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Grantee Organization/Dept: Organization and Leadership

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Submitted to: Susan M. Fitzpatrick, Ph.D (vice President) , Cheryl Washington, (Grants Manager).

Grantee Organization's Final Report:

Beginning in September, 2006, our international team of scholar-practitioners began work on a three-year research project funded by the James S. McDonnell Foundation to develop and refine a theory of intractable conflict from the perspective of dynamical systems. Intractable conflicts are those that persist in a state of enmity and destructiveness despite repeated good-faith attempts to resolve them. They are quite common and can undermine the security and well being of groups and societies worldwide. Decades of research have contributed to our understanding of the many factors that can contribute to their persistence, but scholars have yet to articulate a coherent and testable theoretical model that links these component parts to the basic underlying structures and dynamics that account for intractability.

This project brings together a uniquely qualified multidisciplinary team for the construction and testing of one such model: a dynamical-systems model of intractable conflict. The theory is being written in the language of the social sciences, but the concepts have counterparts in the mathematical descriptions of attractors from the physical sciences that are sufficiently precise to provide the basis for computer simulation testing of the model. The objectives of the current project are to empirically test, validate, and revise our dynamical-systems theory of intractable conflict from the results of case studies, laboratory experiments, computer simulations, and theoretical discussions, and to disseminate the findings of our research through publications, presentations, educational offerings, and through our website. The long-term goal of the project is to develop a robust theoretical model and simulation tools that will have utility for scholars, policy-makers, and conflict management practitioners in preventing and addressing intractable conflicts.

The first year of our project was very productive. Our team met face-to-face three times over the year to plan research, discuss our findings, and collaborate on papers, workshops and presentations. We also communicated frequently through conference-calls over the Internet. As a result, we have designed new methodologies for the study of conflict from a dynamical perspective, begun data collection on a wide-variety of studies, advanced our basic theoretical understanding of

intractability, generated several new conceptual models of conflict dynamics, and have begun dissemination of our findings through publications, presentations, and our website. As this was our inaugural year, much of our work is “in-progress”. Below is a detailed description of the current activities of our team.

Current Advances in the Dynamical-Systems Theory of Intractability

Conceptual Model. Dynamical systems theory is ideally suited to capture the complexity and intrinsic dynamics associated with intractable conflicts. Dynamical systems theory emphasizes both the penchant for constant change and the maintenance of stable states or “attractors” in complex systems. Thus, we initially developed a framework within which the attractors of intractable conflicts can be conceptualized and investigated. In this framework, conflict manifests as a self-organizing system, in which different elements within a person (thoughts, feelings, behaviors) or a group (norms, beliefs, symbols, etc.) become organized around incompatibilities with a different person or group. These self-organized ensembles function as attractors, so that despite divergent information and contradictory external influences, the system’s behavior consistently converges on the same pattern of thought, affect, and action – destructive conflict. Even an unambiguous event that runs counter to the attractor will likely be assimilated to the attractor. A peaceful overture by an antagonist, for instance, will be seen as insincere or as a trick if there is intense mistrust regarding the antagonist.

When the dynamics of conflict become defined in terms of an attractor, even a relatively inconsequential incident can propel the relations of disputants rapidly into escalated states of conflict that can be extremely resistant to resolution. And if such a conflict undergoes momentary de-escalation, the forces at work are likely to reinstate the conflict. This account paints a rather gloomy picture. It implies that even a minor conflict will inevitably progress to intense conflict. A complex system, however, may be characterized by multiple stable states (attractors), each providing a unique organization for the myriad elements comprising the system. The potential for multiple attractors suggests that an intractable conflict can be resolved if one of the system’s attractors is associated with thoughts and actions of a benign or positive nature. In such an attractor landscape, the resolution of conflict may appear suddenly and catastrophically, as thoughts and actions move from the basin of one (negative) attractor to the basin of another (benign or positive) attractor that was previously latent.

Theoretical Propositions. The conceptual narrative described above has been translated into a series of theoretical propositions, which are described in detail in Coleman, P. T., Vallacher, R., Nowak, A., & Bui-Wrzosinska, L. (2007). Below is a summary of the main propositions of the model.

1. Intractable conflict can be conceptualized and investigated in terms of fixed-point attractor dynamics.
2. Each party’s attractor is maintained by dynamic processes.
3. An attractor associated with intractable conflict can be characterized with respect to its basin of attraction.
4. An attractor associated with intractable conflict can be characterized with respect to its depth.
5. Attractors for intractable conflict are formed when the cognitive, affective, and behavioral patterns characterizing a party’s conflict-relevant dynamics lose their complexity.
6. The loss of complexity in each party’s attractor is maintained by positive feedback loops among the lower-level elements comprising the party’s pattern of thought, feeling, and action.
7. The parties to intractable conflict are likely to have more than one attractor for their respective mental, affective, and behavioral dynamics.
8. Each party’s dynamics can be captured by a latent attractor, promoting a qualitative (as opposed to incremental) change in relationships between the parties.
9. The change in state associated with movement to a latent attractor may be transitory if the original attractor continues to exist.

10. An attractor can lose its power to constrain a party's mental, affective, and behavior processes if it is deconstructed.
11. The deconstruction of an attractor for intractable conflict involves introducing negative feedback loops into the relationships among issues, among dimensions of social judgment, and among action tendencies.
12. Because of the press for coherence in dynamical systems, the lower-level elements comprising a deconstructed attractor are likely to become integrated with respect to another higher-level pattern of thought, feeling, and behavior.

As proposed, we are conducting a case-study and several laboratory studies to test, validate, and refine the main theoretical propositions from our model. The research is described in a subsequent section.

Control Parameters of the Dynamical Model of Intractability. Interpersonal and inter-group conflicts are highly complex and dynamic, reflecting the operation of myriad factors at different levels of reality, from history and geography to everyday events of both a banal and an emotionally charged nature. In dynamical systems theory, however, a distinction is made between the multitude of factors that change only the current state of the system and the much smaller subset of factors that control the dynamic properties of the system. The latter factors, referred to as *control parameters*, provide the focus of dynamical models. The question, then, is how can one identify the control parameters for interpersonal and inter-group relations characterized by intractable conflict?

In general, the identification of control parameters requires the reciprocal interplay of theory, empirical research, and computer simulations. The literature on intractable conflict is enormous, emphasizing both fundamental theory and substantial data collection from laboratory studies and diverse real-world conflict situations. From conflict theory and research, several candidates for control parameters have been identified that seem to cut across vastly different types of conflict scenarios. Findings from experimental and case study research, for example, suggest that intractable conflicts are most likely to occur under conditions of *relatively equal power* between parties (where one party cannot simply overwhelm the other through force), *confined interdependence* (where neither party can simply escape the relationship), and where the parties have strong *competitive (win-lose) orientations* to the conflict. We suspect that these three factors may constitute control parameters for intractability. If so, changes in the magnitude of these variables (e.g., degree of competitive orientation or confined interdependence) should go beyond intensifying the level of conflict to changing in fundamental ways the nature of the conflict.

With the recent advent of the dynamical approach, it is possible to assess whether these factors do indeed function as control parameters, or whether other factors play this role in intractable conflict. Computer simulations, in particular, can be employed to distinguish between factors that change only the momentary state of a conflict from those that reset the basic dynamics of a conflict. The results of simulations can then provide the basis for empirical research and theory construction. In sum, the reciprocal interplay of theory, data collection, and computer simulation captures the essence of the dynamical approach and may prove useful in identifying basic control parameters of intractable conflict that are relevant in a broad range of conflict domains.

Research Studies and Preliminary Scientific Findings on Intractability

The following research studies are currently underway:

Peace as Emergence: A Case Study of Mozambique

We are currently in the process of conducting an interdisciplinary case study of the civil war and peace process in Mozambique, a hopeful example of an intractable conflict that was ultimately transformed and resulted in stable, peaceful relations. Despite the fact that the peace process in Mozambique has been labeled as an exemplary success story, applying the lessons learned to existing protracted conflicts has not been a trivial matter. The primary reason is that a consensus about the critical factors responsible for the success of the peace process has yet to be achieved. While the role

of economic factors has been strongly supported, a comprehensive analysis of the interplay of these factors with social, political and psychological mechanisms has yet to be accomplished.

The dynamical framework offers a set of descriptive tools and a precise vocabulary to model the case of Mozambique. The concept of attractors captures the nature of changes in Mozambique; in dynamical terms it moved from an attractor of war to an attractor of peace. Both war and peace constitute highly coherent structures and the movement from one to another is often catastrophic. To test these assumptions, we are systematically comparing available macro statistical data from the pre and post war period. There is evidence of a non-linear transition in Mozambique in the *Correlates of War* database, which show that the transition from war to peace in 1992 dramatically changed every major aspect of life in the country from politics, culture, and the economy to education and health. We expect to find relative consistency within the war period statistics and within the peace period statistics and an important difference between the two systems in our analyses of these data. While these statistics will not give us precise evidence about the structure of the social system, they will demonstrate the extent to which the concept of attractors can be generalized to a macro level of reality. In addition, we will test the hypothesis that although the transition from one attractor to the other was sudden, it was simply the manifestation of a gradual reconfiguration of the latent attractor landscape. This gradual process affected the nature of the linkages between the elements in the conflict and therefore the structure of potential states of the system.

The case of Mozambique is being employed in our research as goodness-of-fit test of the general propositions of the dynamical system theory (DST) approach to understanding protracted conflict and violence. The prior involvement of members of the research team (Bartoli and Mazula) in various aspects of the peace process in Mozambique allows us to examine the utility of the DST orientation in great detail, and assists us in refining our understanding of its strengths, weaknesses and implications for actual cases on the ground. Our research involves a political scientist, Brazão Mazula, the former chair of the National Elections Commission in Mozambique and Rector of the Eduardo Mondlane University. We began the case study by exploring the history of the conflict in Mozambique through archival data, and plan to employ current indices (such as the FAST International survey database) to examine current conditions as well. This year, the research culminated in a three week visit to Mozambique in June-July 2007 when some of the main actors of the Mozambique peace process were interviewed. These include: Jaime Goncalves, Chairman Alfonso Dlakama, Chancellor Brazo Mazula, Mr. Raul Domingos, MP, Mr. Vincente Ululu, MP, Dr. Oscar Monteiro.

These interviews and archival data will be analyzed according to the following criterion:

- Changes in the semantic structures through an analysis of the various iterative texts of the peace agreement;
- An analysis of the timeline for breakthroughs in the system (switching moments);
- An analysis of changes in the social networks of the key parties over time;
- An analysis of changes in the personal networks over time.

The preliminary results of the research will be summarized in an article on 'Peace as Emergence: The Case of Mozambique' which will be published in a special issue of *Peace and Conflict: The Journal of Peace Psychology* in 2008.

Are they With Us or Against Us? The Effects of Press for Coherence on Escalatory Dynamics and Intractability

Some conflicts escalate gradually, in a linear fashion, with disputants responding proportionally to their opponent's intensification of the conflict. Other conflicts increase in intensity at a relatively slow, proportional rate until they reach a threshold, after which the intensity shows a catastrophic change. Such conflicts evidence what is termed non-linear dynamics. When these conflicts escalate, there occur changes in key psychological, social, and community-based factors, and changes in the way in which these factors are inter-linked, resulting in dramatic, qualitative changes in the character of the conflict. Once conflict has evidenced such a radical shift in intensity, decreasing

the forces that drove it to such a state is unlikely to reduce the intensity to its original level—until another threshold is reached that represents a considerably lower level of forces.

Although research has indicated that a number of situational and personal factors influence differences in conflict escalation, we suggest that differences in experiences of *press for coherence* (a felt need for consistency - such as the need in conflict for others to be either with us or against us) will play a central role. Thus, the purpose of this study is to investigate how one important proxy measure of the press for coherence - individual differences in need for closure - influences the dynamics of escalation and de-escalation in conflict, thereby affecting the dynamics of intractability. We hypothesize that what Webster & Kruglanski (1994) term *need for closure* (described as the extent to which individuals are motivated to seek information that is stable, clear, and unambiguous) is an excellent measure of predispositions for experiencing a press for coherence, and thus may be a central variable accounting for differences in escalatory trajectories and intractability. Based on prior research on need for closure and conflict (Golec & Federico, 2004) and on related individual differences (cognitive complexity, tolerance for uncertainty; see Conway, Suedfeld, and Tetlock, 2001 for a summary), we propose that individuals with a high need for closure will tend to move rapidly from low-intensity conflict interactions to high-intensity interactions, and thus escalate catastrophically, while individuals with a low need for closure will tend to escalate more slowly and incrementally, or not at all.

This study tests the hypotheses in a simulated situation of interpersonal conflict. Participants were sent individual emails containing a link to an online survey. The first section required participants to read eleven sequential scenarios describing an interpersonal conflict situation where the conflict was incrementally escalated in the first six scenarios and then incrementally de-escalated in the last five scenarios. Participants were also presented with a list of thirty behavioral responses along with each scenario and asked to select their likely responses from this list to each scenario. The eleven scenarios and response options were generated through focus groups with a similar population. The response options were randomly ordered for each scenario to avoid any systematic errors in presentation. The second section measured the participants' scores on need for closure.

Results showed significant differences in cell means for higher levels of conflict intensity (levels 5 and 6) throughout scenarios 2 to 6. As expected, the high as opposed to low need for closure participants demonstrated a greater increase in conflict intensity over time, particularly across scenarios 2 to 6. The conflict intensity level quickly increased for high need for closure participants to high levels of destructiveness (levels 5 & 6), and then rapidly decreased to lower levels (1 and 2) during the de-escalation phase (scenarios 7 to 11). This is evidence of catastrophic movement between two attractors: between one for constructive conflict interactions during early stages of the conflict (the other is with us) to one for destructive conflict interactions once a threshold is crossed (the other is against us) and then back to the first attractor once an apology is offered. The transition from one type of response to the other was abrupt and did not involve a transition through intermediate levels. For low need for closure participants, conflict intensity remained primarily at relatively low levels (1 and 2 – constructive conflict interactions) throughout both escalation and de-escalation phases.

This study offers preliminary support for Proposition 5: *Attractors for intractable conflict are formed when the cognitive, affective, and behavioral patterns characterizing a party's conflict-relevant dynamics lose their complexity*, and Proposition 8: *Each party's dynamics can be captured by a latent attractor, promoting a qualitative (as opposed to incremental) change in relationships between the parties*. Subsequent research will introduce more serious issues into the scenario (moral conflicts, reactions to violence, high emotionality, etc.) in order to better simulate conditions of intractability.

Escalation Patterns in Close Relationships

Escalation patterns in interpersonal conflicts can also vary depending on the structure of relations between the parties involved. Some conflicts escalate gradually, with disputants responding proportionally to their opponent's intensification of the conflict. Other conflicts escalate at a relatively moderate rate until they reach a threshold, after which the conflict erupts unexpectedly, rapidly reaching very high levels of intensity. These different patterns of escalation can be explained as attractor dynamics. Attractors reveal under what conditions a system is likely to follow linear changes, and when it is prone to display non-linear transitions. In the present study we explored how escalation patterns vary, depending on the structure of relations between the parties involved: how attractors govern escalation dynamics in close versus distant relationships.

In a school setting experiment, participants were asked to indicate which behaviors (from moderate to very destructive ones) were appropriate in response to peer provocation of varying magnitude either in close (friendship) or distant (acquaintance) relations. Results demonstrated that in conditions promoting a predominance of positive cognitive-affective feedback loops (i.e., strong interpersonal ties), a person experiencing antagonistic behavior from the other party either chose to ignore the attack, responding instead in a relatively mild fashion, or, after a critical threshold of antagonism was reached, to respond in a confrontational manner. The transition from one type of response to the other was abrupt and did not involve a transition through intermediate levels. However, in conditions more likely to involve less linkage among cognitive and affective mechanisms (i.e., weak interpersonal ties), intermediate degrees of antagonism promoted retaliatory responses of intermediate intensity. In effect, participants responded in a more proportional manner to antagonistic actions from a peer and the escalation and de-escalation of conflict intensity followed a relatively linear pattern.

Results of this study were compared to outcomes of computer simulation. The simulation model was developed in the formalism of knowledge networks, where nodes correspond to issues and links to relations between issues. Closeness was modeled as the degree to which different issues were interrelated and relevant to each other, i.e. as the strength of connections between the issues. The outcomes of computer simulations proved to be remarkably similar to empirical results. Attractor tendencies were clearly visible in the model's dynamics. The model replicated the non-linear character of the change of attractors in close relations, and the linear escalation pattern in distant relationships. Furthermore, the simulation could illustrate more general laws of escalation resulting from the model, where the pattern of escalation of a given conflict is strongly linked to its structure. The application of the model to social networks illustrates how the social structure (dense versus dispersed, coherent versus chaotic...) determines a social system's behavior in conflict (linear conflict escalation versus unpredicted outbreaks).

When Conflict is Catastrophic: Linear and Nonlinear Escalatory Dynamics in Social Relations

Sometimes people respond to the actions of others in a proportional, tit-for-tat manner, in line with classic notions of reciprocity in social relations. At other times, though, people respond in a disproportionate manner to the actions of others, displaying catastrophic changes in the nature and intensity of their behavior in reaction to a seemingly minor event. The distinction between linear and reciprocal behavior versus nonlinear and disproportionate behavior is apparent in relations characterized by conflict. Indeed, the nonlinear scenario appears to be a defining feature of conflicts that are protracted in time and seemingly intractable. Identifying the contexts and psychological factors that decide between linearity and non-linearity, then, is essential to understanding when conflicts evolve toward intractability. This knowledge, in turn, may shed light on plausible avenues of conflict resolution. This laboratory experiment is one of series designed with these interrelated purposes in mind.

Participants were asked to read an imaginary scenario consisting of 11 short scenes, each involving the participant and another person in a collaborative work setting. The first 6 scenes portray progressively negative actions by the work partner, from mild and private criticism of the participant (Scene 1) to extreme and public insults of the participant (Scene 6). The subsequent scenes portray progressively conciliatory actions by the work partner, from an apology (Scene 7) to assuming the

majority of the work on the collaborative task (Scene 11). Half the participants were asked to imagine that the work partner was a stranger prior to the collaborative task (*distant target*) and half were asked to imagine that the other person was a personal friend (*close target*). We also varied the mental set with which participants were to think about the scenario. Some subjects were given an instructional set emphasizing the natural benefit of forming simple judgments in order to decide how to behave toward someone (*global judgment*), others were given an instructional set emphasizing the natural benefit of forming complex judgments in order to decide how to behave toward someone (*complex judgment*), and yet others were not given an instructional set for how to think about the scenario (*control*).

After each scene, participants were provided a list of 30 possible behaviors and asked to indicate which of these they would be most likely to enact in response to the actions of the work partner. The 30 behaviors, grouped into 6 categories, represented incremental gradations on a positive vs. negative dimension. The 1st category (behaviors 1-5) was clearly positive (e.g., empathizing, humor), while the 6th category (behaviors 26-30) was clearly negative (e.g., taking revenge, physical aggression). The focus of the experiment was participants' sequence of behavior choices as a function of their relationship with the work partner (distant vs. close) and their mental set for forming judgments (global vs. complex).

We predicted that participants would choose behaviors that were proportional to the actions of the work partner when that person had low personal relevance (i.e., the distant target) and when they were induced to think about the scenario in complex as opposed to global terms. Thus, with each increment in negativity on the part of the work partner, we expected to observe an incrementally more negative behavior choice by participants. When the work partner began to act in a conciliatory manner (beginning with Scene 7), meanwhile, participants were expected to respond in kind, choosing behaviors that decreased incrementally in negativity. A nonlinear sequence of behavioral choices, in contrast, was anticipated when the work partner had high personal relevance (i.e., the close target) and when participants were induced to think about the scenario in globally coherent terms. Both personal relevance and globality in social judgment heighten the press for coherence in thought and behavior regarding other people. A concern with coherence makes people resistant to change, but when change does occur, it tends to be catastrophic in nature, as a new coherent frame of reference is adopted. Thus, participants were expected to persist with fairly positive behaviors despite the increased negativity displayed by the work partner in the initial scenes. At some threshold, though, participants were expected to show a sudden and catastrophic increase in the negativity of their behavior choices, and to maintain this negativity after the work partner began acting in a conciliatory manner (i.e., Scene 7). At another threshold occurring at some point in the de-escalatory scenes, participants were expected to show another catastrophic shift in their behavior, this time to positivity.

Pending the results observed in this experiment, future research will investigate implications concerning the evolution of intractable conflict and the means by which such conflict might be resolved. Paradoxically, down playing the personal relevance of one's relationship with an antagonist might reinstate a sense of proportionality and reciprocity to the relationship. Likewise, emphasizing complexity rather than coherence in thinking about a conflictful situation might enable one to engage one's antagonist in a manner that allows for reciprocal concessions rather than intense and disproportionate reactions to the antagonist's actions.

Taking Sides: Latent and Manifest Attractors in Assigning Blame for Inter-Group Conflict

This laboratory study investigated how observers assign blame for an inter-group conflict involving extreme violence. Because such conflicts typically arise in an information rich and complex environment, they can be understood in a variety of ways, some of them mutually inconsistent. Yet people invariably arrive at a clear-cut and unequivocal judgment regarding which group is primarily at fault. There are two fundamentally distinct perspectives available for understanding how people manage to achieve explanatory coherence in these contexts. Because inter-group conflicts are typically highly consequential, first of all, one might expect observers to consider the relevant historical and situational factors that fueled the conflicts. In this view, the determination of blame is the endpoint of

deliberative information processing and integration. On the other hand, because of the inherent ambiguity and complexity associated with inter-group conflict, one might expect observers to rely on cognitive short-cuts, such as prejudicial attitudes that bias judgments in favor of one of the groups.

Focusing only on observers' final judgment doesn't decide between these possibilities. To shed light on this issue, we presented participants with a film depicting a long-term conflict between Christians and Muslims that culminates in a violent confrontation. Participants varied in the degree to which they had non-conscious negative attitudes toward Muslims, so we could assess whether their thoughts and feelings about the conflict converged on this latent attractor or instead reflected deliberative information processing.

At an initial session, participants completed self-report questionnaires assessing background information (e.g., race, religion, education) and their levels of explicit prejudice toward various racial, ethnic, and religious groups. They then completed the Arab-Muslim *Implicit Association Test* (IAT), a computer-administered procedure designed to assess implicit (non-conscious but readily activated) attitudes toward Arabs and Muslims. At a subsequent session, participants viewed one of two versions of a film portraying a long-term conflict between two groups, one Christian and one Muslim, in Africa. The film consisted of two segments: a history of the two groups that led to the conflict, and a bombing of one group by the other. Participants either viewed the history segment first, followed by the bombing, or the bombing segment first, followed by the history segment. In both versions, the Muslim group bombs the Christian group, and the history segment portrays the Christian group "moving in" on the Muslims' land, significantly lowering the Muslims' quality of living and eventually leading to many deaths. Thus, participants could either take into account the history that led to the Muslim bombing or base their judgment on the bombing incident.

Upon completion of the film, participants were asked to allocate blame to one group or the other (dichotomous choice) and then to elaborate on and justify their decision verbally. These narratives were recorded privately on an audiotape. Afterwards, participants listened to their recorded tapes and used a computer mouse to track the moment-to-moment evaluations of the blamed group that were expressed in their narrative. The resultant temporal trajectories of mouse-controlled cursor positions were analyzed for the average evaluation expressed in the narrative and for the variation in evaluation over time. (Analyses are also in progress to identify the factors that were foremost in participants' minds as they reflected on their judgment.)

Our predictions centered on the availability of an attractor for participants' judgments. People with negative attitudes towards Arabs and Muslims can be described as having a strong attractor for thinking about people with these group identities. If these attitudes are consciously accessible, however, people can override them if they are deemed inappropriate or biased, engaging instead in deliberative processing when forming judgments. Thus, participants with explicit negative attitudes (i.e., a manifest attractor) concerning these groups may actively suppress their bias and take into account relevant historical information when judging which group is to blame for the violent confrontation. An implicit attitude, in contrast, exists below the threshold of conscious awareness and thus is less open to deliberative self-regulation. Hence, when presented with information that is relevant to an unconscious attitude (i.e., a latent attractor), people are likely to engage in cognitive mechanisms that spontaneously reframe the information in a manner that supports the attitude. In effect, their stream of thought should converge over time on a judgment that reflects an implicit bias.

Different processes were predicted to be operative for participants who did not have a negative attractor for thinking about Arabs and Muslims. Theory and research have repeatedly identified two conflicting processes in "bottom-up" social judgment. The first process emphasizes the tendency for "behavior to engulf the field." In this view, observers tend to assign traits to an actor that matches (and provides an explanation for) the actor's overt behavior, particularly when the behavior is vivid and has a low base-rate of occurrence. The second process emphasizes people's capacity for information processing. In this view, observers consider relevant contextual information concerning an actor's behavior and are capable of integrating complex arrays of such information to form a coherent judgment. The first process predicts that participants should blame the Muslims because they were directly responsible for the bombing (a vivid and infrequent event), whereas the second process

predicts that participants should attend to the relevant historical information and form a judgment that puts the bombing in a larger context.

We hypothesized that the order of film segments would determine which process would predominate in participants' judgments. Those who saw the bombing first were expected to blame the Muslim tribe (the bombers), because bombing is a highly vivid and low base-rate behavior that engages the tendency to assign "causal" traits (e.g., aggressive, evil) to the perpetrators. Those who saw the historical information first, on the other hand, were expected to blame the Christian tribe (who encroached on the Muslim tribe's territory) or to express relatively low certainty and high ambivalence if they blamed the Muslim tribe. Once sensitized to contextual information, participants' judgment processes are less likely to be pre-empted by the salience of vivid behavior.

The results obtained were consistent with this reasoning. There was a highly reliable correlation, first of all, between participants' IAT scores (reflecting an unconscious attitude) and their allocation of blame to the Muslim group when presented with a dichotomous choice. Thus, participants with a strong latent attractor for negative feelings regarding Arabs and Muslims tended to blame the Muslim group for the violent conflict, even if they were exposed to the historical context prior to the bombing. Among participants with low IAT scores (i.e., a weak latent attractor), however, allocation of blame reflected the order of film segments: the bombing-first participants tended to blame the Muslim group, while the history-first participants tended to blame the Christian group. Participants' degree of explicit anti-Muslim attitude, meanwhile, was not associated with blaming the Muslim group. Apparently, the salience of historical information prompted consciously biased participants to suppress their bias and attend instead to relevant information in forming their judgments.

The stream of thought narratives provided additional insight into the judgment dynamics of participants. A key measure was the degree of volatility in participants' narrative, as this reflects uncertainty or ambivalence in judgment. Results revealed the greatest volatility for participants with a highly negative implicit attitude (reflecting unconscious bias) and a positive explicit attitude toward Arabs and Muslims. In essence, the judgments of these participants oscillated over time between two attractors, one reflecting positive (explicit) attitudes and one reflecting negative (implicit) attitudes. Participants whose explicit and implicit attitudes both reflected anti-Muslim bias tended to display little volatility in their narratives and their evaluation of the Muslim group became increasingly negative over the course of their narrative. Participants whose attitudes were neither explicitly nor implicitly negative toward Arabs and Muslims also displayed little volatility, but their evaluation did not become polarized over the course of their narrative. Apparently, participants whose explicit and implicit attitudes were congruent found it easy to marshal arguments in support of their judgment.

These results have implications for how observers view inter-group conflict, and more important, for how to reduce the role of bias and prejudice in observers' allocation of blame. Intuition suggests that people should display less prejudice when their biases and negative preconceptions remain out of awareness. Presumably, such attitudes cannot affect people's judgment of events if the attitudes are not consciously activated and implemented in the judgment process. The present findings suggest quite the opposite. If observers are made explicitly aware of their prejudicial attitudes, they are in a position to engage their self-regulatory capabilities to override these attitudes. It is when such biases remain implicit and opaque to consciousness that they are likely to shape people's judgments. Of course, explicit awareness of one's prejudices is no guarantee that one will attempt to suppress them in favor of more "objective" considerations. Research currently in preparation will address the factors that determine when conscious awareness of negative attitudes amplifies versus reduces the effect of such attitudes on perceptions of inter-group conflict.

Who's to Blame? Dynamics of Allocating Responsibility for Conflict

This laboratory experiment investigated whether the allocation of blame for conflict conforms to the process of emergence inherent in dynamical systems. Emergence occurs when the lower-level elements of a system become coordinated to produce a higher-level state or property that promotes global coherence for the system. Many, if not most conflict situations involve myriad events and pieces of relevant information, yet such situations are typically understood by the relevant parties (and

interested observers) in relatively global and coherent terms, with unambiguous judgments about which side is responsible for instigating the conflict. If judgmental coherence develops via emergence, it should be possible to reverse engineer the process by disassembling the judgment system into lower-level elements of thought, thereby creating the conditions for emergence to a different global understanding, perhaps one with benign as opposed to malignant overtones. Past research on emergence in social judgment has shown that the progression from a lower-level state (e.g., disconnected thoughts and feelings) to a higher-level coherent state (e.g., global evaluation) can take place in two ways: by means of external cues to higher-level understanding (e.g., an interpretation provided by a credible source) or by means of self-organization (i.e., progressive integration of lower-level thoughts due to the intrinsic dynamics of the judgment system). We tested both modes of emergence in this study.

Participants read a lengthy narrative concerning a heated exchange between an African American (*Darnell*) and a White male (*Adam*) that resulted in one of them being injured by the other. The injured male (*victim*) filed assault charges against the other male (*defendant*). Half the participants were instructed to focus on basic facts and details while reading the narrative (*low-level* action identification) and half were instructed to consider the larger meaning of the events (*high-level* action identification) when reading the narrative. Participants then read an official summary that either held the defendant accountable (*guilty*) or not accountable (*not guilty*) for the victim's injuries, or they did not read a summary. Finally, participants were asked to allocate responsibility for the incident between the defendant and the victim, and to rate the defendant's and victim's respective personalities on several evaluative dimensions (e.g., honest, moral, intelligent). At an earlier session, participants had completed a set of individual difference measures, including an instrument (Implicit Association Test, *IAT*) designed to assess unconscious or latent prejudice against African Americans.

We predicted that the low-level instructional set would promote a fragmented view of the conflict and thus motivate participants to achieve a more integrated and coherent judgment of the narrative, including an assessment of which party was primarily responsible for the conflict. Whether such emergence would be achieved by means of external influence (i.e., the official summary) or by means of self-organization was expected to depend on the availability of a latent attractor (i.e., latent prejudicial attitude) for participants' judgments. Specifically, low-level participants with low implicit prejudice toward African Americans (as assessed by the *IAT*) were expected to assign responsibility (and make corresponding personality judgments) in line with the official summary they read, regardless of the racial composition of the defendant and victim. However, low-level participants with high implicit prejudice were expected to assign greater responsibility to the African American (*Darnell*) than to the White (*Adam*), regardless of their respective defendant or victim status and the interpretation provided by the official summary.

Results supported these hypotheses. The official summary provided an avenue of emergent understanding for participants in the low-level conditions who had relatively low implicit prejudice. Lacking a latent attractor (i.e., prejudice) for organizing their disconnected thoughts derived from reading the narrative, they were influenced by the interpretation (guilty vs. not guilty) conveyed in the official summary they read. Low-level participants with high implicit prejudice, on the other hand, had a latent attractor in their mental system with which they could forge a coherent (albeit biased) understanding of the conflict scenario, and thus they were not influenced by the official summary. Subjects in the high-level conditions, meanwhile, presumably developed a coherent understanding of the conflict scenario while reading the narrative and thus were less likely to show emergence by embracing the official summary (low implicit prejudice participants) or by means of self-organization in line with a latent attractor (high implicit prejudice participants). Taken together, the results of this experiment are consistent with the press for order and coherence in dynamical systems and suggest ways in which seemingly intransient judgments can be qualitatively transformed. Research is underway to explore the implications of these findings for the genesis and resolution of conflict at the interpersonal and intergroup level.

A Multi-Modal Framework for Understanding and Measuring Pervasiveness of Intractable Conflict

The effects of conflict on groups and societies are typically assessed through the measurement of three basic dimensions: *intensity*, such as number and types of bombings, attacks, battles, injuries, fatalities, displacement, and destruction of property, *consequences* for economical, political, educational, and healthcare systems, and *effects* on the physical and psychological welfare of those involved. However, conflict scholars have begun to discuss another dimension, the spread of negativity in situations of conflict or its level of pervasiveness. The heuristic of attractors provides a particularly useful perspective for conceptualizing this phenomenon. *Pervasiveness* in the context of intractable conflicts refers to the range of psychological elements (thoughts, beliefs, attitudes, etc.) and social processes that become organized into the structure of a conflict. In addition, it refers to the structural changes that occur within a society as a result of the conflict. Enduring conflicts do not only affect individuals and groups, but they also harm the social structures of conflicted societies- they affect the norms, the values, and the principles by which people are educated and the institutions that govern the lives of citizens (Martin-Baro, 1989; Comas-Diaz, Lykes, Alarcon, 1998). In other words, pervasiveness is *the spread of negativity or positivity into previously independent states and activities*.

For example, we suggest that as conflicts intensify and endure, more and more mundane aspects of people's lives become touched by and even organized around the conflict. Therefore, we are interested in distinguishing those psychological, social (interpersonal/ inter-group/ intra-group) and structural elements that, at any given time, serve to drive and maintain the conflict (which move people toward more anger or aggression) versus those elements that serve to constrain the conflict (which move people toward more empathy or tolerance). Today, there is much conceptual confusion about the meaning of conflict pervasiveness and its various aspects and manifestations and there is a need to acquire a deeper understanding of the basic processes and the mechanisms through which conflict (and peace) processes spread. In addition, there is little empirical evidence of conflict pervasiveness, and a lack of adequate tools to measure it. Even though several scholars have touched on specific aspects of the phenomenon of pervasiveness (for example the preoccupation of the media and the intellectual elites with the conflict, See Rouhana, Bar-Tal, 1998; the increase of violence against women and minorities, See Shalhoub-Kevorkian, 2004; the increase of political intolerance towards "in-group" members, See Shamir, Sagiv-Schifter, 2006; sectarian segregation, Shirlow, 2003; changing norms and values, See Comas-Diaz, Lykes, Alarcon, 1998; territory and political symbolism, Kuusisto, 2001), a comprehensive framework on the phenomenon and its specific psychological, social, and structural elements has yet to be achieved.

In this organizing framework we hope to offer a useful tool by which researchers and scholars in the field of conflicts might better articulate the destructive effects of conflict on the parties involved in it. By carefully examining the multiple levels of mutually reinforcing elements that constitute the pervasiveness of a conflict, we will be capable of better assessing and analyzing the effects of intractable conflicts on individuals, groups, and societies as a whole. Currently, we are focusing our efforts on developing the construct of pervasiveness on three main levels: psychological, social (inter-group) and structural levels which are in reciprocal relationship with each other.

In order to achieve our goal we have been relying on three main methodologies:

- a) *Focus groups and interviews*: Focus groups and individual interviews have been conducted with individuals who are currently living or have previously lived in conflicted areas (Israel/Palestine). In this method, participants were asked to think about and generate "conflict free" and "conflict related" activities related to their daily lives. In additions, participants were asked to share with us their experiences and impressions from living in conflicted areas.
- b) *Journaling*: In order to capture, as accurately as possible, the range of activities that individuals are typically engaged in, we have asked participants to keep personal journals for three days and document each of their daily activities and their duration. As a reminder, each participant was contacted five times a day at random times.
- c) *Interdisciplinary literature review*: The goal behind applying this method is to understand how various scholars have thought about, conceptualized, and measured some of the relevant aspects of pervasiveness. Therefore, we have been conducting a comprehensive search of the literature from different fields in the social sciences including: psychology, sociology,

anthropology, political science, and international affairs, in order to enhance our understanding of the phenomenon.

Today, there is an urgent need to move towards the development of a new set of early-warning tools that can assess changes in levels of conflict pervasiveness on the psychological, social, and structural levels. Initial research will test and refine the theory and instruments through 1-2 day conflict simulation role-plays. A second stage will involve a 3 month pilot-study of Palestinian and Israeli students. Finally, we plan to conduct comparative research in various settings of protracted conflict.

New Conceptual Models

The stimulating interactions of our team have led to the generation of four new conceptual models which hold great promise for enhancing our understanding of basic conflict dynamics. These are outlined below:

The Crude Law Model: Development of a formal model of Deutsch's Crude Law of Social Relations.

We have developed a formal, minimalist model of the emergence of the culture of war from a simple rule of social relations: *The Crude Law*. The Crude Law formulated by Deutsch provides a comprehensive summary of many years of study of the typical effects of cooperative and competitive processes (Deutsch, 1949, 1973). It states that “*the characteristic processes and effects elicited by a given type of social relationship (e.g., cooperative or competitive) tend also to elicit that type of social relationship; and a typical effect of any type of relationship tends to induce the other typical effects of the relationship*”. In Deutsch's study of conflict it was demonstrated that when conflict is viewed by the parties involved, as a mutual problem to be resolved cooperatively, it mainly leads to a constructive process of conflict resolution with mutually satisfactory outcomes. On the other hand, a competitive, win-lose orientation to a conflict mainly leads to a destructive course of conflict resolution with both sides losing or the stronger party defeating the less powerful one. From the “crude law,” one would expect that when the typical effects of a cooperative process are introduced into a conflict situation, the conflict is likely to be characterized by a constructive process; while the typical effects of a competitive process are apt to produce a destructive process of conflict resolution.

From the modeling point of view, Crude Law defines the relationship between three types of variables:

- *Interdependence* is defined as the relatively objective relation between interests of the individuals or social groups. It characterizes the consequences of realization of the interests of one individual or group for the interests of the other individual or group.
- *Behaviors* (cooperation – competition) This variable describes characteristics of the momentary behaviors of individuals.
- *Orientations* (cooperative - competitive). This variable describes the tendency toward cooperation s. competition. It has many components e.g. trust, perceptions of others, etc. Its changes in time are slower than changes of behaviors.

We can summarize the findings associated with the crude law in the list of the following principles, which will form the basis for the dynamic model:

- Type of interdependence between individuals and orientation of each individual changes the probability and intensity of cooperation/competition of the individual
- There is reciprocity such that cooperative behaviors elicit cooperative behavior of the partner and competitive behaviors elicit competitive behaviors
- Behaviors of the individuals change orientations in the direction of congruency with behaviors.
- Orientations facilitate behaviors that are compatible with them.

In our model we have investigated the emergent consequences of the assumptions of the Crude Law as applied to interactions in a social group. We based our model on the observation that the Crude Law describes the growth or decay of several related and mutually dependent (by feedback loops) sets of

variables. We will thus adopt for our model the generic formalism of growth: the formalism of the Alphabet Model (Nowak & Solomon 2006)

In a series of simulations we varied the parameters to learn under what conditions islands of conflict were created. One result was quite trivial. For the islands of conflict to be created the coefficient of reciprocity must be larger than the rate with which behaviors decays. The other result was much more surprising. The parameter that most strongly prevented the creation of sustainable islands of conflict involved the *mobility* of elements of conflict. This involves both the type of interdependence, and behaviors. The local exponential growth of behaviors in the model is possible only because the new behaviors are created exactly in the location where the facilitating factors (interdependence or orientations) are present. They can in turn multiply, because there is the facilitating factor.

If behaviors migrate outside the location where the negative interdependence exists, or if the elements of orientations migrate fast enough to escape the islands of negative behaviors, the behaviors and the conditions for their proliferation do not exist together in the same place long enough to lead to the exponential proliferation of negative behavior. Islands of behaviors cannot be formed, and thus the behaviors decay. Preservation of local concentration is thus critical for the emergence and maintenance of conflict. In general our simulations show the critical role of local conditions and local dynamics. According to the model, even large scale intractable conflicts are maintained by high local reciprocal behaviors and frozen conditions. If the elements move, if the behaviors are not returned to those who are under condition to reciprocate them the conflict is likely to dissolve.

Dynamics of Two-Actor Cooperation-Competition Conflict Models.

A mathematical model for conflict can give us insight into which mechanisms are the most important in maintaining or resolving a conflict. We developed a nonlinear model of the interactions in time between two actors (which could be individuals, groups, or nations) based on the theoretical and experimental insights of Deutsch, Pruitt, Gottman, Murray, Swanson, Tyson, and Swanson, and Coleman, Vallacher, Nowak, and Bui-Wrzosinska. In this model, the state of each actor at a given moment in time depends on its own state in isolation, its previous state in time, its inertia to change, and the influence from the other actor. We analyzed this model using analytical methods and numerical computer simulations. We determined how the dynamics of the actors depends on whether they influence each other through positive feedback (cooperation), negative feedback (competition), or mixed positive and negative feedback. This model gives us insight into the dynamics of conflicts and is the starting base for more complex simulations that will model the interactions between many actors at once.

A paper on this model was one of three papers nominated for the best theoretical paper at the *International Association for Conflict Management* conference in July, 2007, in Budapest Hungary, and has been submitted for publication to *Negotiation and Conflict Management Research*.

A Dynamical Model of Conflict in Asymmetrical Power Relations.

Deutsch's theory of conflict resolution (1973, 2006a) is one of the most important and influential theoretical advances for the study of conflict of the last century. Based on his earlier work on cooperation and competition in groups (Deutsch, 1949a, 1949b), it specified the basic conditions and processes involved in constructive versus destructive conflict. However the original formulation of the theory assumed equal power between the parties in conflict. This assumption constrains both the theoretical scope and practical implications of the theory. This research project will empirically validate and refine a new social-psychological model of the dynamics of power and conflict, thus extending Deutsch's theory into situations of asymmetrical power. It combines prior work on interdependence and social power and integrates them through the lens of dynamical systems theory, a new paradigm for the study of social conflict. A conceptual article is being submitted to *Journal of Conflict Resolution* and empirical studies of the main propositions are planned for Fall, 2007.

Intractability in Conflict: A Network Simulation Model.

The formalism of knowledge networks was used to model the development of intractability in conflict. The catastrophic versus linear dynamics of escalation, in the model, are a result of the network structure (groups, relations, semantic structure). The model was tested empirically (see description of empirical study of escalation in close relationships above for details). Nodes correspond to issues and links to relations between issues. Closeness was modeled as the degree to which different issues were interrelated and relevant to each other, i.e. as the strength of connections between the issues. The outcomes of computer simulations proved to be remarkably similar to empirical results. Attractor tendencies were clearly visible in the model's dynamics. The model replicated the non-linear character of the change of attractors in close relations, and the linear escalation pattern in distant relationships. Furthermore, the simulation could illustrate more general laws of escalation resulting from the model, where the pattern of escalation of a given conflict is strongly linked to its structure. The application of the model to social networks illustrates how the social structure (dense versus dispersed, coherent versus chaotic...) determines a social system's behavior in conflict (linear conflict escalation versus unpredicted outbreaks).

New Pedagogical Tool

In addition to our conceptual and empirical work, we collaborated to co-design a new pedagogy for teaching negotiations in a complex world. It was first conceptualized as a methodology for working with stakeholders attempting to comprehend and address chronic patterns of destructive conflict and violence in New York City public schools. It has since been developed as a platform for teaching multi-stakeholder negotiations in various situations of protracted social conflict. In the workshop we engage participants in a series of hands-on exercises that demonstrates the complex dynamical properties of conflict systems in a simple and accessible way. The workshop employs a newly developed computer simulation, The Attractor Software[®], which assists conflict-practitioners, policy-makers and conflict stakeholders in negotiating complex agreements without neglecting the dynamical properties and the complexity of the systems with which they work. This approach suggests that it is particularly useful to conceptualize ongoing, destructive conflicts as strong *attractors*: a particular form of self-organization of multiple elements of conflict systems. Thus, the centerpiece of this teaching platform is a computer simulation of conflict attractors, which allows participants to visualize and work interactively with the dynamics of conflict as they unfold overtime.

Two outcome studies were conducted on the tool which compared the effects of a workshop which employed the simulation with one which employed only a traditional integrative problem-solving method. Results showed that the training that employed the attractor software tool in addition to integrative negotiation training led to more sustainable solutions. A paper describing the tool and the findings from these studies is being drafted and will be submitted to *Negotiation Journal*.

To date, this tool has been used in courses at Columbia University (a dynamical systems course and a genocide prevention course), and West Point Military Academy, and in workshops at the International conference on *Dynamics and Complexity of Intractable Conflicts*, Kazimierz October 2006, for the *International Association for Conflict Management* conference in July, 2007, in Budapest Hungary, and the University of Maryland, May, 2007.

Refereed Publications:

- Coleman, P. T., Bui-Wrzosinska, L., Vallacher, R. R., & Nowak, A. (2006). Protracted conflicts as dynamical systems. In A. K. Schneider & C. Honeyman (Eds.), The negotiator's fieldbook: The desk reference for the experienced negotiator (pp. 61-74). Chicago: American Bar Association Books.
- Coleman, P. T., Vallacher, R., Nowak, A., & Bui-Wrzosinska, L. (2007). Intractable conflict as an attractor: Presenting a dynamical model of conflict, escalation, and intractability. American Behavioral Scientist, 50(11), 1454-1475.
- Nowak, A., Vallacher, R. R., Bui-Wrzosinska, L., & Coleman, P. T. (2007). Attracted to conflict: A dynamical perspective on malignant social relations. In A. Golec & K. Skarzynska (Eds.), Understanding social change: Political psychology in Poland. Hauppauge, NY: Nova Science Publishers Ltd.

Articles submitted for publication or pending:

- Liebovitch, L. S., Vallacher, R. R., Nowak, A., Bui-Wrzosinska, L., and Coleman, P. T. Dynamics of two-actor cooperation-competition conflict models. Submitted to *Negotiation and Conflict Management Research*.
- Nowak, A., Bui-Wrzosinska, L., Coleman, P. T., Vallacher, R. R., Borkovsky, W., & Jochemczyk, L. Seeking sustainable solutions: Using an attractor simulation platform for teaching multi-stakeholder negotiation. To be submitted to *Negotiation Journal*.
- Vallacher, R., Nowak, A., Coleman, P. T., Bui-Wrzosinska, L., Bartoli, A., Liebovitch, L. S. The dynamics of conflict: Frequently asked questions. To be submitted to *Peace and Conflict: Journal of Peace Psychology*.
- Coleman, P. T., Bui-Wrzosinska, L., Nowak, A., Vallacher, R. R., Bartoli, A., and Liebovitch, L. S. A dynamical model of power and conflict. To be submitted to *Journal of Conflict Resolution*.
- Coleman, P. T., Tan, R. Y., Bui-Wrzosinska, L., Nowak, A., and Vallacher, R. R. Are they with us or against us? The effects of need for closure on conflict orientations and catastrophic escalatory dynamics. To be submitted to *Journal of Personality and Social Psychology*.
- Vallacher, R. R., Sullivan, S., Coleman, P. T., Bui-Wrzosinska, L., & Nowak, A. Who's to blame? The dynamics of allocating responsibility for conflict. To be submitted to *Journal of Experimental Social Psychology*.
- Vallacher, R. R., White, E., & Haddad, L. Taking sides: Implicit and explicit bases of assigning blame for inter-group conflict. To be submitted to *Journal of Social Issues*.

Papers presented at conferences:

Liebovitch, L. S., Vallacher, R. Nowak, A., Bui-Wrzosinska, L., and Coleman, P. T. (2007). Dynamics of Two-Actor Cooperation-Competition Conflict Models. Presented at the *International Association for Conflict Management* conference, July 4, 2007, Budapest Hungary. This paper was one of three papers nominated for the best theoretical paper submitted to this conference.

Coleman, P. T., Nowak, A., Vallacher, R., Bui-Wrzosinska, L., Bartoli, A., & Musallam, N. (2007). Complexity, change, and conflict: Empirical research on the dynamics of conflict and intractability. Research symposium presented at the 20th Annual Conference of the *International Association of Conflict Management* Conference, Budapest, Hungary, June 2007.

Nowak, A., Bui-Wrzosinska, L., Jochemczyk, L., Borkovsky, W., and Coleman, P. T. (2007). Negotiating complex systemic conflicts: Introducing a dynamical tool for multi-stakeholder negotiations. Workshop presented at the 20th Annual Conference of the *International Association of Conflict Management* Conference, Budapest, Hungary, June 2007.

Coleman, P. T., Vallacher, R., Nowak, A., & Bui-Wrzosinska, L. (2007). Intractable conflict as an attractor: Presenting a dynamical model of conflict, escalation, and intractability. Paper presented at the 20th Annual Conference of the *International Association of Conflict Management* Conference, Budapest, Hungary, June 2007.

Coleman, P. T., Kugler, K., and Goldman, J. (2007). The Privileges of Humiliation: The Effects of Social Roles and Norms on Immediate and Prolonged Aggression in Conflict. Paper presented at the 20th Annual Conference of the *International Association of Conflict Management* Conference, Budapest, Hungary, June 2007.

Coleman, P. T. (2007) A dynamical model of power and conflict. Invited paper presentation for the 2007 *Social Interdependence Theory Conference*. Silverwind, MN.

Nowak, A. (2007). A Dynamical Model of Deutsch's Crude Law of Social Relations. Invited paper presentation for the 2007 *Social Interdependence Theory Conference*. Silverwind, MN.

Other Grant Support Obtained Following JSMF Grant:

This year, we were granted two small grants for our DST project. Although one of these grants pre-dated funding from JSMF, we believe that the awarding of the grant from JSMF helped secure additional funding for 2007-2008. Our funding activities were as follows:

The Community Foundation of Boulder, 2006-2007, \$18,000. Foundational Meeting on Conflict and Complexity, Warsaw, Poland.

The Community Foundation of Boulder, 2007-2008, \$18,000. Fellowships on the Study of Conflict and Complexity at Teachers college, Columbia University.

Also sent letters of inquiry to The Ford Foundation and The Guggenheim Foundation. Currently in preparation to submit 2 new grants to the National Science Foundation: One to Human and Social Dynamics (HSD) for applying dynamical systems theory to protracted conflicts and one to Social Psychology for a new dynamical model of conflict under conditions of asymmetrical power.

Information Dissemination

Principal investigators: Please complete and submit electronically to: washington@jsmf.org

In addition to our courses, presentations, workshops, and publications, a website was created for further dissemination of the projects findings. It is available at:

<http://www.dynamicsofconflict.iccc.edu.pl/>

In addition, a Wiki platform was created for the coordination of initiatives around dynamical systems approaches to conflict. It is available at: <http://www.iccc.edu.pl/index.php?page=research-groups-and-projects>

Conclusion

Our team greatly appreciates the support of the JSMF. As we hope you see from this report, it has helped to establish the conditions to achieve considerable progress on our agenda and has helped to stimulate new thinking and methods for our work. We are immensely excited about the work and look forward to another fruitful year!