the changes that occur? Third, to what extent do process dynamics vary according to case-specific factors, such as whether the negotiation was assisted or unassisted, the substantive issues at stake, the type of agreement reached, the number of parties, and the duration of the negotiation? These questions are addressed by applying an adapted version of Druckman's (2001; 2004) turning points framework to analyze chronological events data from 29 environmental negotiation cases that concluded between 1976 and 2004 in three countries.

This study's contributions include the following: It identifies a typical pattern of change in environmental negotiation, particularly with respect to the beginning and end of such processes. Another finding is that neutral third parties (e.g., mediators) are as likely as other actors to precipitate parties' movement toward agreement, whereas actors external to the negotiation (e.g., mediators and enforcers) collectively do precipitate movement toward agreement more often than actors internal to the negotiation (i.e., parties and their advocates). The research also highlights significant relationships between case-related factors and variables in the adapted turning points framework. The results are compared to those from related research on international and labor-management negotiations and potential implications for practice are presented.

I. INTRODUCTION

More than three decades ago, following on the heels of the environmental movement and building on similar efforts in labor relations and other areas, government agencies, industry, environmental advocates, and other interested stakeholders began to use negotiation to prevent and resolve disputes regarding the air, land, water, wildlife and other issues (Cormick, 1976; Mernitz, 1980). Since then, an entire field of environmental negotiation practice has emerged, complete with professional practitioners and dedicated government offices. Proponents claim that environmental negotiations, especially when assisted by a neutral third party such as a mediator, can lead to a better decision-making process and outcomes for those involved than is available through traditional administrative and judicial decision-making approaches.

As this relatively young field has developed, so has a small body of literature and research directed at promoting, explaining, and studying it. Most literature to date has been in the form of prescriptions for practice (Carpenter & Kennedy, 1988a; Mernitz, 1980; Susskind & Cruikshank, 1987; Susskind, McKearnan, Thomas-Larmer, & Consensus Building Institute, 1999) or descriptive case studies (Susskind, Bacow, Wheeler, & United States Environmental Protection Agency, 1983; Talbot, 1983), or has focused on the role of neutral third parties and outcomes, such as settlement rates (Andrew, 2001; Bingham, 1986; Consensus Building Institute, 1999; Sipe & Stiffler,

1995; Susskind & Consensus Building Institute, 1999). Only a few studies have compared large numbers of negotiation cases across different dimensions, and little attention has been given to systematic study of the negotiation process itself, especially the changes that occur in the process over time. Additional research in this area could help negotiators, third party practitioners, and other stakeholders identify the types of behaviors and events that bring about changes in an environmental negotiation and perhaps lead to more efficient and effective processes and outcomes. Such knowledge could also add to the growing body of literature on the dynamics of negotiation and conflict resolution more generally, providing the opportunity to compare different types of processes and build theory.

To further environmental negotiation practice and contribute to the body of research, this study investigates the dynamics of environmental negotiation – changes that occur in the interaction among negotiating parties over time. The inquiry places a specific emphasis on the roles different actors play in moving the negotiation process toward or away from agreement, and the relationship between process dynamics and negotiation case-related factors. These matters are explored by applying a research framework adapted from recent literature concerning turning points in negotiation (Druckman, 1986, 2001, 2004; Druckman, Husbands, & Johnston, 1991) to a set of 29 environmental negotiation cases which took place between 1976 and 2004, in three countries.

Accordingly, Chapter II in the study reviews the literature on environmental negotiation. The literature review gives particular attention to the limited research in this

area. Chapter III describes a set of research questions to guide the inquiry, elaborates an adapted turning points framework, and proposes a set of research hypotheses to be tested. As discussed in Chapter IV, the primary research methodology is content analysis of environmental negotiation case descriptions and involves identifying a suitable selection of cases and operationalizing the variables in the turning points framework so they can be coded and analyzed. The chapter also explains the approach to and results from reliability testing. Chapter V specifies the statistical methods used for analysis and provides the results. The concluding chapter, Chapter VI, compares findings from this study to earlier research on turning points, discusses potential implications for practice, describes the limitations of the research, and suggests opportunities for future research.

II. LITERATURE REVIEW

Negotiation about the use of and human impacts on the land, air, water, and wildlife has probably occurred since people first had differences about them and decided to reach an agreement rather than fight each other. Society, of course, has not always considered such issues to be “environmental.” What arguably changed in the 1960s-70s was a shift in the public consciousness about the relative societal importance of these issues, a collective reframing of them as “environmental” issues, a new expectation that those whose activities may impact public health or the natural world are responsible for preventing and remediating environmental harm, and an increased role for government at all levels in protecting the environment.

Not long after the environmental movement began, some in the United States began experimenting with new forms of negotiation about environmental issues (or at least labeling them as such). Beginning in 1973, in what is widely acknowledged as the first such experiment, Gerald Cormick and Jane McCarthy from the University of Washington assisted a group of negotiators representing farmers, environmental groups, and government agencies in agreeing on recommendations regarding a flood control project on the Snoqualmie River in Washington State (Cormick, 1976). In the more than three decades since that time, a field of environmental negotiation practice has emerged,

together with a related literature. This chapter reviews the environmental negotiation literature, with a particular emphasis on the available research.

As Dukes (2004) notes in his review of the field's literature, there are a variety of views on what to call this field and what it encompasses. Early writing in this area emphasized terms such as environmental mediation (Cormick, 1976; Mernitz, 1980; Talbot, 1983) -- the involvement of a mediator, a neutral third party who assists stakeholders in resolving their issues -- though some, including Bingham (1986) and Dukes (2004), have included unassisted negotiations in their discussions of the field as well.¹ Many, including Bingham (1986), Crowfoot and Wondelleck (1990), Carpenter

¹ There is a significant debate about the extent to which "neutral third parties," such as mediators and facilitators, are or should be literally neutral. In a well-known exchange, Susskind (1981) and Stulberg (1981) reflected opposing views in this debate. Susskind (1981), writing about the lack of accountability for environmental mediators, concluded that they should be concerned about unrepresented or underrepresented groups who may be impacted by any agreement reached, the possibility that parties have not maximized joint gains, long-term or unintended effects of an agreement, and precedents.

In Stulberg's (1981) response, he argued that Susskind was advocating for mediators to be non-neutral by having them to commit publicly to particular desired outcomes. Instead, Stulberg's (1981) view is that a mediator "must be neutral ... to invite a bond of trust to develop between him and the parties. If the mediator's job is to assist the parties to reach a resolution, and his commitment to neutrality ensures confidentiality, then, in an important sense, the parties have nothing to lose and everything to gain by the mediator's intervention" (p. 96).

The debate about neutrality remains unresolved today, even as "neutral third party" has become a frequently used term of art in the practice of environmental negotiation and neutral third party practitioners vary in their claims to being neutral. This lack of resolution is particularly evident in the legal profession and government service, for example, where it is common to refer to a "neutral" defined as "an individual who, with respect to an issue in controversy, functions specifically to aid the parties in resolving the controversy" ("The Administrative Dispute Resolution Act," 1996). The present study does not take a position about whether "neutral third parties" are literally neutral but adopts the common usage of the term as a person(s) who is external to the negotiating parties and is engaged and accepted by all of them to assist in reaching agreement.

and Kennedy (1988a), and Susskind et al. (1983) have framed the focus of the field as resolving environmental conflict or disputes. In more recent years, others have adopted a wider vocabulary to describe the practice such as consensus building (Susskind et al., 1999) and collaborative learning (Daniels & Walker, 2001). Much of the original language has endured, however, and today environmental conflict resolution (Dukes, 2004; O'Leary & Bingham, 2003; Office of Management and Budget & Council on Environmental Quality, 2005) is a common umbrella term, retaining an emphasis on social conflict and the involvement of neutral third parties.

The literature on environmental negotiation is characterized by a relative lack of research (Andrew, 2001; Bourdeaux, O'Leary, & Thornburgh, 2001; Dukes, 2004; O'Leary, 1995, 1997). O'Leary (1995; 1997), for example, reviewed several categories of literature including those focused on the key elements of environmental disputes; how to evaluate success; and the components of environmental negotiations. The latter category includes structure and process, the parties, incentives for participation, the role of government officials, parties' goals, timing of the process, the extent to which the issues are ripe, morals and values, the role of mediators and facilitators, power, implementation, and alternative approaches (such as the use of computer technology to assist resolution processes). She reaches the following conclusion:

“...Despite the plethora of literature touting the advantages of environmental mediation (and, at times, the disadvantages), the empirical foundations for most of the conclusions are quite weak. While there are some strong conceptual works, few scholars have studied environmental mediation through one or more of the standard empirical methods: theoretically informed case studies, comparative case analyses, surveys, interviews, and statistical analyses of quantitative data. Given the paucity of empirically based research, it must be concluded that much of our

"knowledge" concerning environmental mediation is based primarily on thoughtful speculation or wisdom, with few data (broadly defined) to support it."

Dukes's (2004) review of research describes studies that address several areas, including settlement rates; changes in participants as a result of the process; participant satisfaction with the process, neutral third parties and the outcome; transaction cost savings; durability of settlements; agreement seeking vs. other process goals; assisted vs. unassisted processes; process sponsorship; programmatic vs. ad hoc processes; local vs. policy level dispute contexts; and impact on socioenvironmental systems. The number of studies he cites for each of these areas is typically small – he describes five studies that provide results on settlement rates, for example -- and he remarks that the research remains quite limited in many instances. In their commentary on Dukes's (2004) article, Emerson, O'Leary, and Bingham (2004) note that case studies and anecdotal information have been the field's "primary research vehicle to date" (p. 222).

Emerson (1998) and Emerson et al. (2003) offer several explanations for the lack of research in this area and highlight a number of methodological challenges. One methodological concern is potential bias in research because so many scholars in this area are also practicing mediators and facilitators. Second, the cases are also difficult to compare because they are often unique in many aspects such as the type of process used and subject matter involved. Third, largely because of the confidentiality afforded to participants in environmental conflict resolution processes, data regarding these processes are limited. Finally, the available information is often generated *post hoc*, raising questions about its validity.

Emerson (1998) and Emerson et al. (2003) also state that research in this area is hampered for conceptual reasons. Such challenges include: the ideological promotion of environmental conflict resolution; ongoing comparisons of environmental conflict resolution to litigation despite its use in other contexts where litigation is not the alternative; a tendency to isolate disputes for analysis rather than viewing them as part of a dynamic conflict system; failure to draw on the literature from other related fields; a focus on settlement of environmental conflict rather than or in addition to other positive outcomes of participation; and the adequacy of underlying social conflict models as they are applied to environmental conflict resolution.

The present study concerns the dynamics of the environmental negotiation process – the changes in the interaction among parties over the course of the negotiation, how different actors influence those changes, and potential relevance of case-related variables to negotiation dynamics. The next three sections review what the limited research literature has to say in each of these areas.

A. NEGOTIATION PROCESS

Most of the research on environmental negotiation has tended to emphasize questions about outcomes of the negotiation process rather than the nature of the process itself or to treat the process as a static concept for purposes of inquiry. It typically does not attempt to assess changes that occur in the interaction among the parties during their negotiation or describe or explain factors that may lead to such changes. Case settlement

rates are a common outcome measured. Bingham (1986), among the earliest to conduct a cross-case assessment, found in her analysis of 132 mediated cases where the parties sought agreement that 78% reached a settlement. Sipe and Stiffler (1995) found a 73% settlement rate in mediated enforcement disputes in Florida. In related research by Sipe (1998) comparing settlement rates of 21 mediated and 125 non-mediated cases, 85% of mediated cases and 71% of non-mediated cases settled.² Following a study of 100 land use mediation cases, Susskind (1999) and the Consensus Building Institute (1999) describe in two linked reports their finding that nearly two-thirds of the cases were resolved through assisted negotiation. Andrew's (2001) study of 54 assisted and unassisted waste management negotiations showed an 81% success rate in terms of the parties reaching agreement. An evaluation of 15 collaborative land planning cases in British Columbia by Frame, Gunton, and Day (2004) showed that full consensus was achieved in 93% of cases.³ A more recent evaluation by the U.S. Institute for Environmental Conflict Resolution (USIECR) (2004) of 24 agreement-seeking assisted negotiation cases revealed that the parties reached an agreement in 87% of the cases. The consensus of this body of research is that settlement rates are relatively high.

It should be noted, however, that because most of these studies focus exclusively on assisted negotiation – with Sipe's (1998) and Andrew's (2001) being the exceptions -- they could have a bias toward settlement in case selection. The reason for the potential

² Sipe (1998) includes unassisted negotiations, administrative hearings, and court trials as non-mediated cases.

³ Frame, Gunton, and Day's (2004) description of the collaborative planning process strongly suggests that these are environmental negotiations usually assisted by facilitators.

bias, which Bingham (1986) herself acknowledges, is a neutral third party's typical practice of assessing the situation prior to initiating negotiation. Such assessments can result in a decision not to proceed with a negotiation when conditions are determined to be unfavorable for settlement. Thus the settlement rates reported in the studies on assisted negotiation may not reflect settlement rates for the universe of all environmental negotiation cases.

These and other studies do address outcomes from the process other than settlement. Buckle and Thomas-Buckle's (1986) interviews of participants in successful and what mediators perceived to be "failed" mediations revealed participant views that they saved time and money and have solutions that better fit their interests. Sipe and Stiftel (1995) and Andrew (2001) also evaluated time and cost savings and participant satisfaction with the outcome of environmental negotiations. The multi-agency study of assisted negotiation conducted by the USIECR (United States Institute for Environmental Conflict Resolution, 2004) addressed questions to participants in completed negotiations concerning whether environmental conflict resolution helped to improve their capacity to manage conflict. Respondents in just over half the cases responded that they can now meet with all of the other participants to discuss issues of concern (60%), it is now easier to discuss controversial issues with other participants (61%), and they can now work productively with other participants with whom they have disagreements (64%). Results from the same evaluation project indicate that a majority of parties believe that their agreements can be implemented and will be fully implemented. Bingham (1986)

reported that implementation of agreements occurred in 80 percent of the site-specific cases in her study.

Sipe (1998) evaluated whether agreements reached through environmental mediation of enforcement disputes produce better compliance rates than settlements reached through unassisted negotiation and found no significant difference between the two types of process. And, in perhaps the only published attempt to date to assess the environmental impacts of assisted negotiation, Rose and Suffling (2001) found that five of six environmental alternative dispute resolution (ADR) cases produced good environmental outcomes by comparing the outcome of ADR to a set of environmental criteria. These criteria included: maintaining or enhancing the diversity and health of native species and their associated habitats; protecting hydrological features; otherwise maintaining the site in as natural a form as possible; protecting the surrounding areas from the effects of development; and accounting for the long-term effects of development. They found that overall the cases produced environmentally sound decisions.

In general, the research literature tends to treat the negotiation process as a static phenomenon and usually addresses it through post-process participant surveys or interviews rather than observations of the process itself. Participant satisfaction with the process is a common theme. For example, the USIECR study (2004) found that 79 percent of participants in environmental conflict resolution reported that they were satisfied with the process and that 83 percent would use the process again for a similar situation. Susskind (1999) and the Consensus Building Institute (1999) report that 86

percent of the four categories of respondents in the study (mediators, government officials, project proponents, and project opponents) had a positive view of assisted negotiation, with government officials having the most positive perspective on mediation. Andrew (2001) adopted a stringent standard for measuring satisfaction and determined that all participants in 65 percent of the cases were satisfied with the negotiation process. Reasons for their satisfaction included efficiency, cost savings, an equal opportunity to express interests and influence the outcome, and the degree to which the parties understood the process. From data collected through interviews with ADR specialists at the Environmental Protection Agency (EPA), neutral third parties, parties that are potentially responsible for hazardous waste clean-ups (potentially responsible parties or PRPs), and agency enforcement attorneys, as well as archival records, O'Leary and Raines (2001; 2003) also found high levels of satisfaction among those who had participated in EPA ADR processes.

Such satisfaction measures have their critics as well. Speaking primarily about substantive outcomes from a policy perspective, Coglianese (2003) argues that surveys tend to remove the extreme views of satisfaction and dissatisfaction and mainly measure attitudes instead of effects, that extraneous factors can affect survey responses, and that by virtue of their participation in dialogue, the respondents are not representative of the broader public and can therefore be biased. Consistent with his third argument, Beierle and Cayford (2003) found that environmental mediation tends to involve less diverse participation in terms of socioeconomic characteristics than forms of other public participation. They note that satisfaction among environmental negotiation participants

may differ sharply from that of others with an interest or stake in the issues who are not directly participating in mediation.

Some studies go beyond participant satisfaction and address some of what takes place during the process of negotiation. In a study that uses mainly descriptive statistics and cross tabulations, Bingham (1986) considers the types of process factors that may lead to a negotiated agreement, such as the parties' agreement on procedural issues, parties' agreement on the scope of issues, parties' agreement on the facts, presence of a deadline for reaching agreement, parties' maintenance of good relationships with their representatives or constituencies, and negotiation in good faith. She notes that most of these factors are difficult to measure and provides case examples to illustrate how they might have an impact on whether agreement is reached. She did find that there was not a relationship between having a deadline and reaching agreement for the cases in her study. Both satisfaction type questions, and even these more detailed inquiries about the negotiation process, however, continue to view the negotiation process as a uniform, relatively static phenomenon.

Bourdeaux, O'Leary, and Thornburgh (2001) found two process-related factors that influence success in negotiations concerning enforcement disputes at EPA. One was the sense of control that negotiators feel they have over the process, which can make participating more or less attractive depending on overarching power dynamics. Communication issues were also central; a perception of poor communication between the parties prior to ADR was one reason the non-EPA parties cited as their reason for

trying ADR. These researchers also found more positive mean responses to communication questions for parties who participated in cases that reached resolution.

Susskind (1999) and the Consensus Building Institute (1999) asked land use mediation participants about obstacles to reaching agreement and reported on three categories of obstacles. Interviewees in their study attributed 52 percent of obstacles to tensions among stakeholders, 28 percent to procedural factors, and 20 percent to substantive factors.

At least three authors give some attention to the dynamics at the very beginning of an environmental negotiation and specifically address issues about how it is initiated. Buckle and Thomas-Buckle (1986), in their study of “failed” mediations found that in only 24 of 81 cases reviewed did the parties agree to participate in mediation after the option was presented to them. They also found that participants in a large number of cases rejected mediation after the first meeting with a mediator. Their interviews with negotiating parties revealed a prevailing view that negotiation is typically only one process among many occurring simultaneously, including litigation, lobbying and other activities. This complexity is reflected in the finding of Susskind (1999) and the Consensus Building Institute (1999) that in 71 percent of the cases they researched, the parties were referred to mediation from some other process.

In discussing a reported ambivalence of EPA attorneys about participating in ADR, Bourdeaux, O’Leary, and Thornburgh (2001) speculate that it is an example of a lack of hurting stalemate. Essentially, these researchers argue that the agency attorneys

may have sufficient power in the situation to prevail and see no benefit (and perhaps a detriment) to negotiation.

To summarize, the existing research on the process of environmental negotiation has focused on outcomes, has tended to treat the process as a static phenomenon, and has given only limited attention to factors that may impact the process. Typical process outcomes subject to research include settlement rates, cost and time savings, and compliance rates, with only one study to date exploring the environmental outcomes of such negotiations. Measures of participant satisfaction regarding various aspects of the process and outcomes are common. Although some studies have addressed questions about factors that may impact the negotiation process, obstacles to agreement, and why and how negotiation begins, no research has yet treated the process of environmental negotiation as a series of events, investigated the changes that occur in the interaction among negotiators over time, or compared a set of negotiation cases on these terms.

B. ROLES

The research on environmental negotiation addresses a variety of actors who may be involved in the process and impact the dynamics. Three roles are given particular attention: the negotiating parties, government entities, and neutral third parties, including mediators and facilitators. Of the three, arguably the greatest emphasis is placed on the role of the neutral third party. For example, in a number of studies the subjects of inquiry

are deliberately limited to assisted negotiation. This section of the literature review provides examples of what the research says about the three roles.

Negotiating parties are generally considered central to environmental negotiations (Carpenter & Kennedy, 1988a; Cormick, Dale, Emond, Sigurdson, & Stuart, 1996; Susskind & Cruikshank, 1987; Susskind et al., 1999). Examples of this principle occur throughout the prescriptive literature on the subject. After reviewing traditional decision making approaches to public policy issues and describing them as inadequate, Susskind and Cruikshank (1987) call for a new approach in which “the disputing parties should sit around a table and work together until they produce an agreement – or decide to give up” (p. 77). Carpenter and Kennedy (1988a) promote the value of having affected parties to a dispute meet face-to-face and suggest that they should be engaged in shaping the negotiating process. Cormick et al. (1996) state that “care needs to be taken to identify and involve all parties with a significant interest in the outcome. This includes those parties who may be affected by any agreement that may be reached, parties needed to successfully implement it, or who could undermine it if not included in the process” (p. 23).

Despite such prescriptions, research on party involvement in environmental negotiations remains limited. Bingham (1986) noted the inherent challenges in determining the effect of not having all the parties involved might have on the success of an environmental dispute resolution process. Reasons she cites are the inability to do experimental designs in these situations and the uniqueness of the individual negotiation processes.

Andrew (2001) found no examples of research that examine the extent to which environmental ADR includes all stakeholders. Evaluating the level of stakeholder inclusion in 54 cases, he found that all relevant participants were involved throughout the entire process in only a minority of cases. In addition, his results showed that approximately half of the stakeholder absences that occurred were involuntary. He states that these findings are contrary to the principles of stakeholder involvement in the prescriptive literature.

A few more recent projects have attempted to collect information about the negotiating parties' engagement in the process. For example, Leach and Pelkey's (2001) review of 37 studies to analyze factors affecting conflict resolution in watershed partnerships found that interpersonal trust and committed participants were among the most important factors.

USIECR's study on environmental conflict resolution (2004) measured aspects of the negotiators' role in the process including the extent to which the participants were effectively engaged, communicated and collaborated effectively, and narrowed and clarified the issues in dispute. Results from the respondents' data showed only moderate support for the idea that the parties were effectively engaged, but slightly stronger support for their effective communication and collaboration and narrowing and clarifying the issues in dispute. For purposes of that analysis, the negotiation process is treated as uniform, static phenomenon.

Whether as parties to a process or external actors, the role of government agencies receives only limited attention in the research literature as well. Bingham (1986)

concluded that “regardless of a public agency’s role, however, its representatives usually must participate directly in efforts to resolve a dispute when that agency is party to a lawsuit or a potential lawsuit. Similarly in most cases in this study in which an agency was a project proponent or developer, representatives of the agency also have been at the table” (p. 103).

Susskind (1999) and the Consensus Building Institute (1999), in their study of the use of mediation in land use disputes found that government officials initiated 78 percent of the cases. The role of government agencies was even important in disputes among private parties, where public officials often suggested the use of assisted negotiation when the parties became involved through the regulatory process.

In contrast to the research literature’s treatment of the roles of parties and government agencies, the role of neutral third parties, including mediators and facilitators, receives significantly more attention. The theme of neutral third party involvement is particularly common in the practice and case study literature. Susskind and Cruikshank (1987), for example, take the view that “because the participants in multi-party, many issue disputes are usually unable to deal with differences on their own, assisted negotiation is often necessary” (p. 136). Carpenter and Kennedy (1988a) suggest that a mediator is valuable in several situations including when a negotiation is deadlocked, when establishing communication between the parties is needed, when the parties need to address sensitive information, when internal disagreements in a group threaten a negotiation, and when a process fails to achieve its desired results.

Birkhoff and Lowry (2003) summarized the claims that have been made about assisted negotiation at the individual, relational, societal, and ecological levels. At the individual level, the claims include higher satisfaction, participation by all affected parties, increased efficiency and cost savings, a smaller time commitment, a more flexible process, and procedural justice. Additional benefits at the individual level include enhancing one's capacity to better manage disputes, personal empowerment, and perhaps even individual growth and moral development. At the relational level, assisted negotiation participants can expect improved relationships and the generation of social capital. At the societal level, it is possible for these processes to contribute to social change and promote social justice. Ultimately, at the ecological level, some claim that assisted negotiation and related processes can produce better environmental outcomes because of the focus on inclusion, better information, and greater breadth in decision-making options. Beyond the claims of practitioners and advocates, the case study literature also reflects an emphasis on assisted negotiation, as will be discussed in Chapter IV.

From the perspective of research, some studies are limited to addressing assisted negotiation cases (Bingham, 1986; Consensus Building Institute, 1999; Susskind & Consensus Building Institute, 1999; United States Institute for Environmental Conflict Resolution, 2004) and others emphasize questions about the role of mediation or the neutral third party (Andrew, 2001; Bourdeaux et al., 2001; Buckle & Thomas-Buckle, 1986; O'Leary & Raines, 2001, 2003; Sipe & Stiffler, 1995). In their evaluation of

mediation in land-use disputes, Susskind (1999) and the Consensus Building Institute (1999) assessed the importance of the mediator. Their findings include the following:

- Eighty-five percent of respondents thought that the role of the mediator was crucial or important and only four percent thought that the mediator was unimportant.
- For the mediation cases in which the parties reached an agreement, 91 percent of respondents thought the mediator was crucial or important. Seventy-five percent of respondents from cases where the parties did not reach agreement thought that the mediator was similarly important.
- Eighty percent of respondents indicated that an agreement would not have been possible without a mediator being involved.

The USIECR (2004) evaluation results were similarly positive in their portrayal of the neutral third parties' contribution to the assisted negotiation process. Participants in the 24 cases evaluated indicated a mean of 7.7 (on a scale from 0 to 10) that the mediator's skills and practices were appropriate. Their responses have a mean of 8.0 for overall satisfaction with the neutral third parties.

Andrew (2001) argues that in spite of many normative claims about the value of neutrality and the general assumption in the literature that facilitators and mediators are always neutral, no empirical evidence exists to support the idea that neutrality is critical to the success of environmental negotiation. He investigated whether the neutral third parties in 54 waste management cases were truly neutral, defining neutrality as not being affiliated with either a party to the negotiation or potentially having an adjudicatory role

in a subsequent hearing. His finding was that 29% of these cases from Ontario and Massachusetts had facilitators or mediators who cannot be considered to be neutral.

Related research by Bourdeaux, O’Leary, and Thornburgh (2001) and O’Leary and Raines (2003) addressed the questions about party satisfaction with mediator performance and about what mediator characteristics are important for the resolution of Superfund enforcement disputes. In these studies, both EPA attorneys and their PRP counterparts were generally satisfied with mediator performance. Respondents, however, did note an inconsistency in the quality of mediators with respect to their knowledge of the subject matter and ability to control strong-willed attorneys during the process.

Buckle and Thomas-Buckle (1986) asked parties for their views about what constitutes successful mediation. In general, parties’ response was that mediation was successful if the mediator made any positive contribution. These researchers considered the mediator to have made a substantial effort and had a significant impact in 40 of 81 cases, including 16 in which no joint meetings occurred and 24 in which at least one joint meeting occurred. They note the parties’ observation in 30 of 81 cases that the mediator’s actions allowed the parties to proceed on their own without further assistance. Other feedback on the mediators’ utility to parties in the process was that the mediators helped the parties to understand their own interests better and served as generators for new options that could be used in other dispute resolution fora.

In Sipe and Stiftel’s (1995) study of environmental enforcement mediation in Florida, they asked participants about the tasks that mediators typically perform including: “(1) facilitating group discussion and interaction; (2) assisting parties in

stating their interests; (3) helping the parties in generating options; (4) helping to establish rules for reaching decisions; and (5) assisting the parties in ratifying agreements” (p. 147). At least 84 percent of participants gave the mediator a rating of moderately or very helpful on the first four criteria. Only slightly more than half of the respondents were satisfied with the mediator’s performance related to assistance with ratifying agreements. Approximately 90 percent of the respondents gave mediators a rating of moderately or very helpful.

Leach and Sabatier (2003) provide a counterpoint to the otherwise optimistic picture of neutral third parties emerging from the research on environmental negotiations. In their study of 50 randomly sampled watershed partnerships in California and Washington State, they conducted interviews of participants and used multivariate regression to determine whether facilitators and watershed partnership coordinators have an impact on agreements and the incidence of restoration projects and perceived environmental impacts. Among their other findings, they found a small negative correlation between facilitator effectiveness and the level of agreement reached, that perceived facilitator effectiveness is greater in partnerships facing relatively easy tasks, and that neither facilitators nor coordinators appear important for explaining restoration projects or perceived impacts on the watershed. Instead, the researchers found that variables concerning the partnership participants – including interpersonal trust and the age of the partnership -- were better determinants of success.

The review in this section has shown that much of the research on environmental negotiation focuses on the role of neutral third parties in the negotiation process, with

some attention given to roles played by other actors, including the parties to the negotiation and government agencies, and factors related to them. There apparently have been no studies comparing multiple roles played in environmental negotiation to each other in a systematic way or across cases, particularly with respect to how these roles may impact changes in the negotiation process over time.

C. CASE-RELATED FACTORS

A reasonable question is whether factors related to particular types of negotiation cases can have an impact on or relationship to the process dynamics in an environmental negotiation. Such case-related factors include whether the negotiation was assisted or unassisted, the number of participants, issues at stake, duration of the negotiation, location, and policy context that can provide a useful basis for making comparisons between different types of negotiations. This part of the literature review addresses the extent to which previous research considers case-related factors as important variables.

One type of case-related factor, connected to the above discussion about neutral third party roles, is whether the parties to the negotiation have assistance from a neutral third party or are pursuing the process without such assistance. As a case-related variable, the presence of neutral third party and not their actions is emphasized. Given the generally mediator-centric orientation of the literature, such comparisons are somewhat rare, though some studies do include these variables. As noted previously, Sipe (1998) compared the settlement and compliance rates of assisted and unassisted

negotiation and found that assisted negotiation led to better settlement rates but no statistical difference between the compliance rates of the two types of process. In analyzing the settlement rate data, he also noted that two control variables related to power and the age of the case had an effect. More specifically, older cases were less likely to settle and cases where the parties perceive a balance of power are more likely to settle.

Similar to Sipe (1998), Buckle and Thomas-Buckle (1986) looked at assisted and unassisted negotiations, as well as partially assisted cases where mediation was initiated but not sustained until the end of the negotiation. Comparisons on this variable included the procedural disposition of the cases (e.g., what type of process was used after mediation was accepted or rejected), the outcome of the process (where known), and the perceived impact of the mediator in the different types of situations (as discussed in the preceding section).

Another dimension addressed in the literature is whether the parties did or did not settle their case. In Sipe and Stifel's (1995) study they compared responses from parties to settled to unsettled cases about the issues in dispute, the mediation process, and the mediator. For unsettled cases they found that parties tended to see agency jurisdiction as a significant issue more than in settled cases. For settled cases, parties saw interpretation of data and the amount of fines and penalties as significant issues more than in unsettled cases.

These researchers also found significant differences with respect to the mediation process. Parties who settled their dispute through mediation rated the mediation process

higher than those who did not settle in terms of defining the issues; clarifying viewpoints, interests, and positions; reaching general agreements; reaching specific agreements; and improving communication among the parties. There were differences in the views of the parties from the two types of case with respect to the mediator only on two of five criteria. One of those criteria addressed ratifying agreements, which the authors point out is logical given that some of the cases did not settle. Thus there was in effect a difference in the perceptions of the mediator and the mediation process for those in the unsettled cases.

Susskind (1999) and the Consensus Building Institute (1999) compared settled to unsettled cases in terms of satisfaction with the mediator (as discussed above) and the mediation process. They report a difference in process satisfaction between settled and unsettled cases, with 31 percent of the respondents from the latter cases indicating a very favorable or favorable attitude toward the process. They also compared settlement rates, satisfaction with the process, and perceptions of cost and time savings among different substantive types of land use cases. Settlement rates varied between 40 and 78 percent depending on the issues at stake. The range of at least favorable ratings also varied among the participants in different types of substantive cases. Perceptions of time and cost savings ranged from 64 to 100 percent. An additional comparison among different regions in the county showed that assisted negotiation received more very favorable reviews and indications of a higher settlement rate from the interviewees in the Pacific Coast regions (59% and 67%, respectively). Andrew (2001) also used geography –

negotiation cases in Ontario and Massachusetts -- as a basis for comparison and found no statistical differences between the sets of cases.

Although she studied only assisted negotiations, Bingham (1986) considered case-related variables such as the number and types of parties involved, the substantive issues being negotiated, the parties' authority to make decisions versus recommendations, availability of sufficient incentives, ability to satisfy parties' underlying interests, and whether parties were involved in litigation. She stated that the availability of incentives and ability to satisfy interests were not easy to evaluate. Neither the number of parties, nor the substantive issues at stake had an impact on whether agreement was reached in site-specific cases.

Bingham (1986) found three case-related factors that did have a relationship with whether agreement was achieved. Reaching agreement was more likely when parties were empowered to make decisions rather than only developing recommendations for a decision maker. Another finding was that certain configurations of parties involved in the negotiation were more likely to be associated with agreement in site-specific cases. For example, assisted negotiations involving certain groupings of government and non-government entities were more likely to be associated with reaching agreement than cases involving only government entities. The third case-related factor with a relationship to agreements being reached in site-specific cases was whether the parties were involved in litigation. Those not involved in litigation were more likely to reach agreement, followed by those involved in cases where a lawsuit had been filed and those on the verge of

litigation or an administrative hearing. Parties involved in administrative adjudication were least likely to reach agreement.

In one of only a few studies on the subject, Langbein and Kerwin (2000) compared negotiated rulemaking, in which parties are invited to reach consensus on a proposed administrative regulation with the help of a facilitator, to conventional rulemaking, in which a government agency proposes a regulation without stakeholder negotiation. Using a survey of involved stakeholders for both types of cases, they found that there is greater satisfaction with the substance of the rule and the overall process among participants in negotiated rulemaking at EPA, and that negotiated rulemaking parties learn more and face greater costs of participation. The authors concluded that there were no differences in the perceived benefits of participation, whether parties were excluded or had disproportionate influence, EPA's involvement in the process, or the amount of subsequent litigation.

This generally optimistic assessment of negotiated rulemaking is not without critics, however. In another study, Coglianese (1997) explores whether negotiated rulemaking reduces the time required for the rulemaking process and reduces judicial challenges. His conclusion is that negotiated rulemaking does not offer these benefits.

To sum up this section, the research on environmental negotiation has addressed some case-related factors, including whether the negotiation was assisted or unassisted, whether the parties settled or not, and the substantive issues at stake. Some work has also considered case variables such as the number of parties, type of issues, and the presence of a deadline, and their relationship to whether the parties reach agreement. A few

studies have even compared environmental negotiation to non-negotiated processes. Typically, however, comparisons of this sort tend to address questions about outcomes, participant satisfaction – especially with neutral third party performance, and cost and time savings. They do not consider the possible relationship between different attributes of negotiation cases and the changes that occur in the interaction among parties over time.

D. POTENTIAL CONTRIBUTIONS OF THIS RESEARCH

In summary, this review of how the literature on environmental negotiations addresses negotiation dynamics, the roles of those involved in negotiation, and case-related factors has revealed several themes. One significant focus of the research is on the outcomes of environmental negotiation. Research about such outcomes reports a variety of findings about settlement rates, cost-effectiveness, participant satisfaction, and implementation. The research also addresses some factors related to dynamics; however, it tends to treat the negotiation process as a static phenomenon and to characterize aspects of the process as a whole. It typically does not attempt to assess the changes that occur in the interaction among the parties over the period in which they are negotiating or address the factors that may lead to such changes. One exception to this general trend is that a few studies have addressed the initiation of an environmental negotiation. From a methodological perspective, the dominant approaches to research are participant surveys or interviews, as well as reliance on secondary sources.

The state of the extant environmental negotiation literature provides opportunities for inquiry related to negotiation dynamics and for methodological innovation. A general lack of research, of course, invites further systematic inquiry of many sorts; however it is the lack of research into the changes that occur in the interaction among parties in environmental negotiation that fosters interest in the present study. In addition, the emphasis on the role of neutral third parties, such as mediators and facilitators, and relatively less emphasis on other roles, such as those played by negotiating parties and government agencies, suggests an opportunity to investigate how a variety of actors interrelate with process dynamics over the course of a negotiation. From a methodological point of view, there are currently only about seven comparative cross-sectional large-N studies (Andrew, 2001; Bingham, 1986; Buckle & Thomas-Buckle, 1986; Consensus Building Institute, 1999; Frame et al., 2004; Sipe, 1998; Sipe & Stiffler, 1995; Susskind & Consensus Building Institute, 1999), suggesting the occasion to incorporate this aspect into research about negotiation dynamics as well. The following chapter describes the specific research questions prompted by these opportunities, a framework for exploring them, and related hypotheses.

III. RESEARCH QUESTIONS AND FRAMEWORK

The preceding chapter reviewed the existing literature on environmental negotiation. Reflecting on the themes discussed in the literature review, this chapter poses a set of research questions to guide the study, describes a research framework for generating answers to these questions, and specifies hypotheses for testing.

A. RESEARCH QUESTIONS

Consistent with the themes highlighted in the literature review, this study proposes three sets of research questions related to the dynamics of environmental negotiations in general, the roles that may influence such negotiation process change, and the relationship of different case-related factors to negotiation dynamics.

With respect to the changes that take place in the interactions among parties to an environmental negotiation as they progress toward agreement (i.e., the negotiation dynamics):

- What factors lead to such changes?
- What consequences follow from such changes?
- Do individual instances of process change tend to move stakeholders toward agreement or away from agreement?

- Can a pattern of typical dynamics for environmental negotiation be identified?

With respect to the roles that may influence negotiation dynamics:

- What influence do different actors involved in an environmental negotiation have on the changes that occur?
- Given claims and evidence about the role that neutral third parties, (e.g., mediators and facilitators) may play in assisted environmental negotiation, to what extent is there a relationship between such involvement and changes in the process and consequences?

Finally, to what extent does the pattern of negotiation process dynamics vary according to a variety of case-related factors including:

- The substantive issues at stake?
- The type of agreement reached?
- The number of negotiating parties?
- The duration of the negotiation?

B. RESEARCH FRAMEWORK

A research framework provides the structure for articulating a set of hypotheses related to the research questions and testing the hypotheses. This study draws on previous work concerning turning points in negotiations for a framework with which to investigate the research questions. Some refinements to the earlier turning points model make it more applicable to this study. The research framework also includes case-related

variables needed to investigate the third set of research questions. The refined turning points framework and case-related variables are discussed below.

1. TURNING POINTS FRAMEWORK

In Zartman's (1988) typology of analytical approaches to the process of negotiation, he identifies five ways that scholars have conceptualized the phenomenon. They include structural analysis, strategic analysis, process analysis, behavioral analysis, and integrative analysis. These analytical approaches tend overlap to some extent in their application. Structural analysis deals with the relative symmetry or asymmetry of the negotiating parties along one or more dimensions. For example, outcomes of a negotiation can be explained in terms of whether one party had more power than another. Strategic analysis focuses on the values and preferences of the parties and how they influence decision-making during the course of negotiation. Models of negotiation reflecting the strategic analysis approach generally assume that the parties are rational actors. Process analysis emphasizes the concessions that parties make in the course of a negotiation based on their continual calculation of costs and benefits. Behavioral analysis concerns the psychological make-up of the individual negotiator. By categorizing different negotiators based on their motivations, one can compare the moves they make in a negotiation as well as the types of outcomes that are possible with a given configuration of negotiators. The important elements of integrative analysis, Zartman's last category, are the stages or phases of a negotiation and the behaviors that coincide

with each. Integrative analysis overlaps with process analysis, suggests greater flexibility in the parties' conceptions of their own interests, and resonates more closely with a negotiation practice perspective.

The turning points in negotiation framework (Druckman, 1986, 2001, 2004) emphasizes aspects of both the process and integrative analysis approaches. It is also a member of a relatively new generation of theory and research methods that focus on critical moments in negotiation – the major shifts and radical changes that occur in the course of a negotiation process (Leary, 2004). The framework has been used to research a variety of international and domestic negotiations, including military base negotiations between the United States and Spain (Druckman, 1986); pre-negotiations concerning the North American Free Trade Agreement (Tomlin, 1989); negotiations regarding the elimination of intermediate range nuclear forces between the United States and the Soviet Union (Druckman et al., 1991); international environmental negotiations (Chasek, 1997); and in a comparative analysis of 34 international security, trade and environmental negotiations and 11 airline labor negotiations in the United States (Druckman, 2001). The current study will make a contribution to the turning points literature by applying a revised version of the framework to a set of environmental negotiations that took place in the United States and other countries. Use of the framework also addresses one of the primary methodological challenges in researching environmental negotiation by providing a basis for comparing a diverse set of cases.

The turning points framework is designed to explore the change in negotiation processes and integrates three concepts: precipitants, departures, and consequences

(Druckman, 2004). Precipitants can be events or behaviors within the negotiation – internal precipitants. In previous research, internal precipitants have been substantive (i.e., related to the issues being negotiated) or procedural (i.e., related to the process for discussions). Precipitants have also been associated with events or behaviors external to the negotiation – external precipitants -- such as those of neutral third parties and other actors.

Precipitants are followed by departures – the turning points -- which are the negotiators' responses to precipitants and which can mark the transition between stages or phases in the process. These turning points can be either more abrupt or less abrupt relative to the previous state of negotiation. In some research (Chasek, 1997; Druckman, 1986; Tomlin, 1989), the stages or phases are overlaid analytically on the negotiation process using a deductive approach. Other research (Druckman, 2001; Druckman et al., 1991) has taken a more inductive approach, without assuming a predetermined pattern of phases or stages.

From the turning points follow consequences, which reflect whether the participants in the process are moving toward or away from agreement. Graphically, the turning points framework is illustrated in Figure 1:

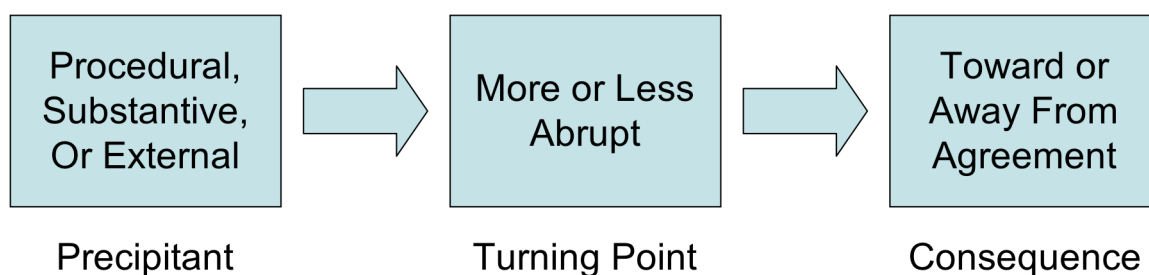


Figure 1: ORIGINAL TURNING POINTS FRAMEWORK

2. REFINING THE TURNING POINTS FRAMEWORK: PRECIPITANTS AND CONSEQUENCES

Application of the existing turning points framework to environmental negotiations would pose little difficulty. An example from an actual environmental negotiation process illustrates such an application.

During the 1990s, the U.S. EPA sponsored a negotiated policy dialogue with neutral third party assistance to address the issue of how to manage a particular source of water pollution in the United States – a source of pollution with significant environmental and public health consequences that also would be very expensive to control. The negotiation was advisory in nature, meaning that the negotiators – representing a range of municipal, industry, and environmental interests that would be impacted by a policy decision -- were working to produce a consensus agreement that EPA would consider and then choose whether or not to implement.

After several months with little progress toward agreement, the negotiators reported that they were preparing to end the negotiation. Frustrated by this situation, a senior federal environmental official reportedly told the negotiators: “if you don’t find a solution, then I’ll find a solution – and you won’t necessarily like my solution.” Soon after that declaration, the group of negotiators that was previously locked in an impasse over how to address the issues decided to reconvene their discussions – a sudden turning point. The senior official’s declaration was an external precipitant to the change in the negotiation process, since the official was not participating directly in the negotiations.

The resumption of the dialogue eventually led to an agreement among the negotiators, who recommended a new policy for managing the particular source of water pollution. EPA eventually adopted a new policy developed as a result of these recommendations and the policy was eventually codified into federal law by an act of the U.S. Congress. In terms of the turning points framework, the sudden departure in the process, precipitated by an external factor, led the participants toward agreement.

As this example highlights, the existing turning points model is applicable to environmental negotiations and, in particular, could yield responses to most of the research questions addressing environmental negotiation dynamics. Some refinements, however, are desirable to make the framework more relevant for addressing the research questions related to the consequences of turning points for the negotiation and the roles of various actors, particularly neutral third parties, who may precipitate turning points in environmental negotiations. Each of these refinements to the turning points framework is discussed in turn.

In the original turning points framework, identification of the consequences of the departure for the negotiation is limited to whether the negotiating parties move toward or away from agreement. With respect to the research question about the consequences of turning points, additional information about these outcomes would be useful. In particular, assessing whether the consequences mainly relate to the process or the substance of the negotiation could provide detailed information about precipitant impacts on the negotiation and how those impacts are associated with both the type of turning point and the direction of the negotiation toward or away from agreement. Such information could potentially assist negotiators and prospective external intervenors when deciding the type and timing of their next move. As a result, the turning points framework for this study includes variables for both the direction of the negotiation (toward or away from agreement) as a consequence of the turning point and whether the consequence is related to the substance or process of the negotiation.

The second refinement to the turning points framework relates to expanding the categories for precipitant roles – the actor(s) responsible for the precipitant – and separating the identification of procedural and substantive precipitants from the precipitant role categories. The existing turning points framework distinguishes between external and internal roles responsible for precipitants but limits any further categorization to precipitants associated with internal precipitants. Only the latter precipitants are further distinguished as being either procedural or substantive.

There are two reasons why a more refined typology of precipitant roles and distinction between such roles and the type of precipitant are important for this study.

First, environmental negotiations occur in a different political context from international negotiations. In contrast to international negotiations among nation-states where there is no overarching authority and where any procedural rules are the product of convention and consensus, environmental negotiations take place under a common set of laws and procedures for which governmental entities at multiple levels have responsibility and, in many cases, enforcement authority. This situation affords a wide range of actors the opportunity to intervene in negotiations in terms of both substance and procedure. Beyond the negotiating parties themselves, actors who may precipitate turning points in environmental negotiations include advocates for the parties, neutral third parties, enforcement agencies, elected officials, the courts, the media, academic institutions, and the public. For example, in the case of the water pollution policy dialogue described above, the senior executive branch official's external intervention in the process was clearly procedural. The official's declaration -- essentially a threat to reclaim the entire decision making process within the agency -- would have had the effect of eliminating the negotiation process altogether. The negotiators viewed this as an undesirable procedural outcome and they opted instead to return to the bargaining table and seek a consensus recommendation.

A more refined classification of precipitant roles will also facilitate investigating the research questions related to role of neutral third parties by allowing for the development of causal hypotheses on the relationship between roles and internal dynamics. Under the existing turning points framework a neutral third party is considered an external precipitant. As noted above, most of the literature on the subject

of neutral third party involvement is prescriptive and anecdotal, and there is little evidence from research addressing the issue of the extent to which neutral third party involvement may impact negotiation dynamics and assist participants in reaching agreement. Among advocates of neutral third party assistance, the argument is that such interventions provide procedural assistance, while remaining impartial about the substance. By distinguishing between procedural and substantive precipitants for both internal and external precipitant roles and identifying a wider range of precipitant roles it becomes possible to distinguish not only between neutral third party impacts and those of other external actors, but also identify to what extent neutral third parties act in a procedural or substantive way.

Laue (1987) provides an analytical framework for intervention roles that can be easily adapted for use in a refined turning points framework. His starting point is that intervention roles are based “predominantly on an intervener’s base and credibility – for whom does the intervenor work, who pays the intervenor to be there, and consequently what are the structured expectations for behavior of the intervenor in that role? What are the organizational sanctions to which the intervenor may be vulnerable? What kind of peer pressure exists?” (p. 26)

Laue (1987) identifies five intervention roles in conflict resolution: (1) activists, (2) advocates, (3) mediators, (4) researchers, and (5) enforcers. From his perspective as a scholar interested in community conflict resolution, activists are individuals who are leaders of a group of individuals with common interests, from which emerges one or more of the parties in a given conflict situation. Activists typically do not enter into

negotiations but may support parties outside a negotiation. Advocates, in a variety of capacities such as lawyers and technical consultants, are engaged by parties and represent them in a dispute situation. In contrast to activists, advocates are expected to negotiate and do participate directly in negotiations. Mediators, the third type of intervenor role, do not have a base in any party, but is instead interested in the interaction among parties and what other intervenors do. They are advocates for an effective process in which all parties can obtain at least some of their objectives. Researchers collect and process information about the dispute and its resolution, and can bring about change in a negotiation when such information is made available to the parties or those in other intervention roles. The final intervention role, the enforcer, has the formal power to sanction some or all parties in a conflict or negotiation. Examples include judges, arbitrators, and the police. Laue envisions each of these roles as being progressively farther removed from interaction with the parties to a negotiation as one moves along a continuum from activists to enforcers.

Laue's (1987) typology of intervention roles can be used to analyze environmental negotiations with two modifications. One change is to eliminate the activist intervention role. This is appropriate for two reasons. First, it may be difficult in environmental negotiations to distinguish between parties and activists. The same individuals and organizations that may sometimes play activist roles also sometimes negotiate. Second, as Laue points out, where activists can be identified separately from parties, they are less likely than those in other roles to participate in negotiations. The second modification is to broaden the term mediator to neutral third party. This label

change provides room to include other types of procedural and substantive assistance, such as facilitators and technical experts who are engaged to assist all parties involved in a negotiation.

The revised turning points framework thus includes four precipitant roles from Laue's (1987) typology – advocates, neutral third parties, researchers and enforcers – in addition to the parties themselves. For comparability with the existing turning points framework, parties and advocates are considered internal precipitant roles because both actors are fundamentally involved to serve the interests of specific parties. External roles include neutral third parties, researchers, and enforcers. All precipitant roles can be associated with either procedural or substantive precipitants.

The revised turning points framework including the refinements to the consequences and precipitant roles proposed is illustrated in Figure 2:

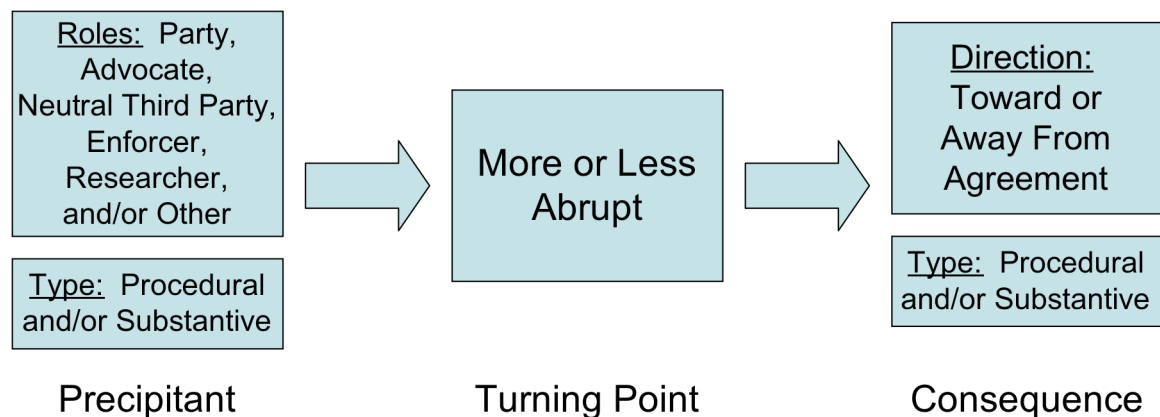


Figure 2: REVISED TURNING POINTS FRAMEWORK

3. CASE-RELATED VARIABLES

The third set of research questions concerns whether case-related factors are related in some way to the pattern of precipitants, turning points, and consequences in environmental negotiation cases. To investigate these research questions, the following typology of environmental negotiations will be used to assess how negotiation dynamics may be related to different types of negotiations:

- Whether the specific substantive issues at stake in the negotiation emphasize the preservation or use of natural resources or the control or remediation of pollution;
- Whether the agreement reached was a settlement and binding on the parties, or an advisory recommendation, requiring another entity to decide whether to accept and implement it;
- The number of discrete participants in the process; and
- The duration of the negotiation process -- the time from when the participants first consider or begin interacting directly and when they reached agreement.

There is no particular reason to expect a difference in negotiation dynamics related to the substantive issues at stake in an environmental negotiation. Such a distinction, however, is relatively easy to test in this research and could suggest areas for future inquiry or alternative approaches to conducting negotiations if differences are found to exist. The distinction is based on Frey's (2001) typology for distinguishing between environmental issues that concern natural resources – reducing the amount of an

available resource or protecting such a resource from depletion – and resource degradation – when human actions change the natural world in undesirable ways.

Of the four case categories, the type of agreement reached is perhaps the most interesting because of its potential connection to a larger question about other factors that may influence the extent to which different types of precipitants correlate with a process departure. As Druckman (2004) notes, there are likely psychological factors at work in determining which events or behaviors become precipitants to changes in the process. Among the potential psychological factors are the negotiating parties' perceptions of the level of conflict among participants. Settlement agreements most often occur once a dispute has manifested itself among parties (e.g., an enforcement action is taken or pollution has already been released) and they decide to negotiate to resolve the dispute. By contrast, negotiations involving advisory agreements may occur while a dispute is still latent or relatively minor or the parties do not even perceive conflict. In such cases, there is still an opportunity to avert or significantly mitigate the situation, sometimes known as conflict prevention. Thus a distinction between settlement and advisory agreements provides a proxy for the level of conflict in these cases.

C. HYPOTHESES TO BE TESTED

The study's research questions concern the dynamics of environmental negotiation generally, the roles of different actors as precipitants of change, and the potential impact of case-related factors on negotiation dynamics. The refined turning

points framework articulated above provides the basis for advancing a set of hypotheses to be tested for each set of research questions. The hypotheses reflect the results of research, where available, as well as common non-empirical claims that have been made in the academic and professional literature.

Negotiation dynamics for environmental negotiation cases concern the frequencies of variables in the refined turning points framework – procedural/substantive precipitants, more/less abrupt turning points, procedural/substantive consequences, and toward/away from agreement consequences, their interrelationships, and occurrence over time. Because there has been little previous research on the dynamics of environmental negotiation, formulating hypotheses on that basis is not practical. Druckman's (2001) analysis of 34 international negotiation cases and 11 airline negotiations addressed different subject matter; however, two of that study's findings do seem potentially applicable to environmental negotiations:

- For international political negotiations (which include environmental issues and are perhaps the closest analog to environmental negotiations), the finding that there tend to be fewer less abrupt turning points than more abrupt turning points after substantive precipitants; and
- For all international negotiations, the finding that consequences of turning points tend to be toward agreement.⁴

⁴ This finding is in contrast to Druckman's (2001) finding about consequences in the airline negotiations, in which most consequences were away from agreement. His explanation was that parties to labor negotiations typically have incentives to prolong negotiations as much as possible for economic reasons. It is unlikely that such a rationale is operational in environmental negotiations since parties usually have economic

Extending these findings to environmental negotiations the following hypotheses will be tested:

- H1: Toward agreement consequences are more frequent than away from agreement consequences in environmental negotiations; and
- H2: More abrupt turning points are more common than less abrupt turning points following substantive precipitants in environmental negotiations.

A third and fourth hypothesis related to negotiation dynamics will be tested based on claims in the environmental negotiation literature that the early stages of environmental negotiation tend to (or should) feature more procedural aspects (Carpenter & Kennedy, 1988a; Manring, Nelson, & Wondolleck, 1990; McCarthy, Shorett, & American Arbitration Association, 1984; Moore, 1986), thus:

- H3: Procedural precipitants are more likely than substantive precipitants to occur at the beginning of an environmental negotiation; and
- H4: Procedural consequences are more likely than substantive consequences to occur at the beginning of an environmental negotiation.

Several hypotheses are also advanced concerning precipitant roles and their relationship to negotiation dynamics. Once again, several of Druckman's (2001) findings are potentially applicable:

- For political international negotiations, the finding that precipitant roles tended to be internal rather than external;

incentives to establish certainty (from a regulated entity perspective, for example) and mitigate environmental harm as quickly as possible (from an environmental advocate perspective, for example).

- For all international negotiations, the finding that external precipitant roles led to more abrupt rather than less abrupt turning points; and
- For all international negotiations, the finding that external precipitant roles were responsible for more than half the away from agreement consequences.

Extending these findings to environmental negotiations the following hypotheses will be tested:

- H5: Internal precipitant roles are more common than external precipitant roles in environmental negotiations;
- H6: External precipitant roles are more likely to be associated with more abrupt rather than less abrupt turning points in environmental negotiations; and
- H7: External precipitant roles are more likely than internal precipitant roles to be responsible for away from agreement consequences in environmental negotiations.

As discussed in the literature review, the research literature and claims from the practitioner community both emphasize the importance of neutral third parties in environmental negotiations. In light of this focus on the role that neutral third parties may play, the following hypotheses will be addressed:

- H8: Neutral third parties are more likely than other external precipitant roles to precipitate turning points in environmental negotiations;

- H9: Neutral third parties are more likely than other precipitant roles to be associated with procedural precipitants of turning points than substantive precipitants in environmental negotiations; and
- H10: Neutral third parties are more likely than other precipitant roles to precipitate turning points that lead to toward agreement consequences in environmental negotiations.

Regarding the research questions addressing the relationship between the case-related factors and the pattern of precipitants, turning points, and consequences, one hypothesis will be tested:

- H11: Neutral third party precipitant roles are more common than other precipitant roles in shorter environmental negotiation cases.

This hypothesis follows from the emphasis in the literature on the role of neutral third parties and claims that their intervention should produce efficient agreements from a time perspective. For example, Susskind and Ozawa (1983), Todd (2001), and Madrid and Martin (2002) all argue that mediation should minimize the time necessary to reach an agreement, though the assumption in these articles is that the most appropriate comparison is between mediation and non-negotiated decision making, such as litigation. Only one hypothesis is advanced for case-related factors because there is no significant basis in either the turning points or environmental negotiation literature to expect differences in process dynamics related to the substantive issues at stake, the type of agreement reached, or the number of negotiating parties.

While these hypotheses propose specific relationships among the variables in the research framework, formally this study will use the null hypothesis in determining statistical significance (Agresti & Finlay, 1997; Frankfort-Nachmias & Nachmias, 1992). Additional analysis will be performed beyond what is necessary to test these hypotheses in an attempt to identify other relationships among the variables that can be explored in future research.

IV. CASE SELECTION AND CONTENT ANALYSIS

The data used to address the research questions and hypotheses described in Chapter III were extracted through content analysis performed on a set of negotiation case chronologies. These chronologies were derived from case descriptions of environmental negotiation. Authors vary somewhat in their treatment of content analysis as a research technique, though they share much in common. For example, Frankfort-Nachmias and Nachmias (1992) and Druckman (2005) both cite the definition of content analysis used by Holsti (1969): “any technique for making inferences by objectively and systematically identifying specified characteristics of messages.”

Robson (1993) describes a step-by-step process for conducting a content analysis that is used in this study. This approach to content analysis involves several discrete tasks: (1) development of research questions, (2) determination of a sampling strategy, (3) definition of the recording unit, (4) construction of categories for analysis, (5) reliability testing, and (6) conducting the analysis. The preceding chapter discussed the research questions and hypotheses in the context of the overall research framework. The following chapter describes the statistical analysis and results.

This chapter first reviews the sampling strategy for the environmental negotiation cases used in the study and how the written case descriptions are prepared for analysis. The second part of the chapter addresses the definition of the recording unit – essentially

what is being counted in the content analysis procedure – and how the elements of the recording unit – the research variables – are operationalized. The final section of the chapter describes the approach to reliability testing and the results of that assessment.

A. CASE SAMPLING AND CHRONOLOGY DEVELOPMENT

This section describes the approach to selecting environmental negotiation case descriptions and converting them to chronologies that can be subjected to content analysis. The approach to sampling cases is reviewed first, followed by a brief discussion of case descriptions that were rejected to illustrate the challenge of finding suitable material for analysis. The middle portion of the section characterizes the cases selected for the study, including a list of the cases, brief highlights of each case, and their respective sources. The last part of the section explains why and how chronologies for each case were developed to facilitate content analysis.

1. CASE SAMPLING APPROACH

Sampling involves selecting members of a larger group for analysis (Frankfort-Nachmias & Nachmias, 1992; Robson, 1993). In many research applications, the goal of sampling is to identify a set of cases from a population of all known cases so that the case set is in some way representative of the population and the results of the research can be

extended to and characterize the population as a whole (Frankfort-Nachmias & Nachmias, 1992; Robson, 1993). This is also true of content analysis.

With respect to the environmental negotiation cases that are the subject of this research, however, the population is unknown. Thousands of such cases have probably occurred in the past three decades; however, no database currently captures the entire population.⁵ As a consequence, this study relies on non-probability sampling to select cases for analysis. A non-probability sample means that it is not possible to know the probability that a case is included in the sample (Robson, 1993) and is used when probability samples are infeasible (Druckman, 2005; Robson, 1993). More specifically, this study employs a purposive sample, meaning that cases are selected to satisfy a set of criteria specified to support the research methodology (Frankfort-Nachmias & Nachmias, 1992; Robson, 1993).

Multiple criteria were used to select environmental negotiation cases and case descriptions for the purposive sample. The cases selected for this research:

- Occurred entirely within the national boundaries of a single country;
- Addressed environmental or natural resource issues, including land-use planning;
- Were either assisted (e.g., involving a neutral third party such as a mediator) or unassisted negotiation;

⁵ One emerging effort to develop such a resource is the Public Policy Case Database, supported by the William and Flora Hewlett Foundation and led by RESOLVE. More information on the database is available at <http://www.resolve.org/casedata/index.html>.

- Reflect negotiations in which the parties reached an agreement, allowing a conceptual conclusion to the negotiation⁶; and
- Involved parties in direct negotiations for at least some portion of the negotiation process.

The case descriptions selected for the study:

- Emphasize description of events at least from the time the parties first consider a negotiated process until an agreement is reached;
- Include sufficient detail about changes in the negotiation and the moves that individual parties made vis-à-vis each other in the course of the negotiation process to allow identification of one or more turning point sequences;
- Provide adequate time references so that a case chronology can be developed; and
- Represent primarily their author's description as opposed to a collection of negotiation participant accounts.

Although the research on environmental negotiations is quite limited, as noted in the literature review above, scholars, neutral third party practitioners, and others have in the past three decades devoted significant effort to developing case descriptions for a variety of reasons and to varying levels of detail. The primary reasons for developing

⁶ The "case" and the "process" are bounded by the agreement. The agreement allows identification of the parties (e.g., signatories to the agreement), gives an end date to the process (i.e., date the agreement is reached), and provides a means to identify the beginning of the process by working backward from the known end of the process. Without an agreement, it can be difficult to know who the parties were to the "non-agreement." In the absence of an agreement, it may also be unclear whether the negotiation has truly concluded (e.g., a suspended negotiation may be restarted if conditions were to change in the future).

case descriptions include government agency, foundation, and neutral third party practitioner promotion of environmental negotiation (and third party-assisted negotiation, or mediation, in particular) as an alternative to litigation, and scholarship. The level of detail available in such case descriptions ranges from summary accounts of one or two pages to lengthy sections of extensively documented and edited volumes. As a result of these efforts, it is generally not difficult to find cases that meet the criteria for environmental negotiation cases specified above.⁷

It would be advantageous to secure a relatively standard set of detailed case descriptions, as was utilized in previous work by Druckman (2001). Since no such resource exists for environmental negotiation cases, the purposive sample of cases (and related case descriptions) was assembled from a variety of sources, including a review of the existing scholarly literature -- utilizing social science indices and references from published literature -- and other sources (e.g., web searches, personal contacts with individuals knowledgeable about environmental negotiation cases). Before discussing in detail the cases selected for this study, several examples of rejected case descriptions are presented below together with the rationale for non-inclusion.

⁷ A minor exception to this general statement is that the available case descriptions tend to emphasize third party neutral assisted negotiations. Individuals and organizations promoting the involvement of neutral third parties in environmental negotiations (e.g., environmental mediation) are frequently the authors or sponsors of such material. Nonetheless, it was possible to identify a number of unassisted negotiation case descriptions, as discussed later in this chapter.

2. EXAMPLES OF REJECTED CASE DESCRIPTIONS

A review of some rejected case descriptions and the reasons for not including them in this study illustrates the challenge of identifying cases descriptions meeting the criteria specified above. This section does not speak to the overall merits of the rejected case descriptions, which may be useful for their intended purposes, and only addresses why they were not appropriate for this study.

A lack of detail about the negotiation dynamics and party moves was the most frequent reason for not including a case description in the study. For example, an account of the Quincy Library Group negotiation (Red Lodge Clearinghouse, 2001), which led to the development of a controversial alternative forest plan for three national forests, mentions numerous meetings taking place among the members of the group, but provides little information about their dialogue or interaction during these sessions. Muezzinoglu's (2000) description of a mediation to resolve a power plant dispute in Aliaga-Izmir, Turkey, similarly lacks detail, devoting only nine paragraphs to discuss a five-month negotiation process. A large number of case studies prepared by the Policy Consensus Initiative and available in an on-line database (Policy Consensus Initiative, 2007a) also devote limited attention to the negotiation process. For example, a case description for a mediation about water use in Lake Michigan (Policy Consensus Initiative, 2007b) and another concerning a dispute between recreationists and ranchers over access to state school trust lands (Policy Consensus Initiative, 2007c) briefly highlight some aspects of these processes, such as how they were initiated, who was

involved, and reaching agreement; however, individual negotiator moves are not addressed. Common to such case descriptions is an emphasis on the outcome and implications, rather than the negotiation process itself.

Some candidate cases otherwise including a reasonable amount of detail were rejected either because they did not include adequate time references to establish a chronology of behaviors and events, because they relied heavily on the direct accounts of participants rather than an authoritative account of the author(s), or both. The Lincoln Institute of Land Policy (Lampe & Kaplan, 1999) published a set of eight land-use mediation case studies with a potentially useable amount of detail about the process; however, the case descriptions tend to summarize the chronology of events in broad terms (e.g., they make generalizations about a number of meetings held over a period of time) and it is difficult to organize the important events and behaviors described into a chronological order. A set of enforcement mediation case studies published by the U.S. Environmental Protection Agency (Clean Sites Inc., 1992) was determined to be unsuitable for this study because the case descriptions rely heavily on quotations from and attitudes ascribed to the negotiation participants, rather than primarily the author's account of events and behaviors. These case narratives also presented difficulties in terms of establishing a chronology of events.

3. CASES SELECTED FOR THIS STUDY

The search for suitable environmental negotiation case descriptions yielded a set of 29 cases acceptable for analysis. The number of cases allows this research to qualify as a large-N study. The full list of cases is presented in Table 1 and characterized briefly below.

The case descriptions are drawn primarily from the scholarly literature and other published sources, such as government agency publications. The one non-published source is the description of the Terminal 91 case (Shorett, 1984).⁸ More than half of the case descriptions (18) come from four collections with some degree of editorial consistency (Consensus Building Institute, 2003; Shrybman, Canadian Environmental Law Association, Canada Environmental Strategies Directorate, & Canada Department of Justice, 1983; Susskind et al., 1983; Talbot, 1983). Most case descriptions were developed based on interviews with the parties and others familiar with the cases as well as case-related documentation (e.g., letters, meeting summaries, reports). The Nahal Tzalmon case had two similar case descriptions (Levine, 2005; Levine & Har Lev, 2004) that meet the criteria for acceptable case descriptions and both were used in developing the case chronology for this case. Authors who were not directly involved in the case they describe (e.g., either as a party to the negotiation or as a neutral third party) prepared most case descriptions. Exceptions to this general principle of authorship include the case descriptions for Georges Bank (Scott & Hirsh, 1983), Goodyear Tire and Rubber

⁸ The researcher kindly acknowledges Alice Shorett, the author of this case description, who made it available for inclusion in this study.

Table 1: ENVIRONMENTAL NEGOTIATION CASES USED IN THIS STUDY

Case Name	Negotiation Type	Agreement Type	Primary Issues	Number of Parties	Duration (in months)	Country	Source
Brayton Point	Assisted	Settlement	Pollution	4	14	US	(Burgess & Smith, 1983)
Brown Company	Unassisted	Settlement	Pollution	2	13	US	(Gilmore, 1983)
Conoco	Assisted	Settlement	Pollution	2	4	US	(Consensus Building Institute, 2003; Macey, 2003c)
Denver Metropolitan Roundtable	Assisted	Advisory	Resource	6	22	US	(Carpenter & Kennedy, 1988b)
Eau Claire	Assisted	Settlement	Resource	3	5	US	(Talbot, 1983)
Foothills	Assisted	Settlement	Resource	6	20	US	(Burgess, 1983)
Georges Bank	Assisted	Advisory	Pollution	8	6	US	(Scott & Hirsh, 1983)
Goodyear Tire and Rubber Company	Assisted	Settlement	Pollution	2	8	US	(Susskind, Podziba, Babbitt, & Collins, 1989)
Holston River	Unassisted	Settlement	Pollution	2	12	US	(Jagerman, 1983)
Holbrook Waste Disposal Site	Unassisted	Settlement	Pollution	4	1	Canada	(Shrybman et al., 1983)
Hudson River	Assisted	Settlement	Resource	11	21	US	(Talbot, 1983)
Interstate 90	Assisted	Settlement	Resource	6	9	US	(Talbot, 1983)
Jackson	Assisted	Settlement	Resource	2	6	US	(Hill, 1983)
Nahal Tzalmon	Assisted	Advisory	Resource	30	34	Israel	(Levine, 2005; Levine & Har Lev, 2004)
Northern Flood Agreement	Assisted	Settlement	Resource	4	43	Canada	(Shrybman et al., 1983)
Pitch Project	Assisted	Settlement	Both	9	17	US	(Watson & Danielson, 1982)
Port Townsend	Assisted	Advisory	Resource	9	9	US	(Talbot, 1983)
Portage Island	Assisted	Settlement	Resource	3	6	US	(Talbot, 1983)
Promised Land State Park	Assisted	Advisory	Resource	9	4	US	(Purdy & Gray, 1994)
Rhone-Poulenc	Unassisted	Settlement	Pollution		13	US	(Consensus Building Institute, 2003; Macey, 2003a)
Community Audit							

San Juan National Forest Mediation	Assisted	Advisory	Resource	27	2	US	(Tableman, 1990)
Swan Lake	Assisted	Settlement	Resource	2	5	US	(Talbot, 1983)
Tampa Bay	Unassisted	Settlement	Resource	5	14	US	(Stiftel & Montalvo, 1989)
Terminal 91	Assisted	Settlement	Resource	3	14	US	(Shorett, 1984)
Truman Dam	Assisted	Advisory	Resource	3	12	US	(Moore, 1989)
Unocal Good-Neighbor Agreement	Unassisted	Settlement	Pollution	4	6	US	(Consensus Building Institute, 2003; Macey, 2003b)
Vulcan	Assisted	Settlement	Pollution	6	1	US	(Consensus Building Institute, 2003; Macey, 2003c)
Whitchurch-Stouffville Landfill	Unassisted	Settlement	Pollution	3	2	Canada	(Shrybman et al., 1983)
Yukon Wolf Management	Assisted	Advisory	Resource	9	5	Canada	(Todd, 2002)

Company (Susskind et al., 1989), and Truman Dam (Moore, 1989), which were authored or co-authored by individuals who served as neutral third parties in the negotiations, and the case description for the Pitch Project negotiation (Watson & Danielson, 1982), which was co-authored by the opposing attorneys in the case.

While it is unknown how representative 29 case descriptions may be of the universe of environmental negotiation cases, they do vary substantively across a number of dimensions, including aspects of the negotiation process, issues at stake, size of the negotiation group, geography, and time (see Table 1). Each of these dimensions is discussed briefly below as it is reflected in the set of cases as a whole.

The cases vary in terms of whether they are assisted or unassisted negotiations and the type of agreement achieved. Assisted negotiations are those in which a neutral third party, such as a mediator or facilitator, or technical expert assists all parties in reaching agreement. Unassisted negotiations are those that have no neutral third party assisting the negotiating parties. Of the 29 case descriptions, 22 are assisted negotiation cases and 7 are unassisted.

Another kind of procedural dimension is the type of agreement reached through negotiation, which can be a settlement among the parties or consensus recommendations to another entity, such as a government agency (United States Environmental Protection Agency, 2003). Parties can reach a settlement binding on all and that is typically not subject to additional scrutiny beyond the agreement of the parties, although, for example, a court may as a purely procedural matter need to issue an order to formalize the settlement. Alternatively, an entity such as an administrative governmental agency may

convene a group of parties to arrive at an agreement on recommended actions within the purview of the agency and explicitly indicate that it reserves the right to decide whether and how the recommendations will be implemented. Along this dimension, negotiating parties in 21 of the 29 cases reached settlement agreements and parties in eight cases reached advisory agreements.

It is possible to categorize the cases according to the type of substantive issues that were at stake for the negotiating parties. One issue category is the environmental medium impacted. Most cases generally had issues at stake primarily in one medium: air quality (5), water quality or quantity (6), or land use or contamination (15). Two cases featured substantive issues that involved more than one environmental medium and another featured wildlife issues that do not fit well into one of the three environmental media categories.

Another category is whether the issues in a case mostly concern resource use or availability or the control or remediation of sources of pollution (Frey, 2001). Of the 29 case descriptions, 17 are resource cases and 11 are pollution cases, with one case falling into both categories.

The cases vary in terms of the number of parties who negotiate and reach agreement. The number of parties in these cases ranges from two to 30. The mean number of parties is 6.62, the median is 4, and the mode is 2.

The cases also differ in terms of the amount of time during which the parties were engaged in negotiation and when each case occurred during the 30-year span covered. Considering the approximate duration of each negotiation from the time the negotiators

first considered or initiated a negotiation to the time they reached agreement, the length of the negotiations in these cases ranges from one to 43 months. The mean duration is 11.31 months, the median is 9 months, and the mode is six months.

The cases in this study span the period from 1974 to 2004, as measured by the date on which the parties reached agreement. Figure 3 provides a timeline of conclusion dates for these cases. With respect to when they occurred, approximately two-thirds of the cases concluded in the first decade and a half of this period (i.e., 1974-1988). This clustering of cases in the early part of the study period is probably more a reflection of the case descriptions found to be suitable for this research than an overall indication of environmental negotiation activity, though there are no reliable estimates of the frequency of environmental negotiation cases. For example, three of the four sources (Shrybman et al., 1983; Susskind et al., 1983; Talbot, 1983) that provide the majority of case descriptions for this research were published in 1983.

Geography is another variable by which the cases may be characterized. Twenty-four of the 29 cases took place in the United States. The United States cases cover at least 15 states, with Colorado (six cases) and Washington (four cases) having the greatest representation among the states.⁹ Overall, the United States cases tend to come from the northeast and western parts of the country, with relatively less emphasis on the mid-west and southeast. Of those that occurred in other countries (five cases), four are from Canada and one is from Israel.

⁹ One case is categorized as occurring in New England because it involves issues concerning the ocean environment off the coast of that region.

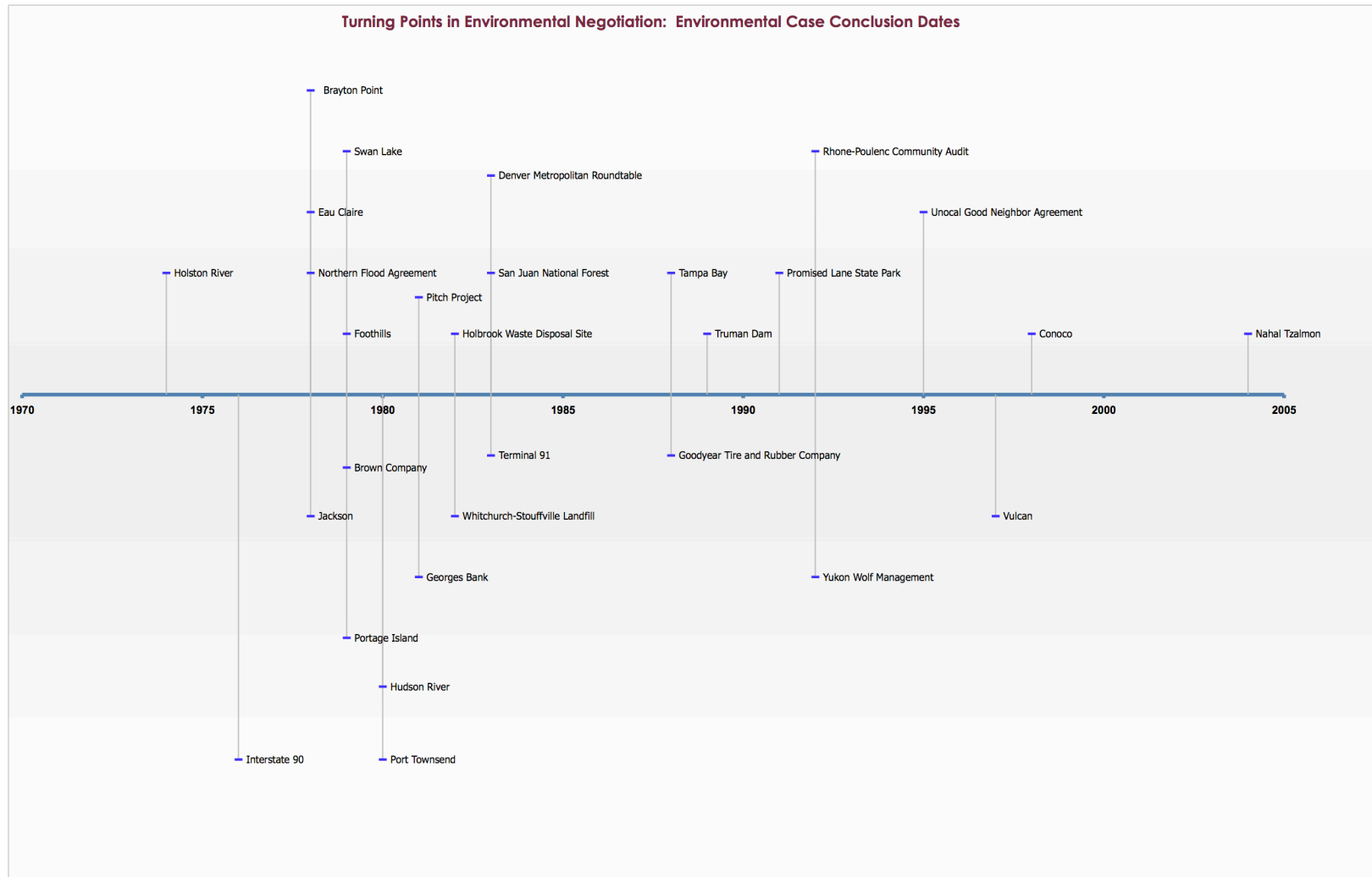


Figure 3: TIMELINE OF ENVIRONMENTAL NEGOTIATION CASE CONCLUSION DATES

One area in which these cases show little diversity is along the classification scheme for environmental negotiation cases suggested by Emerson et al. (2003) and clarified by Dukes (2004), which divides such cases into “upstream” cases and “downstream” cases. Upstream cases are those where the agreement addresses a category of entity or facility, such as all oil refineries or all sources of a particular pollutant in a country. Downstream cases focus on a site-specific issue or a limited geography within a country, such as remediation of groundwater contamination or management of a hydroelectric facility. Along this dimension the cases show little diversity, with all but one of the cases reflecting the downstream case type.

This summary of the cases according to the different dimensions demonstrates that they are relatively diverse in a number of ways, including procedural characteristics, issues at stake, size of the negotiation, duration of the negotiation, and geography within the United States. They are less diverse with respect to the era and country in which they occurred. Some of these dimensions are used for further analysis to allow comparisons between different types of environmental negotiation cases, as described below in Chapter V.

4. CASE CHRONOLOGY DEVELOPMENT

The content analysis procedure cannot be applied directly to descriptions of environmental negotiation cases for several reasons. First, a chronological series of events and behaviors is necessary to ensure that turning point sequences are identified in

a proper order, whereas case descriptions as written may not follow a chronological order. Their authors, in the interest of telling a compelling story or for other purposes, such as pedagogy or advocating the use of negotiation, may for example begin the case description by discussing the outcome of the negotiation or treat parallel components of the negotiation sequentially in the text.

Second, because case descriptions were developed for reasons other than research using content analysis (e.g., pedagogy, promotion of environmental negotiation as an alternative to litigation) they usually include a great deal of material beyond a statement of the events and behaviors as they occurred. Such material can include the author's evaluation of selected aspects of the negotiation or a discussion of negotiators' reported or imagined internal mental states or attitudes during the negotiation. For purposes of content analysis, however, the material is limited to those events and behaviors that could have been observed by others without the filter of post-hoc assessment.

Third, some authors incorporate accounts from participants in the negotiation that may reflect only their individual perspective rather than an overall description of the course of events. Each of these typical attributes of environmental negotiation case descriptions poses challenges for content analysis that can be addressed by distilling the case description into a case chronology.

The process of developing a case chronology for each case was straightforward and proceeded in parallel with the process of identifying candidate negotiation case descriptions for the study. The steps for developing the case chronologies are described below:

- Step 1: Review Case - Each case description was reviewed to ascertain whether it was suitable for the research, according to the criteria for cases and case descriptions described earlier in this chapter. Each case description -- including any background, appendices, and footnotes -- was read in detail.
- Step 2: Create Matrix - During the detailed reading, the researcher recorded all events and behaviors into a three-column matrix in the order they occurred based on the information contained in the case description. The three columns in the matrix include 1) a time reference, which is either the date on which the event occurred as specified in the case description or which can be easily inferred; 2) a description of the event/behavior, including the actor(s) involved or responsible; and 3) coding of the event/behavior (reserved for identifying and coding the recording units).
- Step 3: Record Events and Behaviors - The events and behaviors recorded in column 2 of the case chronology matrix exclude reported or assumed mental states, the case description author's analysis, and behaviors/events that did not occur but might have (e.g., "the party did not do X at this time"). In some situations, it was necessary and appropriate to infer behaviors based on the text. Descriptions of repeated behaviors that occurred over a period of time without specific temporal context (e.g., "the party tended to prepare a meeting summary and distribute it to the other parties following each meeting"), as well as examples of such behaviors, are not included in the chronologies because they are usually insufficient to allow for coding. The reader can not be sure they occurred each

time and elements of the turning point sequence are not specified for each occurrence. An attempt was made to distinguish between a party's mental states expressed by the party to other parties during the negotiation (these can be coded as elements of turning point sequences and thus were included in the chronology) and mental states reported to or inferred by the case description author that were not expressed to the parties during the negotiation (these were excluded from the chronology).

- Step 4: Record Time References - Examples of time references recorded in column 1 of the case chronology matrix are "May 10, 1977" or "two weeks after [the previous event]." Where dates were not specified, they were inferred from the text if possible. For example, many of the case descriptions indicate that some events without an associated date took place between events in which dates are specifically indicated, allowing the researcher to infer that they took place sometime between the specified dates. In other situations, it is possible to logically infer that a behavior or event must occur before another. Where specific events and behaviors are described, but no time frame is given, they are included in the chronology in the order they appear in the text.

The resulting chronologies convert the description of events and behaviors to present tense to give the events a sense of currency and for potential future comparison to chronologies developed through other methods, such as simulated exercises. The researcher generally copied text from the source document verbatim. Paraphrasing was sometimes used to capture events and behaviors where the level of detail in the text is

unnecessary and when doing so would not alter the original meaning. When an initial draft of each case chronology was complete, the researcher reviewed and revised it to eliminate any obvious inconsistencies. The example case chronology included in APPENDIX A provides a typical product of the case chronology development procedure.

The resulting 29 environmental negotiation case chronologies range from four to 28 pages in length. The mean number of pages is 11.59, the median is 10, and the mode is 9. These case chronologies provide the material from which to generate the data for this research by identifying and coding recording units, as described in the next section.

B. DEFINING THE RECORDING UNIT AND OPERATIONALIZING THE RESEARCH VARIABLES

As discussed in the previous chapter, the research variables of interest in this study include turning points, precipitants, and consequences. Turning points can be either more or less abrupt. Precipitants can be procedural or substantive and may be associated with a range of actors that are either internal or external to the negotiation. Consequences can be procedural or substantive and reflect the parties' movement either toward or away from agreement as a result of the turning point. The next step in the content analysis procedure was to identify the recording units in the chronologies and code them using operational definitions of the research variables.

According to Frankfort-Nachmias and Nachmias (1992) the recording unit is "the smallest body of content in which the appearance of a reference is counted." (p. 314) Both Frankfort-Nachmias and Nachmias (1992) and Robson (1993) describe a range of

possible recording units that can be used in content analysis -- including words, themes, paragraphs, and characters – as well as the importance of context to identifying recording units. In addition, Robson (1993) makes a distinction between manifest content, which is physically present in the text being analyzed (e.g., actual words), and latent content, which relies heavily on the interpretation of the coder. For this research the item being counted or the recording unit is the turning point sequence (described below) and consists of a single precipitant, turning point, and consequence. Although an effort is made to anchor turning point sequences with specific text in each case chronology, the turning point sequence is considered to be of the latent content type.

Once the turning point sequences are identified, their three component parts are coded into categories. As both Frankfort-Nachmias and Nachmias (1992) and Robson (1993) point out, the categories must relate directly to the research framework and questions. For purposes of this study, the categories for content analysis are more/less abrupt turning points, procedural/substantive precipitants, precipitant roles, procedural/substantive consequences, and toward/away from agreement consequences. These categories follow directly from the research framework and are operationalized as described below.

1. THE RECORDING UNIT: TURNING POINT SEQUENCES

The turning point sequence serves as the recording unit for content analysis and consists of a single precipitant, turning point, and consequence. One or more turning

points are identified in each environmental negotiation case chronology. The three elements of the turning point sequence are most often identified in relatively close proximity to each other in the case chronology text. These elements are also usually identified in an order where a precipitant directly precedes its associated turning point and the turning point precedes its associated consequences in the text. Occasionally, however, it is logical to associate precipitants and consequences with a given turning point even though they may not be proximate to their associated turning point in the case chronology text, identified elements of other turning point sequences appear in between elements of the given turning point in the text, or the elements of the given turning point appear in an order other than precipitant followed by turning point followed by consequence. For example, a turning point in the middle of the case chronology might have a precipitant at the beginning of the chronology, with one or more complete turning point sequences being identified in between the precipitant and turning point. Another example would be a situation where a sentence in the case chronology is copied verbatim from the case description and the text containing the consequence precedes the turning point in that sentence.

In identifying turning point sequences, turning points serve as the anchors of each sequence and are identified first, followed by their respective precipitants and consequences. Only after the three elements are identified are they coded as defined below. The identification and coding processes are illustrated in Figure 4:

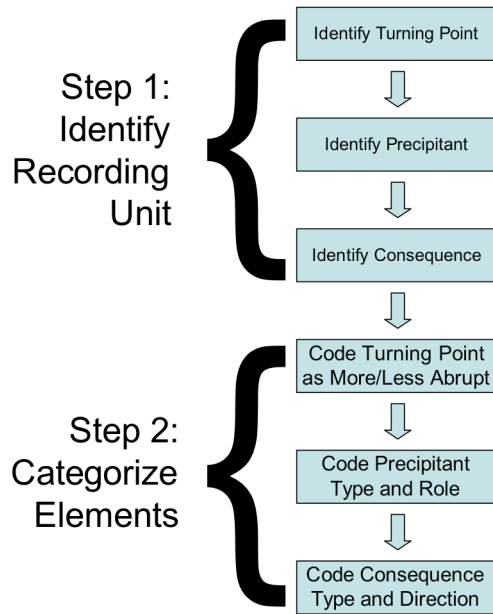


Figure 4: PROCESS FOR IDENTIFYING TURNING POINT SEQUENCES AND CODING ELEMENTS

The operational definitions of precipitants, turning points, and consequences are described below, including how their categories are defined.

2. TURNING POINTS

Turning points are the changes that occur in the interaction among negotiating parties. Such changes are evident when compared with the previous state of interaction among the parties. Turning points are reflected in the behavior of negotiating parties, as

opposed to external parties, such as mediators, the media, and governmental entities that are not participating in the negotiation.

Events or behaviors signifying turning points can be either positive or negative. Specific examples include one or more parties' decision to enter into or leave a negotiation or mediation, the parties' agreement or disagreement on substantive or procedural aspects of their negotiation, and one or more parties' attempts to work outside the negotiation in another forum to achieve their ends (while still remaining part of the negotiation). In addition to text that explicitly relates these types of behaviors and events, words and phrases such as a "change," "shift," "step forward," "impasse," or "stalemate," can also denote turning points.

After all turning point sequences (including turning points, precipitants, and consequences) are identified for an environmental negotiation case, turning points are coded as being either more abrupt or less abrupt. More abrupt turning points are sudden departures from the pattern of give and take among negotiators. Examples of abrupt turning points include: final agreements, interim agreements, impasses, agreements to negotiate, exits from negotiations, re-entries into negotiation after exit, unexpected transitions from one negotiation phase to another. Less abrupt turning points are more gradual, incremental changes in the negotiation. Examples of less abrupt turning points include: somewhat altered discussions, adjustments to the terms of trade, and somewhat predictable stage transitions.

3. PRECIPITANTS

A precipitant is an event or behavior that causes, leads to, or produces the turning point and occurs chronologically prior to the turning point. The essential aspect of identifying precipitants is to locate the causal relationship. Precipitants are usually proximate to turning points in the source text, but in some instances precede turning points by a large period of time. While the precipitant is usually associated with specific text, it is occasionally necessary to infer the precipitant from the context of the case chronology.

After all turning point sequences (including turning points, precipitants, and consequences) are identified for an environmental negotiation case, precipitants are coded in two ways: the type of precipitant and the role of the actor responsible for the precipitant. There are two types of precipitant: substantive and procedural. Substantive precipitants emphasize the substance of the issues at stake in the negotiation. Examples of substantive precipitants include new proposals, new ideas, new concepts, packages of proposals, concessions, issue frameworks or agendas with specifically mentioned topics for discussion, and new information made available to the parties.

Procedural precipitants emphasize the process of interaction among the negotiating parties. Examples of procedural precipitants include the structure of the negotiation, format of the negotiation, venue, working groups/committees, alliances formed among parties, caucuses, change in the individual(s) representing a party in negotiations. Procedural precipitants such as these often take the form of an actor

making a process suggestion or proposal. Substantive and procedural precipitant types are not mutually exclusive – a precipitant may be coded as both where substantive and procedural aspects are present and an emphasis on one or the other is not clear.

Each precipitant is also coded according to the role of the agent responsible for the identified event or behavior. Following the research framework described in Chapter III, there are six possible roles: (1) negotiating party, (2) advocate, (3) neutral third party, (4) researcher, (5) enforcer, and (6) other. Each of these roles is defined below for coding purposes:

Negotiating Party – Individuals and the institutions or interests they represent who ultimately reach agreement as a result of the negotiation but which do not possess the ability to impose a solution.

Advocate – Individuals external to the negotiating parties or engaged by some of the parties to represent particular negotiating party interests. Examples of advocates include: legal counsel, technical experts, and management consultants.

Neutral Third Party – Individuals or organizations external to the negotiating parties engaged or hired to assist all parties in reaching agreement. A neutral third party typically helps to develop the negotiating process and ensure that all parties meet at least some their objectives in the negotiation. Examples of neutral third parties include: mediators, facilitators, and technical experts that are engaged to serve all parties.

Researcher – Individuals or organizations external to the negotiating parties who generate or gather information about the negotiation or underlying dispute,

whether or not such information is shared with others. Examples of researchers include: journalists, the news media, scientists, and observation teams.

Enforcer – External individuals or organizations who have the power to sanction one or more negotiating parties or significantly determine the outcome of the negotiation. Examples of enforcers include: arbitrators, judges, police, government agencies when not primarily acting as negotiating parties, funding organizations, and the public, who can sanction negotiating parties through voting and other means. Although an administrative government agency might sign a final agreement with other parties, if the agency has the ability, or has a credible threat, to impose a solution on one or more negotiating parties they are not negotiating as such and are likely playing some other role such as an enforcer.

Other - Other individuals or organizations, including unknown actors, which do not fall into one of the other role categories.

It was sometimes necessary to code more than one type of role for a precipitant where attributing the event or behavior to a single type of actor is impossible. One potential consequence for data analysis of coding multiple roles is that the number of unique categories resulting from different role combinations could be quite large relative to the number of cases in the study. To maintain the utility of the data for analysis, the precipitant roles were also re-coded as to whether they were internal or external to the negotiation. Internal roles include the negotiating parties and their advocates. External roles include neutral third parties, enforcers, researchers, and other. Re-coding the more refined precipitant roles can also lead to categorizing the roles as both, for example when

the precipitant is attributed to both a negotiating party and neutral third party. The three re-coded categories – internal, external, and both – result in a number of categories that is more amenable to significance testing.

4. CONSEQUENCES

A consequence is the impact of the turning point on the negotiation.

Consequences follow turning points chronologically and are distinguished from them. They are usually identified in the case chronology text between their associated turning point and the precipitant of a subsequent turning point, if any. In some instances the consequence of a turning point may not be clear or is not stated in the source text and it is therefore necessary to infer the consequence from the context of the case. In addition, it is possible for the consequence of one turning point to be the same as the precipitant of a subsequent turning point, though this occurred rarely.

After all turning point sequences (including turning points, precipitants, and consequences) are identified for an environmental negotiation case, consequences are coded in two ways: the type of consequence and the direction of the negotiation. As with precipitants, there are two types of consequence: substantive and procedural. Substantive consequences emphasize the substance of the issues at stake in the negotiation. Examples of substantive consequences include: initiating new discussions on issues, moving on to a new issue, completing documents addressing the issues in negotiation, transmitting information to others, and refining or reaching final terms of settlement.

Procedural consequences emphasize the process of interaction among the negotiating parties. Examples of procedural consequences include: convening discussions or meetings, initiating public involvement processes or other types of data gathering processes, beginning mediator selection, meeting with constituents to seek agreement on next steps, and development of plans for the process. Substantive and procedural consequence types are not mutually exclusive – a consequence may be coded as both where substantive and procedural aspects are present and an emphasis on one or the other is not clear.

Each consequence is also coded according to whether the parties move toward or away from agreement. Toward agreement consequences represent de-escalation in a dispute (if such exists) and progress in reaching agreement among the negotiating parties. Away from agreement consequences are the opposite. The elements of the turning point sequences, their corresponding categories and definitions, and examples for coding purposes are summarized in Table 2.

C. RELIABILITY TESTING

Druckman (2005) and Robson (1993) both stress the importance of testing the identification of recording units and categories to assess the extent to which independent coders reach the same judgments on a sample of cases. This process is known as reliability testing. Detailed reliability testing of each the elements in the coding scheme is necessary demonstrate how robust the coding definitions are and how likely different

Table 2: FRAMEWORK FOR JUDGING TURNING POINTS IN ENVIRONMENTAL NEGOTIATION CASES

ELEMENT AND CATEGORY		DESCRIPTION	EXAMPLES
<u>Turning Point</u>		A change in the state of the negotiation process between the parties from where the negotiation had previously appeared to be heading, the impact is on all the parties to the negotiation	Parties agree Parties disagree Impasse Stalemate Turning point (probably indicates agreement or disagreement) Change Shift Step forward Decision to begin/end negotiation process Decision to begin/end mediation process Party attempts unilateral action to address the issues outside the negotiation Parties portray a united front vis-à-vis others
<u>Type</u>	More Abrupt	Sudden departures from a pattern of give and take	Final agreement Interim agreement Impasse Stalemate Deadlock Agreement to negotiate Exit from negotiations Re-entry into negotiations after exit Unexpected transitions from one negotiation phase to another
	Less Abrupt	More gradual, incremental changes in the negotiation	Somewhat altered discussions Adjustments to the terms of trade Somewhat predictable stage transitions
<u>Precipitant</u>		An event or behavior that causes/leads to/produces the turning point	
<u>Type</u>	Substantive	Emphasizes the substance of issues at stake	New proposals New ideas New concepts Packages of proposals

ELEMENT AND CATEGORY		DESCRIPTION	EXAMPLES
			Concessions Frameworks for discussion New information
	Procedural	Emphasizes the process of interaction	Structure of the negotiations Format of the negotiations Venue Working committees Groundrules Alliances formed among parties Caucuses Change of person negotiating for a party
<u>Actor</u>	Parties	Relates to the parties to the negotiation who ultimately reach agreement	
	Advocate	External individuals or organizations engaged or hired by less than all parties to represent particular party interests	Lawyers Attorneys Technical experts Management consultants
	Neutral Third Party	External individuals or organizations engaged or hired to assist all parties in reaching agreement. The neutral third party is responsible for process and for ensuring that all parties get at least something of what they want from the negotiation.	Mediator Facilitator Technical experts serving all parties in the negotiation
	Researcher	External individuals or organizations who gather information about the dispute or negotiation, whether or not such information is shared with others	Journalist Social science researcher Observation team
	Enforcer	External individuals or organizations as power to sanction some or all parties	Arbitrators Judges Police Government agencies

ELEMENT AND CATEGORY		DESCRIPTION	EXAMPLES
			Funding organizations “The Public”
	Other	Other external individuals or organizations that do not fall into one of the other external categories	Natural event Unknown actor
<u>Consequences</u>		Outcome of the turning point relative to the direction of the negotiation process	Agreement Disagreement
<u>Type</u>	Substantive	Emphasizes the substance of issues at stake	Initiating new discussions on issues Moving on to a new issue Completing documents addressing the issues in negotiation Transmitting information to others Refining or reaching final terms of settlement.
	Procedural	Emphasizes the process of interaction	Convening discussions or meetings Initiating public involvement processes or other types of data gathering processes Beginning mediator selection Meeting with constituents to seek agreement on next steps Development of plans for the process.
<u>Direction of Change in Negotiation Process</u>	Toward Agreement	Progress toward agreement	
	Away from Agreement	Movement away from agreement	

coders are to interpret the definitions in similar ways. Similar interpretations should lead to similar judgments and strengthen claims that data generated based on the definitions in the coding scheme are valid. Significantly different interpretations have the opposite consequence. An important and expected outcome of reliability testing is further refinement of the coding scheme.

The reliability testing procedures used in this study are detailed below. This section concludes with discussion about the reliability testing results and their interpretation, as well a description of changes that were made to the coding scheme.

1. RELIABILITY TESTING PROCEDURE

The first step in reliability testing is to select a sample of cases to be included in the procedure.¹⁰ For this study, a sample of eight environmental negotiation cases was selected to represent a data set of 23 cases on a proportional basis relative to a set of overall data set characteristics.¹¹ Criteria for inclusion in the sample included the length of the case chronology (at least one short, medium, and long chronology based on number of pages), source of the case description (at least one chronology from each three

¹⁰ Reliability testing was conducted only on a sample of cases instead of the entire data set. Changes to the coding framework made as a result of reliability testing were subsequently used to code the remaining cases in the data set.

¹¹ At the time that reliability testing was conducted, the data set for this research consisted of 23 environmental negotiation case chronologies. Six case chronologies were identified and added to the data set after reliability testing was complete, bringing the final data set to 29 cases. Thus the cases used in reliability testing represent only the set of 23 cases available at the time it was conducted.

sources of case descriptions that contributed multiple cases to the data set and at least one chronology from a source that contributed only one case description), whether the case was an assisted or unassisted negotiation (at least one of each type), and whether the agreement reached in the case was a settlement or advisory agreement type (at least one of each type). The eight cases used in the reliability testing procedure are listed in Table 3:

Table 3: CASES USED IN RELIABILITY TESTING

Reliability Testing Cases
Brayton Point
Holston
Hudson
Nahal Tzalmon
Portage Island
Promised Lane
Rhone Poulenc
Terminal 91

A set of written instructions was developed to guide the reliability testing procedure (see APPENDIX B). The instructions provide definitions for elements of the recording unit – the turning point sequence (i.e., turning points, precipitants, and consequences) -- and for the coding categories (i.e., procedural/substantive precipitants, precipitant roles, more/less abrupt turning points, procedural/substantive consequences, toward/away from agreement consequences).

Two coders participated in the reliability testing process: the author of this study and a recent law school graduate who specialized in environmental law and who also has

some background as a mediator. The second coder was trained to use the reliability testing instructions using a pre-coded sample case chronology and through detailed explanations to address any questions. The second coder was financially compensated for participating in the reliability testing procedure but the remuneration was not at a level commensurate with the actual amount of time spent on the process.

The two coders undertook the following tasks to test the reliability of the coding scheme:

- Identification of Turning Points as Components of the Recording Unit - For all eight cases, both coders independently identified turning points as the first component of the recording unit. Where initial disagreement existed, the two coders then discussed the independent decisions and their respective rationales so that agreement could be reached, where possible, on a final set of turning points for each case.¹² The two coders' discussion focused on the definition of a turning point and how to interpret it relative to events and behaviors in the case chronologies; they made some attempts to persuade each other on interpretation but did not force agreement. This approach allows for comparison of the independent pre-discussion vs. post-discussion level of agreement on identifying turning points.

¹² Where the two coders agreed on recording units (or elements thereof) for the case chronologies, these recording units (or elements thereof) were used as the recording units in the final data set. Where the two coders could not reach agreement on what to identify as the elements of the recording unit based on the discussion, the researcher's decision prevailed for purposes of the recording unit included in the final data set.

- Identification of Precipitants and Consequences as Components of the Recording Unit - For five of the eight cases, both coders independently identified the precipitants and consequences as components of the recording unit and then discussed their differing judgments so that agreement could be reached where possible on a final set of turning points, precipitants, and consequences for each case.¹³ As with the disagreements in identifying turning points, the two coders' discussion focused on the definition of precipitants and consequences, as well as the definition of turning point, and how all three definitions should be interpreted relative to the events and behaviors in the case chronologies. They made some attempts to persuade each other on interpretation, but did not force agreement. In some cases, this discussion led to a change in the identification of turning points (always reducing the number of turning points per case). This approach allowed for the comparison of the independent pre-discussion vs. post-discussion level of agreement on identifying precipitants and consequences on five cases.

For three of the eight cases, both coders independently identified the precipitants and consequences as components of the recording unit together with the turning points. The two coders then discussed the independent decisions so that agreement could be reached where possible on a final set of turning points, precipitants, and consequences for each case. The two coders' discussion focused on the definitions of turning points, precipitants, and consequences and how the

¹³ The two coders began the reliability testing process with a set of five case chronologies and the sample was later expanded to include a total of eight case chronologies, hence the slightly different procedures in this and subsequent reliability testing tasks.

definitions should be interpreted relative to the events and behaviors in the case chronologies. They made some attempts to persuade each other on interpretation, but did not force agreement. This approach was used for three cases as an alternative because reliability testing on the first five suggested the possible relevance of identifying the turning points simultaneously with their respective precipitants and consequences on the overall pattern of turning points in each case.¹⁴ For these three cases, it was possible to compare pre-discussion vs. post-discussion level of agreement on identifying precipitants and consequences for turning points that were agreed to by the two coders as a result of their independent pre-discussion work.

- Coding Decisions for More/Less Abrupt Turning Points, Substantive/Procedural Precipitants, Precipitant Role, Substantive/Procedural Consequences, and Toward/Away From Agreement Consequences - Each coder independently coded the categories for the elements of the recoding unit based on the coding scheme. Where disagreement remained after independent coding, the two coders then discussed their coding judgments so that agreement could be reached, where possible, on the coding for each case.¹⁵ The two coders' discussion focused on

¹⁴ Even in this alternative approach, however, the coders did identify turning points first before identifying precipitants and consequences. The primary difference between this and the earlier approach on the first five cases was that no discussion occurred between the identification of turning points and the identification of precipitants and consequences.

¹⁵ As with the identification of the elements of the recording unit, where the two coders agreed on coding the categories, these judgments were used in the final data set. Where the two coders could not reach agreement on coding the categories based on the discussion, the researcher's decision prevailed for purposes of the final data set.

understanding and clarifying definitions and they made some attempts to persuade each other while not forcing agreement. This approach allowed for the comparison of the independent pre-discussion vs. post-discussion level of agreement on coding the elements of the recording unit into categories.

2. RESULTS AND DISCUSSION

The results of the reliability testing procedure and their interpretation are presented below. The results are expressed as the percentage agreement between the two coders' identification of recording units and categorization of recording unit elements and are provided both for their independent coding efforts as well as post-discussion coding. The goal of reliability testing was to achieve approximately 60 percent agreement on identification of recording units and categorization of recording units, because this is an exploratory study and criteria for reliability are not yet established.

a. RECORDING UNIT ELEMENTS – TURNING POINTS, PRECIPITANTS AND CONSEQUENCES

Agreement of Coders' Independent Identification of Turning Points vs. Post Discussion Turning Points – Table 4 shows the turning points that each coder identified that the other did not (i.e., the unique turning points) as well as those they both identified (i.e., agreed turning points), before discussion as well as their coding judgments after

discussion. As the table illustrates, pre-discussion independent identification of turning points as units of analysis produced a mean agreement of about 42 percent across the eight cases. Discussion between the two coders produced a mean agreement of about 86 percent, or more than double the pre-discussion level of agreement. Independent identification of turning points did not produce the expected level of agreement; however, post-discussion agreement greatly exceeded the expected level of agreement.

Table 4: INDEPENDENT IDENTIFICATION OF TURNING POINTS ON EIGHT CASES AND IDENTIFICATION OF TURNING POINTS AFTER DISCUSSION¹⁶

Case Name	Independently Identified Turning Points (Recording Unit)						Percentage Agreement (Agreed Turning Points / Total Turning Points)
	1st Coder's Unique Turning Points	2nd Coder's Unique Turning Points	Agreed Turning Points	1st Coder's Total Turning Points	2nd Coder's Total Turning Points	Total Turning Points (1st Coder Unique + 2nd Coder Unique + Agreed Turning Points)	
Portage Island	2	5	6	8	11	13	46.15%
Rhone Poulenc	2	2	2	4	4	6	33.33%
Nahal Tzalmon	1	2	8	9	10	11	72.73%
Brayton Point	5	15	22	27	37	42	52.38%
Terminal 91	5	15	11	16	26	31	35.48%
Promised Lane	2	2	3	5	5	7	42.86%
Hudson	6	4	3	9	7	13	23.08%
Holston	2	2	3	5	5	7	42.86%
MEAN	3.13	5.88	7.25	11.14	14.29	16.25	43.61%

¹⁶ For turning points, “Agreed” means coders identified the same or substantially the same text or, in the case of inference, had highly similar rationales.

Turning Points After Discussion (Recording Unit)							
Case Name	1st Coder's Unique Turning Points	2nd Coder's Unique Turning Points	Agreed Turning Points	1st Coder's Total Turning Points	2nd Coder's Total Turning Points	Total Turning Points 1st Coder Unique + 2nd Coder Unique + Agreed Turning Points)	Percentage Agreement (Agreed Turning Points / Total Turning Points)
Portage Island	1	0	8	9	8	9	88.89%
Rhone	2	0	3	5	3	5	60.00%
Poulenc Nahal	0	0	8	8	8	8	100.00%
Tzalmon	3	2	17	20	19	22	77.27%
Brayton Point	2	3	12	14	15	17	70.59%
Terminal 91	0	0	5	5	5	5	100.00%
Promised Lane	1	0	8	9	8	9	88.89%
Hudson	0	0	5	5	5	5	100.00%
Holston	0	0	5	5	5	5	100.00%
MEAN	1.13	0.63	8.25	9.38	8.88	10.00	85.70%

Agreement of Coders' Independent Identification of Precipitants vs. Post

Discussion Precipitants for All Precipitants in Five of the Eight Cases – Table 5 shows the two coders' initial level of agreement and disagreement on precipitants in five of the eight cases, as well as their level of agreement and disagreement post-discussion. As the table illustrates, pre-discussion independent identification of precipitants as elements of the recording unit produced a mean agreement across the five cases of about 36 percent. Discussion between the two coders produced a mean agreement of about 96 percent. Independent identification of turning points did not produce the expected level of agreement; however, post-discussion agreement greatly exceeded the expected level of agreement.

In light of the large difference (more than two and a half times greater) between the independent and post-discussion level of agreement on identified precipitants for these five cases, it is useful to highlight examples of how the two coders' independent identification of precipitants differed, their discussion about the disagreement, and what decision was made. Three examples from the Terminal 91, Portage Island, and Nahal Tzalmon cases are described below.

The second turning point in the Terminal 91 case occurred when the negotiating parties developed an idea and agreed implicitly to form a small group to continue their discussions. For the precipitant the first coder (this study's author) independently coded text related to one party's suggestion about continuing the discussions. The second coder independently coded text, immediately preceding the first coder's, related to a discussion between the parties about one party's need for reasonable development and other's desire for a forum to resolve the dispute. To address the two coders' disagreement, their discussion focused on whether the first coder's text was essentially part of the turning point, rather than the precipitant. The two coders agreed that this was true and decided in favor of the second coder's judgment.

In the Portage Island case, the fourth turning point was the first meeting being held between the two parties that marked the beginning of their face-to-face negotiation. The first coder independently coded an ultimatum from the Secretary of the Interior giving the parties a deadline for resolving their dispute as the precipitant. The second coder selected text, immediately preceding the turning point text, summarizing in a general way the format of all the meetings that occurred between the parties and what

occurred between the meetings. The two coders' discussion addressed whether it was appropriate to select the summary text, given that it addressed the events over a period of time rather than what occurred prior to the fourth turning point. Their conclusion was to use the first coder's judgment and avoid selecting such summary text as precipitants in further content analysis.

The fourth turning point in the Nahal Tzalmon case involved a large group of negotiators reaching agreement on a set of issues and grouping the issues for further discussion. The two coders independently selected different but adjacent and overlapping text as the precipitant. For both coders, their selected language concerned the activities of the mediator in working with the parties and their discussion to resolve the disagreement centered on whether part of the second coder's selected text was really the consequence of the third turning point. They agreed that this was a better judgment and the resulting compromise was to keep the overlapping precipitant text and the non-overlapping text selected by the first coder.

These examples illustrate several important points about this part of the reliability testing process. The first point is that discussion between the coders resolved disagreements in one of three ways: 1) in favor of the first coder; 2) in favor of the second coder; or 3) a compromise between the two coders. The second point is that the two coders often selected similar or adjacent text or had similar reasoning for their judgments; however, this study requires the two coders to select substantially the same text for agreement to exist – a relatively strict standard that probably increases the chances of disagreement in independent identification of precipitants. Finally, the

discussions not only resolved the disagreements, where possible, but also produced clarifications and procedures for both coders to use in making further judgments in other cases.

Table 5: INDEPENDENT IDENTIFICATION OF PRECIPITANTS ON FIVE CASES AND IDENTIFICATION OF PRECIPITANTS AFTER DISCUSSION¹⁷

Independently Identified Precipitants (Recording Unit)				
Case Name	Coders Agree on Precipitants	Coders Disagree on Precipitants	Total Precipitants	Percentage Agreement
Portage Island	5	4	9	55.56%
Rhone Poulenc	2	3	5	40.00%
Nahal Tzalmon	1	8	9	11.11%
Brayton Point	9	16	25	36.00%
Terminal 91	6	10	16	37.50%
MEAN	4.60	8.20	12.80	36.03%

Precipitants After Discussion (Recording Unit)				
Case Name	Coders Agree on Precipitants	Coders Disagree on Precipitants	Total Precipitants	Percentage Agreement
Portage Island	9	0	9	100.00%
Rhone Poulenc	4	1	5	80.00%
Nahal Tzalmon	8	0	8	100.00%
Brayton Point	20	0	20	100.00%
Terminal 91	14	0	14	100.00%
MEAN	11.00	0.20	11.20	96.00%

¹⁷ Pre-discussion precipitants for these five cases were identified after the two coders first identified and discussed turning points. For the identification of precipitants, "Agree" means that the coders identified the same or substantially the same text or, in the case of inference, had highly similar rationales. "Disagree" means that the two coders identified different text for the precipitant, including differences on inferring precipitants and/or deciding not to identify text

Agreement of Coders' Independent Identification of Precipitants vs. Post Discussion Precipitants of Agreed Pre-discussion Turning Points in Three of the Eight Cases – Table 6 shows the two coders' level of agreement and disagreement on precipitants for three of the eight cases before and after discussion. As the table illustrates, pre-discussion independent identification of precipitants as elements of the recording unit for agreed pre-discussion turning points produced a mean agreement of about 55 percent. Discussion between the two coders produced a mean agreement of about 90 percent. Independent identification of precipitants did not produce the expected level of agreement; however, post-discussion agreement greatly exceeded the expected level of agreement. It should also be noted that the level of agreement based on independent identification of precipitants for these three cases improved considerably over the independent identification results for the first five cases, potentially as a result of clarifications produced when the two coders discussed and resolved disagreements in the first five cases.

Table 6: INDEPENDENT IDENTIFICATION OF PRECIPITANTS ON THREE CASES AND IDENTIFICATION OF PRECIPITANTS AFTER DISCUSSION¹⁸

Independently Identified Precipitants (Recording Unit)				
Case Name	Coders Agree on Precipitants	Coders Disagree on Precipitants	Total Precipitants	Percentage Agreement
Promised Lane	2	1	3	66.67%
Hudson	1	2	3	33.33%
Holston	2	1	3	66.67%
MEAN	1.67	1.33	3.00	55.56%

Precipitants After Discussion (Recording Unit)				
Case Name	Coders Agree on Precipitants	Coders Disagree on Precipitants	Total Precipitants	Percentage Agreement
Promised Lane	5	0	5	100.00%
Hudson	8	1	9	88.89%
Holston	4	1	5	80.00%
MEAN	5.67	0.67	6.33	89.63%

Agreement of Coders' Independent Identification of Consequences vs. Post

Discussion Consequences for All Turning Points in Five of the Eight Cases – Table 7

shows the two coders' level of agreement and disagreement on the initial identification of consequences and post-discussion level of agreement and disagreement for five of the eight cases. As the table illustrates, pre-discussion independent identification of

¹⁸ For this group of three cases, the pre-discussion precipitants were identified independently in conjunction with independent identification of turning points and the percentage agreement for the all pre-discussion precipitants may have been influenced by the percentage agreement on pre-discussion turning points. Therefore, only the precipitants to independently agreed pre-discussion turning points are analyzed here as pre-discussion precipitants. For identification of precipitants, "Agree" means that the coders identified the same or substantially the same text or, in the case of inference, had highly similar rationales. "Disagree" means that the two coders identified different text for the precipitant, including differences on inferring precipitants and/or deciding not to identify text.

consequences as units of analysis produced a mean agreement of about 44 percent. Discussion between the two coders produced a mean agreement of about 97 percent. Independent identification of consequences did not produce the expected level of agreement; however, post-discussion agreement greatly exceeded the expected level of agreement.

As with the process of identifying precipitants for these five cases described above, the process of identifying consequences showed a large (more than two times) difference between the two coders' independent and post-discussion level of agreement. It is thus useful to provide some examples of how the consequence identification procedure ensued and the interaction between the two coders in resolving their disagreements. These examples are taken from the Brayton Point, Rhone-Poulenc, and Portage Island cases.

In the Brayton Point case, the 11th turning point involves the parties reaching an agreement on a process to develop information, a particulate matter study, which may help resolve a dispute about particulate violations. The first coder (this study's author) selected one party's initiation of the study as the consequence of the turning point. The second coder selected text concerning the outcome of the study. To resolve the disagreement, the two coders considered which of the two judgments more closely reflected the immediate consequence of the turning points and agreed that the initiation of the study was the more proximate of the two. This resolution favored the first coder's judgment.

The fifth and final turning point in the Rhone-Poulenc case was the parties signing their final agreement. The first coder independently selected text adjacent to the identified turning point text that detailed terms of the agreement. The second coder selected text concerning the regulatory authority's acceptance of the agreement and its incorporation into a permit. Discussion between the two coders addressed which of the selections best reflected a consequence of the turning point. They concluded that the second coder's judgment was a better reflection of what happened as a result of the turning point.

In the Portage Island case, the seventh turning point was the two parties' tentative agreement. The first coder independently selected text relating to the substance of this interim agreement as the consequence of the turning point. The second coder selected text concerning the county board of commissioners' (to which one of the parties was accountable) reaction to the interim agreement. The two coders' discussion about the disagreement centered on two issues: whether the terms of the agreement were truly a consequence of this turning point and whether the county commissioners' reaction was sufficiently proximate to constitute a consequence of the turning point. The outcome of the discussion was an agreement to select text different from either independently identified text. The two coders chose text related to a briefing for the county commissioners about the interim agreement as the consequence of the parties reaching an interim agreement.

These examples show the same types of resolution outcomes as typically occurred with the precipitant identification procedure. They also illustrate how the discussions

produced clarification and joint understanding about the consequence concept that were used in subsequent reliability testing.

Table 7: INDEPENDENT IDENTIFICATION OF CONSEQUENCES ON FIVE CASES BY TWO CODERS AND IDENTIFICATION OF CONSEQUENCES AFTER DISCUSSION¹⁹

Independently Identified Consequences (Recording Unit)				
Case Name	Coders Agree on Consequences	Coders Disagree on Consequences	Total Consequences	Percentage Agreement
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91	2	7	9	22.22%
	3	2	5	60.00%
	2	7	9	22.22%
	13	12	25	52.00%
	10	6	16	62.50%
AVERAGE	6.00	6.80	12.80	43.79%

Consequences After Discussion (Recording Unit)				
Case Name	Coders Agree on Consequences	Coders Disagree on Consequences	Total Consequences	Percentage Agreement
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91	8	1	9	88.89%
	5	0	5	100.00%
	8	0	8	100.00%
	19	1	20	95.00%
	14	0	14	100.00%
AVERAGE	10.80	0.40	11.20	96.78%

¹⁹ Pre-discussion consequences for these five cases were independently identified after the two coders first identified and discussed turning points. For the identification of consequences, "Agree" means that the coders identified the same or substantially the same text or, in the case of inference, had highly similar rationales. "Disagree" means that the two coders identified different text for the consequence, including differences on inferring consequences and/or deciding not to identify text.

Agreement of Coders' Independent Identification of Consequences vs. Post Discussion Consequences of Agreed Pre-discussion Turning Points in Three of the Eight Cases – Table 8 shows the two coders' initial level of agreement and disagreement on the identification of consequences before discussion as well as their level of agreement after discussion for three of the five cases. As the table illustrates, pre-discussion independent identification of consequences as units of analysis for agreed pre-discussion turning points produced a mean agreement of about 67 percent. Discussion between the two coders produced a mean agreement of about 96 percent. Independent identification of consequences exceeded the expected level of agreement and post-discussion agreement greatly exceeded the expected level of agreement. It should also be noted that the level of agreement based on independent identification of consequences for these three cases improved considerably over the independent identification results for the first five cases, potentially as a result of clarifications produced when the two coders discussed and resolved disagreements in the first five cases.

Table 8: INDEPENDENT IDENTIFICATION OF CONSEQUENCES ON THREE CASES AND IDENTIFICATION OF PRECIPITANTS AFTER DISCUSSION²⁰

Independently Identified Consequences (Recording Unit)				
Case Name	Coders Agree on Consequences	Coders Disagree on Consequences	Total Consequences	Percentage Agreement
Promised Lane	2	1	3	66.67%
Hudson	2	1	3	66.67%
Holston	2	1	3	66.67%
MEAN	2.00	1.00	3.00	66.67%

Consequences After Discussion (Recording Unit)				
Case Name	Coders Agree on Consequences	Coders Disagree on Consequences	Total Consequences	Percentage Agreement
Promised Lane	5	0	5	100.00%
Hudson	8	1	9	88.89%
Holston	5	0	5	100.00%
MEAN	6.50	0.50	6.33	96.30%

b. CATEGORIZATON OF RECORDING UNIT ELEMENTS

Agreement of Coders' Independent Coding of Procedural/Substantive Precipitants

vs. Post Discussion Procedural/Substantive Precipitants - Table 9 shows both coders'

level of agreement on coding judgments for procedural/substantive precipitants both

²⁰ For this group of three cases, the pre-discussion consequences were identified independently in conjunction with independent identification of turning points and the percentage agreement for the all pre-discussion consequences may have been influenced by the percentage agreement on pre-discussion turning points. Therefore, only the consequences of independently agreed pre-discussion turning points are analyzed here as pre-discussion consequences. For identification of consequences, "Agree" means that the coders identified the same or substantially the same text or, in the case of inference, had highly similar rationales. "Disagree" means that the two coders identified different text for the consequence, including differences on inferring consequences and/or deciding not to identify text.

Table 9: CATEGORIZATION OF PROCEDURAL/SUBSTANTIVE PRECIPITANTS BY TWO CODERS

Pre-Discussion Coding									
Case Name	Agreed Procedural Precipitants	Agreed Substantive Precipitants	Agreed Both Procedural and Substantive Precipitants	Disagreed Procedural/ Substantive Precipitants	Procedural One Coder Only	Substantive One Coder Only	Total Agreed Coding on Procedural/ Substantive Precipitants	Total Procedural/ Substantive Precipitants	Percentage Agreement on Procedural/ Substantive Precipitants
Portage Island	4	5	0	0	0	0	9	9	100.00%
Rhone Poulenc	0	3	0	2	0	0	3	5	60.00%
Nahal Tzalmon	8	0	0	0	0	0	8	8	100.00%
Brayton Point	6	10	0	4	0	0	20	20	80.00%
Terminal 91	4	8	0	2	0	0	14	14	85.71%
Promised Lane	1	4	0	0	0	0	5	5	100.00%
Hudson	5	3	0	1	0	0	8	9	88.89%
Holston	2	3	0	0	0	0	5	5	100.00%
MEAN	3.75	4.50	0	1.13	0	0	9	9.375	89.33%

Post-Discussion Coding									
Case Name	Agreed Procedural Precipitants	Agreed Substantive Precipitants	Agreed Both Procedural and Substantive Precipitants	Disagreed Procedural/ Substantive Precipitants	Procedural One Coder Only	Substantive One Coder Only	Total Agreed Coding on Procedural/ Substantive Precipitants	Total Procedural/ Substantive Precipitants	Percentage Agreement on Procedural/ Substantive Precipitants
Portage Island	4	5	0	0	0	0	9	9	100.00%
Rhone Poulenc	0	4	1	0	0	0	5	5	80.00%
Nahal Tzalmon	8	0	0	0	0	0	8	8	100.00%
Brayton Point	8	11	0	1	0	0	20	20	95.00%
Terminal 91	4	8	0	2	0	0	14	14	85.71%
Promised Lane	1	4	0	0	0	0	5	5	100.00%
Hudson	5	3	0	1	0	0	8	9	88.89%
Holston	2	3	0	0	0	0	5	5	100.00%
MEAN	4.00	4.75	0.13	0.50	0	0	9.25	9.375	93.70%

before and after discussion. As the table illustrates, the coders' pre-discussion independent coding of procedural/substantive precipitants produced a mean agreement of about 89 percent. Discussion between the two coders produced a mean agreement of about 94 percent. Both pre- and post-discussion categorization of procedural/substantive precipitants greatly exceeded the expected level of agreement.

Agreement of Coders' Independent Coding of Precipitant Roles vs. Post

Discussion Agreement of Precipitant Roles - Table 10 shows the two coders' level of agreement and disagreement on coding judgments for precipitant roles before and after discussion. As the table illustrates, the two coders' pre-discussion independent coding of precipitant roles produced a mean agreement of about 95 percent. Discussion between the two coders produced a mean agreement of about 98 percent. Both pre- and post-discussion categorization of procedural/substantive precipitants greatly exceeded the expected level of agreement.

Agreement of Coders' Independent Coding of More/Less Abrupt Turning Points

vs. Post Discussion More/Less Abrupt Turning Points - Table 11 shows the two coders' level of agreement and disagreement on coding judgments for more/less abrupt turning points before and after discussion. As the table illustrates, pre-discussion independent coding of more/less abrupt turning points produced a mean agreement of about 71 percent. Discussion between the two coders produced a mean agreement of about 99 percent. Both pre- and post-discussion categorization of more/less abrupt turning points exceeded the expected level of agreement.

Table 10: CATEGORIZATION OF PRECIPITANT ROLES BY TWO CODERS

Pre-Discussion Coding											
Case Name	Agreed Negotiating Party Precipitants	Agreed Advocate Precipitants	Agreed Neutral Third Party Precipitants	Agreed Researcher Precipitants	Agreed Enforcer Precipitants	Agreed Other Precipitants	Agreed Multiple Role Precipitants	Disagreed Role Precipitants	Total Agreed Precipitant Roles	Total Precipitant Roles	Percentage Agreement on Precipitant Roles
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91 Promised Lane Hudson Holston	1 5 1 14 13 3 4 4	0 0 0 0 0 0 0 0	1 0 5 5 0 1 4 0	1 0 0 0 0 0 0 0	5 0 0 0 0 0 1 0	0 0 0 0 0 0 0 0	0 0 1 0 0 1 0 1	1 0 1 1 1 0 0 0	8 5 7 19 13 5 9 5	9 5 8 20 14 5 9 5	88.89% 100.00% 87.50% 95.00% 92.86% 100.00% 100.00% 100.00%
MEAN	5.63	0	2.00	0.13	0.75	0	0.38	0.50	8.88	9.38	95.53%

Post-Discussion Coding											
Case Name	Agreed Negotiating Party Precipitants	Agreed Advocate Precipitants	Agreed Neutral Third Party Precipitants	Agreed Researcher Precipitants	Agreed Enforcer Precipitants	Agreed Other Precipitants	Agreed Multiple Role Precipitants	Disagreed Role Precipitants	Total Agreed Precipitant Roles	Total Precipitant Roles	Percentage Agreement on Precipitant Roles
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91 Promised Lane Hudson Holston	1 5 1 15 13 3 4 4	0 0 0 0 0 0 0 0	1 0 5 5 1 1 4 0	1 0 0 0 0 0 0 0	6 0 0 0 0 0 1 0	0 0 0 0 0 0 0 0	0 0 1 0 0 1 0 1	0 0 1 0 0 0 0 0	9 5 7 20 14 5 9 5	9 5 8 20 14 5 9 5	100.00% 100.00% 87.50% 100.00% 100.00% 100.00% 100.00% 100.00%
MEAN	5.75	0	2.13	0.13	0.88	0	0.375	0.13	9.25	9.38	98.44%

Table 11: CATEGORIZATION OF MORE/LESS ABRUPT TURNING POINTS BY TWO CODERS

Pre-Discussion Coding							
Case Name	Agreed More Abrupt Turning Points	Agreed Less Abrupt Turning Points	Disagreed More/Less Abrupt Turning Points	More Abrupt Turning Points One Coder Only	Less Abrupt Turning Points One Coder Only	Total More/Less Abrupt Turning Points	Percentage Agreement on More/Less Abrupt Turning Points
Portage Island	2	2	5	0	0	9	44.44%
Rhone Poulenc	2	0	2	1	0	5	40.00%
Nahal Tzalmon	3	4	1	0	0	8	87.50%
Brayton Point	6	4	10	0	0	20	50.00%
Terminal 91	4	3	7	0	0	14	50.00%
Promised Lane	4	1	0	0	0	5	100.00%
Hudson	7	2	0	0	0	9	100.00%
Holston	5	0	0	0	0	5	100.00%
MEAN	4.13	2.00	3.13	0.13	0	10.00	71.49%

Post-Discussion Coding							
Case Name	Agreed More Abrupt Turning Points	Agreed Less Abrupt Turning Points	Disagreed More/Less Abrupt Turning Points	More Abrupt Turning Points One Coder Only	Less Abrupt Turning Points One Coder Only	Total More/Less Abrupt Turning Points	Percentage Agreement on More/Less Abrupt Turning Points
Portage Island	5	4	0	0	0	9	100.00%
Rhone Poulenc	4	1	0	0	0	5	100.00%
Nahal Tzalmon	4	4	0	0	0	8	100.00%
Brayton Point	11	9	0	0	0	20	100.00%
Terminal 91	9	4	1	0	0	14	92.86%
Promised Lane	4	1	0	0	0	5	100.00%
Hudson	7	2	0	0	0	9	100.00%
Holston	5	0	0	0	0	5	100.00%
MEAN	6.13	3.13	0.13	0.00	0	10.00	99.11%

Agreement of Coders' Independent Coding of Procedural/Substantive

Consequences vs. Post Discussion Procedural/Substantive Consequences - Table 12

shows the two coders' level of agreement and disagreement on coding judgments for procedural/substantive consequences before and after discussion. As the table illustrates, the two coders' pre-discussion independent coding of procedural/substantive consequences produced a mean agreement of about 86 percent. Discussion between the two coders produced a mean agreement of about 95 percent. Both pre- and post-discussion categorization of procedural/substantive consequences greatly exceeded the expected level of agreement.

Table 12: CATEGORIZATION OF PROCEDURAL/SUBSTANTIVE CONSEQUENCES BY TWO CODERS

Case Name	Pre-discussion Coding						Percentage Agreement on Procedural/Substantive Consequences
	Agreed Procedural Consequences	Agreed Substantive Consequences	Agreed Both Procedural and Substantive Consequences	Disagreed Procedural/Substantive Consequences	Total Agreed on Procedural/Substantive Consequences	Total Procedural/Substantive Consequences	
Portage Island	5	3	0	1	8	9	88.89%
Rhone Poulenc	2	2	0	1	4	5	80.00%
Nahal Tzalmon	5	2	0	1	7	8	87.50%
Brayton Point	9	11	0	0	20	20	100.00%
Terminal 91	5	6	1	2	12	14	85.71%
Promised Lane	1	3	0	1	4	5	80.00%
Hudson	3	5	0	1	8	9	88.89%
Holston	1	3		1	4	5	80.00%
MEAN	3.88	4.38	0.14	1.00	8.38	9.38	86.37%

Post-Discussion Coding							
Case Name	Agreed Procedural Consequences	Agreed Substantive Consequences	Agreed Both Procedural and Substantive Consequences	Disagreed Procedural/ Substantive Consequences	Total Agreed on Procedural/ Substantive Consequences	Total Procedural/ Substantive Consequences	Percentage Agreement on Procedural/ Substantive Consequences
Portage Island	5	3	0	1	8	9	88.89%
Rhone Poulenc	3	2	0	0	5	5	100.00%
Nahal Tzalmon	6	2	0	0	8	8	100.00%
Brayton Point	9	11	0	0	20	20	100.00%
Terminal 91	6	7	1	0	14	14	100.00%
Promised Lane	1	3	0	1	4	5	80.00%
Hudson	3	5	0	1	8	9	88.89%
Holston	1	4			5	5	100.00%
MEAN	4.25	4.63	0.14	0.43	9.00	9.38	94.72%

Agreement of Coders' Independent Coding of Toward/Away from Agreement Consequences vs. Post Discussion Agreement of Toward/Away from Agreement Consequences - Table 13 shows the two coders' level of agreement and disagreement on coding judgments for toward/away from agreement consequences before and after discussion. As the table illustrates, the two coders' pre-discussion independent coding of toward/away from agreement consequences produced a mean agreement of about 96 percent. Discussion between the two coders produced a mean agreement of about 97 percent. Both pre- and post-discussion categorization of toward/away from agreement consequences greatly exceeded the expected level of agreement.

Table 13: CATEGORIZATION OF TOWARD/AWAY FROM AGREEMENT CONSEQUENCES BY TWO CODERS

Pre-discussion Coding							
Case Name	Agreed Toward Agreement Consequences	Agreed Away From Agreement Consequences	Disagreed Toward/Away From Agreement Consequences	Toward Agreement Consequences One Coder Only	Away from Agreement Consequences One Coder Only	Total Toward/Away From Agreement Consequences	Percentage Agreement on Toward/Away From Agreement Consequences
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91 Promised Lane Hudson Holston	7 5 8 16 13 4 6 4	1 0 0 1 1 3 1	1 0 0 3 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	9 5 8 20 14 5 9 5	88.89% 100.00% 100.00% 85.00% 100.00% 100.00% 100.00% 100.00%
MEAN	7.88	1.00	0.50	0.00	0.00	10	96.27%

Post-discussion Coding							
Case Name	Agreed Toward Agreement Consequences	Agreed Away From Agreement Consequences	Disagreed Toward/Away From Agreement Consequences	Toward Agreement Consequences One Coder Only	Away from Agreement Consequences One Coder Only	Total Toward/Away From Agreement Consequences	Percentage Agreement on Toward/Away From Agreement Consequences
Portage Island Rhone Poulenc Nahal Tzalmon Brayton Point Terminal 91 Promised Lane Hudson Holston	7 5 8 16 13 4 6 4	1 0 0 2 1 1 3 1	1 0 0 2 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	9 5 8 20 14 5 9 5	88.89% 100.00% 100.00% 90.00% 100.00% 100.00% 100.00% 100.00%
MEAN	7.88	1.13	0.38	0.00	0.00	10	96.98%

c. INTERPRETATION OF RELIABILITY TESTING RESULTS

The results of the reliability testing procedure for both recording units and the categorization of recording unit elements are discussed below:

- Recording Unit – With respect to the elements of the recording unit (i.e., precipitants, turning points, consequences), the agreement of the coders' independent identification was below the expected 60 percent. Post-discussion agreement on identifying all units of analysis was more than 80 percent. Potential reasons for this substantial difference include:
 - The definitions for the recording unit elements are not sufficiently precise to allow for a high level of agreement by independent coders.
 - The definitions for the recording unit elements as broad concepts/themes are sound; however, the task of identifying recording unit elements involves identifying latent (as opposed to manifest) content. The identification of latent content necessarily involves a higher degree of interpretation on the part of the coder and increases the chances that two coders will disagree when independently identifying the recording unit.
 - The definitions for the recording unit elements as broad concepts/themes are sound; however, more training of the second coder than was possible with eight cases could be needed to increase reliability.
 - The definitions for the recording unit elements as broad concepts/themes are sound; however, a consensus or group decision-making process to

identify the recording unit elements could be more appropriate than independent coding.

- Identification of the recording unit elements with reliability may require specialized expertise that the second coder did not have.
- The case chronologies developed for analysis and/or the case descriptions on which the chronologies are based are insufficient to allow for a high level of agreement using the coding procedure because, for example, they lack adequate detail or use language that increases the risk of two coders arriving at different interpretations.
- Categorization of Recording Unit Elements – With respect to the categorization of key research variables (procedural/substantive precipitants, precipitant roles, more/less abrupt turning points, procedural/substantive consequences, toward/away from agreement consequences) the agreement of the coders' independent coding decisions exceeded the expected 60 percent. Discussion between the coders also increased the level of agreement to varying degrees. It is appropriate to conclude that the category definitions for the key variables are generally reliable.

The overall conclusion is that independent identification of the recording units did not produce the expected level of agreement. By contrast, independent categorization of the recording unit elements exceeded expectations and is considered reliable for purposes of this study.

The finding about recording units is not necessarily an indication that the coding framework is inherently unreliable, given the range of possible explanations for the difference. Of the possible reasons for the difference in independent and post-discussion agreement listed above, one seems the most plausible: the need for additional training to achieve greater independent coder reliability. Training should not be understood only as a unidirectional process in which one coder transfers information to another; it also allows for mutual education about ways to clarify and strengthen the coding scheme. In this reliability testing process described above, the fact that agreement based on the independent identification of precipitants and consequences improved when reliability testing was conducted on the second set of three cases argues for the benefits of additional training as a way of reaching a higher level of agreement on independent identification of recording units.

D. CHANGES TO THE CODING SCHEME BASED ON RELIABILITY TESTING

The reliability testing process provided the opportunity to clarify the definitions for the recording unit and categorization scheme for its related elements. During their discussions, as the two coders identified areas where additional definitional clarity would be useful, the instructions for the reliability testing procedure were revised to reflect the new understanding. The reliability testing instructions in their final form are included as APPENDIX B.

In general, the reliability testing process produced three types of change in the reliability testing instructions. One type of change was to include additional guidance for identifying turning points. For example, the following text was added to the instructions to help clarify what the coder should be seeking:

“Recognize that multiple behaviors/events recorded separately in the text may not be separate turning points even though they are somewhat distinct. For example, the text may indicate that the parties agree to begin a mediation (e.g., as part of separate conversations with the mediator or in some other forum) and also say that the mediation actually begins. From the standpoint of the turning points analysis these are one and the same unless there is some intervening text suggesting an additional turning point between those two (e.g., one of the parties having first agreed to mediation later says to the other parties that he/she has changed his/her mind and then has to be convinced before the mediation begins).”

A second type of revision addressed the need for additional examples. For instance, one example of a turning point is the parties’ agreement on substance. The following more specific examples were added to the existing list of examples of agreement on substance: “... parties agree on agenda items for discussion, parties reach resolution of an outstanding issue(s) or impasse, a party’s concerns are addressed” Finally, a limited number of revisions were made to the definitions themselves. For example, the definition of turning point was amended to include the following: “Turning points are reflected in the behavior of negotiating parties, not external parties such as mediators, the media, or governmental entities that are not participating in the negotiation.” All clarifications to the reliability testing instructions were subsequently used in conducting the final content analysis on the cases not included in the reliability testing process to generate data for analysis.

E. SUMMARY OF CASE SELECTION AND CONTENT ANALYSIS

This chapter has described how environmental negotiation cases were selected for inclusion in the study and converted to case chronologies to be used in identifying turning point sequences (i.e., the recording unit) and assigning recording unit elements (i.e., precipitants, turning points, and consequences) to categories based on operational definitions of those concepts. The chapter also explained the reliability testing procedure used to assess the extent to which different individuals can apply the coding scheme and agree on their coding judgments and discusses changes that were made to enhance the coding scheme.

The content analysis procedure described in this chapter was applied to the entire set of 29 environmental negotiation cases to produce a final data set for statistical analysis. The approach to and results of the analysis are presented in the next chapter.

V. ANALYSIS AND RESULTS

This chapter addresses the statistical methods used to analyze the data set generated through content analysis and the results of those analyses. The results specifically address the hypotheses advanced in Chapter III and provide evidence for other relationships among the variables in the research framework. The first part of the chapter describes the statistical methods used. The second part of the chapter presents the results of applying these methods.

A. METHODS

Four types of analyses were performed on the data set: frequency analysis, cross tabulations using the *chi square* test, analysis of first and last turning points, and analysis of variance (ANOVA). Each of these methods is described below.

1. FREQUENCY ANALYSIS

Simple frequency distributions are adequate for responding to several of the research hypotheses (Frankfort-Nachmias & Nachmias, 1992; Robson, 1993). These

counts, together with other descriptive statistics, are presented at the beginning of each results section below.

2. CROSS TABULATIONS

Cross tabulations of variables in the research framework and the *chi square* test of independence allow for comparison between variables to determine whether the null hypothesis of independence should be rejected for any of the research questions (Agresti & Finlay, 1997; Druckman, 2005). Cross tabulation and *chi square* are particularly useful for addressing the relationships between categorical variables, which comprise the research framework for this study. The significance level for all applications of the *chi square* test is 0.05 (rounded to the nearest hundredth). SPSS version 11.0.4 for Apple Macintosh (SPSS Inc. & Software Mackiev, 2005) was used to conduct the analyses using cross tabulations and the *chi square* test.

3. FIRST AND LAST TURNING POINTS

The first and last turning points are important milestones in an environmental negotiation. First turning points in these negotiations tend to mark either the first consideration of or entry into negotiations. Last turning points are typically the conclusion of the negotiation when the parties reach a final agreement. By analyzing

precipitants and precipitant roles for these two key events, it is possible to identify typical patterns of how environmental negotiations are initiated and conclude. The analysis of first and last turning points was not conducted for relationships with the case-related variables due to data sparseness issues.

4. ANALYSIS OF VARIANCE (ANOVA)

The turning points data were analyzed using a repeated measures ANOVA (Druckman, 2005) with three measures per environmental negotiation case. The repeated measures ANOVA provides a more refined analysis than cross tabulation and the *chi square* test, providing detailed information about which differences between measures and variables are significant. To arrive at three measures, the turning point sequences in each case were first grouped into three equal intervals. Second, the most common precipitant (procedural/substantive, internal/external), turning point (more/less abrupt), and consequence (procedural/substantive, toward/away from agreement) within each of the three intervals of turning points were identified, producing a total of three turning point sequences for each case.²¹ One case – the Whitchurch-Stouffville landfill case – has only two turning points and was dropped from the dataset for the repeated measures ANOVA to avoid a situation in which a case would have missing values for one of the repeated measures. The decision to use three repeated measures was based on the fact

²¹ Where individual elements of a turning point sequences were equally common within an interval of turning point sequences, the tie was broken randomly.

that the number of turning points per case was divisible evenly by three (e.g., three turning points per case or 15 turning points per case) for most cases. This decision helps to minimize the need to randomly assign turning points to intervals in cases where the total number of turning points was not evenly divisible by the number of intervals.

After the number of turning points sequences was reduced to three per negotiation case (and one case was dropped from the data set for purposes of the repeated measures ANOVA), the data (all categorical variables) were recoded into dummy variables as follows:

Table 14: RECODED VARIABLES FOR REPEATED MEASURES ANOVA

Procedural/Substantive Precipitants	
Procedural	0
Procedural and Substantive	1
Substantive	2
Internal/External Precipitants	
Internal	0
Both	1
External	2
More/Less Abrupt Turning Points	
More	0
Less	1
Procedural/Substantive Consequences	
Procedural	0
Procedural and Substantive	1
Substantive	2
Toward/Away from Agreement Consequences	
Toward	0
Away	1

The data were then organized into a spreadsheet with one row per negotiation case and three measures (turning point sequences) per case and the analysis was conducted using SPSS (SPSS Inc. & Software Mackiev, 2005). Arkkelin's (2007) guide to SPSS was used to assist in interpreting the results. The significance level for the repeated measures ANOVA is 0.05 (rounded to the nearest hundredth).

A standard univariate ANOVA (Agresti & Finlay, 1997; Druckman, 2005) was used for analysis in one situation where numerical data were available. The ANOVA compares the mean of the duration of the negotiation variable as it varies according to variables in the research framework. The analysis was conducted using SPSS (SPSS Inc. & Software Mackiev, 2005). The significance level for the univariate ANOVA is 0.05 (rounded to the nearest hundredth).

B. RESULTS

The results of this study are organized according to the sets of research questions proposed in Chapter III. They cover three areas: 1) the dynamics of environmental negotiations in general; 2) precipitant roles and their impact on negotiation dynamics; and 3) attributes of the negotiation cases as case-related factors. In each area, results are presented in the following order: 1) frequencies, 2) cross tabulations and *chi square* tests, 3) first and last turning points, and 4) ANOVA. In presenting the results from each type of analysis, the research hypotheses are addressed first, followed by other significant results.

1. DYNAMICS OF ENVIRONMENTAL NEGOTIATIONS

FREQUENCIES: Table 15 displays the frequencies for procedural/substantive precipitants, more/less abrupt turning points, procedural/substantive consequences, and toward/away from agreement consequences across all cases (n=29) and all turning point sequences (n=254):

Table 15: FREQUENCIES ACROSS CASES

Procedural/Substantive Precipitants	Frequency	Percentage
Procedural	123	48%
Substantive	117	46%
Both	14	6%
TOTAL	254	100%

More/Less Abrupt Turning Points	Frequency	Percentage
More Abrupt	168	66.1%
Less Abrupt	86	33.9%
TOTAL	254	100%

Procedural/Substantive Consequences	Frequency	Percentage
Procedural	109	43%
Substantive	132	52%
Both	13	5%
TOTAL	254	100%

Toward/Away From Agreement Consequences	Frequency	Percentage
Toward	211	83.1%
Away From	43	16.9%
TOTAL	254	100%

For these cases, the mean number of turning point sequences is 8.76, with a range from 2 to 20.

The first hypothesis related to negotiation dynamics (H1) is that toward agreement consequences are more frequent than away from agreement consequences in environmental negotiations. For the 29 cases in this study, 211 turning points (83.1%) have toward agreement consequences and 43 turning points (16.9%) have away from agreement consequences. There is a much higher percentage of toward agreement consequences and the null hypothesis can be rejected. Thus, the evidence supports the first hypothesis (H1).

The frequency analysis reveals other findings as well. One is that more abrupt turning points are about twice as common (66.1%) as less abrupt turning points (33.9%). Across all turning points sequences, procedural consequences are more common (52%) than substantive consequences (43%) and consequences with both elements are quite rare (5%). Substantive and procedural precipitants are fairly balanced (48% and 46%, respectively) and precipitants with both elements occur infrequently (4%).

CROSS TABULATIONS: Detailed results for the cross tabulations and *chi square test* for procedural/substantive precipitants, more/less abrupt turning points, procedural/substantive consequences, and toward/away from agreement consequences for all turning points are presented in APPENDIX C. The second hypothesis (H2) related to the dynamics of environmental negotiations is that more abrupt turning points are more frequent than less abrupt turning points following substantive precipitants. The results of the cross tabulation show that the proportion of more abrupt turning points to less abrupt

turning points is approximately equal for both procedural and substantive precipitants (67.5% and 62.6%, respectively). The results of the *chi square* test show no significant difference ($X^2=3.183$, $df=2$, $p=0.204$), therefore the null hypothesis cannot be rejected – more abrupt turning points are equally likely to follow procedural and substantive consequences.²² Thus, the evidence does not support the second hypothesis (H2).

Analysis using cross tabulations and the *chi square* test produced additional statistically significant results related to negotiation dynamics in environmental negotiations beyond those needed to test the research hypotheses. These results for relationships among procedural/substantive precipitants, more/less abrupt turning points, procedural/substantive consequences, and toward/away from agreement consequences are described in the paragraphs that follow below. Relationships among these variables and precipitant roles are addressed in the next results section.

The crosstabulation of procedural/substantive precipitants by procedural/substantive consequences shows that procedural precipitants are more likely to be associated with procedural consequences (62.4%) than substantive precipitants (33.3%). Substantive precipitants are somewhat more likely to be associated with substantive consequences (54.5%) than procedural precipitants (42.3%). Thus, procedural precipitants tend to be associated with procedural consequences and

²² More abrupt turning points are much more likely than less abrupt turning points to follow precipitants that include both procedural and substantive elements. For these precipitants, the proportion of more abrupt turning points is 85.7%.

substantive precipitants tend to be associated with substantive consequences ($X^2=28.564$, $df=4$, $p=0.000$).²³

The crosstabulation of procedural/substantive precipitants by toward/away from agreement consequences shows that both procedural precipitants and substantive precipitants are more likely to be associated with toward agreement consequences than away from agreement consequences; however procedural precipitants are more likely than substantive precipitants to be associated with toward agreement consequences ($X^2=19.464$, $df=2$, $p=0.000$). Procedural precipitants are much more likely to be associated with toward agreement consequences (93.2%) than away from agreement consequences (6.8%). Substantive precipitants are more likely to be associated with toward agreement consequences (72.4%) than away from agreement consequences (27.6%).

The preceding results concern all turning points across all cases. To gain an understanding of how turning points and their associated variables change over time, it is useful to compare the frequencies of precipitants to the first and last turning points across all cases and utilize the repeated measures ANOVA to identify patterns of the turning point variables across cases.

FIRST AND LAST TURNING POINTS: This study's third and fourth hypotheses (H3 and H4, respectively) predict greater proportions of both procedural precipitants and procedural consequences at the beginning of an environmental

²³ Precipitants with both procedural and substantive elements are more likely to be associated with procedural consequences (50%) than either substantive consequences (21.4%) or consequences with both procedural and substantive elements (28.6%).

negotiation. Analysis of the first turning points ($n=29$) addresses the third hypothesis and the repeated measures ANOVA (below) addresses both hypotheses.

Precipitants to the first turning points are overwhelmingly procedural (23 or 79.3%) rather than substantive (2 or 6.9%) or both (4 or 14%). This result provides evidence to support the hypothesis that procedural precipitants are more common at the beginning of a negotiation (H3).

The situation for last turning points is just the opposite. Precipitants to the final turning points tend to be more substantive (17 or 58.6%) rather than procedural (9 or 31%) or both (3 or 10.3%).

REPEATED MEASURES ANOVA: The results of the repeated measures ANOVA for all cases are presented in the tables and charts in APPENDIX D and can be summarized as follows:

- The variance in means across the three measures was statistically significant at the 0.05 level for all variables: procedural/substantive precipitants ($p=0.003$), more/less abrupt turning points ($p=0.008$), procedural/substantive consequences ($p=0.001$), and toward/away from agreement consequences ($p=0.033$). See the results of the lower bound test in the univariate tests table in APPENDIX D (where results that are significant at the 0.05 level are highlighted).
- For procedural/substantive precipitants, the mean for the first measure (interval) differed significantly from both the second and third measures ($p=0.001$ and $p=0.000$, respectively). Procedural precipitants are much more likely to occur in the first interval than either the second or third intervals, which tend to feature

more substantive precipitants. This finding provides evidence to support the hypothesis that procedural precipitants are more common at the beginning of an environmental negotiation (H3).

- For more/less abrupt turning points, the mean for the third measure differed significantly from both the first and second measures ($p=0.001$ and $p=0.000$, respectively). Although all intervals feature a greater proportion of more abrupt turning points than less abrupt turning points, more abrupt turning points are much more likely to occur in the third interval than either the first or second intervals.
- For procedural/substantive consequences, the mean for the third measure differed from both the first and second measures ($p=0.000$ and $p=0.003$, respectively). Substantive consequences are more likely to occur in the third interval than either the first or second intervals, where the proportion of procedural consequences is likely to be greater. This finding provides evidence to support the hypothesis that procedural consequences occur more frequently than substantive consequences at the beginning of environmental negotiation (H4).
- For toward/away from agreement consequences, the mean for the third measure differed from the second measure. Toward agreement consequences are more likely than away from agreement consequences to occur in both intervals; however, toward agreement consequences are much more likely to occur in the third interval than in the second interval.

These results suggest a pattern in environmental negotiation cases in which the first of three turning point intervals is characterized by a tendency for more procedural precipitants than substantive precipitants. The third interval is characterized by a tendency for more substantive precipitants, abrupt turning points, substantive consequences, and movement toward agreement.

A brief analysis of an environmental negotiation case helps to illustrate the identified pattern of precipitants, turning points, consequences described above. While no single negotiation case in this study's data set reflects the identified pattern of negotiation dynamics completely, six cases do closely match this pattern. Among them, the case that matches the pattern in most respects is the Vulcan case. This case has a total of nine turning point sequences with a distribution of elements as follows:

- *Procedural/Substantive Precipitants* - The first interval of three turning point sequences includes three procedural precipitants. The first turning point of the case is a court decision finding that a citizen's lawsuit can proceed against the defendant. The second is the recommendation of a mediation expert and legal counsel that a particular mediation firm is qualified to assist the parties. The third precipitant is the mediator's convening of the mediation process through a situation assessment. As the process moves to the second and third intervals, the distribution of precipitants changes to feature more substantive precipitants. Each of the last two intervals has two substantive precipitants and one procedural precipitant. For example, the third interval begins with the procedural

precipitant of the parties going through the process of drafting the principles of settlement. The last two precipitants of the negotiation are the parties making a substantive proposal and offer. The last precipitant being substantive is also typical of the last turning points in the data set.

- *More/Less Abrupt Turning Points* – The case shows the typical pattern of more/less abrupt turning points. The first two intervals have two less abrupt turning points and one more abrupt turning point each, whereas the situation is reversed in the third interval with two more abrupt turning points and one less abrupt turning point. In the first interval, the first and only more abrupt turning point is the parties' initiation of the negotiation about whether and how to use mediation, which is a major change from their adversarial relationship in the court setting. The two less abrupt turning points that follow are relatively predictable agreements on the mediator and the initiation of the first joint meeting in the mediation. The dynamics changed in the last interval, which begins with the more abrupt turning point of the parties reaching agreement on the principles of settlement, followed by the less abrupt turning point of the parties' agreement for gathering more information in between mediation sessions, and then the final, more abrupt turning point of the parties reaching a final agreement.
- *Procedural/Substantive Consequences* – The typical pattern for procedural consequences holds in the Vulcan case as well. Both the first and second

intervals are dominated by procedural consequences. The first and last consequences of the first interval, for example, are entirely procedural, with the parties proceeding to select the mediator in the first turning point sequence and the mediation process itself beginning in the third turning point sequence. In between, the consequence in the second turning point sequence has both procedural and substantive elements, where one party meets with its constituency and in that meeting agrees to pursue certain substantive terms in the negotiation. In contrast, the consequences of the third interval of negotiation in this case are mostly substantive. The consequence in the first turning point sequence of the third interval is substantive, when the parties begin refining the terms of their agreement. In the second turning point sequence, the consequences are procedural as evidenced by the parties beginning a process of data collection. In the last turning point sequence, the parties sign their final agreement, a substantive consequence.

- *Toward/Away From Agreement Consequences* – As noted above, this case does not demonstrate the typical pattern of toward/away from agreement consequences, in which toward agreement consequences are more likely to occur in the third interval than in the second. In fact, all the consequences of turning points in this case are toward agreement consequences. Interestingly, however, four of the six cases that closely match the typical pattern of negotiation dynamics do exhibit this pattern. In the Hudson

River case, for example, all of the consequences in the second interval of turning point sequences are away from agreement and in the third interval all are toward agreement.

SUMMARY: Summarizing this section, the results of this study provide the following responses to the first set of research questions concerning the factors that lead to changes in negotiation dynamics, the consequences that follow from such changes, and whether parties tend to move toward or away from agreement:

- Procedural and substantive precipitants occur with roughly equal frequency across all turning points and all cases.
- More abrupt turning points are about twice as likely to occur as less abrupt turning points.
- Procedural consequences are somewhat more frequent than substantive consequences
- Procedural precipitants tend to be associated with procedural consequences and substantive precipitants tend to precede substantive consequences.
- Toward agreement consequences are more than four times as likely as away from agreement consequences.
- Procedural precipitants are more likely than substantive precipitants to be associated with toward agreement consequences.

Regarding the question about whether a pattern of typical dynamics for environmental negotiation can be identified, the results from this study demonstrate the following pattern:

- Analysis of the beginning and end of the negotiation shows that the first turning points in negotiation tend to be precipitated overwhelmingly by procedural precipitants and the last turning points tend to be precipitated by substantive precipitants.
- When the negotiation cases are divided into three intervals or periods of turning point sequences:
 - The first interval is characterized by more procedural than substantive precipitants (consistent with the finding about first turning points); and
 - The third interval tends to have a greater frequency of substantive precipitants (consistent with the finding about last turning points), more abrupt turning points, more substantive consequences, and movement toward agreement.

2. PRECIPITANT ROLES AND THEIR IMPACT

FREQUENCIES: Table 16 and Table 17 present the results of the frequency analysis related to precipitant roles:

Table 16: FREQUENCIES OF INTERNAL/EXTERNAL PRECIPITANT ROLES ACROSS ALL CASES AND TURNING POINT SEQUENCES

Internal/External Precipitant Role	Frequency	Percentage
Internal	151	59%
External	78	31%
Both	25	10%
TOTAL	254	100%

Table 17: FREQUENCIES OF DETAILED PRECIPITANT ROLES ACROSS ALL CASES AND TURNING POINT SEQUENCES

Precipitant Role	Frequency	Percentage
Party	137	53.9%
Neutral	49	19.3%
Multiple	32	12.6%
Enforcer	27	10.6%
Advocate	7	2.8%
Other	1	0.4%
Researcher	1	0.4%
TOTAL	254	100.0%

Two hypotheses in this study concern the frequency of precipitant roles in turning point sequences. One hypothesis (H5) states that internal precipitant roles are more common than external precipitant roles in environmental negotiations. The frequency analysis presented in Table 16 shows that internal precipitant roles occur at approximately double the frequency (59%) of external precipitant roles (31%), with precipitants having both types of role making up the difference at 10 percent. Thus the evidence supports the hypothesis (H5).

Another hypothesis (H8) proposes that neutral third parties are more likely than other external precipitant roles to precipitate turning points in environmental negotiations. As Table 17 indicates, neutral third parties are second only to negotiating parties as precipitants of turning points. They account for 19.3 percent of all precipitant roles and are about twice as likely as the next largest single external precipitant role --- enforcers (10.6%) -- to precipitate turning points.²⁴ These results provide evidence in support of the hypothesis that neutral third parties are the most frequent external role associated with precipitants (H8).

CROSS TABULATIONS: The results of the cross tabulation and chi square tests for precipitant roles and other turning point sequence elements are presented in APPENDIX E. In addition to the categorizations of precipitant roles described above, precipitant roles were also aggregated as follows to mitigate data sparseness issues when using cross tabulation and the *chi square* test:

- Negotiating parties and their advocates were recoded as parties.
- All multiple role precipitants, researchers, and other role precipitants were recoded as multiple/other.
- All neutral third party and enforcer precipitant roles remained the same.

The frequencies of the aggregated roles are displayed in Table 18:

²⁴ The multiple precipitant role category represents 12.6 percent of all precipitant roles. This is an aggregate category for precipitant roles that include more than a single precipitant role. One example would be a precipitant attributed to both a party and a neutral third party. Another would be a precipitant attributed to both an enforcer and a neutral third party. The multiple precipitant role category was developed to capture the low frequencies of different multiple role combinations in a single category and thus facilitate analysis of the single precipitant role categories.

Table 18: AGGREGATED PRECIPITANT ROLES ACROSS ALL CASES AND TURNING POINT SEQUENCES

Aggregated Precipitant Roles	Frequency	Percentage
Parties	144	56.7%
Neutral Third Party	49	19.3%
Enforcer	27	10.6%
Multiple/Other	34	13.4%
TOTAL	254	100%

The results of the cross tabulation and *chi square* testing for both the internal/external precipitant role and recoded precipitant role aggregations and the other turning point variables are presented in the following paragraphs.

The second hypothesis related to precipitant roles and negotiation dynamics (H6) is that external precipitant roles are more likely to be associated with more abrupt turning points than less abrupt turning points. The cross tabulation of these variables shows that 62.8 percent of external precipitant roles are associated with more abrupt turning points and 37.2 percent are associated with less abrupt turning points. Thus, the evidence supports the hypothesis (H6). The same cross tabulation, however, shows that internal precipitant roles are equally as likely as external precipitant roles to precipitate both more abrupt turning points and less abrupt turning points (65.6% and 34.4%, respectively). The *chi square* test ($X^2=2.551$, $df=2$, $p=0.279$) shows no significant difference in the association between internal/external precipitant roles and more/less abrupt turning points. These results support the hypothesis (H6) that external precipitant roles are more likely to be associated with more abrupt turning points than less abrupt turning points and also show the same pattern for internal precipitant roles.

The third precipitant role hypothesis (H7) is that external precipitant roles are more likely than internal precipitant roles to precipitate away from agreement consequences. Crosstabulating these variables shows the opposite is true for environmental negotiations. External precipitant roles are somewhat less likely (10.3%) than internal precipitant roles (21.9%) to be associated with away from agreement consequences. Results of the *chi square* test ($X^2=6.491$, $df=2$, $p=0.039$) show that the null hypothesis can be rejected and thus the research hypothesis (H7) is not supported by the evidence.

Turning to the more detailed aggregation of precipitant roles, a fifth hypothesis (H9) proposes that neutral third parties are more likely than other precipitant roles to be associated with procedural precipitants of turning points than with substantive precipitants. The cross tabulation of the detailed aggregation of precipitant roles and procedural and substantive precipitants shows that 63.3 percent of neutral third party precipitants are associated with procedural precipitants, 32.7 percent are associated with substantive precipitants, and 4.1 percent are associated with both. The enforcer role shows almost exactly the same pattern of relationship to procedural and substantive precipitants as the neutral third party role. Enforcers are more likely to be associated with procedural precipitants (63%) than with substantive precipitants (33%). In contrast to both neutral third parties and enforcers, however, the negotiating parties tend to be more associated with substantive precipitants (57.6%) than procedural precipitants (38.2%). The *chi square* test shows these results to be statistically significant ($X^2=19.405$, $df=6$, $p=0.004$). Because both neutral third parties and enforcers are equally

likely to have a more frequent association with procedural precipitants than with substantive precipitants, these results do not provide support for the hypothesis (H9).

The results of crosstabulating the detailed precipitant roles with procedural/substantive precipitants are consistent with the cross tabulation of internal/external precipitant roles and procedural/substantive precipitants, as would be expected. These results show that external roles are more often associated with procedural precipitants (62.8%) than substantive precipitants (33.3%). Internal roles are more often associated with substantive precipitants (58.9%) than procedural precipitants (36.4%). The *chi square* test ($X^2=22.094$, $df=4$, $p=0.000$) indicates that these results are statistically significant.

The final hypothesis related to precipitant roles (H10) is that neutral third parties are more likely than other precipitant roles to precipitate turning points that lead to toward agreement consequences in environmental negotiations. Crosstabulation provides the relative proportions of toward/away from agreement consequences for the different precipitant roles. A greater proportion of neutral third party precipitants are associated with toward agreement consequences (91.0%) than enforcers (88.9%), parties (79.9%), or other (79.4%). The results of the *chi square* test ($X^2=4.706$, $df=3$, $p=0.195$), however, show that these differences are not statistically significant and the null hypothesis cannot be rejected. Thus, the evidence does not support the research hypothesis (H10) that neutral third parties are more likely than other roles to precipitate turning points that lead to toward agreement consequences.

One additional crosstabulation of internal/external precipitant roles and toward/away from agreement consequences provides results beyond those necessary to address the research hypotheses and at the same time provides a contrast to the finding above about the association between aggregated detailed roles and toward/away from agreement consequences. One finding is that both internal and external roles are much more likely to be associated with toward agreement consequences than with away from agreement consequences. Another finding, however, is that external roles are somewhat more likely (89.7%) than internal precipitant roles (78.1%) to be associated with toward agreement consequences. The *chi square* test ($X^2=6.491$, $df=2$, $p=0.039$) shows this is a significant result and therefore the null hypothesis can be rejected. Thus, although there is no significant difference among the more detailed precipitant roles with respect to toward/away from agreement consequences, the internal/external comparison does provide evidence that external roles are more likely to precipitate turning points that lead to toward agreement consequences.

FIRST AND LAST TURNING POINTS: The first and last turning points were analyzed with respect to the associated proportions of precipitant roles. External roles more commonly (16 or 55.2%) precipitated the first turning point than internal roles (9 or 31%), and both roles precipitated four first turning points (14%). Proportions among the more detailed aggregated roles are relatively similar -- negotiating parties (9 or 31.0%), enforcers (8 or 27.6%), neutral third parties (7 or 24.1%) – with the multiple/other category at 5 or 17.2 percent.

The situation is different for the last turning points. There the internal roles dominate (17 or 58.6%) over external roles (8 or 27.6%) in precipitating the final turning points, and both roles precipitated four last turning points (4 or 14%). This pattern is consistent when analyzing the more detailed aggregated roles, where the negotiating parties are much more likely (16 or 55.2%) to precipitate the last turning point than enforcers (4 or 13.8%), neutral third parties (4 or 13.8%), or multiple/other roles (5 or 17.2%).

REPEATED MEASURES ANOVA: The repeated measures ANOVA was used to analyze whether internal/external precipitant roles differed across the three intervals in environmental negotiations. The results of the repeated measures ANOVA are presented in APPENDIX D. The finding is summarized as follows: For internal/external precipitants, the mean for the first measure (interval) differed significantly from the second measure. Although all intervals feature a greater proportion of internal precipitant roles relative to external precipitant roles, external precipitant roles are more likely to occur in the first interval than the second interval. This result is consistent with the one above about first turning points.

As discussed in the previous section on negotiation dynamics in general, the Vulcan case reflects the typical pattern of dynamics for procedural/substantive precipitants, more/less abrupt turning points, and procedural/substantive consequences (although it does not match the typical pattern for toward/away from agreement consequences). This case also demonstrates the typical pattern described in this section for internal/external precipitants. In the first interval, external actors are responsible for

two of the three precipitants, and are jointly responsible for the third. In the first turning point sequence, an external actor, the court, precipitates a more abrupt turning point, the parties' agreement to consider mediation, that leads to the procedural and toward agreement consequence of the parties beginning the process of selecting a mediator. In the second and third turning point sequences the roles attributed to the precipitants are both internal and external (the parties' lawyer and a mediation expert together) and external only (the selected mediator), respectively.

In the second interval of turning point sequences the role dynamics for precipitants have changed. There, the first and last turning point sequences feature internal precipitants, the negotiating parties beginning the first mediation session in the first sequence and a party making an offer in the second. The second sequence involves the mediators' use of a dialogue process, which precipitates an unexpected phase transition.

The Vulcan case also illustrates the typical pattern of first and last turning points for precipitant roles. In the first turning point sequence in the case, an external actor, the court, has the precipitant role. In the last turning point, an internal actor, the negotiating parties are responsible for the precipitant role.

SUMMARY: Results concerning the frequency of precipitant roles include:

- Comparing internal and external role categories, internal roles are much more likely to precipitate turning points than external roles.
- Using more detailed categories for individual precipitant roles, negotiating parties are the most frequent precipitant of turning points. The largest

category of external precipitant roles is neutral third parties. Enforcers are about half as likely as neutral third parties to precipitate turning points.

Findings about the relationship of precipitant roles to other variables in the turning points research framework may be summarized as follows:

- External precipitant roles and internal precipitant roles are equally likely to precipitate more or less abrupt turning points and both roles tend to precipitate approximately twice as many more abrupt turning points as less abrupt turning points.
- Both neutral third parties and enforcers are more likely to be associated with procedural precipitants than with substantive precipitants. The situation is reversed for negotiating parties, who are more likely to be associated with substantive precipitants. Analysis of internal and external precipitant roles showed similar results.
- Neutral third parties, enforcers, and negotiating parties are equally likely to precipitate turning points with toward agreement consequences; however, external precipitant roles collectively are somewhat more likely than internal precipitant roles to precipitate turning points with toward agreement consequences.

Analysis of precipitant roles with respect to changes in the negotiation dynamics over time showed the following patterns:

- External roles are more common precipitants of first turning points than internal roles.

- Internal roles are more common precipitants of last turning points than external roles.
- Although internal roles are more frequent than external roles across all three intervals of a environmental negotiation, external roles are relatively more frequent in the first interval compared with the second interval.

3. CASE-RELATED FACTORS

The analysis of case-related factors included differences among cases based on whether they involved assistance by neutral third parties or were unassisted, whether the issues addressed natural resources or pollution, whether the agreement reached was of an advisory or settlement type, the number of negotiating parties divided into large and small categories, and the duration of the negotiation divided into long and short negotiations. The results of the analysis are provided below.

FREQUENCIES: Table 19 portrays the frequency of turning points that occurred in the different types of cases:

Table 19: FREQUENCIES OF TURNING POINTS FOR ALL CASE TYPES

Assisted/Unassisted Cases	Frequency of Turning Point Sequences	Percentage	Number of Cases	Per Case Average
Assisted	216	85%	22	9.82
Unassisted	38	15%	7	5.42
TOTAL	254	100%	29	8.76

Resource/Pollution Cases	Frequency of Turning Point Sequences	Percentage	Number of Cases	Per Case Average
Resource	158	62.2%	17	9.29
Pollution	83	32.7%	11	7.54
Both	13	5.1%	1	13
TOTAL	254	100%	29	8.76

Settlement/Advisory Cases	Frequency of Turning Point Sequences	Percentage	Number of Cases	Per Case Average
Settlement	186	85%	21	8.85
Advisory	68	15%	8	8.50
TOTAL	254	100%	29	8.76

Small/Large Cases	Frequency of Turning Point Sequences	Percentage	Number of Cases	Per Case Average
Small	140	55.1%	15	9.33
Large	114	44.9%	14	8.14
TOTAL	254	100%	29	8.76

Short/Long Cases	Frequency of Turning Point Sequences	Percentage	Number of Cases	Per Case Average
Short	146	57.5%	13	11.23
Long	108	42.5%	16	6.75
TOTAL	254	100%	29	8.76

The mean number of 8.76 turning point sequences across all cases and the results of the frequency analysis indicate that the mean for most types of cases tend to cluster around this figure. There are two exceptions, however, as follows:

- One type of case categorization that makes a difference is the distinction between assisted and unassisted negotiations. While the mean for assisted cases is only slightly larger than the overall case mean, the mean number of turning point sequences for unassisted cases is considerably lower at 5.42.
- The other exception concerns the negotiation case duration. Long environmental negotiation cases tend to have a greater frequency of turning points per case, with a mean of 11.23 turning point sequences. Short negotiation cases have a much lower mean number of turning point sequences (6.75). Thus, there is a positive relationship between the duration of the negotiation and the number of turning point sequences.²⁵

CROSSTABULATIONS: Results for crosstabulations of all turning point sequence elements and different case types with significant *chi square* test results are presented in APPENDIX F. Cross tabulation and the *chi square* test were not necessary to test the only research hypothesis (H11) for case-related factors. Other significant results are presented below.

Crosstabulating internal/external precipitant roles and assisted/unassisted negotiation cases shows that for both assisted and unassisted negotiations, internal

²⁵ There is also a potential relationship between the frequency of turning points and the case chronology material used for content analysis. Using the length of pages for each case chronology as a crude measure of the density of its content and conducting a Pearson correlation, the correlation coefficient for number of pages and number of turning points is 0.66 and is significant at the 0.01 level. Conducting the same analysis on duration in months and number of turning points, the correlation coefficient is 0.47 and is significant at the 0.05 level. Curiously, the relationship between duration in months and number of pages is not significant using the Pearson correlation.

precipitant roles occur more frequently than external precipitant roles. External precipitant roles are significantly more likely to be involved in assisted negotiation cases (35.2%) than unassisted negotiation cases (5.3%). This result is not surprising given that assisted cases by definition are those in which a neutral third party (i.e., an external role) is involved. These results are statistically significant based on the *chi square* test ($X^2=19.798$, $df=2$, $p=0.000$).

The crosstabulation of more/less abrupt turning points and assisted/unassisted cases shows that more abrupt turning points are more frequent than less abrupt turning points in both types of case. More abrupt turning points occur significantly more frequently, however, in unassisted negotiation cases (84.2%) than in assisted negotiation cases (63.0%). These results are statistically significant based on the *chi square* test ($X^2=6.515$, $df=1$, $p=0.011$).

Crosstabulating procedural/substantive consequences and assisted/unassisted negotiation cases demonstrates that procedural consequences are significantly more likely (55.1%) than substantive consequences (42.1%) to occur in assisted negotiations. For unassisted negotiations, the situation is reversed: substantive consequences are significantly more likely (47.4%) to occur than procedural consequences (34.2%). These results are statistically significant based on the *chi square* test ($X^2=18.369$, $df=2$, $p=0.000$). These results are consistent with the earlier finding concerning the relationship between neutral third party roles and procedural precipitants.

One crosstabulation with resource/pollution cases provided statistically significant results. While internal precipitant roles are more likely than external precipitant roles to

precipitate turning points in both resource and pollution cases, internal roles occur significantly more often in pollution cases (75.9%) than in resource cases (48.1%). These results are statistically significant based on the *chi square* test ($X^2=24.574$, $df=4$, $p=0.000$).

Crosstabulations with advisory/settlement cases produced three statistically significant results. One is that for negotiations in which advisory agreements are reached, external roles are more likely (42.6%) than internal roles (36.8%) to precipitate turning points. For settlement negotiations the situation is reversed – in those cases, internal roles are more likely (67.7%) than external roles (26.3%) to precipitate turning points. These results are significant using the *chi square* test ($X^2=23.242$, $df=2$, $p=0.000$).

A second finding related to advisory/settlement cases is that although more abrupt turning points occur more frequently than less abrupt turning points in both negotiations that lead to advisory agreements and those that lead to settlement agreements, more abrupt turning points are significantly more common in settlement negotiations (69.9%) than in advisory agreement negotiations (55.9%). The *chi square* test ($X^2=4.364$, $df=1$, $p=0.037$) shows these results to be statistically significant.

The third finding, from the crosstabulation of advisory/settlement agreement cases with toward/away from agreement consequences, shows that both advisory agreement and settlement agreement cases have a greater proportion of toward agreement consequences compared to away from agreement consequences. It also shows that advisory agreement cases are significantly more likely to have toward agreement

consequences (92.6%) than are settlement agreement cases (79.6%). The *chi square* test ($X^2=6.055$, $df=1$, $p=0.014$) shows these results to be statistically significant.

A final crosstabulation shows the relationship between the duration of the negotiation and internal/external roles. Internal roles are more likely than external roles to precipitate turning points in both long and short negotiations. Internal roles, however, are significantly more common as turning point precipitators in long negotiations (67.1%) than in short negotiations (49.1%). In short negotiations, the frequencies of internal and external roles are more balanced (49.1% and 42.6%), respectively. These results are statistically significant using the *chi square* test ($X^2=12.478$, $df=2$, $p=0.002$).

ANOVA: A univariate ANOVA (see APPENDIX G) was used to test the second hypothesis (H11) that neutral third party precipitant roles are more common than other precipitant roles in shorter environmental negotiation cases. It shows that the mean duration of the negotiation in months is very similar for neutral third party, negotiating party, and other role precipitants (15.8, 13.98, and 14.03, respectively), whereas the mean for enforcer role precipitants is significantly lower (7.33). This result indicates that enforcer roles are more likely to be associated with shorter duration negotiations than other roles and suggests that they may be more effective than other roles at producing a quick agreement. Therefore, the evidence does not support the hypothesis (H11).

REPEATED MEASURES ANOVA: The repeated measures ANOVA procedure was used for all case types and all variables in the research framework. Only one statistically significant result was produced (see APPENDIX H). For the cases categorized as either advisory agreements or settlement agreements, there is significant

interactive effect between group and time (thirds) for procedural/substantive consequences. Advisory agreement cases have significantly more substantive consequences in the second interval than settlement negotiations, though they both begin with a higher proportion of procedural consequences in the first interval and end with a higher proportion of substantive consequences in the third interval. Apart from this result the negotiation dynamics over three intervals does not differ among the different types of environmental negotiation cases.

SUMMARY: Analysis of factors related to environmental negotiation cases and the variables in the research framework produced a number of significant results. They are summarized as follows:

- Assisted vs. Unassisted Cases – Unassisted negotiation cases tend to have a lower number of turning points than both assisted negotiation cases and all cases. External precipitant roles occur more often and procedural consequences are more common than substantive consequences in assisted negotiation cases compared to unassisted negotiation cases. Unassisted negotiation cases have a greater frequency of more abrupt turning points than in assisted negotiation cases and are also more likely to have substantive consequences than procedural consequences compared to assisted negotiations.
- Natural Resources vs. Pollution Cases – Precipitants associated with internal roles occur more often in pollution cases than in resource cases.

- **Advisory vs. Settlement Cases** – Advisory agreement cases are more likely than settlement agreement cases to have toward agreement consequences. External roles are more likely than internal roles to precipitate turning points in advisory cases and the reverse is true for settlement cases. More abrupt turning points occur more frequently in settlement negotiations than in advisory cases. Comparing advisory and settlement cases produced the only finding related to changes in the negotiation over time, showing that advisory and settlement negotiations differ in the middle with respect to substantive and procedural consequences. Advisory cases are more likely than settlement cases to have substantive consequences in the middle part of the negotiation. These findings about advisory and settlement negotiations suggest that negotiations where recommendations are the goal may be superior to settlement cases in terms of minimizing sudden change in the process and producing movement toward agreement. Involving external roles in advisory cases would seem to contribute to these benefits.
- **Duration of the Negotiation** – There is a positive relationship between the duration of the negotiation and the number of turning point sequences. Enforcer roles are more likely to be associated with shorter duration negotiation than other roles.

There were no statistically significant findings related to the number of parties in a negotiation.

4. SUMMARY OF ALL RESULTS

The three preceding sections described the significant findings from this study in the three areas of inquiry related to negotiation dynamics in general, the impact of precipitant roles on negotiation dynamics, and the relationship between different types of cases and the variables in the research framework. This chapter concludes by summarizing the findings, which will be discussed in the next chapter.

The evidence supports six hypotheses of the eleven hypotheses proposed:

- H1: Toward agreement consequences are more frequent than away from agreement consequences in environmental negotiations;
- H3: Procedural precipitants are more likely than substantive precipitants to occur at the beginning of an environmental negotiation;
- H4: Procedural consequences are more likely than substantive consequences to occur at the beginning of an environmental negotiation;
- H5: Internal precipitant roles are more common than external precipitant roles in environmental negotiations;
- H6: External precipitant roles are more likely to be associated with more abrupt rather than less abrupt turning points in environmental negotiations; and
- H8: Neutral third parties are more likely than other external precipitant roles to precipitate turning points in environmental negotiations.

The evidence from this study does not support the following hypotheses:

- H2: More abrupt turning points are more common than less abrupt turning points following substantive precipitants in environmental negotiations (the proportion of more to less abrupt turning points was approximately equal for both procedural and substantive precipitants);
- H7: External precipitant roles are more likely than internal precipitant roles to be responsible for away from agreement consequences in environmental negotiations (the opposite is true for these cases);
- H9: Neutral third parties are more likely than other precipitant roles to be associated with procedural precipitants of turning points than substantive precipitants in environmental negotiations (neutral third parties are indeed more likely to be associated with procedural precipitants than substantive precipitants; however, this is also true for the enforcer role);
- H10: Neutral third parties are more likely than other precipitant roles to precipitate turning points that lead to toward agreement consequences in environmental negotiations (from a statistical perspective, neutral third parties are as likely as other roles to precipitate toward agreement consequences); and
- H11: Neutral third party precipitant roles are more common than other precipitant roles in shorter environmental negotiation cases (only the enforcer role was found to be associated with shorter duration negotiations).

These findings about the research hypotheses, together with other evidence from the study, suggest the following conclusions about the dynamics of environmental negotiations with respect to turning points and the associated variables in the research framework:

- Turning Points – The number of turning points covaries with the duration of the negotiation. Unassisted negotiation cases tend to have a lower number of turning points than both assisted negotiation cases and all cases.
- Procedural/Substantive Precipitants – The precipitants of turning points are equally likely to have procedural or substantive elements. The first turning point in a negotiation tends to be precipitated overwhelmingly by a procedural event or behavior. Procedural precipitants are also generally more common in the first third of the negotiation process. The last turning point tends to be precipitated by a substantive event or behavior. Substantive precipitants are generally more common in the final third of the negotiation process.
- Precipitant Roles - Internal roles, such as negotiating parties and their advocates, are much more likely to precipitate turning points than external roles, including neutral third parties, enforcers, researchers, and others. External roles are more common precipitants of first turning points than internal roles. The former also tend to be more common than the latter during the beginning (first third) of the negotiation compared to the middle (second third). Internal roles are more common precipitants of last turning points than external roles. External precipitant roles occur much more often in assisted

negotiation cases compared to unassisted negotiation cases. Precipitants associated with internal roles occur more often in pollution cases than in resource cases. External roles are more likely than internal roles to precipitate turning points in advisory cases and the reverse is true for settlement cases. Among all precipitant roles, the negotiating parties most frequently precipitate turning points. Neutral third parties precipitate turning points more often than any other external role. Enforcer roles are more common in shorter negotiations than other external and internal roles, which tend to be more common in longer negotiations. The numerous findings related to precipitant roles are summarized in Table 20.

- More/Less Abrupt Turning Points - More abrupt turning points are about twice as likely to occur than less abrupt turning points. The end of a negotiation (final third) tends to have a greater frequency of more abrupt turning points than less abrupt turning points compared to the beginning (first third) and middle (second third). Unassisted negotiation cases have a greater frequency of more abrupt turning points than in assisted negotiation cases. More abrupt turning points occur more frequently in settlement negotiations than in advisory cases. Advisory agreement cases are more likely than settlement agreement cases to have toward agreement consequences.
- Procedural/Substantive Consequences - Procedural consequences are somewhat more frequent than substantive consequences. The end of a negotiation (final third) tends to have more substantive consequences than the

Table 20: SUMMARY OF PRECIPITANT ROLE FINDINGS

Precipitant Role	All Cases/General	Dynamics	Specific Case Types
Internal	<ul style="list-style-type: none"> • More likely than external roles to precipitate turning points • More likely to be associated with substantive precipitants than procedural precipitants 	<ul style="list-style-type: none"> • More common than external roles in final turning points 	<ul style="list-style-type: none"> • More common than external roles in settlement cases • More common in pollution cases than in resource cases • Less common than external roles in advisory cases
External	<ul style="list-style-type: none"> • Less likely than internal roles to precipitate turning points • More likely than internal roles to precipitate toward agreement consequences • More likely to be associated with procedural precipitants than substantive precipitants 	<ul style="list-style-type: none"> • More common than internal roles in first turning points • More common in the first interval of turning points than the second interval 	<ul style="list-style-type: none"> • More common in assisted negotiations than in unassisted negotiations • Less common than internal roles in settlement cases • More common than internal roles in advisory cases
Parties	<ul style="list-style-type: none"> • Most frequent precipitant of turning points 		
Neutral Third Parties	<ul style="list-style-type: none"> • Most common external precipitant of turning points • More likely to be associated with procedural precipitants than substantive precipitants 		
Enforcers	<ul style="list-style-type: none"> • More likely to be associated with procedural precipitants than substantive precipitants 		<ul style="list-style-type: none"> • More likely to be associated with shorter negotiations than other roles

beginning (first third) and middle (second third) of a negotiation. Unassisted negotiations are more likely to have substantive consequences than procedural consequences compared to assisted negotiations. Advisory cases are more likely than settlement cases to have substantive consequences in the middle part (second third) of the negotiation.

- Toward/Away From Agreement Consequences - Toward agreement consequences are more than four times as likely as away from agreement consequences. The end (final third) of a negotiation shows more movement toward agreement than the middle (second third) of a negotiation.

Several relationships among the turning point variables were revealed, including:

- Relationship Between Procedural/Substantive Precipitants and Procedural/Substantive Consequences - Procedural precipitants tend to be associated with procedural consequences and substantive precipitants tend to precede substantive consequences. Procedural precipitants are more likely than substantive precipitants to be associated with toward agreement consequences.
- Relationship Between Precipitant Roles and Procedural/Substantive Precipitants - Both neutral third parties and enforcers, as well as external roles collectively, are more likely to be associated with procedural precipitants than with substantive precipitants. The situation is reversed for negotiating parties, and internal roles collectively, which are more likely to be associated with substantive precipitants.

- Relationship Between Precipitant Roles and Toward/Away From Agreement Consequences - Neutral third parties, enforcers, and negotiating parties are equally likely to precipitate turning points with toward agreement consequences; however, external precipitant roles collectively are somewhat more likely than internal precipitant roles to precipitate turning points with toward agreement consequences.

VI. DISCUSSION AND FUTURE DIRECTIONS

This study sits at the intersection of the turning points in negotiation framework, an analytical approach to the process of negotiation, and environmental negotiation, a field of practice, as well as their respective bodies of literature. It is therefore appropriate to discuss the findings as they relate to those two contexts and identify potential implications for each. In addition, this section describes the limitations of the study, as well as directions for possible future research.

A. REFLECTIONS ON THE TURNING POINTS FRAMEWORK

Reflecting on this study's findings and their potential relevance to the body of turning points research, it is appropriate to discuss what the project may contribute to the literature. It is also useful to compare the findings directly to those of previous work. Both of these topics are addressed in the sections that follow.

1. CONTRIBUTIONS TO TURNING POINTS RESEARCH

This is the first study to apply a turning points framework to environmental negotiation. In addition the study extends the application to a new type of negotiation

and furthers an argument for its broad utility in analyzing the dynamics of negotiations. The research has also advanced the development of the framework by incorporating a more detailed typology of precipitant roles, by recognizing that all precipitant roles (whether internal or external to the negotiation) can be associated with procedural and substantive precipitants, and by adding the concept of procedural and substantive consequences. This methodological contribution is likely applicable to other types of negotiation as well.

Another significant contribution of this study is the identification of a typical pattern of process change in environmental negotiations. By dividing a negotiation conceptually into three periods of change, it is possible to see how the relative proportions of procedural/substantive precipitants, precipitant roles, more/less abrupt turning points, procedural/substantive consequences, and toward/away from agreement consequences vary over time.

The typical pattern of process change reveals a contrast between the first and last period of change – in effect the beginning and end of the negotiation – that is particularly interesting. The beginning of the negotiation is characterized by a greater role for external actors than they have later in the negotiation. These actors tend to be making procedural moves more often than substantive moves. These moves tend to produce a slightly greater frequency of less abrupt turning points than occur later in the negotiation. They also prompt a greater proportion of procedural consequences. This pattern of dynamics suggests prescriptions for practice. It is also likely consistent with practitioner experience that the beginning of a negotiation involves addressing procedural issues and

tasks such as determining what type of negotiation process to use, establishing groundrules, and selecting a mediator for assisted negotiation.

The third interval of change – the end of the negotiation – is characterized by a shift to a greater proportion of internal precipitant roles, more substantive moves and consequences, a greater proportion of more abrupt turning points, and more toward agreement consequences. These changes are very logical and are likely related to the end game of reaching agreement. The parties must engage at a greater frequency to address the substantive issues (i.e., substantive precipitants with substantive consequences) before an agreement addressing those issues can be reached. More abrupt turning points and more toward agreement consequences are indicative of the draft and interim agreements that are usually necessary to pave the way to a final agreement.

Another dynamic that is very consistent with the typical pattern described above is what happens with the first and last turning points. The first turning point more often features external roles precipitating turning points with procedural actions, whereas the last turning point usually has internal actors precipitating the turning point with substantive moves. These turning points provide the boundaries for the negotiation process. In the case of the first turning point in particular, these results demonstrate the utility of having an actor external to the negotiation intervene to influence the conditions for negotiation, prompting the parties to consider or begin the process.

2. COMPARISON TO EARLIER RESEARCH

Given the successful application of the adapted turning points framework to environmental negotiations and previous application of a similar framework to other types of negotiations, it is useful to compare and contrast the results of this study to those of earlier research. Of particular interest is a comparison between Druckman's (2001) analyses of turning points in international negotiations and domestic labor-management negotiations. Like the present research, this earlier study compared a large number of negotiation cases. Common themes and differences are discussed below.

Druckman's (2001) earlier findings suggested several hypotheses that were tested in this study. In crafting the related hypotheses, one of the operating assumptions was that environmental negotiations would probably most resemble international political negotiations (among all types of international negotiations) from a substantive point of view. This was due to the fact that some of the international political negotiations involved environmental issues.

Concerning the parties' movement toward or away from agreement during the process, Druckman (2001) found opposite results for international and labor negotiations. For the international negotiations, movement toward agreement was typical. For the labor negotiations, parties tended to move away from agreement more often. His explanation for this difference between the two types of negotiation was that there are economic incentives in the labor negotiations for both parties to prolong negotiations as much as possible, incentives that generally do not exist in international negotiations.

In this study, toward agreement consequences were considerably more common than away from agreement consequences, a result more consistent with that for the international negotiations in the earlier study. Here too it is likely the case that at least some parties to environmental negotiations lack the incentives to prolong the negotiation, though it is not necessarily the case that all parties in a given case are equally motivated in this regard.

Examples of different types of parties and their incentives help to illustrate the point. In some situations a business or development party may want or need an agreement to provide certainty from an operational or economic perspective. In others that same entity might benefit from a delay, if the likelihood is great that an agreement would bring significantly greater costs than the expense of continuing to participate in a negotiation without reaching a resolution.

For governmental entities, the incentives to prolong a negotiation can turn on both economic and political concerns. When a government agency is a regulated entity (e.g., an owner of a landfill), their situational incentives will likely resemble those of a comparable industry party. As a regulatory agency, there is a tendency for government agencies to use negotiation as a way of reaching a solution more efficiently than is possible through other decision-making processes and thus a desire to limit the expense of the negotiation as well; however, political motivations of elected or appointed officials could argue for using negotiation as a delay tactic in some circumstances.

For proponents of environmental interests, as Amy (1987) points out, negotiation can be a more expensive approach than other options, such as litigation. While it

possible that parties with such interests might seek to delay an inevitable outcome through negotiation, they are likely to find it more cost-effective to pursue such delay through other forums. In general, environmental interests involved in a negotiation will want to get to a resolution quickly for both cost reasons as well as to ensure as rapid an improvement for the environment as possible.

Perhaps the more general point to make about incentives (or disincentives) related to prolonging an environmental negotiation is that there is likely to be at least one party who has an interest in moving toward agreement. The presence of one or more such parties will set the stage for offers and concessions to be made that will be seen as favorable by other participants. In addition, it should be noted that all of the environmental negotiations in this study reached agreement. Given the other options available to the parties, they probably would not have entered into these negotiations unless they thought agreement was possible and desirable. In structural terms, environmental negotiations are thus more like international negotiations, where negotiating is also usually optional, and less like labor negotiations, where the process is prescribed through collective bargaining agreements and where alternatives, such as a strike, are far more costly to all parties than delay in a negotiation.

Another set of comparisons between the two studies relates to precipitant roles. Druckman (2001) found that external actors were more likely than internal actors to precipitate more abrupt turning points and that external actors were responsible for more than half the away from agreement consequences across all international negotiation cases. External actors are responsible for a greater frequency of more abrupt turning

points in environmental negotiations; however, they are more likely than internal actors to precipitate toward agreement consequences.

The association between more abrupt turning points and external roles in both types of case may reflect the types of actions that external roles typically can take in a negotiation and susceptibility to change in the parties' interaction resulting from such actions. Considering the less abrupt turning points is instructive, because of different actors' relative ability to precipitate them. Less abrupt turning points are by definition relatively minor, as in changes to the substantive terms of the negotiation, or relatively predictable, as in changes from one phase of the negotiation to another. Both types of change are well under the control of the negotiating parties. The latter can happen often without significant intervention by outsiders. External actors are likely to be too removed substantively to impact the former type of minor change. In other words, since the parties ultimately have to come to an agreement (if one is to be reached), they are best placed to understand and address the details of the substance.

The connection between external roles and toward agreement consequences in environmental negotiations seems straightforward in light of the types of actors that play external precipitant roles. Common external players are government agencies (usually with some authority for the environmental issues at stake), neutral third parties, and the courts. There are usually incentives for government agencies to take actions that motivate negotiating parties to reach agreement. For example, these entities may have convened an advisory negotiation explicitly for the purpose of finding a consensus solution and possibly avoiding the need to make a decision without stakeholder agreement. They may

also be facing costs because of delayed action or litigation and believe that a negotiated solution among the parties would help to minimize those costs. Neutral third parties similarly wish to see the parties reach agreement, because they have been invited to help serve that end. Courts also generally encourage settlement rather than the parties pursuing litigation. Moreover, and for the cases in this study in particular, the impact of a court is mostly likely to occur at the beginning of a negotiation in the form of an action that changes one or more parties' incentives in favor of negotiation. Once a negotiation is underway, it is usually considered inappropriate and counterproductive for parties to continue to pursue related litigation.

By contrast, in the international negotiation context, most external actors lack legal authority over the issues at stake and do not have the commensurate self-interest in the parties reaching agreement. Neutral third parties focused on the process of reaching agreements are a lot less common. Indeed, some external state and non-state actors may take an active role in attempting to derail negotiations they see as not furthering their interest through violence or diplomatic moves, for example.

Another finding related to roles is that both environmental negotiations and international political negotiations tend to have more internal precipitants than external precipitants. Under the operating assumption that these two case types have similarities from a substantive perspective, one possible explanation for tendency toward more internal precipitants is that while the issues are no doubt important to the negotiating parties, they may not be as relevant to those outside the negotiation. Put another way, actors with interests in a particular environmental or trade issue, for example, generally

have more to gain by engaging in a negotiation they care about – even if they do not reach or do not want to reach agreement – than sitting it out and attempting to impact the negotiation from outside. This logic may not hold true for security negotiations, where for some actors participation may be tantamount to recognizing the enemy and its interests and contrary to other deeply held positions. It may make more sense for such an actor to remain on the outside and actively work to scuttle the negotiation. Alternatively, a security negotiation may attract other kinds of external actors, such as superpowers or regional powers, which want to motivate the parties toward agreement, but may not be able to take a place directly at the negotiating table. Involving external parties in security negotiations can be attractive for the parties as well -- as Druckman (2001) notes, negotiators see significant risks in the outcome of security negotiations and may need external actors to assist them in getting an agreement.

Comparing the mean number of turning points in environmental negotiations (8.76), international negotiations (3.3), and labor negotiations (9), produces a difference and a similarity. The means for the two types of domestic negotiation are very close and they both differ significantly from the international negotiation. What could account for the difference in the pace of change between domestic and international negotiations?

Assuming that the differences in these findings are not due to something so mundane as differences in the level of detail in the source material one candidate explanation could lie in party representation and negotiator authority. In the environmental negotiations studied here, the individuals at the table were either the parties themselves or tended to represent a relatively small, well-defined group interest.

They also generally had the authority to make decisions for their party or could access decision makers expeditiously. These factors are also likely to be true for labor negotiators, because unions tend to have fairly hierarchical structures and reserve broader input for a final vote of the membership, and companies represent themselves directly. These conditions are less likely to hold true for international negotiations, however, which by definition involve multiple state (and non-state) actors, large international and national bureaucracies with a wide variety of decision making processes and needs for internal consultation. It is probably the exception that international negotiators are individually empowered to make decisions for their party without significant consultation.

The differences in representation-authority structure, of course, have consequences. Negotiators without complicated representational and authority arrangements can engage more frequently and make decisions more rapidly (including decisions that precipitate turning points) than those who must consult with others before making a move. Thus the typical environmental negotiator directly representing his/her party's interest can surface a proposal as he or she sees fit and as often as necessary, whereas the typical international negotiator may have to consult with a variety of constituencies before making a proposal or accepting an offer. One hypothesis, and potential subject for additional research, is that negotiations may include more turning points because parties have the ability to make changes more often, being relatively unconstrained by a complex representational structure.

The preceding comparison between the present study and Druckman's (2001) analysis of international and labor negotiations reveals both similarities and differences between environmental negotiations and the other types of negotiation. Environmental and international negotiations share a tendency for more toward agreement consequences and a relationship between external role precipitants and more abrupt turning points. The former similarity may be due to the optional nature of both types of negotiation for the parties and the latter due to external actors' relatively greater ability to precipitate major rather than minor process changes. Both international political negotiations and environmental negotiations also tend to have more internal precipitants than external precipitants, perhaps because actors will usually engage directly as negotiating parties or stay on the sidelines.

An area where environmental and international negotiations seem to differ is on the number of turning points in a negotiation, which is higher in environmental negotiations. This difference in the frequency of change could be attributable to the environmental negotiators' greater authority to take actions that precipitate turning points. Another area of difference concerns external actors' tendency to precipitate movement toward agreement in environmental negotiations, while they promote movement away from agreement in international negotiations. A possible explanation is that external actors in environmental negotiations often have incentives to take actions that can move the parties toward agreement.

With respect to comparing environmental and labor negotiations, the discussion above reveals one similarity and one difference. The two types of negotiation are similar

in the level of process change -- as reflected in the average number of turning points -- which could be due to the negotiators' ability to take more frequent precipitating actions without consulting others. They are different in that progress tends to be toward agreement in environmental negotiations and away from agreement in labor negotiations, possibly because of the parties' varying incentives to reach agreement in these situations.

B. IMPLICATIONS FOR THE PRACTICE OF ENVIRONMENTAL NEGOTIATION

As probably the first study to address environmental negotiations as a dynamic phenomenon and provide evidence for typical patterns of turning point sequences, both overall and for certain types of cases, the findings may have implications for practice. Two sets of implications are purely practical. The first relates to managing the expectations of prospective and actual participants in these negotiations. The second involves possible guidance on how those involved in an environmental negotiation may take steps to move negotiators toward agreement. A third set of implications is more conceptual and concerns ideas about environmental negotiation itself. The latter may also raise questions about the roles of various intervenors in these situations, particularly neutral third parties.

1. MANAGING EXPECTATIONS

Identifying a typical profile for environmental negotiations provides information that can be used to help manage the expectations of those involved in actual situations. For example, a common situation is an internal or external actor who is impatient with the pace of progress in a negotiation. For these individuals, knowing what typically occurs based on evidence may help to ease their concerns. More generally, information about common patterns in environmental negotiation may assist all participants in preparing appropriately for different phases of the negotiation.

Some caveats to this apparent utility are warranted. One is that acting on counsel about the typical pattern of negotiations could become a self-fulfilling prophecy, prompting behavior that may or may not be appropriate in the specific circumstances. For that reason, it is best to couch such advice in terms of tendencies or what is typical rather than absolutes. A second caution is that the evidence presented only reflects environmental negotiations in which an agreement was reached. Unsuccessful negotiations could follow a different pattern and parties, of course, would not know at the outset whether they will reach agreement or not. Having articulated these appropriate concerns, there are several typical expectations for environmental negotiations that may be offered as advice to prospective or actual participants.

One expectation is very hopeful. In successful negotiations, more frequent movement toward agreement is more common than movement away from agreement. It may be psychologically easier for parties who are considering a negotiation or facing an

obstacle once negotiation has begun to know that the trend is usually quite positive. Overall the experience of participating in an environmental negotiation should be favorable despite the occasional dark moment when parties move away from agreement.

Another positive statement for parties is that they truly do own the negotiation process. They are much more likely than other roles to create changes in the process. For those who fear a loss of control -- a fairly common concern expressed among those considering assisted negotiation in particular -- this should be a comfort.

Participants should also expect big changes to be more common than little changes in the negotiation. Most often these will be positive, but sometimes they will reflect movement away from agreement.

There are also important expectations concerning changes in the negotiation process over time. One is that the behaviors and events prompting changes, as well as their consequences, tend to be procedural at the beginning of a negotiation. While it is not uncommon for a party or observer to be frustrated by the lack of substantive progress at the beginning, a focus on process at that time is the norm.

Some participants may also be concerned about the lack of significant changes at the beginning of a negotiation, since more abrupt change is more common at the end. This argues for additional patience at the start of a negotiation. When parties begin to see more abrupt change occurring and more frequent movement toward agreement, it is possible that the end of the negotiation is getting closer and participants should plan accordingly.

In summary, the results of this study provide information that can be used to help manage the expectations of negotiation participants. With appropriate cautions that these findings are typical but not predictive, they suggest a positive experience for parties and reasons to encourage patience at the beginning of a negotiation.

2. PRECIPITATING CHANGE AND AGREEMENTS IN ENVIRONMENTAL NEGOTIATIONS

Beyond helping to set expectations for potential or actual participants in environmental negotiations, the evidence from this study suggests possible interventions to initiate negotiations or move parties toward agreement. Recommendations for generally applicable interventions as well as those related to specific types of environmental negotiations are described below. None of these suggestions are absolutes but do provide potentially useful guidance based on the evidence.

Environmental negotiations tend to begin as a result of procedural precipitants and external actors. Those who are interested in initiating an environmental negotiation on a particular set of issues should seriously consider identifying an appropriate external actor and engage them in making a procedural move to prompt that initial change in the dynamics among the parties. The combination of external actors and procedural moves should continue to be emphasized in the first part of the negotiation, after which the parties making substantive moves should have greater emphasis.

During the negotiation process, the choice of procedural or substantive moves seems to be important. Procedural moves are particularly likely to lead to procedural results and substantive moves tend to prompt substantive results, so one can to some extent guide the type of result by choosing the appropriate type of precipitant. Procedural moves also tend to precipitate movement toward agreement more often than substantive moves. When in need of progress toward agreement or to reverse a trend away from agreement, the best advice is to make a procedural move.

The results of this study may suggest advice for the practice of negotiation relevant to different intervention roles. One is that it is generally appropriate to encourage parties to take a leading role in a negotiation because they are likely to precipitate most of the change in dynamics and most often will do so in a positive way. Actors in other roles, such as neutral third parties and enforcers, may work indirectly through individual parties by providing advice and suggestions that the parties can choose whether or not to implement.

Other role-based recommendations concern external actors. Those in external roles should be aware that their actions tend to lead to more abrupt changes in the dynamics of a negotiation and should carefully weigh the desirability of an abrupt change when deciding whether or not to intervene. Fortunately for those seeking agreements, external roles are also more likely than internal roles to produce toward agreement consequences. Thus engaging an external actor to precipitate change in a negotiation may be a useful choice if forward movement is desired.

Certain types of interventions may impact the duration of the negotiation. For example, the finding that more abrupt turning points tend to occur more often just prior to agreement being reached may suggest an opportunity to prompt a final agreement sooner by precipitating such change. Another possible way to shorten the duration of a negotiation is to involve an enforcer role, because shorter negotiations are associated with a greater level of enforcer intervention (although the cause and effect is not clear in this relationship). There may be reasons, however, why interventions intended to affect duration are not desirable, so such moves should be exercised with caution. Among them are a possible psychological need for the process to take a certain amount of time and the unknown effect on the quality of the agreement as a result of intervention by different types of roles.

A final set of possible prescriptions for practice concerns the relationship between negotiation dynamics and the type of process. Negotiations tend to show more gradual changes in the dynamics (i.e., a relatively greater proportion of less abrupt turning points) when a neutral third party is involved and when the goal is to reach an advisory agreement. The opposite is true for unassisted and settlement agreement processes. To the extent that a certain pattern of negotiation dynamics is desired – for example following a period of intense conflict on an issue – decision makers should take these options into consideration.

Two findings about advisory agreement negotiations deserve attention. One is that these processes tend to feature more toward agreement consequences than settlement negotiations. While the situation may not always allow for a choice between the two,

advisory processes can be preferable if an overall climate of agreement is desirable. This finding may also reflect highly on advisory processes as an alternative to not using negotiation at all.

A second result about advisory negotiations relevant to practice is that enforcers are more common precipitants of change in these processes. Normally the enforcer role in such situations will be filled by the government agency responsible for the particular issue, which convenes and provides support for the negotiation. The evidence from this study suggests that these agencies need to actively engage in impacting the dynamics of an advisory negotiation for it to be successful.

3. NEUTRAL THIRD PARTIES AND OTHER EXTERNAL ROLES

Perhaps the most surprising findings from a practice standpoint concern the roles of the various participants in environmental negotiation cases. As the literature review in Chapter II suggests, much of the research and practice literature in this domain emphasizes the role that neutral third parties, including mediators and facilitators, can play in assisting the primary parties to an environmental negotiation in reaching agreement. A single study should not by itself be cause to change that orientation, yet findings that the behavior of neutral third parties is no more likely than those in other roles to move parties toward agreement and that neutral third parties are associated with longer duration negotiations appear to be at odds with some aspects of the literature concerning this role.

There are many possible ways that neutral third parties could have still have important roles in environmental negotiations, despite the findings in this study, including:

- Some periods in a negotiation may be particularly challenging and require a neutral third party's involvement to precipitate a turning point;
- Case characteristics beyond those considered in this study may require the involvement of neutral third party to precipitate turning points;
- The mere presence of a neutral third party or his/her indirect actions in an environmental negotiation (e.g., making suggestions to others who can then choose whether or not to take an action) may allow others to precipitate turning points more effectively; or
- There is some impact of neutral third party involvement unrelated to negotiation dynamics.

Of these possible explanations, the research framework and data generated allow for a preliminary test of the idea that some periods of negotiation may require the intervention of a neutral third party to precipitate a turning point. One candidate for such a challenging period of negotiation in the current data set is the first turning point, where the parties move from a state of not negotiating or adversarial relations to considering or initiating negotiation. Revisiting the analysis of first turning points, the results already show that external roles are more commonly associated with these turning points, but also that neutral third parties are no more likely than other roles to be the precipitants of the first turning point.

A second candidate for a potentially challenging situation is any turning point sequence with an away from agreement consequence that is followed by a turning point sequence with a toward agreement consequence. The shift in a negotiation from an away from agreement trajectory to a toward agreement trajectory is arguably a difficult shift to precipitate and is a particular kind of turning point. To assess this second type of challenging situation using this study's data set, it is a relatively straightforward matter of isolating the turning point sequences that follow a period of away from agreement consequences and counting the frequency of precipitants associated with the different roles. It is also most appropriate to limit this analysis to the cases that are known to have been assisted negotiations, because neutral third parties were not involved in the unassisted negotiations and could have not have played a role in those cases.

Seventeen cases had a total of 31 turning point sequences with away from agreement consequences that are followed by turning point sequences with toward agreement consequences. The resulting frequency distribution of precipitant roles for these turning point sequences (n=31) is presented in Table 21:

Table 21: FREQUENCY OF PRECIPITANT ROLES FOR TOWARD AGREEMENT TURNING POINTS FOLLOWING AWAY FROM AGREEMENT TURNING POINTS

Precipitant Role	Frequency	Percentage
Neutral Third Party	12	39%
Party	8	26%
Enforcers	7	23%
Advocates	2	6%
Multiple	2	6%
TOTAL	31	100%

This frequency distribution shows that neutral third parties do indeed precipitate toward agreement consequences following a period of away from agreement consequences more often than any other role and they did so in 9 of the 17 cases where this type of situation existed. This suggests the possibility that something about the neutral third party role makes it easier for mediators and facilitators to precipitate this type of turning point. Moreover, when the neutral third party role is combined with the enforcer role and these are compared with the aggregated internal roles (parties and advocates), the external role precipitants are almost double the internal role precipitants. The comparison of aggregated roles thus suggests an alternative explanation that actors in these roles have one or more characteristics as outsiders to the negotiation that make it easier for them to abruptly help reverse the course of a negotiation headed away from agreement. Interestingly, this conclusion is consistent with another finding from Druckman's (2001) analysis of turning points in international negotiations that most of the reversals from away from agreement consequences were precipitated by external actors in security cases (though it was the opposite for trade and political cases).

Conceptually, the collective findings in this study about the role of neutral third parties, enforcers, and external roles more generally are worthy of attention. They do suggest some particular situations in which actors in either a neutral third party or enforcer role might be able to bring about change. The larger point, however, is that these roles are all outside the negotiators themselves.

In his critique of the mediation field and call for a broader understanding of third party practice beyond the concept of neutrality that so many support, Mayer (2004) reminds the field that third parties with power are often very successful in assisting negotiators in reaching resolution. They are able to bring clout in a variety of ways to a situation that makes a difference to the outcome. Neutrality is not the only way to move a negotiation forward. Reflecting on his observations, it is perhaps the position of externality (in its many forms) that best enables certain actors to intervene and precipitate movement in an environmental negotiation.

In practical terms the concept of externality may help to explain the curious phenomenon that some government agencies with a direct interest in many environmental negotiations, such as the U.S. Environmental Protection Agency, employ individuals who claim to be neutral and intervene in such negotiations. As Tonkin (2001) phrases it, “‘Agency Neutral’ – it has the ring of a perfect oxymoron.” She goes on to argue that these individuals can indeed serve as neutral third parties, because of appropriate conflict of interest disclosures, confidentiality policies, voluntary nature of the negotiation, substantive and organizational expertise, and lack of a personal financial interest in providing assistance to the parties. In light of the findings in this study, the role that such

actors are playing may not be so surprising at all. Without detracting anything from these individuals' procedural skills or other attributes, what they share with independent neutral third parties is that they are external to the parties engaged in negotiation. Whether they are neutral, have clout associated with their employer, or even both, may matter less than the fact that they are outsiders.

C. LIMITATIONS OF THIS STUDY

Like all research, this study has important limitations. Threats to this study's internal and external validity are described below. In addition, reliability is important to the content analysis procedure and is considered in the context of threats to internal validity.

Internal validity concerns whether the concepts being measured are actually those intended (Druckman, 2005; Frankfort-Nachmias & Nachmias, 1992; Robson, 1993). In this study, threats to internal validity arise from multiple sources mostly in the context of the research methodology, particularly the use of case descriptions, development of case chronologies based on the case descriptions, and coding of the case chronologies into the data used for analysis. Each of these threats is discussed in turn.

The case descriptions for the 29 cases used in this study could impact internal validity for several reasons. First, they were taken from a range of different sources and originally created for a wide variety of different reasons. As a consequence, there is no editorial consistency among the descriptions and they emphasize material appropriate to

their purposes, not necessarily this research. Second, the procedures for developing the case descriptions are not always evident and may differ considerably among different sources. For example, some descriptions may have been generated primarily through interviews with participants; others may have depended heavily on secondary sources. Third, although each case description has one or a limited number of authors, the reader is dependent on what the author believed to be important in relating the story to the audience. Fourth, the case descriptions were generated retrospectively, and thus rely to some extent on the memories of those involved to accurately and completely recount the events and behaviors that occurred. All of these factors related might result in inconsistent or incomplete case descriptions that vary in terms of the emphasis that they place on certain types of events and behaviors and in what may be included or excluded from the narrative. While an effort was made in this study to select case descriptions based on a set of qualitative criteria expected to minimize these concerns, it was not possible to entirely eliminate these threats to internal validity.

The case chronology development process is another area where internal validity may be affected. Developing case chronologies is necessarily a selective procedure, involving the extraction of material from the case descriptions and placing them in sequential order. One area of concern relates to occasional need to infer information from the case descriptions where the description itself is incomplete. Another is the possibility that some material may have been inadvertently excluded from the case chronology. Although the text was used verbatim from the original case description in

most instances, some material was summarized, which could lead to a potential third concern.

A final set of internal validity issues involves the process of coding the case chronologies into the data used for analysis. Inherent to content analysis are threats to internal validity arising from the definitions used to identify recording units and categorize their components. Any room for interpretation in these definitions can lead different coders to make different coding judgments on the same material. As noted in the chapter on content analysis, the recording unit for this study, the turning point sequence, is of the latent type, meaning that it is subject to a significant degree of interpretation by the coder. This situation in content analysis increases the chances that different coders will reach different judgments on the same material in the coding process as well as the chances that the same coder may make different judgments with the same material at different points in time.

The standard approach to moderating threats to internal validity in content analysis is to conduct reliability testing (Druckman, 2005; Robson, 1993). The reliability testing process, as discussed in Chapter IV, produced different results for the two basic coding tasks, identifying the recording unit and categorizing the recording unit elements. For the categorization task, the two coders achieved a very high level of agreement both in independent coding and after revising their results where additional agreement through a discussion was possible. For the identification of the recording unit task, independent coding produced less than the expected level of agreement between the two coders (although there was some improvement in the last set of three cases). They were able to

raise the level of agreement as a result of dialogue and clarification. The discussion about the recording unit definitions also led to changes in the definitions that were applied in coding case chronologies that were not part of the reliability testing procedure. Reliability testing perhaps mitigated the threats to internal validity presented by content analysis, but it is reasonable to assume that some issues could remain concerning the identification and interpretation of turning point sequences.

External validity addresses whether the results of this research can be extended to other situations (Druckman, 2005; Frankfort-Nachmias & Nachmias, 1992; Robson, 1993). More specifically, the question is the extent to which these results are generalizable to other environmental negotiation cases or other types of negotiation. Beginning with the issue of whether these results might generalize to other types of negotiation, two reasons suggest a conclusion that they do not. One reason is that there may be fundamental differences between environmental negotiations and other negotiation types, for example, in terms of the situational context, actors, power relationships, and substance. The second and more concrete reason is that the comparison between this study and previous research in the turning points paradigm revealed differences between the studies in the relationship among turning point variables.

With respect to the issue of extending these results to other environmental negotiation cases, there are threats to external validity resulting from the case selection process. The entire population of environmental negotiation cases in the United States (or any other country, for that matter) is unknown. Moreover, even if the population

were known, it would be unlikely that adequate case descriptions would be available for the entire universe of cases. For these reasons, it was not possible to use a probability sample to select cases in this study and a purposive sample was utilized instead. As a consequence it is not clear how representative these cases would be of the entire population of environmental negotiation cases.

A second concern arising from the case selection process is that parties to all the environmental negotiations in the sample reached agreement. The pattern of elements in the turning point sequences for environmental negotiations and their distribution across time could be different in cases where agreement is not reached.

An additional concern about the representativeness of the sample may include the distribution of the negotiations in the dataset over time, as shown in Figure 3. The majority of the case descriptions are for environmental negotiations that took place more than 20 years ago, yet it is reasonable to argue that, given promotional efforts in both the public and private sector since that time, the frequency or types of environmental negotiation may have increased or changed in important ways.

Mitigating somewhat against concerns about external validity is the finding of no important differences in negotiation dynamics among different types of environmental negotiations using the repeated measures ANOVA. Because the different types of cases are substantially the same and the number of cases in the study is relatively large, it is likely that the identified pattern of negotiation dynamics for the elements of turning point sequences across three intervals would be relatively the same in a larger universe of cases. This finding supports the decision to sample robustly.

D. FUTURE DIRECTIONS AND CONCLUSION

Like earlier research, this study suggests opportunities for further research both using the turning points analytical approach and other approaches. In light of the unknown impact of the case selection process on generalizability of the results to other environmental negotiations, one obvious area of research would be to apply the method to an additional group of similar cases. For this to be effective, however, additional descriptive case studies would need to be identified or generated. This need is particularly acute for unassisted negotiation and for negotiations that did not end in agreement. It would also be interesting to investigate possible relationships between dynamics during the negotiation and the quality and subsequent implementation of agreements.

The modifications to the turning point framework, particularly the differentiation of intervention roles, may make it useful for application to other types of negotiation as well. For example, research using the adapted framework could be conducted on additional types of negotiations (e.g., corporate negotiations, negotiations among family members, crisis negotiations, other types of public policy negotiations) and perhaps even international negotiation to explore the interplay of different roles in negotiation dynamics.

Another opportunity is to explore use the turning points framework in a more experimental research methodology. One possible approach might be to create simulated negotiations based on the typical negotiation profile revealed through this research and test the impact of various intervention scenarios. Such an alternative research design may

help to overcome some of the problems associated with relying on retrospective case information. It would also provide the ability to triangulate the results from this study.

Beyond additional applications of the turning points framework, the field of environmental negotiation would benefit from certain types of research. One avenue would be to take a more nuanced approach to the variety of roles that can influence the process and outcome of environmental negotiations instead of assuming the central importance of neutral third parties. This could lead for example to more comparisons between assisted and unassisted negotiations on a wide range of dimensions, including process dynamics.

This research is likely the first to address the dynamics of environmental negotiations, the actors who impact these dynamics, and case-related factors. It also is intended to respond to the general lack of research on environmental negotiations and the emphasis in research and practice on the role of neutral third parties. An adapted turning points framework and content analysis procedure were used together with statistical analysis to analyze the turning points, their precipitants, and consequences. The findings from the analysis revealed a typical pattern of dynamics in environmental negotiation and significant relationships among a range of variables. These results suggest that the turning points framework is applicable in analyzing this type of negotiation and allows for comparison with previous research. They also suggest prescriptions for practice and implications for understanding the role of third party intervention in environmental negotiations.

Before concluding, it is worth reflecting on the relevance of turning points compared to other popular concepts in negotiation theory that provide alternative ways of understanding or explaining various aspects of negotiation. These alternative concepts typically fall into one of two categories.

One category features concepts that emphasize what happens at the beginning of a negotiation. The best alternative to a negotiated agreement or BATNA (Fisher, Ury, & Patton, 1991), for example, is essentially the negotiator's analysis, alone or assisted by others, to determine whether entering into a negotiation and reaching agreement offers the most benefits to the negotiator based on what they might accomplish outside the negotiation. A related concept is the zone of possible agreement or ZOPA (Lewicki, Minton, & Saunders, 1999), which is the range of overlap between the parties' respective BATNAs. A relatively large ZOPA increases the chances of the parties finding a solution that will meet both of their needs and argues for a negotiation. A small ZOPA suggests that parties should not negotiate or may make it much harder to reach agreement. A third negotiation initiation concept, mainly applicable to high conflict situations, is ripeness (Zartman, 2003). Ripeness is a condition in which the parties' costs of continuing to fight are too much to bear and they are ready to consider negotiating a solution to their conflict. BATNA, ZOPA, and ripeness are all perceptions formed in the minds of negotiators and require some triggering behavior (e.g., one party makes an offer to another) to translate them into the beginning of an actual negotiation.

The second category of popular concepts focuses on negotiation outcomes. Outcomes can be characterized as "win-win", where parties gain more than they

expected; “win-lose”, where one party gains more than expected and another does not; or “lose-lose”, where all parties gain less than expected (Burgess & Burgess, 1997; Covey, 1989; Spangler, 2003b). A similar set of ideas addresses outcomes less subjectively in terms of “sums”: “Positive sum” outcomes occur when parties generate more benefits than they had at the beginning of a negotiation; “zero sum” outcomes occur when one party gains and one party loses more than they had at the beginning, effectively resulting in no net gain; and “negative sum” outcomes occur when all parties collectively lose more than they had at the beginning (Burgess & Burgess, 1997; Spangler, 2003a). Compromise is another type of outcome in which all parties give up something that they might have wished to achieve. Each type of outcome generally presupposes a particular bargaining strategy. For example, negotiators who achieve a “win-win” outcome are presumed to have been using integrative bargaining to achieve that result.

Contrasting turning points with these other concepts, the turning points framework utilized in this study offers notable advantages. Not only does it provide a means of analyzing the beginning of a negotiation (e.g., the first turning point), but it complements concepts such as BATNA and ripeness by providing a means for identifying the precipitant that, in the context of participants’ appropriate perceptions, triggers that first turning point. Like the negotiation outcome concepts described above, it can be used to understand and explain a variety of outcomes; however, unlike those concepts, it does not presuppose a negotiation pattern to be appropriate or necessary for certain kinds of outcomes. More generally, the turning points framework accomplishes something that none of these other concepts achieve: it provides a systematic way of

analyzing the changes that occur in a negotiation and allows for relatively easy comparison among similar and different types of negotiation. For this reason, and as demonstrated in this dissertation, the turning points concept is likely to remain generative in conflict resolution research for some time to come.

APPENDIX A: SAMPLE ENVIRONMENTAL NEGOTIATION CASE
CHRONOLOGY

Eau Claire Dump Case Chronology (adapted from Talbot (1983))

DATE	EVENT	CODE
1967	Wisconsin Department of Natural Resources is formed from the Department of Resource Development and the Conservation Department. The Public Intervenor, an arm of the WI State Attorney General's Office, is established as an independent legal office to assure that the DNR would protect the public interest in a clean environment. Sometime later, the public pressures on the new office to challenge DNR's activities proved so great that the state attorney general established an advisory committee to guide the public intervenor to those cases or issues deserving the most attention.	
Prior to 1970	Eau Claire, a city of 50,000 in western Wisconsin, dumped garbage into two ravines two miles west of the city. Ravines filled up, drainage polluted a nearby stream, and the operation became an eyesore.	
1970	Wisconsin adopts a Solid Waste Disposal Act, aimed at regulating the estimated 3,000 dumpsites throughout the state. This is a response to the problems caused by the Eau Claire and other dumpsites.	
Early 1974	WI Department of Natural Resources tells Eau Claire that the dump will have to be closed.	
Early 1974	Eau Claire officials seek a new landfill site immediately.	
By Summer 1974	Eau Claire finds a 20-acre parcel of the east of Eau Claire in the town of Seymour. Eau Claire agrees on a price	

	and terms with the owner.	
Early fall 1974	Gerry Merryfield, the Seymour town chairman, learns from the Eau Claire city manager that Seymour would now receive Eau Claire's garbage. Merryfield is appalled.	
January 1975	A special town meeting is held in Seymour. Concerns expressed include additional traffic to the site, use of such a large site, loss of property tax revenue, environmental problems, and the way Eau Claire dealt with smaller neighbor. Ron Koshoshek, a member of Trout Unlimited, says that his organization would fight the plan and help Seymour oppose it. Citizens authorize Merryfield and the other two town supervisors to hire an attorney to help them fight back.	
Approximately early 1975	Raymond Johnson is hired as Seymour's attorney. He adopts a strategy of delaying the landfill project for as long as possible.	
1975 – early 1976	Johnson develops legal strategy	
1975 – early 1976	WI DNR and Eau Claire are "locked in battle" over the design of the Seymour landfill site. DNR wants clay liner and drainage system to remove liquid wastes. Eau Claire says this is too expensive.	
April 1976	DNR holds a public meeting in Eau Claire on the license for the new landfill. Johnson attacks DNR's licensing review procedures and challenges Eau Claire's legal powers to acquire and operate a disposal site in another jurisdiction. Koshoshek of Trout Unlimited talks about the dangers to Seven Mile Creek. An environmental group attacks the landfill because it would provide no inducement to recycling.	
Fall 1976	DNR licenses the site.	
Fall 1976 – Summer	Johnson uses slowest possible use of	

1978	court and administrative reviews and a continuing flow of requests for information from the DNR and Eau Claire. In his appeal, Johnson charges that DNR had not considered whether there were other, better landfill sites available to Eau Claire. To support his claim, he needed DNR records, and he prolongs his requests for records through extended correspondence. Over this same period, he further delays matters by seeking a review of the case by the public intervenor, an arm of the WI State Attorney General's Office.	
1977	Johnson requests a hearing with the state hearing examiner.	
March 1978	Examiner hears the case.	
Before March 16, 1978	Koshoshek encourages the public intervenor's advisory committee to recommend that the public intervenor enter the Seymour case.	
Before March 16, 1978	Johnson discusses the Seymour case with Tom Dawson, one of the public intervenor's staff attorneys. The two discuss the triple role of DNR (enforcement, review, and licensing). There was pressure to find a new site. Another issue is whether an environmental impact statement should have been done.	
March 16, 1978	The advisory committee to the public intervenor receives a general briefing on mediation as a technique for resolving environmental controversies. Howard Bellman and Edward Krinsky of the Wisconsin Center give the briefing for Public Policy. They indicated that their services as mediator were available at no charge.	
March 16, 1978	The advisory committee to the public intervenor tells Dawson to get involved. They ask Dawson to find out whether the DNR had considered alternate sites.	
March 16, 1978	One of the committee members asks	

	Krinsky whether he thought mediation might be helpful in the Seymour case. Krinsky replies that he and Bellman would be willing to try. The committee invites the two men to use this as a demonstration project.	
March 1978	Johnson and Dawson join forces in securing an administrative hearing on the case. They also prepare a petition seeking a court order to force the DNR to prepare an environmental impact statement.	
Late March 1978	Krinsky and Bellman begin calling the principals in the dispute.	
Late March 1978	The mediators meet first with Dawson and convince him to approach the DNR about whether and to what extent other sites were considered.	
Late March 1978	The mediators meet with the head of the DNR, who agrees to have his staff brief Dawson, but not provide elaborate written statements on their decision.	
Late March 1978	Krinsky calls Eau Claire's attorney, Ted Fischer, to invite him to an informal session.	
March 29, 1978	First mediation session takes place. Eau Claire officials brought files showing their efforts to find a new landfill site. DNR representatives outlined their roles – the closedown order for the old dump, their involvement in site selection, and the negotiations on the clay liner and drainage system. This information leads Dawson to conclude privately that this would not be a good case to challenge in court.	
Between March 29 and April 13, 1978, meetings	Dawson relates his impressions to Johnson. Johnson tells Merryfield that there is a "50-50" chance of winning in court.	
April 13, 1978	Second meeting held. DNR staff shows Dawson their records. DNR offers to amend their worksheets with short	

	written references to alternative sites. Eau Claire promises to pay for another set of soil borings on the Seymour site, with the results to be made public. Dawson says that he will consider withdrawing from the case if these steps are taken.	
During or after the April 13, 1978, meeting	Dawson confers with Johnson. They agree that attacking DNR's role would probably not work in court. Johnson decides to press his fight before the hearing examiner and then in court. Dawson says that he will help behind the scenes.	
May 15, 1978	Bellman and Krinsky met with Johnson and Merryfield. Johnson reveals that he was proceeding to prepare his case for the hearing examiner.	
May 19, 1978	Merryfield tells Krinsky that he would like the mediators to set up a meeting with Eau Claire representatives.	
After May 19, 1978	Eau Claire agrees to the meeting	
June 19, 1978	Seymour and Eau Claire representatives meet. Seymour representatives explain their objections to the landfill. Both sides explore possible alternatives. Everyone seems to agree that they should meet again.	
July and early August 1978	Mediation takes a back seat to the legal proceedings	
On or before August 9, 1978	State hearing examiner rejects Johnson's contention that DNR violated Wisconsin's Environmental Policy Act	
August 9, 1978	Dawson publicly and formally bows out of the case.	
After August 9, 1978	Eau Claire proceeds with the excavation of the site.	
August 15, 1978	Johnson asks a state court to enjoin DNR and Eau Claire from proceeding with the project while he pursued other legal actions.	
August 17, 1978	A state judge rules that he has no jurisdiction to stop DNR's licensing of	

	the project. He also says that if Johnson were to narrow his request to enjoining Eau Claire's construction activity, then he had some authority to act.	
August 17, 1978	Merryfield tells Bellman that Seymour is ready to negotiate.	
August 21, 1978	Mediation session begins at 7 PM with a joint session.	
August 21, 1978	Bellman caucuses with the Seymour representatives and asks them to list their settlement demands. The Seymour representatives list the following demands: time restrictions on excavation activities; a seven-year time limit on Eau Claire's use of the site; town ownership of the site once seven years had passed; use of the landfill by the town; landfill operations to be stopped on Saturdays and Sundays; and the construction of a transfer station outside of Seymour.	
August 21, 1978	Bellman and Krinsky reviewed these points with the DNR representatives and then with the DNR representatives and Seymour representatives together. Once these sides agreed, the mediators pull the DNR staff into a meeting with the Eau Claire officials to introduce them to the points on which the DNR and Seymour had concurred. Eau Claire's officials then caucused and met with the mediators. The mediators then met with Seymour's representatives.	
August 22, 1978, 3 AM	Entire group reconvenes to ratify the agreement, which gave Seymour most of what it wanted.	
August 24, 1978	At a town meeting in Seymour, the agreement passes by a margin of one vote.	
August 25, 1978	Eau Claire's city council approves the agreement.	
After August 25, 1978	The agreement language is incorporated into the final opinion of the state hearing	

	examiner and put into the records of the circuit court should there be any future litigation.	
Fall 1980	City of Eau Claire announces that it is going to convey the Seymour landfill to the Eau Claire County government. The transfer station is one key issue. [WEH note: this is written as a postscript to the agreement]	

APPENDIX B: INSTRUCTIONS TO RELIABILITY CODERS

Instructions to Reliability Coders

Background

Thank you for agreeing to assist me with the analysis of data for my project entitled “Turning Points in Environmental Negotiation.” The goal of the project is to discover patterns in the changes that occur over time in the interaction of parties involved in environmental negotiation and correlate those patterns with the roles played by the parties themselves and others who may be involved (e.g., mediators, advocates). The data to be analyzed are chronologies (a set of events and behaviors organized according to the order in which they occurred) extracted from detailed case studies of environmental negotiation. The environmental negotiations took place within the boundaries of one nation (i.e., these are not international environmental negotiations) and addressed a wide range of environmental and natural resource issues.

An important aspect of the analysis is checking the consistency of terms used to identify concepts by having people other than the researcher use the same terms to analyze a small set of cases and provide their results. The researcher can then compare the two sets of results for the same set of cases. This comparison is called “reliability testing,” and essentially means that we are trying to find out how often you and I apply the same term in the same way in identifying concepts. The more often our results agree, the more reliable the definitions of terms are said to be.

Because of the number of terms involved in analyzing the project data set, the reliability testing will be conducted in an incremental fashion, taking each step in the identification process one at a time. The first step is to identify the “Turning Points” and the “Precipitants.”

You will be given five case chronologies to review. The objective is to identify all turning points, precipitants, and consequences within each case chronology.

Definitions

The following are the terms you will use in doing the identification.

“Turning Points” are the changes that occur in the interaction among parties involved in a negotiation. Such changes are evident when compared with the previous state of interaction among the parties. Turning points are reflected in the behavior of negotiating parties, not external parties such as mediators, the media, or governmental entities that are not participating in the negotiation.

Examples/indicators of turning points:

- The parties agree on substance (e.g., one or more parties changes position or makes a concession in response to some other behavior or event, a party responds positively to another party's proposal, parties agree on agenda items for discussion, parties reach resolution of an outstanding issue(s) or impasse, a party's concerns are addressed) or process (e.g., the parties agree on the formation of working groups or, the parties agree on groundrules).
- The parties disagree on substance or process (e.g., imagine the opposites of the above).
- Where the text indicates an "impasse," a "turning point," a "change," a "shift," a "step forward," a "step backward," a "deadlock," or similar terms. But make sure to look at what is being described for the actual change.
- A decision by parties to begin or re-enter a negotiation or mediation (sometimes this may be indicated by the actual beginning of the negotiation/mediation, sometimes it is indicated by the parties' decision to begin even if the beginning of negotiation is later – no need to count both unless there's an intervening turning point in between).
- A decision by one or more parties to end a negotiation or mediation (including one or more parties leaving a negotiation that will continue with remaining parties).
- One or more parties' behavior intended to gain power outside the negotiation (e.g., appeals to a judicial body or administrative agency to intervene or provide standing in an alternative decision making process)
- The parties moving from one phase to another in a problem solving process (e.g., moving from issue identification to options generation or from options generation to options selection, beginning a process of shuttle diplomacy)

Turning points are coded as two types: More abrupt and less abrupt. The definitions for the two types are as follows:

Type

More Abrupt – Sudden departures from the pattern of give and take.

Examples include: Final agreements, interim agreements, impasses, stalemates, deadlocks, agreements to negotiate, exits from negotiations, re-entries into negotiations after exit, unexpected transitions from one negotiation phase to another

Less Abrupt – more gradual, incremental changes in the negotiation.

Examples include: Somewhat altered discussions, adjustments to the terms of trade, somewhat predictable stage transitions

“Precipitants” are events or behaviors that cause, lead to, or produce turning points.

Sometimes the precipitants precede turning points by some time. The key is looking

for the causal relationship, not necessarily proximity. It is sometimes possible for precipitants to be unclear from the text, but please err on the side of identifying a precipitant for most turning points. It is also sometimes necessary to infer the precipitant from prior turning point. Where feasible, please attempt to identify specific events as precipitants rather than sets of events.

They are coded in two ways: type of precipitant and role of the agent responsible for the precipitant. There are two types of precipitant: substantive and procedural. There are several possible roles: negotiating parties, advocates, neutral third parties, researchers, enforcers, and other. It is sometimes (rarely) necessary to code as more than one type or role where making a distinction is impossible. Each type and role is defined below:

Type

Substantive Precipitants – emphasizes the substance of the issues at stake (examples – new proposals, new ideas, new concepts, packages of proposals, concessions, issue frameworks/agendas [with specifically mentioned topics as opposed to the process of developing them] for discussion, new information)

Procedural Precipitants – emphasizes the process of interaction (examples - structure of the negotiations, format of the negotiations, venue, working groups/committees, alliances formed among parties, caucuses, change in individual representing a party in negotiations). These often take the form of process suggestions or proposals.

Role

Negotiating Party – relates to the parties to the negotiation who ultimately reach agreement (see “parties,” below)

Advocate – Individuals external to the negotiating parties or engaged by less than all parties to represent particular negotiating party interests (examples: lawyers, attorneys, technical experts, management consultants)

Neutral Third Party – Individuals or organizations external to the negotiating parties engaged or hired to assist all parties in reaching agreement. A neutral third party is typically responsible for the negotiating process and for ensuring that all parties get at least something of what they want from the negotiation. (examples: mediator, facilitator, technical expert that serves all parties)

Researcher – individuals or organizations external to the negotiating parties who gather information about the dispute or negotiation, whether or not such information is shared with others (examples: journalist, news media, social science researcher, observation team)

Enforcer – external individuals or organizations who have the power to sanction one or more parties (examples: arbitrators, judges, police, government agencies [when not primarily acting as negotiating parties], funding organizations, “The Public” [e.g., by voting])

Other - Other individuals or organizations, including unknown actors, which do not fall into one of the other role categories, as well as natural events.

“Consequences” are the results of the turning point. Positive consequences are progress toward or the achievement of agreements that are the outcome of the negotiation. Negative consequences are movement away from agreements toward impasses. Consequences follow from turning points and are distinguished from them. The consequence is the direction of the negotiation toward or away from positive outcomes (agreement). Another way to think about consequences is in terms of de-escalation (toward agreement) and escalation (away from agreement). In the coding process, consequences are found in the text between the identified turning point and the subsequent precipitant. It is sometimes (rarely) necessary to infer the consequence from the context of the case and sometimes (rarely) the consequence of one turning point is the precipitant of the subsequent turning point. And in some instances the immediate consequence of a turning point is not clear or not stated in the text. Consequences are coded in two ways, direction and type:

Direction

Toward Agreement – progress toward agreement, upturns in a trend

Away From Agreement - movement way from agreement, downturns in a trend

Type

Substantive Consequences – emphasizes the substance of the issues at stake

Procedural Consequences – emphasizes to the process of interaction

Please review the attached example to see how turning points, precipitants, and consequences are coded.

“Parties” (i.e., negotiating parties) are those who ultimately reach agreement as a result of the negotiation but which do not possess the ability to impose a solution. For example, although an administrative agency might sign a final agreement with other parties, if the agency has the ability (or credible threat) to impose a solution on one or more parties they are not negotiating as such and are likely playing some other role.

Tasks

1. Read the entire case chronology to get a feel for the dynamics during the course of the negotiation and who the negotiating parties are.
2. Identify the turning points in the chronology based on the above definition.
3. For all turning points, mark the text or summarize the turning point in writing and indicate in writing why you see a turning point (e.g., cite one of the examples offered above). Code the turning point as either “more abrupt” or “less abrupt.”
4. For all the precipitants, mark the text or summarize the precipitant in writing and indicate in writing what you see as the precipitant. Code the precipitant as either procedural or substantive and indicate the role that is responsible for the precipitant.
5. For all the consequences, mark the text or summarize the consequence in writing and indicating in writing what you see as the consequence. Code the consequence as either toward agreement or away from agreement

Additional Guidance in Identifying Turning Points

As you identify the turning points, please:

- Look for what the negotiating parties do (not what other parties [e.g., mediators] do) in response to behaviors and events.
- Recognize that multiple behaviors/events recorded separately in the text may not be separate turning points even though they are somewhat distinct. For example, the text may indicate that the parties agree to begin a mediation (e.g., as part of separate conversations with the mediator or in some other forum) and also say that the mediation actually begins. From the standpoint of the turning points analysis these are one and the same unless there is some intervening text suggesting an additional turning point between those two (e.g., one of the parties having first agreed to mediation later says to the other parties that he/she has changed his/her mind and then has to be convinced before the mediation begins).
- Keep in mind that a party’s proposal or offer in a negotiation is only a turning point if represents a change in the dynamic of the negotiation (e.g., a proposal might be a concession from a party’s earlier position). Proposals and offers are generally not turning points by themselves but may lead to an agreement, which may be an actual turning point.
- Potential turning points may be verified by imagining what the course of events might have looked like if the turning point did not exist. Ask yourself whether the subsequent events could have been the same if the candidate turning point had not occurred. If your answer is yes, then the candidate is probably not a turning point.
- Make independent judgments about the turning points in the case. For example, just because the text reports “and then the negotiation” began, you should look for evidence (if it exists) that the negotiators themselves decided to negotiate. Some information must occasionally be inferred when the text is not clear or is silent.

In addition the text sometimes introduces or summarizes (and thus duplicates) behaviors/events that will be described later or have been reported earlier, so be careful not to double count turning points in these situations.

- Stick to the information provided in the case chronology text and do not rely on any knowledge you may have about the case independent of the text.

APPENDIX C: CROSS TABULATIONS AND CHI SQUARE RESULTS FOR PRECIPITANTS, TURNING POINTS, AND CONSEQUENCES

Substantive/Procedural Precipitant by More/Less Abrupt Turning Point (n=254)

Substantive/Procedural Precipitant * More/Less Abrupt Crosstabulation

% within Substantive/Procedural Precipitant

		More/Less Abrupt		Total
		Less	More	
Substantive / Procedural Precipitant	Procedural	32.5%	67.5%	100.0%
	Procedural and Substantive	14.3%	85.7%	100.0%
	Substantive	37.4%	62.6%	100.0%
Total		33.9%	66.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.183 ^a	2	.204
Likelihood Ratio	3.547	2	.170
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.74.

CONCLUSION: Substantive and Procedural Precipitants are equally likely to be associated with More and Less Abrupt Turning Points. There is no statistically significant difference using the chi square test.

Substantive/Procedural Precipitant by Substantive/Procedural Consequence (n=254)

Substantive/Procedural Precipitant * Substantive/Procedural Consequence Crosstabulation

% within Substantive/Procedural Precipitant

		Substantive/Procedural Consequence			Total
		Procedural	Procedural and Substantive	Substantive	
Substantive / Procedural Precipitant	Procedural	62.4%	4.3%	33.3%	100.0%
	Procedural and Substantive	50.0%	28.6%	21.4%	100.0%
	Substantive	42.3%	3.3%	54.5%	100.0%
Total		52.0%	5.1%	42.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.564 ^a	4	.000
Likelihood Ratio	21.096	4	.000
N of Valid Cases	254		

a. 1 cells (11.1%) have expected count less than 5. The minimum expected count is .72.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.335	.000
Cramer's V	.237	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Procedural Precipitants are more likely to be associated with Procedural Consequences than Substantive Precipitants (62.4% vs. 33.3%). Substantive Precipitants are somewhat more likely to be associated with Substantive Consequences than Procedural Precipitants (54.5% vs. 42.3%). These results are statistically significant at the 0.05 level using the chi square test.

Substantive/Procedural Precipitant by Toward/Away From Agreement Consequence (n=254)

Substantive/Procedural Precipitant * Toward/Away from Agreement Consequence Crosstabulation

% within Substantive/Procedural Precipitant

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
Substantive / Procedural Precipitant	Procedural	6.8%	93.2%	100.0%
	Procedural and Substantive	7.1%	92.9%	100.0%
	Substantive	27.6%	72.4%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.464 ^a	2	.000
Likelihood Ratio	20.422	2	.000
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.37.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.277	.000
Cramer's V	.277	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Both Procedural Precipitants and Substantive Precipitants are more likely to be associated with Toward Agreement Consequences than Away from Agreement Consequences; however Procedural Precipitants are more likely than Substantive Precipitants to be associated with Toward Agreement Consequences. Procedural Precipitants are much more likely to be associated with Toward Agreement Consequences than Away From Agreement Consequences (93.2% vs. 6.8%). Substantive Precipitants are more likely to be associated with Toward Agreement Consequences than Away From Agreement Consequences (72.4% vs. 27.6%). These results are significant at the 0.05 level using the chi square test.

More/Less Abrupt Turning Point by Procedural/Substantive Consequence (n=254)

More/Less Abrupt * Substantive/Procedural Consequence Crosstabulation

% within More/Less Abrupt

		Substantive/Procedural Consequence			Total
		Procedural	Procedural and Substantive	Substantive	
More/Less Abrupt	Less	60.5%	4.7%	34.9%	100.0%
	More	47.6%	5.4%	47.0%	100.0%
Total		52.0%	5.1%	42.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.815 ^a	2	.148
Likelihood Ratio	3.843	2	.146
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.40.

CONCLUSION: More and Less Abrupt Turning Points are equally likely to be associated with Procedural/Substantive Consequences. There is no statistically significant difference using the chi square test.

More/Less Abrupt Turning Point by Toward/Away from Agreement Consequence (n=254)

More/Less Abrupt * Toward/Away from Agreement Consequence Crosstabulation

% within More/Less Abrupt

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
More/Less Abrupt	Less	12.8%	87.2%	100.0%
	More	19.0%	81.0%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.583 ^b	1	.208		
Continuity Correction ^a	1.170	1	.279		
Likelihood Ratio	1.645	1	.200		
Fisher's Exact Test				.222	.139
N of Valid Cases	254				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.56.

CONCLUSION: More and Less Abrupt Turning Points are equally likely to be associated with Toward/Away from Agreement Consequences. There is no statistically significant difference using the chi square test.

Procedural/Substantive Consequence by Toward/Away from Agreement Consequence
(n=254)

Substantive/Procedural Consequence * Toward/Away from Agreement Consequence Crosstabulation

% within Substantive/Procedural Consequence

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
Substantive/Procedural Consequence	Procedural	15.9%	84.1%	100.0%
	Procedural and Substantive	15.4%	84.6%	100.0%
	Substantive	18.3%	81.7%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.276 ^a	2	.871
Likelihood Ratio	.275	2	.872
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 2.20.

CONCLUSION: Procedural/Substantive Consequences are equally likely to be associated with Toward/Away from Agreement Consequences. There is no statistically significant difference using the chi square test.

APPENDIX D: RESULTS OF REPEATED MEASURES ANOVA FOR 28 CASES

Descriptive Statistics

	Mean	Std. Deviation	N
1st Procedural/Substantive Precipitant	.46	.793	28
2nd Procedural/Substantive Precipitant	1.29	.976	28
3rd Procedural/Substantive Precipitant	1.43	.920	28
1st Internal/External Precipitant	.89	.994	28
2nd Internal/External Precipitant	.43	.790	28
3rd Internal/External Precipitant	.61	.875	28
1st More/Less Abrupt	.36	.488	28
2nd More/Less Abrupt	.39	.497	28
3rd More/Less Abrupt	.00	.000	28
1st Procedural/Substantive Consequence	.39	.786	28
2nd Procedural/Substantive Consequence	.86	1.008	28
3rd Procedural/Substantive Consequence	1.64	.731	28
1st Toward/Away From Agreement	.07	.262	28
2nd Toward/Away From Agreement	.25	.441	28
3rd Toward/Away From Agreement	.04	.189	28

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
THIRDS	Procedural/ Substantive Precipitants	Sphericity Assumed	15.167	2	7.583	10.920	.000	.288
		Greenhouse -Geisser	15.167	1.971	7.695	10.920	.000	.288
		Huynh-Feldt	15.167	2.000	7.583	10.920	.000	.288
		Lower-bound	15.167	1.000	15.167	10.920	.003	.288
	Internal/ External Precipitants	Sphericity Assumed	3.071	2	1.536	4.093	.022	.132
		Greenhouse -Geisser	3.071	1.988	1.545	4.093	.022	.132
		Huynh-Feldt	3.071	2.000	1.536	4.093	.022	.132
		Lower-bound	3.071	1.000	3.071	4.093	.053	.132
	More/Less Abrupt Turning	Sphericity Assumed	2.643	2	1.321	8.211	.001	.233

		Points						
		Greenhouse -Geisser	2.643	1.610	1.641	8.211	.002	.233
		Huynh-Feldt	2.643	1.697	1.557	8.211	.002	.233
		Lower-bound	2.643	1.000	2.643	8.211	.008	.233
	Substantive/ Procedural Consequences	Sphericity Assumed	22.357	2	11.179	15.487	.000	.365
		Greenhouse -Geisser	22.357	1.882	11.882	15.487	.000	.365
		Huynh-Feldt	22.357	2.000	11.179	15.487	.000	.365
		Lower-bound	22.357	1.000	22.357	15.487	.001	.365
	Toward/ Away From Agreement Consequences	Sphericity Assumed	.738	2	.369	5.073	.010	.158
		Greenhouse -Geisser	.738	1.241	.595	5.073	.024	.158
		Huynh-Feldt	.738	1.272	.580	5.073	.023	.158
		Lower-bound	.738	1.000	.738	5.073	.033	.158
Error (THIRDS)	Procedural/ Substantive Precipitants	Sphericity Assumed	37.500	54	.694			
		Greenhouse -Geisser	37.500	53.216	.705			
		Huynh-Feldt	37.500	54.000	.694			
		Lower-bound	37.500	27.000	1.389			
	Internal/ External Precipitants	Sphericity Assumed	20.262	54	.375			
		Greenhouse -Geisser	20.262	53.667	.378			
		Huynh-Feldt	20.262	54.000	.375			
		Lower-bound	20.262	27.000	.750			
	More/Less Abrupt Turning Points	Sphericity Assumed	8.690	54	.161			
		Greenhouse -Geisser	8.690	43.474	.200			
		Huynh-Feldt	8.690	45.816	.190			
		Lower-bound	8.690	27.000	.322			
	Substantive/ Procedural Consequences	Sphericity Assumed	38.976	54	.722			
		Greenhouse -Geisser	38.976	50.802	.767			

	Huynh-Feldt	38.976	54.000	.722
	Lower-bound	38.976	27.000	1.444
Toward/ Away From Agreement Consequences	Sphericity Assumed	3.929	54	7.275E-02
	Greenhouse -Geisser	3.929	33.515	.117
	Huynh-Feldt	3.929	34.334	.114
	Lower-bound	3.929	27.000	.146

Pairwise Comparisons

Measure	(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Procedural/ Substantive Precipitants	THIRDS 1	THIRDS 2	-.821	.230	.001	-1.294	-.349
		3	-.964	.209	.000	-1.393	-.536
	2	1	.821	.230	.001	.349	1.294
		3	-.143	.228	.537	-.611	.326
	3	1	.964	.209	.000	.536	1.393
		2	.143	.228	.537	-.326	.611
Internal/ External Precipitant	1	2	.464	.158	.007	.139	.789
		3	.286	.169	.103	-6.202E-02	.633
	2	1	-.464	.158	.007	-.789	-.139
		3	-.179	.163	.283	-.513	.156
	3	1	-.286	.169	.103	-.633	6.202E-02
		2	.179	.163	.283	-.156	.513
More/Less Abrupt Turning Points	1	2	-3.571E-02	.131	.787	-.304	.233
		3	.357	.092	.001	.168	.546
	2	1	3.571E-02	.131	.787	-.233	.304
		3	.393	.094	.000	.200	.586
	3	1	-.357	.092	.001	-.546	-.168
		2	-.393	.094	.000	-.586	-.200
Substantive/ Procedural Consequences	1	2	-.464	.238	.062	-.953	2.486E-02
		3	-1.250	.197	.000	-1.654	-.846

	2	1	.464	.238	.062	-2.486E-02	.953
		3	-.786	.243	.003	-1.285	-.287
	3	1	1.250	.197	.000	.846	1.654
		2	.786	.243	.003	.287	1.285
Toward/ Away From Agreement Consequences	1	2	-.179	.090	.057	-.363	5.845E-03
		3	3.571E-02	.036	.326	-3.757E-02	.109
	2	1	.179	.090	.057	-5.845E-03	.363
		3	.214	.079	.011	5.226E-02	.376
	3	1	-3.571E-02	.036	.326	-.109	3.757E-02
		2	-.214	.079	.011	-.376	-5.226E-02

Based on estimated marginal means

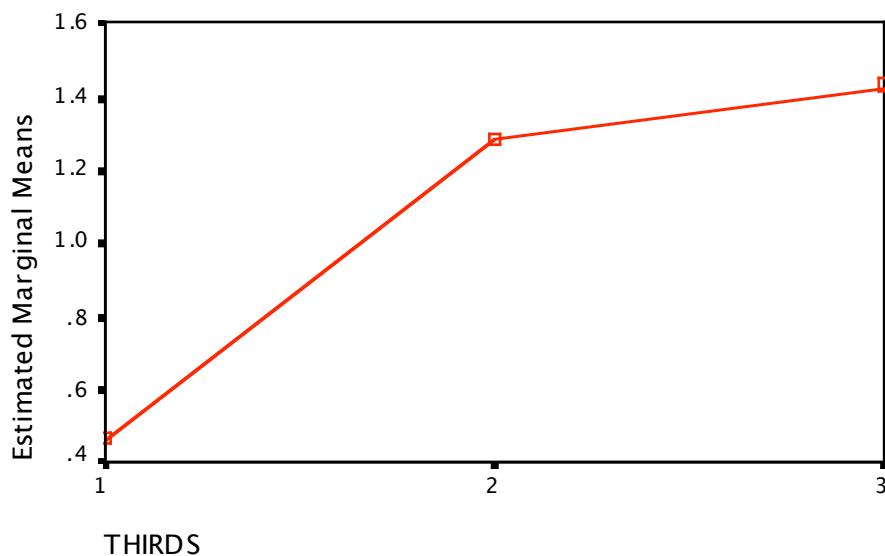
* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Profile Plots

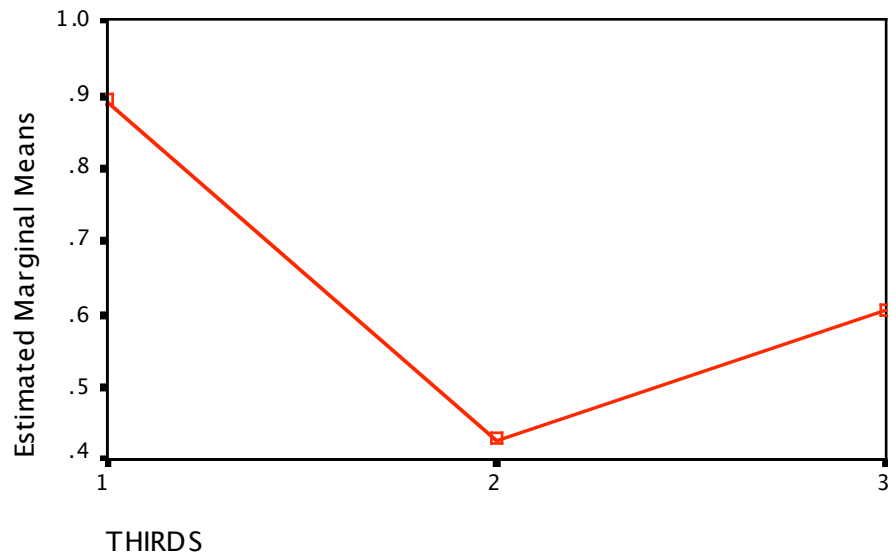
Estimated Marginal Means of Proc/Sub Precipitants

(n=28)



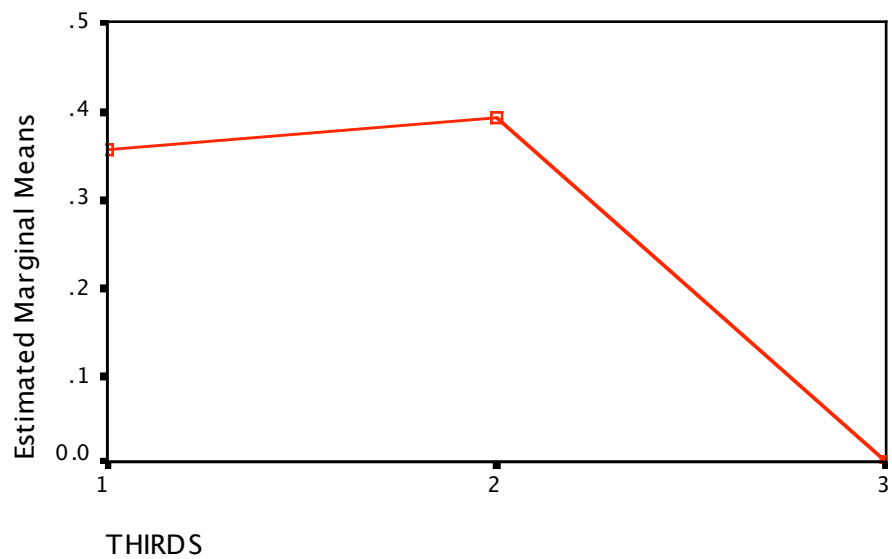
Estimated Marginal Means of Internal/External Prec Roles

(n=28)

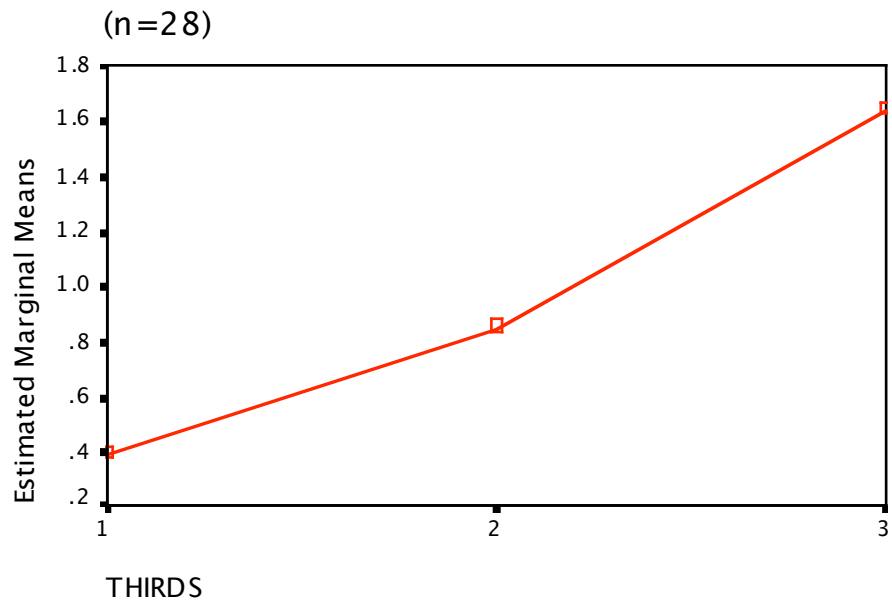


Estimated Marginal Means of More/Less Abrupt TPs

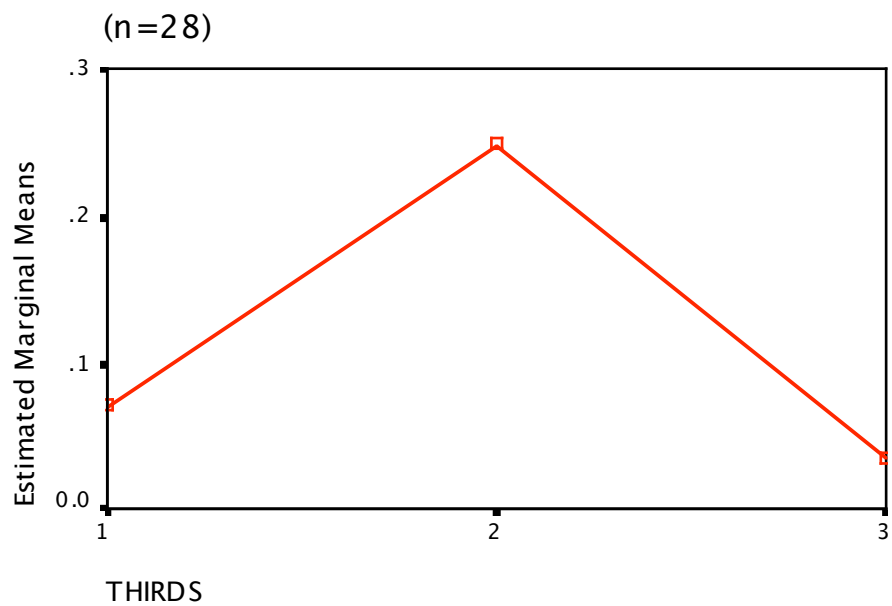
(n=28)



Estimated Marginal Means of Proc/Sub Consequences



Estimated Marginal Means of Toward/Away From Ag Conseq



APPENDIX E: CROSS TABULATIONS AND CHI SQUARE TEST RESULTS FOR PRECIPITANT ROLES AND OTHER TURNING POINT SEQUENCE ELEMENTS

Substantive/Procedural Precipitant by Internal/External Precipitant Role (n=254)

Substantive/ Procedural Precipitant * Internal/External/Both Cross tabulation

% within Substantive/Procedural Precipitant		Internal/External/Both			Total
		Both	External	Internal	
Substantive / Procedural Precipitant	Procedural	11.1%	41.9%	47.0%	100.0%
	Procedural and Substantive	28.6%	21.4%	50.0%	100.0%
	Substantive	6.5%	21.1%	72.4%	100.0%
Total		9.8%	30.7%	59.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.094 ^a	4	.000
Likelihood Ratio	20.605	4	.000
N of Valid Cases	254		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.38.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.295	.000
Cramer's V	.209	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Across all turning point sequences and cases, Internal Precipitant Roles are slightly more likely than External Precipitant Roles (47.0% vs. 41.9%) to be associated with Procedural Precipitants. Internal Precipitant Roles are much more likely than External Precipitant Roles (72.4% vs. 21.1%) to be associated with Substantive Precipitants. These results are statistically significant at the 0.05 level using the chi square test.

Internal/External Precipitant Role by Substantive/Procedural Precipitant (n=254)

Internal/External/Both * Substantive/Procedural Precipitant Cross tabulation

% within Internal/External/Both

		Substantive /Procedural Precipitant			Total
		Procedural	Procedural and Substantive	Substantive	
Internal/External/Both	Both	52.0%	16.0%	32.0%	100.0%
	External	62.8%	3.8%	33.3%	100.0%
	Internal	36.4%	4.6%	58.9%	100.0%
Total		46.1%	5.5%	48.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.094 ^a	4	.000
Likelihood Ratio	20.605	4	.000
N of Valid Cases	254		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.38.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.295	.000
	Cramer's V	.209	.000
N of Valid Cases		254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: External Precipitant Roles are much more likely to be associated with procedural precipitants than substantive precipitants (62.8% vs. 33.3%). Internal roles are more likely to be associated with substantive precipitants (58.9%) than with procedural precipitants (36.4%). These results are statistically significant using the chi square test.

Internal/External Precipitant Role by More/Less Abrupt Turning Point (n=254)

Internal/External/Both * More/Less Abrupt Crosstabulation

% within Internal/External/Both		More/Less Abrupt		Total
		Less	More	
Internal/External/Both	Both	20.0%	80.0%	100.0%
	External	37.2%	62.8%	100.0%
	Internal	34.4%	65.6%	100.0%
Total		33.9%	66.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.551 ^a	2	.279
Likelihood Ratio	2.746	2	.253
N of Valid Cases	254		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.46.

CONCLUSION: Internal and External Precipitant Roles are equally likely to be associated with More and Less Abrupt Turning Points. There is no statistically significant difference using the chi square test.

Internal/External Precipitant Role by Procedural/Substantive Consequence (n=254)

Internal/External/Both * Substantive/Procedural Consequence Crosstabulation

% within Internal/External/Both		Substantive/Procedural Consequence			Total
		Procedural	Procedural and Substantive	Substantive	
Internal/External/Both	Both	44.0%	8.0%	48.0%	100.0%
	External	60.3%	2.6%	37.2%	100.0%
	Internal	49.0%	6.0%	45.0%	100.0%
Total		52.0%	5.1%	42.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.107 ^a	4	.392
Likelihood Ratio	4.253	4	.373
N of Valid Cases	254		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.28.

CONCLUSION: Internal and External Precipitant Roles are equally likely to be associated with Substantive and Procedural Consequences. There is no statistically significant difference using the chi square test.

Internal/External Precipitant Role by Toward/Away from Agreement Consequence (n=254)

Internal/External/Both * Toward/Away from Agreement Consequence
Crosstabulation

% within Internal/External/Both

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
Internal/External/Both	Both	8.0%	92.0%	100.0%
	External	10.3%	89.7%	100.0%
	Internal	21.9%	78.1%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.491 ^a	2	.039
Likelihood Ratio	6.926	2	.031
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.23.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.160	.039
	Cramer's V	.160	.039
N of Valid Cases		254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: External Precipitant Roles are somewhat more likely than Internal Precipitant Roles (89.7% vs. 78.1%) to be associated with Toward Agreement Consequences. These results are significant at the 0.05 level using the chi square test.

Detailed Aggregated Precipitant Roles by Procedural/Substantive Precipitant (n=254)

**Precipitant Roles Aggregated Further * Substantive/Procedural Precipitant
Crosstabulation**

% within Precipitant Roles Aggregated Further

		Substantive /Procedural Precipitant			Total
		Procedural	Procedural and Substantive	Substantive	
Precipitant Roles Aggregated Further	Enforcer	63.0%	3.7%	33.3%	100.0%
	Multiple	41.2%	14.7%	44.1%	100.0%
	Neutral	63.3%	4.1%	32.7%	100.0%
	Party	38.2%	4.2%	57.6%	100.0%
Total		46.1%	5.5%	48.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.405 ^a	6	.004
Likelihood Ratio	17.801	6	.007
N of Valid Cases	254		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is 1.49.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.276	.004
	Cramer's V	.195	.004
N of Valid Cases		254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Detailed Aggregated Precipitant Roles by Toward/Away From Agreement Consequences
(n=254)

**Precipitant Roles Aggregated Further * Toward/Away from Agreement
Consequence Crosstabulation**

% within Precipitant Roles Aggregated Further

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
Precipitant Roles Aggregated Further	Enforcer	11.1%	88.9%	100.0%
	Multiple	20.6%	79.4%	100.0%
	Neutral	8.2 %	91.8%	100.0%
	Party	20.1%	79.9%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.706 ^a	3	.195
Likelihood Ratio	5.230	3	.156
N of Valid Cases	254		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.57.

APPENDIX F: CROSS TABULATIONS WITH SIGNIFICANT CHI SQUARE TEST RESULTS FOR ALL TURNING POINT SEQUENCE VARIABLES AND ALL CASE TYPES

Assisted/Unassisted Cases

Assisted/Unassisted Negotiation by Internal/External Precipitant Role (n=254)

Assisted/ Unassisted Negotiation * Internal/External/Both Cross tabulation

% within Assisted/ Unassisted Negotiation

		Internal/External/Both			Total
		Both	External	Internal	
Assisted/ Unassisted Negotiation	Assisted	11.1%	35.2%	53.7%	100.0%
	Unassisted	2.6%	5.3%	92.1%	100.0%
Total		9.8%	30.7%	59.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.798 ^a	2	.000
Likelihood Ratio	23.878	2	.000
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.74.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.279	.000
	Cramer's V	.279	.000
N of Valid Cases		254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: For both assisted and unassisted negotiations, internal precipitant roles occur more frequently than external precipitant roles. External precipitant roles are significantly more likely to be involved in assisted negotiation cases (35.2%) than unassisted negotiation cases (5.3%). This result is not surprising given that assisted cases by definition are those in which a neutral third party (i.e., an external role) is involved.

Assisted/Unassisted Negotiation by More/Less Abrupt Turning Point (n=254)

Assisted/ Unassisted Negotiation * More/Less Abrupt Crosstabulation

% within Assisted/ Unassisted Negotiation

		More/Less Abrupt		Total
		Less	More	
Assisted/ Unassisted Negotiation	Assisted	37.0%	63.0%	100.0%
	Unassisted	15.8%	84.2%	100.0%
Total		33.9%	66.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.515 ^b	1	.011		
Continuity Correction ^a	5.600	1	.018		
Likelihood Ratio	7.264	1	.007		
Fisher's Exact Test				.010	.007
N of Valid Cases	254				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.87.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.160	.011
	Cramer's V	.160	.011
N of Valid Cases		254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: More abrupt turning points are more common than less abrupt turning points in both assisted and unassisted negotiation cases. More abrupt turning points occur significantly more frequently in unassisted negotiation cases than in assisted negotiation cases.

Assisted/Unassisted Negotiation by Procedural/Substantive Consequences (n=254)

Assisted/ Unassisted Negotiation * Substantive/Procedural Consequence Crosstabulation

% within Assisted/ Unassisted Negotiation

		Substantive/Procedural Consequence			Total
		Procedural	Procedural and Substantive	Substantive	
Assisted/ Unassisted Negotiation	Assisted	55.1%	2.8%	42.1%	100.0%
	Unassisted	34.2%	18.4%	47.4%	100.0%
Total		52.0%	5.1%	42.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.369 ^a	2	.000
Likelihood Ratio	13.821	2	.001
N of Valid Cases	254		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 1.94.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.269	.000
Cramer's V	.269	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Procedural consequences are significantly more likely (55.1%) than substantive consequences (42.1%) to occur in assisted negotiations. For unassisted negotiations, the situation is reversed: substantive consequences are significantly more likely (47.4%) to occur than procedural consequences (34.2%).

Resource/Pollution Cases

Resource/Pollution Negotiation by Internal/External Precipitant Role (n=254)

Resource Use/Depletion vs. Pollution and Control * Internal/ External/ Both
Crosstabulation

% within Resource Use/Depletion vs. Pollution and Control

		Internal/External/Both			Total
		Both	External	Internal	
Resource Use/Depletion vs. Pollution and Control	Both		7.7%	92.3%	100.0%
	Pollution	3.6%	20.5%	75.9%	100.0%
	Resource	13.9%	38.0%	48.1%	100.0%
Total		9.8%	30.7%	59.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.574 ^a	4	.000
Likelihood Ratio	27.353	4	.000
N of Valid Cases	254		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.28.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Contingency Coefficient	.297	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Internal precipitant roles are more likely than external precipitant roles to precipitate turning points in both resource and pollution cases. Internal precipitant roles occur significantly more often in pollution cases than in resource cases.

Advisory/Settlement Agreement Cases

Type of Agreement by Internal/External Precipitant Role (n=254)

Type of Agreement (Binding/ Advisory) * Internal/External/Both Crosstabulation

% within Type of Agreement (Binding/ Advisory)

		Internal/External/Both			Total
		Both	External	Internal	
Type of Agreement (Binding/ Advisory)	Advisory	20.6%	42.6%	36.8%	100.0%
	Settlement	5.9%	26.3%	67.7%	100.0%
Total		9.8%	30.7%	59.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.242 ^a	2	.000
Likelihood Ratio	22.362	2	.000
N of Valid Cases	254		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.69.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.302	.000
Cramer's V	.302	.000
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: For negotiations in which advisory agreements are reached, external roles are more likely than internal roles to precipitate turning points. For settlement negotiations the situation is reversed – in those cases, internal roles are more likely to precipitate turning points.

Type of Agreement by More/Less Abrupt Turning Point (n=254)

Type of Agreement (Binding/ Advisory) * More/ Less Abrupt Crosstabulation

% within Type of Agreement (Binding/ Advisory)

		More/Less Abrupt		Total
		Less	More	
Type of Agreement	Advisory	44.1%	55.9%	100.0%
(Binding/ Advisory)	Settlement	30.1%	69.9%	100.0%
Total		33.9%	66.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.364 ^b	1	.037		
Continuity Correction ^a	3.761	1	.052		
Likelihood Ratio	4.262	1	.039		
Fisher's Exact Test				.051	.027
N of Valid Cases	254				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 23.02.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.131	.037
Cramer's V	.131	.037
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: More abrupt turning points occur more frequently than less abrupt turning points in both negotiations that lead to advisory agreements and those that lead to settlement agreements. More abrupt turning points are significantly more common in settlement negotiations than in advisory agreement negotiations.

Type of Agreement by Toward/Away from Agreement Consequence (n=254)

Type of Agreement (Binding/ Advisory) * Toward/Away from Agreement Consequence Crosstabulation

% within Type of Agreement (Binding/ Advisory)

		Toward/Away from Agreement Consequence		Total
		Away	Toward	
Type of Agreement (Binding/ Advisory)	Advisory	7.4%	92.6%	100.0%
	Settlement	20.4%	79.6%	100.0%
Total		16.9%	83.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.055 ^b	1	.014		
Continuity Correction ^a	5.161	1	.023		
Likelihood Ratio	6.948	1	.008		
Fisher's Exact Test				.014	.008
N of Valid Cases	254				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.51.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	-.154	.014
Cramer's V	.154	.014
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Consequences of turning points in both advisory agreement negotiations and settlement negotiations are much more likely to be toward agreement than away from agreement. This is particularly true for advisory agreement negotiations, where toward agreement consequences are significantly more frequent than in settlement negotiations.

Duration of Negotiation

Duration of Negotiation by Internal/External Precipitant Roles (n=254)

Duration of the negotiation (long /short) * Internal/External/Both Crosstabulation

% within Duration of the negotiation (long /short)

		Internal/External/Both			Total
		Both	External	Internal	
Duration of the negotiation (long/short)	long	11.0%	21.9%	67.1%	100.0%
	short	8.3%	42.6%	49.1%	100.0%
Total		9.8%	30.7%	59.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.478 ^a	2	.002
Likelihood Ratio	12.423	2	.002
N of Valid Cases	254		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.63.

Symmetric Measures

	Value	Approx. Sig.
Nominal by Nominal Phi	.222	.002
Cramer's V	.222	.002
N of Valid Cases	254	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CONCLUSION: Internal roles are more likely than external roles to precipitate turning points in both long and short negotiations. Internal roles are significantly more frequent as turning point precipitators in long negotiations than in short negotiations. In short negotiations, the frequencies of internal and external roles are more balanced.

**APPENDIX G: RESULTS OF UNIVARIATE ANOVA FOR DETAILED
AGGREGATED PRECIPITANT ROLES AND DURATION**

Between-Subjects Factors

	N
Precipitant Roles Aggregated Further	27
Multiple	34
Neutral	49
Party	144

Tests of Between-Subjects Effects
Dependent Variable: Duration of the negotiation (months)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1323.345	3	441.115	3.737	.012
Intercept	27878.874	1	27878.874	236.199	.000
PRECIP3	1323.345	3	441.115	3.737	.012
Error	29507.867	250	118.031		
Total	78018.000	254			
Corrected Total	30831.213	253			

a R Squared = .043 (Adjusted R Squared = .031)

Estimated Marginal Means

Precipitant Roles Aggregated Further

Estimates

Dependent Variable: Duration of the negotiation (months)

	Mean	Std. Error	95% Confidence Interval	
Precipitant Roles Aggregated Further			Lower Bound	Upper Bound
Enforcer	7.333	2.091	3.215	11.451
Multiple	14.029	1.863	10.360	17.699
Neutral	15.796	1.552	12.739	18.853
Party	13.979	.905	12.196	15.762

Pairwise Comparisons

Dependent Variable: Duration of the negotiation (months)

		Mean	Std. Error	Sig.	95% Confidence Interval for Difference	
(I) Precipitant Roles Aggregated Further	(J) Precipitant Roles Aggregated Further	Difference (I-J)			Lower Bound	Upper Bound
Enforcer	Multiple	-6.696	2.801	.018	-12.212	-1.180
	Neutral	-8.463	2.604	.001	-13.591	-3.334
	Party	-6.646	2.278	.004	-11.133	-2.158

Multiple	Enforcer	6.696	2.801	.018	1.180	12.212
	Neutral	-1.767	2.425	.467	-6.542	3.009
	Party	5.025E-02	2.072	.981	-4.030	4.130
Neutral	Enforcer	8.463	2.604	.001	3.334	13.591
	Multiple	1.767	2.425	.467	-3.009	6.542
	Party	1.817	1.797	.313	-1.722	5.356
Party	Enforcer	6.646	2.278	.004	2.158	11.133
	Multiple	-5.025E-02	2.072	.981	-4.130	4.030
	Neutral	-1.817	1.797	.313	-5.356	1.722

Based on estimated marginal means

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

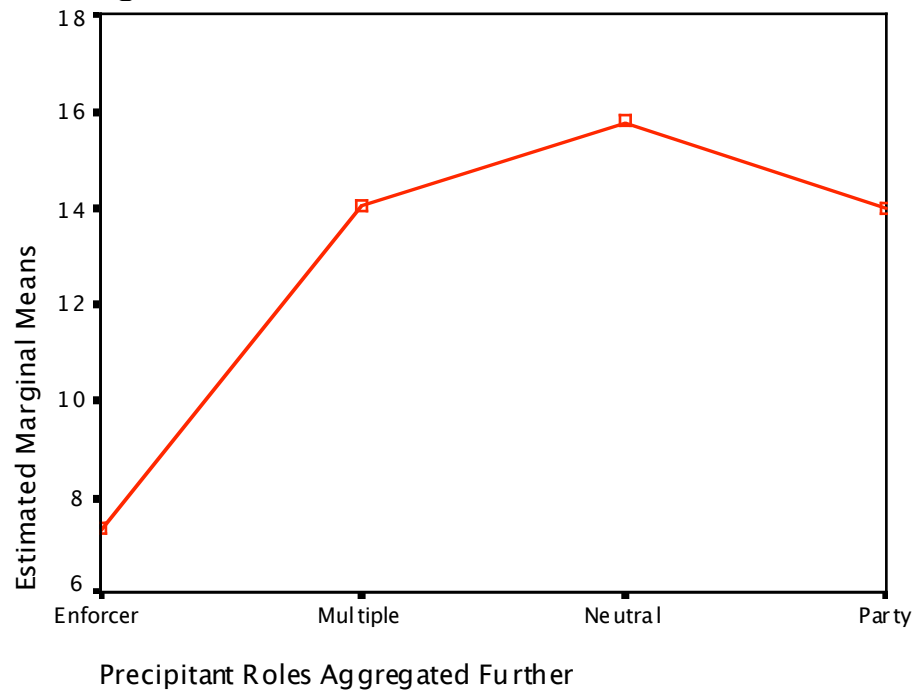
Univariate Tests
Dependent Variable: Duration of the negotiation (months)

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	1323.345	3	441.115	3.737	.012
Error	29507.867	250	118.031		

The F tests the effect of Precipitant Roles Aggregated Further. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

Profile Plots

Estimated Marginal Means of the Duration of the Negotiation



APPENDIX H: REPEATED MEASURES ANOVA RESULTS FOR
ADVISORY/SETTLEMENT NEGOTIATIONS AND ALL TURNING POINT
SEQUENCE ELEMENTS

Descriptive Statistics					
	Type of Agreement	Mean	Std. Deviation	N	
1st Procedural/Substantive Precipitant	Advisory	.38	.744	8	
	Settlement	.50	.827	20	
	Total	.46	.793	28	
2nd Procedural/Substantive Precipitant	Advisory	1.25	1.035	8	
	Settlement	1.30	.979	20	
	Total	1.29	.976	28	
3rd Procedural/Substantive Precipitant	Advisory	1.50	.926	8	
	Settlement	1.40	.940	20	
	Total	1.43	.920	28	
1st Internal/External Precipitant	Advisory	1.13	.991	8	
	Settlement	.80	1.005	20	
	Total	.89	.994	28	
2nd Internal/External Precipitant	Advisory	.75	.886	8	
	Settlement	.30	.733	20	
	Total	.43	.790	28	
3rd Internal/External Precipitant	Advisory	1.00	1.069	8	
	Settlement	.45	.759	20	
	Total	.61	.875	28	
1st More/Less Abrupt	Advisory	.63	.518	8	
	Settlement	.25	.444	20	
	Total	.36	.488	28	
2nd More/Less Abrupt	Advisory	.50	.535	8	
	Settlement	.35	.489	20	
	Total	.39	.497	28	
3rd More/Less Abrupt	Advisory	.00	.000	8	

	Settlement	.00	.000	20
	Total	.00	.000	28
1st	Advisory	.25	.707	8
Procedural/ Substantive Consequence				
	Settlement	.45	.826	20
	Total	.39	.786	28
2nd	Advisory	1.50	.926	8
Procedural/ Substantive Consequence				
	Settlement	.60	.940	20
	Total	.86	1.008	28
3rd	Advisory	1.25	1.035	8
Procedural/ Substantive Consequence				
	Settlement	1.80	.523	20
	Total	1.64	.731	28
1st	Advisory	.00	.000	8
Toward/Away From Agreement				
	Settlement	.10	.308	20
	Total	.07	.262	28
2nd	Advisory	.25	.463	8
Toward/Away From Agreement				
	Settlement	.25	.444	20
	Total	.25	.441	28
3rd	Advisory	.00	.000	8
Toward/Away From Agreement				
	Settlement	.05	.224	20
	Total	.04	.189	28

Tests of Within-Subjects Effects

		Univariate Tests						
Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
THIRDS	PREC	Sphericity	13.388	2	6.694	9.320	.000	.264
		Assumed						
		Greenhouse-Geisser	13.388	1.969	6.800	9.320	.000	.264
		Huynh-Feldt	13.388	2.000	6.694	9.320	.000	.264

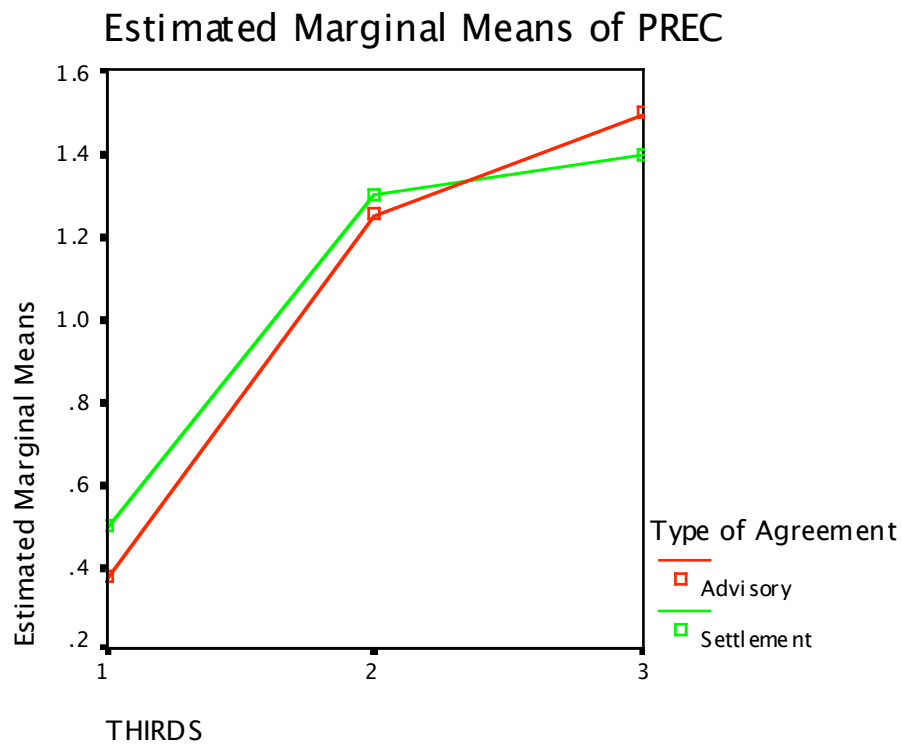
		Lower-bound	13.388	1.000	13.388	9.320	.005	.264
	INEX	Sphericity Assumed	2.193	2	1.096	2.834	.068	.098
		Greenhouse-Geisser	2.193	1.989	1.102	2.834	.068	.098
		Huynh-Feldt	2.193	2.000	1.096	2.834	.068	.098
		Lower-bound	2.193	1.000	2.193	2.834	.104	.098
	ML	Sphericity Assumed	2.836	2	1.418	8.901	.000	.255
		Greenhouse-Geisser	2.836	1.556	1.822	8.901	.001	.255
		Huynh-Feldt	2.836	1.701	1.667	8.901	.001	.255
		Lower-bound	2.836	1.000	2.836	8.901	.006	.255
	CONS	Sphericity Assumed	15.971	2	7.986	12.803	.000	.330
		Greenhouse-Geisser	15.971	1.965	8.129	12.803	.000	.330
		Huynh-Feldt	15.971	2.000	7.986	12.803	.000	.330
		Lower-bound	15.971	1.000	15.971	12.803	.001	.330
	TA	Sphericity Assumed	.695	2	.348	4.635	.014	.151
		Greenhouse-Geisser	.695	1.241	.560	4.635	.032	.151
		Huynh-Feldt	.695	1.322	.526	4.635	.029	.151
		Lower-bound	.695	1.000	.695	4.635	.041	.151
THIRDS *	PREC	Sphericity Assumed	.150	2	7.500E-02	.104	.901	.004
TYPEOF		Greenhouse-Geisser	.150	1.969	7.619E-02	.104	.898	.004
		Huynh-Feldt	.150	2.000	7.500E-02	.104	.901	.004
		Lower-bound	.150	1.000	.150	.104	.749	.004
	INEX	Sphericity Assumed	.145	2	7.262E-02	.188	.829	.007
		Greenhouse-Geisser	.145	1.989	7.301E-02	.188	.828	.007
		Huynh-Feldt	.145	2.000	7.262E-02	.188	.829	.007
		Lower-bound	.145	1.000	.145	.188	.668	.007
	ML	Sphericity Assumed	.407	2	.204	1.278	.287	.047
		Greenhouse-Geisser	.407	1.556	.262	1.278	.283	.047
		Huynh-Feldt	.407	1.701	.239	1.278	.285	.047
		Lower-bound	.407	1.000	.407	1.278	.269	.047
	CONS	Sphericity	6.543	2	3.271	5.245	.008	.168

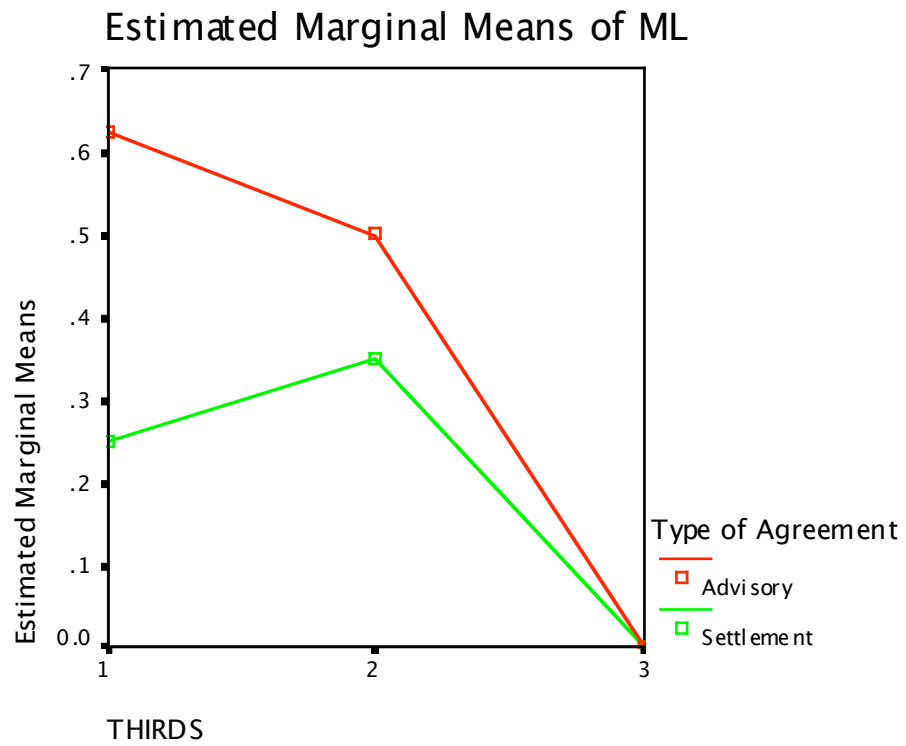
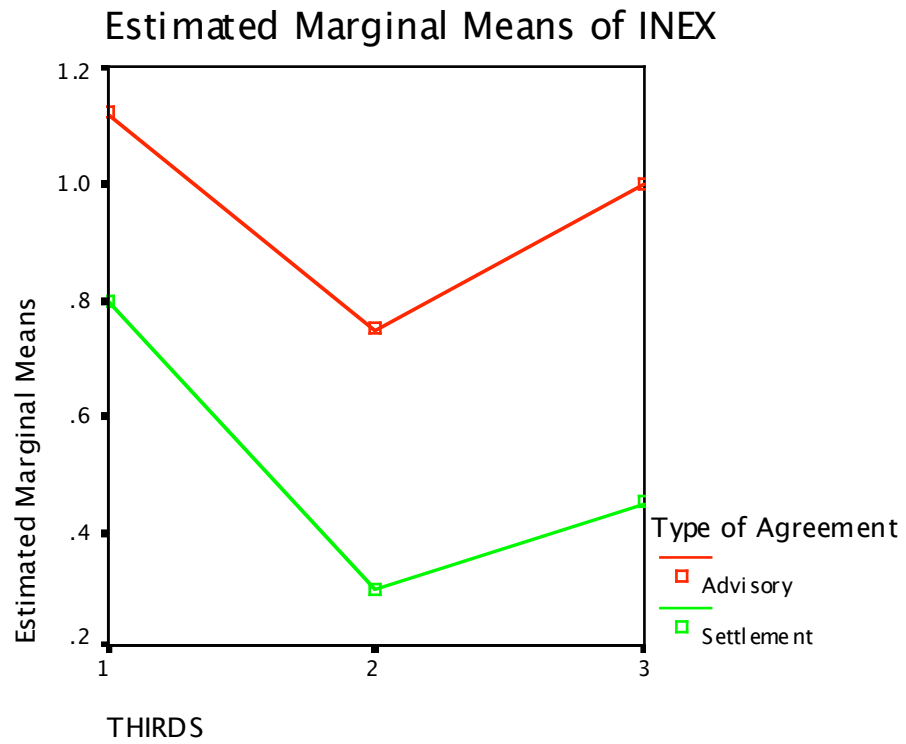
		Assumed					
		Greenhouse	6.543	1.965	3.330	5.245	.009
		-Geisser					.168
		Huynh-Feldt	6.543	2.000	3.271	5.245	.008
		Lower-bound	6.543	1.000	6.543	5.245	.030
Error (THIRDS)	TA	Sphericity	2.857E-02	2	1.429E-02	.190	.827
		Assumed					.007
		Greenhouse	2.857E-02	1.241	2.303E-02	.190	.719
		-Geisser					.007
		Huynh-Feldt	2.857E-02	1.322	2.161E-02	.190	.734
		Lower-bound	2.857E-02	1.000	2.857E-02	.190	.666
	PREC	Sphericity	37.350	52	.718		
		Assumed					
		Greenhouse	37.350	51.191	.730		
		-Geisser					
		Huynh-Feldt	37.350	52.000	.718		
		Lower-bound	37.350	26.000	1.437		
	INEX	Sphericity	20.117	52	.387		
		Assumed					
		Greenhouse	20.117	51.722	.389		
		-Geisser					
		Huynh-Feldt	20.117	52.000	.387		
		Lower-bound	20.117	26.000	.774		
	ML	Sphericity	8.283	52	.159		
		Assumed					
		Greenhouse	8.283	40.459	.205		
		-Geisser					
		Huynh-Feldt	8.283	44.218	.187		
		Lower-bound	8.283	26.000	.319		
	CONS	Sphericity	32.433	52	.624		
		Assumed					
		Greenhouse	32.433	51.086	.635		
		-Geisser					
		Huynh-Feldt	32.433	52.000	.624		
		Lower-bound	32.433	26.000	1.247		
	TA	Sphericity	3.900	52	7.500E-02		
		Assumed					
		Greenhouse	3.900	32.256	.121		
		-Geisser					
		Huynh-Feldt	3.900	34.378	.113		
		Lower-bound	3.900	26.000	.150		

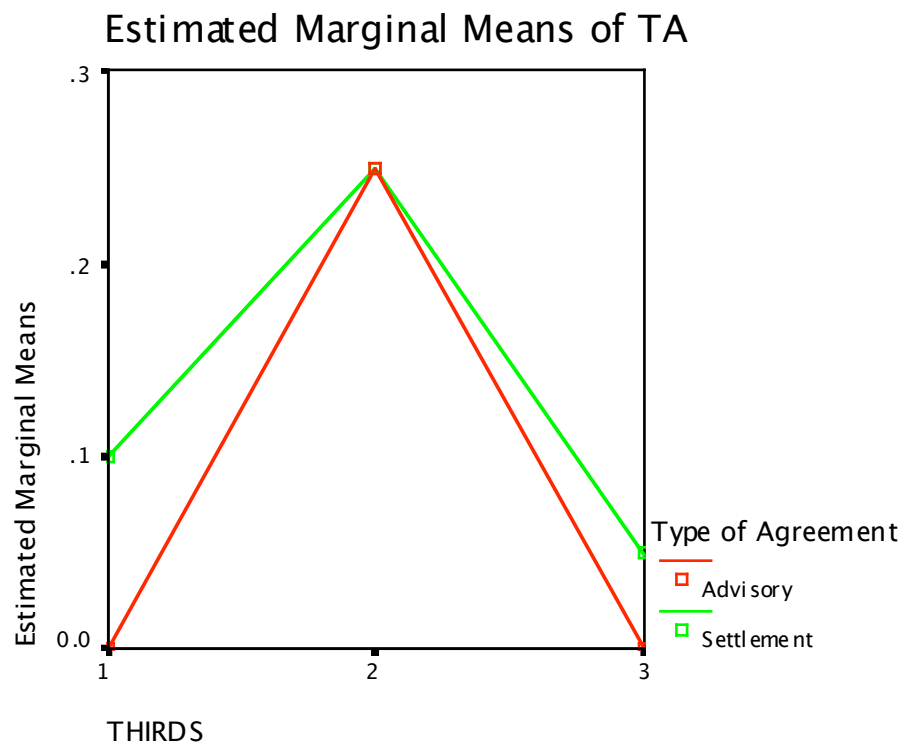
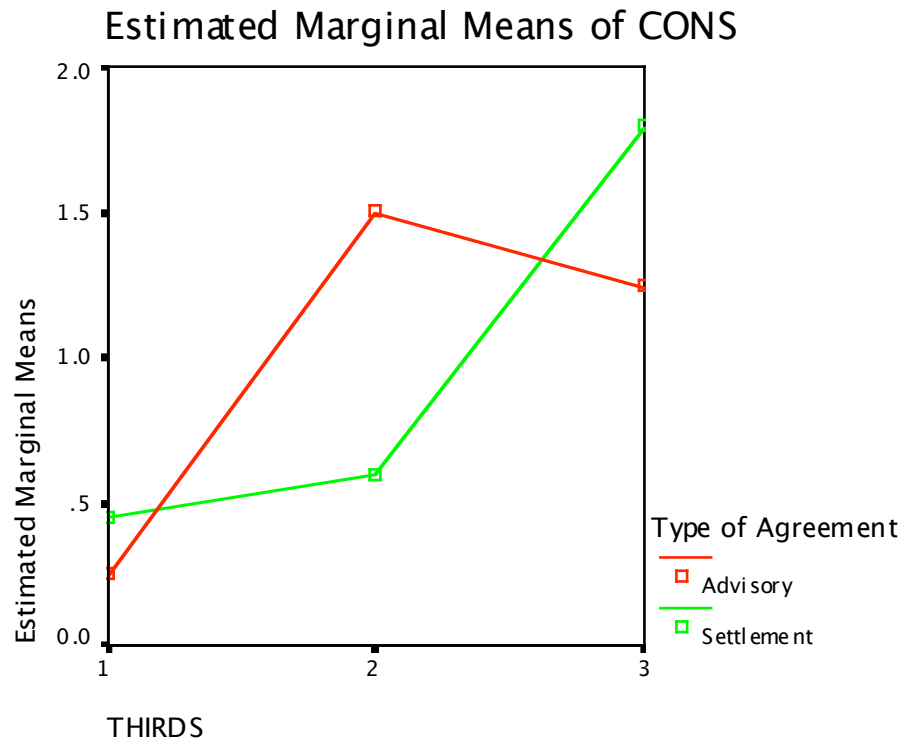
Tests of Between-Subjects Effects
Transformed Variable: Average

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	PREC	76.201	1	76.201	70.695	.000	.731
	INEX	37.296	1	37.296	23.880	.000	.479
	ML	5.668	1	5.668	37.867	.000	.593
	CONS	65.186	1	65.186	86.840	.000	.770
	TA	.805	1	.805	5.103	.032	.164
TYPEOF	PREC	1.071E-02	1	1.071E-02	.010	.921	.000
	INEX	3.344	1	3.344	2.141	.155	.076
	ML	.525	1	.525	3.507	.072	.119
	CONS	4.286E-02	1	4.286E-02	.057	.813	.002
	TA	4.286E-02	1	4.286E-02	.272	.607	.010
Error	PREC	28.025	26	1.078			
	INEX	40.608	26	1.562			
	ML	3.892	26	.150			
	CONS	19.517	26	.751			
	TA	4.100	26	.158			

Profile Plots







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CURRICULUM VITAE

William E. Hall was born in Ashland, KY, on January 31, 1967. He graduated from North Allegheny High School in Wexford, PA, in 1985. In 1987, he studied and traveled aboard the S.S. Universe as part of the Semester at Sea program, visiting 11 countries. A member of Phi Beta Kappa, he received his Bachelor of Arts, *magna cum laude* in Political Science from the University of Pittsburgh in May 1989. He served as a Peace Corps Volunteer in the Democratic Republic of Congo (formerly known as Zaire) from 1989-91. In 1995, he received the Brenda Rubenstein scholarship at the Institute for Conflict Analysis and Resolution at George Mason University, where in 1999 he also completed his Master of Science in Conflict Analysis and Resolution. He is currently employed as a conflict resolution specialist in the United States Environmental Protection Agency's Conflict Prevention and Resolution Center. He is married to Margaret Malone-Hall and together they have a son, Noah, and daughter, Elissa.