Inter-organizational Engagement in Collaborative Environmental Management: Evidence

from the South Florida Ecosystem Restoration Task Force

Ramiro Berardo
University of Wisconsin, Milwaukee
600 E. Greenfield Ave.
Milwaukee, WI 53204
(berardo@email.arizona.edu)

Tanya Heikkila
University of Colorado, Denver
1380 Lawrence Street, Suite 500
Denver, CO 80217
(tanya.heikkila@ucdenver.edu)

Andrea K. Gerlak
University of Arizona
324 Social Sciences
Tucson, AZ 85721
(agerlak@email.arizona.edu)

Abstract: Collaboration is commonly used to deliver public services that reach beyond the individual capacities of independent organizations. Although much of the literature in the fields of collaborative governance has offered theoretical insights to explain how stakeholders might initially enter into collaborative processes or how the design of collaborative processes can support continued stakeholder participation over time, the literature has not effectively studied what factors might drive actors to engage one another in a particular conversation or discussion during a collaborative process, nor what factors affect whether engagement is cooperative or conflictual. We fill this gap through a more "micro-level" view of collaborative engagement in a study of the South Florida Ecosystem Restoration Task Force, a collaborative arrangement involving representatives from 14 federal, tribal, state, and local agencies, charged with advising and coordinating the efforts in South Florida to restore and recover the Florida Everglades. We use data from coded meeting minutes of discussions among the participants in the South Florida Ecosystem Restoration Program Task Force over a 5-year time frame, and demonstrate that the types of issues under discussion and the actors involved in discussion can either foster or inhibit engagement and conflict during dialogue. Our results have important implications for the development of a stronger theory of collaborative engagement in inter-organizational partnerships.

Collaborative decision-making processes that allow for coordination and cooperation across a diversity of actors, agencies and interests are increasingly used to manage and govern natural resources, such as forests, watersheds and fisheries (Gerlak et al. 2012). In theory, collaborative processes can allow for greater transparency in decision-making, as well as learning among the participants in the collaborative process (Backstrand 2003; Bingham et al. 2005; Huxham and Vangen 2005; McGuire 2006; Ansell and Gash 2007). Collaboration may also increase the procedural and distributive fairness of policy or management decisions (Berardo 2013, Merkhofer et al. 1997; Schuckman 2001; Parkins and Mitchell 2005). Additionally, collaborative processes can build trust among participants (Innes 2004), and potentially reduce conflicts among different stakeholders that often plague environmental management (Cronin and Ostergren 2007). One of the primary mechanisms through which many of these "benefits" of collaboration emerge is the process of engagement – or regular dialogue and discussion among diverse actors.

Although much of the literature on collaborative governance has offered theoretical insights to explain how stakeholders might initially enter into collaborative processes or how the design of collaborative processes can support continued stakeholder participation over time, the literature has not effectively studied what factors might drive actors to engage one another in a particular conversation or discussion during a collaborative process, or what factors affect whether engagement is cooperative or conflictual. In other words, the "micro-level" view of collaborative engagement remains underdeveloped. Understanding the "micro-level" view, however, is important if scholars are interested in how individual participants interact, address problems and potentially learn from one another over time. Therefore, in this study, we ask: 1) what characteristics of collaborative processes are likely to trigger more engagement or dialogue

among collaborative participants, and 2) what characteristics of the collaborative process are likely to trigger conflict during dialogue?

Although the empirical and theoretical literature related to these research questions is limited, we draw propositions to inform our study from a diverse body of literature on collaboration, policy processes, networks, and conflict resolution, which provides insights into the types of "micro-level" engagement processes that are of interest in our study. In developing our propositions, we focus on two broad categories of factors that explain engagement in the discussions or dialogue during a collaborative process: 1) the characteristics of the issues under discussion, and 2) the characteristics of the actors participating in the collaborative network.

We use data from coded meeting minutes of discussions among the participants in the South Florida Ecosystem Restoration Program Task Force (Task Force) over a 5-year time frame to test our propositions. The Task Force is a collaborative arrangement involving representatives from 14 federal, tribal, state, and local agencies, charged with advising and coordinating the efforts in South Florida to restore and recover the Florida Everglades. The study of a single case, while limited in its generalizability to other collaborative processes, can offer novel theoretical insights that can be tested in other cases. Additionally, in using coded meeting minutes as our data source, we are able to measure and assess the concept of engagement in "real time", which is a novel approach to studying collaborative partnerships.

We begin with a background on the Everglades Restoration Program to understand the scope of the collaboration and the Task Force as a venue for inter-organizational engagement. Then we examine the literature and outline our propositions around the more "micro-level" processes of collaborative engagement. Next, we describe our data and methods, and our results.

Our results reveal insights into how types of issues and actor characteristics can either foster or inhibit engagement in discussion and conflict during discussions.

Case Background: The Everglades Restoration Program

From a practical perspective, restoration of the Everglades is a high profile collaborative effort - often heralded as one of the leading examples for other collaborative ecosystem restoration efforts (CISRERP 2006; US GAO 2007; Doyle and Drew 2008). The program affects dozens of plant and animal species, the use of agricultural lands (especially sugar), millions of residents and visitors to South Florida, as well as recreation areas in Everglades National Park and Florida's coastal waters.

A significant portion of the restoration program is guided by the Comprehensive Everglades Restoration Plan (CERP)[1], which Congress approved in the Water Resources Development Act of 2000 (Boswell 2005; Grunwald 2006). At the time, the plan represented a culmination of more than a decade of federal and state initiatives that had aimed to address concerns from environmental groups, scientists and political leaders regarding the degradation of the Everglades ecosystem. As a result of the plan, the US Army Corps of Engineers and the South Florida Water Management District, which are responsible for managing much of the water supply and flood control infrastructure in the Everglades, along with other federal and state agencies, have worked together on projects designed to bring more freshwater from the "engineered" system back into the natural flow of the historic Everglades.

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[1] The CERP represents 68 restoration projects and can be seen as just one element of the larger restoration efforts underway within the Everglades and across South Florida. The CERP consists primarily of projects to increase storage capacity, improve water quality, reduce loss of water from the system, and reestablish pre-drainage hydrologic patterns wherever possible. The largest portion of the budget is devoted to water storage and conservation and to acquiring the lands needed for those projects (NRC 2008: 2).

The coordination of the various projects laid out in the CERP, along with other restoration efforts by the diverse interests that play a role in managing the Everglades ecosystem, is undertaken by the South Florida Ecosystem Restoration Task Force. The Task Force includes representatives from federal, state and local entities, and Indian tribes. In bringing these actors together, the Task Force is intended to be consensus-based and transparent, as well as reduce conflict amongst participants and foster public participation (Public Law 104-303). The Task Force is also expected to share information regarding broader restoration projects among member agencies, support coordination of science and research related to Everglades restoration, and assist agencies in restoration projects.

The Task Force also includes or coordinates its activities with advisory sub-groups (Gerlak and Heikkila 2006). The Task Force's Working Group, for example, assists the Task Force in its efforts to coordinate the development of policies, strategies, plans, programs, projects, activities, and priorities addressing the restoration, preservation and protection of the South Florida ecosystem. The Task Force is also supported by the Science Coordination Group, which assesses the scientific aspects of the various plans and programs, and research associated with the restoration. Additionally, the Water Resources Advisory Commission (WRAC), composed of citizens, business, agriculture, state, federal, local, and tribal representatives, is charged with recommending consensus-based solutions to water resource protection, water supply, flood protection, and Everglades restoration issues. While the WRAC is independent of the Task Force, WRAC members attend Task Force meetings and occasionally have joint meetings with the Task Force.

According to its charter, the Task Force shall implement procedures to facilitate public participation, including providing advance notice of meetings, providing adequate opportunity

for public input and comment, and maintaining records of meetings and making those records publicly available (SFERTF 1997). The Task Force has been meeting approximately four times a year since 2000. Most meetings are held in cities in South Florida and often are held over two days. Organizationally, the Task Force is housed within the US Department of the Interior, which provides staff support, including an Executive Director, to facilitate meetings, plans, reports, and other outputs from the collaborative process.

In recent years, some observers of the restoration process have raised questions of political and jurisdictional clout, asymmetries in power and perceived "winners and losers" (Boswell 2005: 96; Grunwald 2006) in the process of designing responses to the ongoing environmental problems that affect the area. The slow progress and cost escalations in recent years have led to fears that some projects and outcomes may be left out and not all stakeholders will receive their expected benefits from the program (NRC 2008: 227). Most recently, the National Research Council, in their fourth biennial review of the program, has noted that although the pace of restoration implementation has improved, with several restoration projects underway, the need for an increased level of federal funding to support the restoration effort is great (NRC 2012). The costs of the CERP -- just one portion of what is considered to be the world's largest restoration effort -- are expected to exceed $13 billion (Quinlan 2010).

Engagement in Collaborative Environmental Management

Engagement among actors in a collaborative process, such as the South Florida Ecosystem Restoration Task Force, is important to explore because, as noted in the introduction, it is one of the mechanisms through which many of the beneficial outcomes of collaboration emerge. For example, engagement is thought to be associated with knowledge building and policy learning (Carpenter and Kennedy 2001; Innes 2004; Carlson 2007; Dietz and Stern 2008).

Engagement is also associated with the emergence of trust when the genuine interests and preferences are revealed by members of a collective (Scholz and Lubell 1998; Bromiley and Cummings 1995). Trust building through engagement can further help promote cooperation and reduce the costs of resolving collective action problems among diverse actors (Dolšak and Ostrom 2003; Burt 2001; Coleman 1990). Engagement is also thought to allow for "social influence" or norming to take hold in a collaborative process, which can help actors come to common understanding of issues and may help removing barriers to joint action (Chwe 1999; Kim and Bearman 1997; Oliver and Myers 2003). Similarly, some research suggests that engagement may ultimately help mediate ambiguity that characterizes many complex environmental issues (Van der Keur et al. 2008; Van der Sluijs 2010; Raadgever et al. 2011) and integrate shared knowledge systems among different stakeholders (Fischer 2006).

Engagement that involves face-to-face communication via dialogue and discussion is more likely to foster the types of collaborative outcomes listed above (Ostrom 2005) compared to mere attendance at public at meetings or participation in decision-making through written public comments. Other scholars consider quality of engagement to involve more than just face-to-face dialogue, but also information exchange, deliberation across diverse actors and conflict management (Thomas 1995; King et al. 1998; Bingham et al. 2008). It is important to keep in mind that engagement in collaborative groups does not equal lack of conflict. Scholars of collaboration in fact recognize that quality engagement coexists with conflict and that discussions that allow conflicts to be aired can be productive, resulting in further collaborative behavior and the establishment of cooperative reputations (O'Leary and Bingham 2007). Summing up, the quality and breadth of engagement in collaborative groups are important to facilitate the solution to common problems, and so it becomes relevant to examine both the level

of engagement across multiple and diverse actors, and the ability of actors to address conflicts during engagement. As noted in the introduction, studies of collaborative efforts have found that the design of collaborative processes is important in fostering dialogue and engagement in general. These "design" features focus the attention of analysts to the macro-level features of a collaborative process, such as whether a diversity of actors are brought to the table in the collaborative process (Schneider et al. 2003). They do not, however, point to the more "micro-level" features of a given discussion within a collaborative process that shape engagement among the actors. Although the literature has not empirically examined what micro-level features of a discussion will spark engagement, we note that two key categories of variables emerge as important when we zoom into the discussion-level of analysis: (1) the characteristics of the issues discussed in collaborative processes, and (2) the actors participating in the collaborative network.

In general, these two broad categories of variables are of interest because they are widely recognized in the literature as important in explaining whether or not actors come to the table and participate in these processes. For instance, the literature on public participation points to characteristics of actors, such as their age, income, skills and resources, as factors that influence who engages politically (e.g. Verba et al. 1993; Brady et al. 1995). Similarly, the literature on citizen participation recognizes that the nature of issues is important in driving citizens and stakeholders to participate in decision-making processes (e.g. Lowndes et al 2001; Dawes et al. 2011). While we use this literature for general guidance, our goal is not to study whether citizens or stakeholders attend. Rather our aim is to look at how participants in a collaborative process engage in a particular discussion and dialogue when they do attend. These participants include both the formal members of the collaborative, as well as citizens or stakeholders.

Therefore, in looking at these two broad categories of factors, we draw out specific variables related to issues and actors that the literature on collaborative governance points to as potentially important in collaborative processes. The issues discussed in a collaborative process are important in influencing engagement because issues define what the actors pay attention to and whether it is of interest and value for them to invest in dialogue. Since collaborative processes typically are formed to address complex problems, they have to grapple with multiple issues and sub-issues (O'Leary and Vij 2012: 511). Not all issues may be relevant or of interest to all actors in the process, but some issues may attract the attention of a greater number of actors involved. The alternative dispute resolution literature, for example, recognizes that competing interests are more likely to come together and participate in discussions around shared issues that are highly central to the collaborative (Putnam and Wondolleck 2003; Orr et al. 2008), such as the core mission. At the same time, because such issues may be most salient to members, they might also drive more conflict in discussions. Therefore, our first two propositions follow:

Proposition 1. Discussions about issues that are central to the mission of the collaborative will be associated with higher levels of engagement – when compared to discussions where non-central issues are on the table.

Proposition 2. Discussions about issues that are central to the mission of the collaborative will increase the likelihood of conflict during engagement – when compared to discussions where non-central issues are on the table.

In addition to issue centrality, technical issues can influence how actors in a collaborative engage. Technical issues usually require actors to have knowledge and expertise in order to engage effectively around these topics. This suggests that fewer actors – namely, those who hold

the technical expertise – are likely to engage around technical issues in a collaborative process. This expectation is supported by scholars who find that the availability of expert knowledge may be used to justify the powerful position of certain actors (Radaelli 1999), which may hinder engagement (Ozawa 2005). Although some scholars find that decision-making process that expose non-experts in a collaborative process to technical information can enhance the willingness and ability of non-experts to engage in genuine dialogue (Webler et al. 2001; Mascarenhas and Scarce 2004), such willingness may require resources (e.g. training) and substantial time for non-experts to understand these issues. Therefore we would expect that on average we would still see less engagement around technical issues. At the same time, we also expect that conflict during engagement is less likely to be spurred by discussions focused on technical issues because such issues may be less likely to draw out fundamental value differences that often spur conflicts. This is supported by research on policy processes that finds that competing interests are more likely to come to consensus, and avoid conflict, when dialogue is focused around technical issues (Sabatier and Weible 2007). Therefore, we propose:

Proposition 3. Discussions about technical issues will be associated with lower levels of engagement – when compared to discussions where non-technical issues are on the table.

Proposition 4. Discussions about technical issues will be associated with lower levels of conflict during engagement –when compared to discussions where non-technical issues are on the table.

In addition to the types of issues, the types of actors that participate in the discussions may affect engagement in collaborative processes. One of the prominent ways actors in collaborative processes are categorized is according to their power, which is related to capacity (i.e. time, funding, technical, administrative skills, and expertise), status and organizational

affiliation (Gray 1989; Emerson et al. 2012; Ansell and Gash 2007; Imperial 2005; Raik and Wilson 2006). Some network research suggests that actors that occupy positions of authority can influence the perceptions of network members (Choi and Brower 2006; Krackhardt 1990; Diani 2003, Shannon 1991, Kuhnert 2001) and set the tone of the discussions (Crona et. al 2011). In many collaborative environmental governance arrangements, government actors hold resources-based power, in terms of the technical and financial resources, and regulatory authority (Pfeffer and Salancik 2003; Choi and Kim 2007). In restoration programs, in particular, federal actors hold positions of structural-based power (Scott 2000; Choi and Kim 2007) based on the design of the restoration program and the positions of key federal agency actors. As O'Leary and Vij (2012: 513) note, government officials may be able to exercise power in a collaborative network simply because they represent the government. As a result, we might see other actors less willing to engage in dialogue when these types of powerful actors dominate a discussion. Therefore, we propose:

Proposition 5. Discussions dominated by powerful actors will be associated with lower levels of engagement—when compared to discussions where other actors dominate.

A lower level of engagement, however, does not equate with low conflict. Particularly in the discussion of policies that may affect land-use patterns, such as the ones that take place in the meetings we analyze, federal governmental agencies in Florida have historically been involved in conflict-ridden negotiations with other governmental and non-governmental actors. Nevertheless, for the past 20 years there has been a tide turn represented by the increasing efforts to create the conditions for greater inter-organizational cooperation in the area, of which the Task Force is an example of (Boswell 2005). Given that the dominant actors in the Task Force are powerful governmental agencies that have at least formally embraced the spirit of cooperation

contained in the legislation that created this collaborative partnership, we would expect that their engagement in discussions is associated with lower levels of conflict during the meetings discussions.

Proposition 6. Discussions dominated by powerful actors will be associated with lower levels of conflict during engagement – when compared to discussions where other actors dominate.

In addition to the powerful actors that participate in the Task Force, there are other actors who attend the meetings but may not be able to match the strong organizational capacity of powerful actors that is needed to steer the decision-making process. Indigenous and tribal perspectives, for example, are thought to be undervalued and even undermined in decision-making (Whiteley et al. 2008; Turner et al. 2008; Foster 2002; Cronin and Ostergren 2007). Similarly, some have raised concerns that collaborative governance processes are skewed against environmental groups and advantage development interests or industry (McCloskey 2000; Echeverria 2001; Schuckman 2001). In terms of ecosystem restoration, environmental NGOs lack structural power because they often are not landowners or resource managers.

However, empirical evidence shows that when actors who are not in positions of power participate in policy-relevant discussions, other actors with formal power to enact regulations may be more willing to accommodate requests and facilitate the in-depth treatment of problematic issues. For instance, students of the Environmental Justice movement have shown that grassroots activists can been successful in promoting the legislative design and bureaucratic implementation of policies both at the federal and state levels that protect their constituencies – usually formed by minority, disenfranchised groups (e.g. Bullard and Johnson 2000, Brulle and Pellow 2006, Chambers 2007). This leads to our seventh proposition:

Proposition 7. Discussions dominated by actors who do not hold positions of power in a

discussion will be associated with higher levels of engagement –in comparison to discussions

where other actors dominate.

Engagement can be positively affected by the presence of non-governmental actors, but the higher level of engagement should not necessarily result in a reduction of conflict but rather the opposite, since conflicting interpretations resulting from disenfranchisement can further differences in power and lead to conflict (Gray 2003). Since actors who lack power, unlike powerful actors, may have fewer opportunities to dominate discussions our final proposition points to either participation or domination of these actors in discussion as influences on engagement:

Proposition 8. Discussions dominated by actors who do not hold positions of power in a

discussion will increase the likelihood of conflict during engagement –in comparison to

discussions where other actors dominate.

Data and Methods

Our data source for analyzing discussions in the case of the South Florida Ecosystem Restoration Task Force is the minutes of 25 separate Task Force meetings held between 2000 and 2005.[2] The Task Force records these minutes nearly verbatim, so they are an excellent record of engagement within the Task Force over time.[3] The Task Force agenda is set by the Executive Director, in consultation with staff and Task Force members, but interested parties can also suggest items for inclusion in the agenda as needed. From these minutes, we coded the characteristics of discussions that occurred within 195 separate "agenda items" identified in the minutes. We

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[2] Over the five-year period, no meetings were held in 2001. The agenda and presentation materials are typically shared in advance of the Task Force meetings online at the Task Force website (see http://www.sfrestore.org/tf.html). Meeting minutes are publicly available.

[3] The researchers attended one meeting in December 2005 and noted that the minutes appear to accurately reflect the meeting discussions.

created a standardized coding form and coding instructions to capture indicators of our dependent and independent variables, as we discuss in detail below.[4] Prior to coding, the research team conducted open-ended, exploratory interviews with ten participants in the restoration process, and attended a Task Force meeting to become familiar with the issues, participants and overall collaborative process.

Dependent Variables

The two key dependent variables of interest in this paper are 1) the *level of engagement* among the actors who participate in the Task Force meetings, and 2) *conflict in engagement*, both measured at the agenda item level. To identify and then code the first dependent variable – level of engagement in each agenda item - the coders first created the full list of organizational actors who attended a given meeting. One coder initially reviewed all of the minutes to identify the complete list of attendees and a second coder then checked that all of them were properly included in the list. For each agenda item discussion, the coders identified who voiced an opinion during the discussion. Thus, all attendees who voiced their opinions during an agenda item are assumed to be engaging each other in that particular agenda item. With this information we built 195 square, symmetric matrices (one for each agenda item) in which rows and columns contained the name of all the actors that were present during the agenda item discussion. In any given matrix (e.g. any given agenda item), a cell x_{ij} contains a 1 whenever the organization in cell i engages organization in cell j, 0 otherwise.[5]

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[4] Three individuals, trained in the coding instructions, conducted the coding. Three sets of minutes were coded with the initial coding form by two coders and then coding questions were revised where inter-coder reliability was low. After coding with the final coding form, 30% of the coded minutes were selected at random and coded by a second coder to check for inter-coder reliability. Inter-coder reliability was 87% (based on the number of lines of minutes coded the same). All coded minutes were reviewed for data entry errors and calculation errors in line counts.

[5] We considered coding engagement between two actors only when the minutes indicated that individuals explicitly responded to one another, but the reliability on that coding approach was low, as it is difficult to determine what constitutes and explicit face-to-face communication.

We inputted each of these 195 matrices into the UCINet software (Borgatti et al. 2002) and calculated the Average Degree for each network as our operational indicator of the dependent variable *level of engagement*. Average Degree is a simple measure obtained with the following formula,

$$Av. Degree = \frac{2T}{n}$$

Where T is the number of ties present in the network (or 1s in the matrix's cells), and n is the number of actors participating in the meeting. In other words, Average Degree is a simple, intuitive measure to capture the overall *level of engagement* observed in each network, with higher values indicating more comprehensive engagement, and lower values indicating the opposite.

The distribution of this variable is heavily skewed to the right, with most values clustering in the low end of the scale and so predicting it through the estimation of a linear regression violates the assumption of normally distributed residuals. Thus, we transformed this variable by obtaining its natural logarithm and use this transformed version as our dependent variable in our OLS regression.[6]

The coders also identified *conflict in engagement* between actors as they voiced their opinions during their participation in the agenda item. Key words indicating conflict included: "disagree", "does not support", "oppose", "criticize", "bad idea", and "concerned". Using these

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[6] In 20 out of the 195 agenda items we coded there was no engagement (e.g. only one actor discussed the issue). The analyses we present in this paper exclude these 20 cases. We plan to analyze the differences between agenda items with and without engagement as we code more meetings in the future.

key words and their synonyms, if any statements were identified by the coders in one of the 195

engagement networks, the discussion was assigned a value of 1 and 0 otherwise.[7]

<u>Independent Variables</u>

As described in our propositions, we expect to be able to predict the level of engagement

among the network of actors at Task Force meetings and whether conflict appears in discussions

based on 1) how central the issues are for the mission of the Task Force 2) the technical

complexity of issues and 3) the type of actor that dominated the discussion in the agenda item,

particularly actors with authority and disempowered actors.

The *centrality of issues* and the *technical issues* (our two first independent variables)

discussed were measured based a categorization of the agenda items under which each

discussion was structured. Agenda items were categorized by the coders into six, mutually

exclusive types.[8] The first two types agenda items that we employ as indicators of issues that are

central to the mission of the Task Force are a) updates and reports on specific restoration

projects; and b) issues related to the implementation of the restoration program (e.g. the progress

of the restoration effort, plans, guidelines and schedules for implementation and implementation

financing). These two types of issues represent the core mission of the Task Force and are most

likely to cross interests of all actors attending the meetings. If the agenda item discussed any of

these two issues, then our variable *centrality of issues* adopts a value of 1, 0 otherwise.

Two other types of agenda item categories indicate discussions on *technical issues*. These

include: c) updates and reports from experts and advisory groups related to the restoration effort;

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[7] Before developing a binary coding scheme, coders attempted to code for cooperative, neutral, or conflict-laden engagement. The differences between cooperative and neutral engagement were difficult to detect and inter-coder reliability was deemed too low to use the three point scale for analysis.

[8] Two coders coded each agenda item. Inter-coder agreement was high (80%) and disagreements in coding were resolved by a third coder. The agenda items also included a topic for "updates from advisory bodies", but as this was not a topic of the public comments, it is excluded from the analysis in this paper.

and d) discussions on technical or ecosystem challenges in the restoration effort. Whenever the agenda item was coded as either of these two issues, the variable adopts a value of 1, 0 otherwise.

Finally, the remaining two types of agenda items indicate *non-technical* and *non-central* issues for the Task Force network members. They are e) internal Task Force administration matters; and f) formal public comment periods on the agenda. If one of these issues is discussed in the agenda item, then this variable adopts a value of 1, and 0 otherwise. This dummy variable is left out of the model, and used as a baseline category to assess the effect of the previous two dummy variables in the level of engagement and conflict that takes place during discussions.[9]

To test propositions 5 through 8, which expect *discussions dominated by powerful actors,* and *discussions dominated by actors who are not in positions of power* to have different effects on the level of engagement and conflict, we created a set of four dummy variables that measure what type of actor is more active in the discussions. Coders counted the number of organizations of different types that participated during the agenda item, and created dummies that indicate which type of actor dominated based on this count. The first dummy captures whether federal-level governmental actors dominated the discussion (value of 1) or not (0), as an indicator of powerful actors. The second dummy takes a value of 1 when discussions are dominated by environmental NGOs, and 0 when they are not, as an indicator of disenfranchised actors

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[9] One of the reviewers noted that the South Florida Ecosystem Task Force is a congressionally chartered task force where the discussions are less likely to include non-members of the Task Force except during the formal public comment periods, and therefore during public comment periods one would, almost by definition expect more engagement. Thus we run alternative models separating the two indicators of non-central/non-technical issues, leaving the "internal Task Force administration" dummy as the baseline category. The coefficients for the "formal public comment periods" on the agenda were not statistically significant, and so we decided to keep these two variables together as our indicator of non-central, non-technical issues. Results are available from the authors upon request. We also note that the public is not precluded from commenting outside of public comment periods and quite frequently individuals who are not members of the Task Force engage in discussion at various points in the meeting.

dominating the discussion. The third variable takes a value of 1 when any other type of

organization dominated the discussion (0 otherwise).[10] Finally, there is a fourth dummy variable

that adopts a value of 1 when no specific type of actor dominated the discussion, and 0

otherwise. For instance, if two federal-level governmental actors participated in the discussion,

and two local government representatives also did, then there was a "tie" in participation, and

thus the last dummy variable would have adopted a value of 1. We do not include this last

dummy variable in our models, since we use it as our baseline category against which the other

three are compared. We also coded a second variable to represent participation of

disenfranchised actors in discussions – which we name *Participation of Tribes*. This variable

captures whether a representative of either the Miccosukee or the Seminole tribes participated in

the discussion of the agenda item (value of 1), or not (value of 0). As there are only two

participating tribes in the Task Force, it is much less likely that tribes are able to dominate a

discussion relative to the federal agencies and NGOs. However, as tribes are commonly

identified as an actor that lacks formal power in many environmental collaborative efforts, it is

important to assess whether their presence in a discussion affects engagement and conflict.

We also include in our models different control variables that we expected may have an

effect on the degree of engagement or the emergence of conflict in a discussion. The controls

include a dummy variable for the *presence of conflict in a previous discussion*. The logic is that

conflict in previous discussions may inhibit the extent to which actors are willing to engage with

one another. In addition, we coded a variable labeled *voting or agreeing on an action item* that

captures the number of votes or action items taken during a discussion. Coders read each agenda

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[10] Ideally, it would be desirable to have separate dummy variables for each category of actor lumped together in this variable: local and state-level governmental actors, and private industry. Unfortunately, there are only 19 agenda items where any of these types of actors dominate the discussion, and so creating separate dummies for each of them would result in variables with not enough variation to pursue our analyzes.

item and identified votes and action items based on self-reporting of the Task Force in the minutes that a vote or action item was taken (typically bolded or italicized in the minutes). We expected this variable to drive both the level of engagement and conflict because typically votes or action items are salient to participants. Two other control variables are included to represent the influence of exogenous events that could affect discussions and potentially conflict. The first variable is the number of *lawsuits related to the Everglades* that were either filed or decided in the two months prior to the meeting (range from 0 to 4). The second variable is the *media attention* on the Everglades, measured by the number of news stories on the Everglades printed the month prior to the meeting, which ranges from 0 to 9. The data source for the court cases was a Lexis Nexis search of state and federal court cases related to the Everglades, while the media data was gathered through a Lexis Nexis search of the major US newspapers (including all of Florida's major cities) for articles addressing the Everglades.

In the following section, we present results of two models. The first model is an OLS estimation with the logged average degree (engagement level) as the dependent variable. The second model is a logit regression predicting conflict in a discussion as a dependent variable. Given that the size of networks remains constant at the meeting level (all participants in a meeting can potentially engage in that meeting's different agenda items), we run our regressions clustering the standard errors at the meeting level.

Results

The results from the regression analyses are presented in Table 1 below.[11] (Descriptive statistics are presented in Appendix A.) The OLS model examines how the issues under

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[11] Standard diagnostics were run on the models. The variance inflation factor on the models showed acceptable levels of collinearity between variables (all < 4). The results of the skewness test (Adj. Chi-square = 3.88), show that the residuals are normally distributed.

discussion, the actors involved in a discussion and the control variables affect the level of

engagement among the Task Force network (measured by the natural log of average degree)

during any given agenda item discussion. The logit regression predicts how these independent

variables affect the likelihood of a conflict emerging during a discussion (at the agenda item

level).   The results in Table 1 present some complementary insights in terms of how the issue

and actor-level variables relate to network engagement and conflict, as we discuss more below.

[Table 1 about here]

Level of Engagement

In considering how the explanatory variables affect the degree of engagement among the

network at a meeting, we find that when both central and technical issues are on the agenda the

level of engagement drops (in comparison to when items that are discussed are not central or

overly complex). These findings on central issues run counter to Proposition 1, while the

findings on technical issues supports Proposition 3, as will be discussed in more detail below.

In addition to the characteristics of the agenda issues, we also considered whether the

characteristics of the actors involved in the network discussions influence engagement.

Proposition 5 advanced the expectation that engagement would be reduced when actors in

position of authority dominated the discussions, but our findings show that the exact opposite

occurs: when more powerful federal actors dominate a discussion around a particular agenda

item, we are more likely to see greater engagement among the actors in the network relative to

the baseline variable where "nobody dominates". At the same time, we find that when NGOs

dominate discussions or when one of the two tribes participates in a discussion, there are higher

levels of engagement among the members of the network that participate in the agenda item,

which lends support to Proposition 7 that domination of discussions by actors who are not in positions of power will lead to an increase in levels of engagement.

In examining the control variables we see that the sign for the variable representing conflict in a previous agenda item is negative, as we would expect, although not significant. The signs for the variables for exogenous events – "court cases" and "media attention" – are opposite from what we would expect. Yet, the effect sizes of the coefficients are relatively small and not significant. The coefficient for the variable "agenda vote or action take", however, is significant, showing that the degree of engagement among the network is likely to be significantly higher ($p < .01$) when voting or action occurs. The positive relationship between Task Force voting/action and engagement is not surprising given that votes and action items are likely to potentially alter the implementation of the restoration effort. For instance, the Task Force held votes more frequently in the later part of 2004 (agenda items 157-169) when discussions were ongoing in regards to the design and implementation of the strategic plan, which is a peak period of engagement in our sample of meetings, as shown in Appendix B.

Conflict in Engagement

While the type of agenda issues help explaining the level of engagement by participants in the Task Force meetings –although not always in the direction originally expected, they do not help explain the likelihood of conflict emerging during an agenda item discussion –as shown by the results in the second column of Table 1. Both central issues and technical issues have a negative coefficient (contrary to Proposition 2 and as expected by Proposition 4), but neither is statistically significant at conventional thresholds. This means Propositions 2 (discussion of

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central issues increase conflict) and 4 (discussion of technical issues decrease conflict) are not

supported.[12]

In examining the effects of the actor characteristics on conflict, the participation of tribes

in a discussion stands out as critical, supporting Proposition 8 given the statistically significant

large and positive coefficient, which indicates that engagement by a member of one of the tribes

in the discussion is more likely to lead to a conflict during the discussion. To get a better grasp

of the effect of tribal participation on conflict, we calculate predicted probabilities of conflict

occurring during discussions when tribes participate and when they do not, while fixing all other

dummy variables in the model to their modes and non-dummy variables to the round value

closest to their means.[13] The difference in probability of conflict with and without tribe

participation is very substantial. Whereas in the absence of tribal participation the probability of

conflict is about 1.5%, once tribes get involved the probability grows to a sizable 43%. (See

Appendix C for the results from the calculations of predicted probabilities.) This finding is

supported by the secondary literature and background evidence on the Task Force, which

indicates that tribes have been dissatisfied with many aspects of the restoration effort (NRC

2011).

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[12] The lack of support for proposition 4 should not be taken to mean that conflict is absent. As one of our reviewers noticed, technical issues may elicit more discussion –and even heated discussion- in alternate forums, such as the Task Force's Science Coordination Group, which is composed of experts who are tasked specifically with studying and making recommendations on scientific and technical issues related to the restoration effort. The fact that conflict may take place in these alternative forums, rather than during the regular meetings that we analyze here, hints that collaboration processes are complex enough as to demand a simultaneous analysis of all its moving components, a goal that should drive future research efforts in this area.

[13] This means this calculation of predicted probabilities is done for agenda items where: a) issues discussed are not central nor technically complex, b) federal actors dominated the discussion (only to calculate the predicted probability of conflict when tribes participate in discussions; to calculate the predicted probabilities of conflict when other actors dominate the discussion, this variable is set to zero), c) conflict did not appear in the previous agenda item, d) one action or vote was taken by the Task Force, e) one lawsuit was either filed or decided in the two months prior to the meeting, and f) two news stories on the Everglades were printed the month prior to the meeting. We use the "margins" command in Stata to calculate the probabilities. The output of these calculations is contained in Appendix C.

Another variable that is significant in the logistic regression predicting conflict is *dominance by other actors*, which has a negative coefficient indicating that when actors other than federal government agencies or NGOs dominate discussions, the likelihood of conflict decays when compared to the baseline dummy variable "nobody dominates discussions". Transforming the coefficient to probabilities (maintaining the other variables in the model fixed at values described in footnote 12, and *Participation of Tribes* fixed at a value of 1) shows that the probability of conflict drops from 52% to about 24% when *other actors* dominate the discussions. These *other actors* are either local or state government agencies, or business interests that have a presence in meetings. We recognize that the level and type of engagement by governmental agencies and business organizations are unlikely to be driven by homogenous goals. Due to the small number of actors in these categories, we cannot analyze these actor types as separate variables, making it challenging to speculate on the meaning of this result.

Unlike the engagement model, we do not find a significant relationship between the control variables and conflict. Conflict in previous discussions, number of court cases dealing with challenges to restoration efforts, and level of attention of the media to the issues discussed in Task Force meetings does not explain the emergence of conflict in agenda item discussions.

Discussion

Our results reveal some notable findings in terms of the more "micro-level" communication and dialogue processes in collaborative environmental processes. In our exploration of coded meeting minutes of discussions among the participants in the South Florida Ecosystem Restoration Program Task Force over a 5-year time frame, we find that issues and actor characteristics matter, yet in some ways that are different than expected. Table 2 summarizes how our findings compared to our expected relationships.

[Table 2 about here]

In terms of the formal agenda item topics we coded, we find that central issues and technical issues engender less engagement relative to the baseline category of issues that are not central nor technically complex. Although the results for central issues ran counter to our expectation, we argue that the possible explanations for this finding invite an optimistic assessment of the inclusive and participatory nature of this particular restoration effort. The fact that issues that are more central to the goals of the Task Force are characterized by lower levels of engagement may simply reflect the fact that informal participants in the meetings clearly activate themselves when public comments are invited. Public comment discussions may spur greater dialogue because they allow for more diversity of topics to emerge on the agenda, and because they give those individuals participating in the meeting a chance to voice their opinions not only about issues that have already been discussed, but also about other topics that remain underexplored.[14]

The explanations for the negative and significant coefficient for the variable measuring technical issues being discussed – a finding that supported our proposition – fall more squarely in line with the logic drawn from the literature. As we might expect to see with other collaborative processes, the discussion of technical issues demands a certain level of expertise and inside knowledge about the ongoing implementation of the restoration efforts in this case. A relatively small group of scientific advisers and members of the Task Force have access to this type of information and technical resources in a continuous basis, whereas other participants in

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[14] A reviewer suggested that the negative effect we found for "Central Issue" may be an artifact of the way the data is aggregated, and that it was possible that more central issues received more attention (and thus produced more engagement) in the earlier years of the Task Force. To assess whether this was the case or not, we run our engagement regression in a subset of meetings that took place from 2000 to 2002, but results didn't change, and the coefficient remained negative (as it did the coefficient for "Technical Issue"). Results are available from the authors upon request.

the meetings most likely do not have such continuous access and the needed technical capacity to process relevant technical information. We argue that this explains the depression in the level of engagement we observe when technical issues are discussed in comparison to discussion on non-technical issues where the "barriers to participation" are much lower and easier to clear for most meeting participants. This finding therefore lends further support to some of the literature that has pointed to how technical issues can challenge engagement (Ozawa 2005).

The negative coefficients linking the discussion of central and technical issues to engagement in meetings have important implications for scholars interested in the study of collaborative partnerships and policy learning. The literature on collaborative partnerships clearly stresses that shared knowledge generation is important for strengthening internal processes, contributing to effective resource management and enhancing the external legitimacy of the collaborative (Thomas 2003; Agranoff 2008; Koontz et al. 2004). Additionally, engagement is a key precondition to shared knowledge generation; in other words, absent engagement, the potential for creating innovative knowledge that can be used to improve policy learning decays (Gerlak and Heikkila 2011). This is particularly the case when solutions to critical environmental problems require what adaptive governance scholars call "public learning", or the engagement of a wide range of actors in discussions that are relevant to finding such solutions (Scholz and Stiftel 2005). It is in this regard that our findings place a question mark on the capacity of the Task Force to successfully face some of the most critical problems in the restoration effort.   However, a counter-argument can be made that even when no strong engagement takes place on technical and central issues, participants in the meetings are being provided information that they can use to better inform their positions on these issues.

At the same time, our results should not be interpreted to mean that engagement among a diversity of actors is absent in the Task Force meetings. In fact, in terms of the actor variables, we found strong support for our expectation that disempowered actors may facilitate both engagement and conflict. The participation of tribal actors in particular was a strong predictor of our dependent variables. Additionally, the dominance of NGOs in a discussion can foster higher levels of engagement, as can dominance by powerful federal actors. We view this last finding in particular as very positive because federal actors are a strong presence in the Task Force, and the success of the measures taken in this collaborative depends on the considerable organizational resources they spend in the process. The fact that the participation of federal actors elicits greater discussion suggests that these actors are likely fulfilling a leadership role that is necessary to solve the coordination problems that result when multiple actors need to learn how to jointly manage a shared resource (Berardo and Scholz 2010).

Conclusion

Taken together, these findings offer some valuable theoretical contributions around how participants in a collaborative engage with one another. First, they help illuminate how different types of issues matter in shaping engagement. Technical issues can thwart dialogue and engagement. So too can issues that are central to the core mission of the Task Force. But actors matter, and those who may not be regarded as particularly powerful can still facilitate both engagement and spark change-inducing conflict, even if that engagement is focused on issues that are not central for the core mission of the Task Force, or not technically complex. These findings provide some insight on the "micro-level" processes that unfold in collaborative partnerships, which are still poorly understood in the specialized literature.

Ultimately, the performance and effectiveness of collaboratives is tied to their ability to ensure a process of engagement – or regular dialogue and discussion among diverse actors. Examining how individual participants interact and what factors that influence engagement among collaborative participants can help scholars to build theoretical insights that connect theories of micro-level processes within collaboratives to more "macro-level" or "system-level" theories and frameworks of collaborative processes. In particular, our findings complement expectations from the theories and frameworks of collaborative partnerships and processes, which suggest that inclusive representation of a diversity of interests is important in supporting the success of a collaborative (e.g. Emerson et al. 2012; Ansell and Gash 2008; Sirianni 2009; Cooper et al. 2008). From a practical standpoint, these findings suggest the importance of designing collaborative processes with greater attention to both the nature of the issues and the nature of the actors – ensuring more technical issues are characterized by more thorough and extended opportunities for dialogue and learning, as well as greater opportunities for more marginalized or disempowered groups to engage.

Further, this research is innovative in that we examine engagement and conflict in "real time", which to our knowledge has not been attempted before in studies of collaborative partnerships. Given the difficulty in securing longitudinal data via surveys and interviews to assess how networks evolve, obtaining information from meeting minutes is a helpful mechanism to examine engagement as it unfolds. Also, analyzing the data this way allows us to avoid some of the poorly understood biases of self-reporting. The approach we follow here may be replicated in other collaborative cases to test the generalizability of our findings and to explore further propositions.

We do, however, recognize the limitations with our data sources and variables used in our analyses. Minutes may not fully capture the extent of engagement or conflict among the actors of a network. Written documents cannot represent the non-verbal cues that individuals may use to express dissatisfaction with a process, nor do they capture what happens among actors outside formal meetings. Furthermore, we have captured the level of engagement in a very rough way. With our measure, we cannot, for instance assess whether engagement and conflict depends on the relative weight that individual actors place on particular discussion topics. In addition, our measure of conflict could be more nuanced to represent degrees of conflict or to separate out "productive" conflict from more dysfunctional conflict. We do note, however, that in qualitatively reviewing the meeting minutes, the majority of "conflictive" exchanges were relatively respectful and constructive. Nonetheless, more robust coding and verification of the codes with alternative sources could help tease out such differences in types of conflict.

We also recognize limitations in the measurement of our explanatory variables, which should be addressed in future research efforts. We have adopted a rather "blunt" measure of power –assuming that federal actors are more powerful based on the usual greater availability of organizational resources that they can bring to collaborative processes. We recognize that federal actors have divergent interests, can play very different roles in the restoration process and may have varying levels of power in terms of their authority to run the process or resources they bring to the table.   Future studies could look for ways to develop more nuanced measures of power at the individual organizational level. Finally, while our issue variables capture the "formal" issues on the agenda, they do not necessarily capture what people ultimately end up chatting about during the discussion. Our media and court case variables may be too coarse measures for agenda-item analysis. These limitations may suggest the need for meeting-level analysis.

Additionally, we recognize that the scope of our study does not provide a complete view of the factors that may influence engagement in a collaborative process over time. For instance, the process of setting the agenda prior to the meetings may play a role in determining who comes to meetings, who has a stake in the meeting, and then ultimately how people engage. To study such issues longitudinally would require a research design that allows for regular interviews with program participants and staff prior to meetings over time. The meeting minutes we drew upon and the interviews we have conducted to supplement these minutes do not allow us to explore such questions.

Finally, in studying only one collaborative partnership, we cannot incorporate factors such as variation of institutional rules into our analysis, which others have identified as critical to explaining whether cooperation or conflict are likely to prevail when actors with divergent interests engage each other (Ostrom 2005; Schneider et al. 2003). This is because institutions set the "rules of the game" for which actors are permitted to participate, including who runs meetings, when they occur, and what topics of discussion are allowed or required (Ostrom 2005). Therefore, in understanding engagement, institutions may causally "precede" the role of actors and issues. In studying only one case, we held institutions constant, which can help in teasing out the more proximal role of actor and issue characteristics. However, future research that compares engagement across collaborative partnership could provide insights on how institutions matter in shaping collaborative engagement.

Despite these shortcomings, this paper can serve as a stepping-stone for further scholarship seeking to uncover how collaborative networks unfold in time. Future research can build from this study to better explore the rich web of dyadic and triadic interactions that take place when different conversations occur during the same agenda item. Such efforts should be

geared towards developing more versatile coding schemes to clearly identify neutral engagement from clearly cooperative behavior, for example. Our efforts to explore the "micro-level" view of inter-organizational engagement in collaborative environmental management provides an initial attempt to understand how characteristics of the collaborative process trigger both greater engagement and conflict during dialogue.

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Table 1. Regression Results for Engagement in Task Force Meetings

	OLS Model (Network Engagement)		Logit Model (Conflict)	
	Coef.	Robust s.e.	Coef.	Robust s.e.
Agenda Issues				
Central Issue	-0.399***	(0.136)	-0.803	(0.572)
Technical Issue	-0.346**	(0.165)	-0.425	(0.528)
Actor Characteristics				
Participation of Tribes	1.240***	(0.150)	3.922***	(1.128)
Federal dominance	1.035***	(0.240)	-0.351	(0.546)
NGO dominance	1.000***	(0.295)	-1.753	(1.617)
Dominance by Other Actors	0.497	(0.331)	-1.249**	(0.681)
Controls				
Agenda Vote or Action Taken	0.161***	(0.037)	0.131	(0.097)
Conflict in previous discussion	-0.163	(0.221)	0.735	(1.316)
Court cases	-0.002	(0.039)	0.142	(0.204)
Media attention	-0.009	(0.021)	0.011	(0.094)
Constant	-1.400***	(0.154)	-4.128***	(0.857)
	$R^2 = .48$		Pseudo-$R^2 = .29$	
	$F = 27.78 \ (.000)$		Wald Chi$^2 = 132.53 \ (.000)$	
	$N = 175$		N=175	

Standard errors (in parentheses) are clustered at the meeting level.

** $p < .05$, *** $p < .01$ (two-tailed).

Baseline Agenda Item Variable = Non-central, not technically complex issues.

Baseline Actor Dominance Variable = No Dominant Actor.

Table 2: Expected Effects of Key Variables versus Findings

Variables	Expected Effect on Level of Engagement	Finding	Expected Effect on Likelihood of Conflict	Finding
Agenda Issues				
Central issue	+ **(Prop. 1)**	**-** **Counter to expectation**	+ (Prop. 2)	Not significant
Technical issue	- **(Prop. 3)**	**-** **Supports expectation**	- (Prop. 4)	Not significant
Actor Characteristics				
Powerful actors	- **(Prop. 5)**	**+** **Counter to expectation**	- (Prop. 6)	Not significant
Disempowered actors	+ **(Prop. 7)**	**+** **Supports expectation**	+ **(Prop. 8)**	**+ (Tribes)** **NGOs not significant,** **Partial support**

Appendix A.

Table A.1. Descriptive Statistics

	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables						
	Log of Average Degree	175	-0.245	1.286	-2.659	2.303
	Average Degree	195	1.400	1.821	0	10
	Conflict in a discussion	175	0.206	0.405	0	1
Independent variables						
	Central Issues	195	0.195	0.397	0	1
	Technically Complex Issues	195	0.277	0.449	0	1
	Non Central, not Technically Complex Issues (omitted)	195	0.528	0.501	0	1
Actors	Participation of Tribes	195	0.492	0.501	0	1
	Federal dominance	175	0.371	0.485	0	1
	NGO dominance	175	0.160	0.368	0	1
	Other Dominance	175	0.109	0.312	0	1
	Nobody Dominates (omitted)	175	0.360	0.481	0	1
Control variables						
	Agenda vote or action taken	195	0.549	1.447	0	13
	Conflict in previous discussion	195	0.164	0.371	0	1
	Court cases	195	1.077	1.327	0	4
	Media attention	195	1.882	2.000	0	9
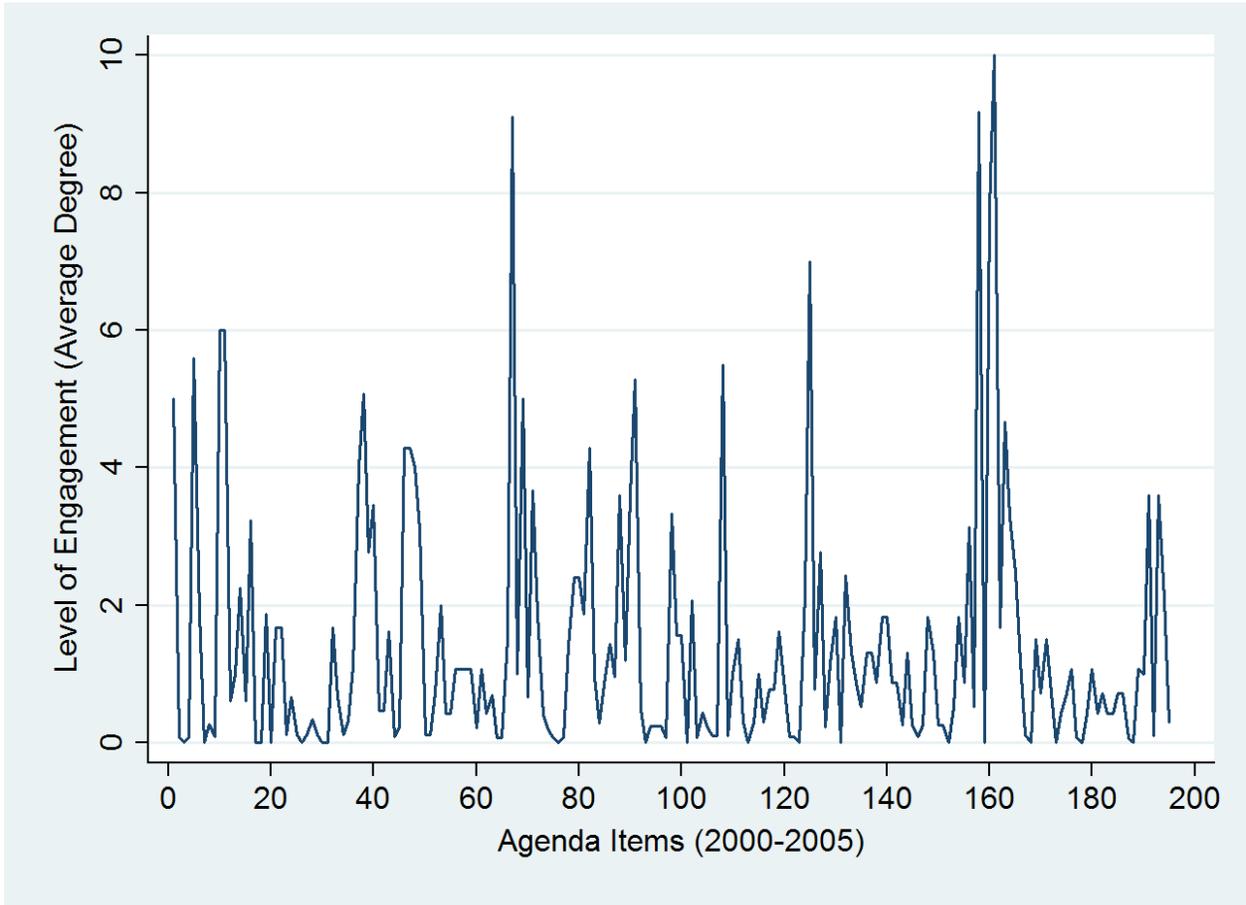
Figure 1.B. Engagement among Participants over 195 Agenda Item Discussions (2000-2005)

Appendix C.

Predicted Probabilities of Conflict with and without Tribal Involvement.

. margins, over(tribe) at (central=0 techcomplex=0 feddom=1 ngodom=0 othdom=0 a
> ctionorvote=1 prevconf=0 fil_dec2month=1 media=2)

Predictive margins   Number of obs =   175
Model VCE   : Robust

Expression   : Pr(conflict), predict()
over   : tribe
at   : 0.tribe
                central   =   0
                techcomplex   =   0
                feddom   =   1
                ngodom   =   0
                othdom   =   0
                actionorvote =   1
                prevconf   =   0
                fil_dec2mo~h =   1
                media   =   2
              1.tribe
                central   =   0
                techcomplex   =   0
                feddom   =   1
                ngodom   =   0
                othdom   =   0
                actionorvote =   1
                prevconf   =   0
                fil_dec2mo~h =   1
                media   =   2

```
------------------------------------------------------------------------
           |          Delta-method
           |    Margin  Std. Err.     z    P>|z|    [95% Conf. Interval]
-----------+------------------------------------------------------------
     tribe |
       0 |  .0150119  .0168252    0.89   0.372   -.0179648   .0479887
       1 |  .4350316  .0975915    4.46   0.000    .2437558   .6263073
------------------------------------------------------------------------
```

Predicted Probabilities of Conflict with and without Dominance by Tribal Involvement.

. margins, over(othdom) at (central=0 techcomplex=0 feddom=0 ngodom=0 tribe=1 a
> ctionorvote=1 prevconf=0 fil_dec2month=1 media=2)

Predictive margins   Number of obs =   175
Model VCE   : Robust

Expression   : Pr(conflict), predict()
over   : othdom
at   : 0.othdom
                central   =   0
                techcomplex   =   0

```
              tribe       =        1
              feddom      =        0
              ngodom      =        0
              actionorvote =       1
              prevconf    =        0
              fil_dec2mo~h =       1
              media       =        2
          1.othdom
              central     =        0
              techcomplex =        0
              tribe       =        1
              feddom      =        0
              ngodom      =        0
              actionorvote =       1
              prevconf    =        0
              fil_dec2mo~h =       1
              media       =        2
```

```
------------------------------------------------------------------------
         |        Delta-method
         |   Margin  Std. Err.    z   P>|z|    [95% Conf. Interval]
-------------+----------------------------------------------------------
   othdom |
       0 |  .5224483  .1091375   4.79  0.000   .3085428   .7363538
       1 |  .2387826  .1182529   2.02  0.043   .0070112   .470554
------------------------------------------------------------------------
```