

A Dynamical Tool to Study the Cultural Context of Conflict Escalation

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Abstract. The present article describes research in progress which is developing a simple, replicable methodology aimed at identifying the regularities and specificity of human behavior in conflict escalation and de-escalation processes. These research efforts will ultimately be used to study conflict dynamics across cultures. The experimental data collected through this methodology, together with case-studies, and aggregated, time-series macro data are key for identifying relevant parameters, systems' properties, and micro-mechanisms defining the behavior of naturally occurring conflict escalation and de-escalation dynamics. This, in turn, is critical for the development of realistic, empirically supported computational models. The article outlines the theoretical assumptions of *Dynamical Systems Theory* with regard to conflict dynamics, with an emphasis on the process of conflict escalation and de-escalation. Next, work on a methodology for the empirical study of escalation processes from a DST perspective is outlined. Specifically, the development of a progressive scenario methodology designed to map escalation sequences, together with an example of a preliminary study based on the proposed research paradigm, is presented. Implications of the approach for the study of culture are discussed.

Keywords: Conflict Escalation, Dynamical Processes, Cross-Cultural Differences

1 Introduction

On March 1, 2001 Afghanistan's puritanical Taliban Islamic militia began the destruction of statues across the country, including the almost 2,000-year-old world's tallest statue of Buddha in Bamyan. Although the destruction of this invaluable evidence of human culture and civilization occurred across merely a few days, the damage done cannot be possibly compensated, and is practically irreversible.

On September, 11, 2001, two airplanes hijacked by al Qaeda suicide bombers crashed into the twin World Trade Center towers in New York, causing the death of 2,974 people, targeting one of the most powerful symbols of the Western world and destabilizing the global political, cultural, and economical status quo.

On September 30th, 2005, twelve caricatures of Mahomet were published by the Danish newspaper Jyllands-Posten under the title "faces of Mahomet." This publication instigated a series of conflicts reaching far beyond the initial

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provocation, including death threats toward the authors, high level political repercussions and rising social unrest.

Understanding, predicting, and managing conflict are arguably among the most important challenges facing mankind. With increasing interdependence, the well-being of societies and their potential for growth and cooperation primarily depends on the way the global community is able to handle existing as well as emerging social conflicts. As the above examples attest, however, conflicts traverse cultures and are constantly changing and evolving. Moreover, culture and conflict are intricately related. Individuals initiate conflicts, which become entrenched and affect the culture in which they are embedded; and at the same time, individuals are themselves conditioned and influenced by culture in the types of triggers that initiate conflicts and the factors that affect their escalation and de-escalation. This makes conflict and culture both *local* – that is, deeply anchored in human experiences and actions, and *global* – with large-scale, system-level consequences. The multilevel dynamic character of today's conflicts presents a challenge to all social sciences, as it requires new tools to help understand, predict, and manage the constantly evolving, dynamical character of the phenomenon.

Recently, a paradigm widely used in other areas of science – the dynamical systems approach (DST) – has been applied to the study of social conflict [1], [2], [3]. This theoretical advance has opened new avenues for the study of complex systems of conflict, bringing computational models, computer simulations and advanced conceptual tools to bear on studying conflict (see: [4], [5], [6]). Computational models and simulations hold the potential to advance not only the understanding of the dynamic interplay between culture and conflict, but also to have predictive value, which is critical for applications. However, empirical data is also crucial to ensure that computational models have relevance and predictive power. Empirical data should utilize multiple methods of data collection, including case studies analysis, statistical, time-series data, field work, and experimental psychological data allowing for causal inference.

The present article describes a work in progress on the latter effort—experimental psychological data—which is a part of several larger initiatives: the Dynamics of Conflict initiative [7], and the MURI initiative [8], aimed at bringing together advances from the application of dynamical systems to intractable conflicts, with the latest lines of research on the cultural context of conflict and cooperation. The main focus of the present project is the cultural context of conflict escalation and de-escalation dynamics. Specifically, we report our efforts toward the development of a simple, replicable methodology aimed at identifying the regularities and specificity of conflict escalation and de-escalation patterns which ultimately can be used to study conflict dynamics across cultures. We believe that experimental data collected through this kind of methodology can help identifying relevant cultural parameters, and their effects on naturally occurring conflict escalation and de-escalation processes. This, in turn, can facilitate the development of realistic, empirically supported computational models.

In what follows, we first outline the theoretical assumptions of DST with regard to conflict dynamics, with an emphasis on the process of conflict escalation and de-escalation. Next, the work in progress on a methodology for the empirical study of

escalation processes from a DST perspective will be outlined. Specifically, the development of a *progressive scenario methodology* designed to track escalation sequences, together with an example of a preliminary study based on the proposed research paradigm, will be reported. Implications of the approach and methodological tools for the study of culture are then discussed.

1.1 The Dynamical Systems Approach to Conflict

Along with the dynamical systems approach to social psychology [9] social phenomena can be described with the use of some core Dynamical Systems Theory concepts. The term *dynamical system* is generally used to describe numbers of interconnected elements that change and evolve over time. From this perspective, for example, boiling water is viewed as the current state of a system of interacting molecules, the brain as a system of interacting neurons, or the society as a system of interacting individuals. A dynamical system can generally be conceptualized as the state of its elements at a given time; a system's behavior as a sequence of such states. To describe sequences of states, we need to identify key variables and parameters capturing the evolving characteristics of the system [9]. Although key parameters such as temperature and density for instance, describing a systems of interacting molecules in a state of steaming water, ice, or vapor seem relatively simple to measure and identify, specifying key parameters for the description of human systems undergoing different phases of conflict escalation still poses an important challenge to social sciences. It requires not only empirically informed, qualitative understanding of the phenomenon of conflict, but foremost the translation of qualitative, stable, social psychological properties into quantitative, measurable dynamical variables. Moreover, efforts toward the identification and definition of key social, psychological, and cultural parameters are tantamount to the mapping of such a system's behavior over time.

In the present project, we map conflict escalation and de-escalation as a sequence of one party's reaction to another party's conflict provoking behavior. From this point of view, the trajectory of escalation is a sequence of measures of the participant's behavior in response to the step-by-step increase of aggressiveness of another party in conflict over time. The response is measured on a behavioral scale reflecting the level of conflict intensity of the response, from very low (conciliatory acts) to very high (physical aggression). What is interesting from the point of view of the present article, is that patterns of responses for the same scenario of conflict provocation by another party can vary across different social, cultural, and psychological conditions: people can escalate gradually in response to gradual intensification of aggressive behaviors from the other party, but the same conditions can also lead to exaggerated response or, conversely, resistance to change and stabilization at a given level of intensity. Responses trajectories can also progress along some repeated cycles, or have unpredictable, irregular character.

One way to formally portray and systematize such results is to describe the dynamical properties of conflict escalation trajectories as attractor's dynamics. Generally, the dynamical systems approach to social psychology [9] identifies and describes attractors in social systems as regions, toward which trajectories in a state

space converge with time. It is common to distinguish among four classes of attractors [10], [11]: fixed-point, periodic, quasiperiodic, and chaotic. Here, we concentrate on fixed-point attractors. The method we use here to assess attractor dynamics is to actively perturb the system through a sequence of conflict provocation stimuli. If a single, fixed-point attractor exists, the system will always return to the same state after some time, thus one party's response will return to the same level of conflict intensity, regardless of the influence from the other party. In the case of multiple fixed-points, small perturbations will result in the system returning to its original state, but further changes of the control parameter may result in the system moving toward a different equilibrium: threshold effects are to be expected in the responses patterns. In dynamical social psychological terms similar dynamics have been understood as catastrophic scenarios of change [12], and will be referred to as catastrophic (as opposed to gradual, incremental) escalation. Properties of such scenarios are of particular relevance for de-escalation and practical applications: the *hysteresis* effect described in catastrophe theory [13], for instance, explains how crossing certain thresholds in conflict escalation leads to irreversible changes, undermining the potential for further de-escalation. In our project, however, this would rather be a post hoc conceptualization of emerging properties and parameters explorations than mathematically supported, precise models.

Our goal is to explore the variance of people's response trajectory in different cultural, social, and psychological contexts. The work we are advancing here is aimed at identifying naturally occurring sequences in escalation dynamics, but at the same time controlling for cultural conditions which could emerge as critical parameters for escalation dynamics. We are thus not yet at the stage of empirical testing of existing models of conflict escalation, but rather at the preliminary stage of parameters identification, as well as exploration of dynamical properties, naturally occurring patterns, triggers and qualitative shifts in controlled, laboratory conditions. This stage, we believe, is critical for the further development of models that have social psychological relevance. Below we discuss the initial development of a tool – *the progressive scenario methodology* – a work in progress toward experimental data collection aimed at testing the role of cultural parameters on interpersonal conflict escalation and de-escalation dynamics.

2 Development of the *progressive scenario tool*

The *progressive scenario tool* is mapping the response of one party to another party's conflict provocation behavior. As a starting point, the main parameter describing the system's behavior is derived from one of the most robust theories in conflict theory, Deutsch's theory of conflict cooperation and competition [14]. Morton Deutsch's seminal question, "under what conditions will a conflict follow a constructive versus destructive path?" is investigated in a dynamical way, through the translation of the "destructiveness" variable into concrete behaviors ranked according to their level of destructiveness versus constructiveness. The manipulated parameter, representing the stimulus responsible for changes over time, is a linear progression of the other party's conflict provocation behavior. Through the use of this tool, numerous independent

variables can be manipulated in order to track their effect on the course of escalation / de-escalation. Below, we describe the two components of the tool: (1) the stimuli and (2) the response scale.

2.1 Stimuli

The stimuli consist of a series of short descriptions (vignettes) of gradually escalating and de-escalating conflict behaviors displayed by a colleague at work in a situation of task interdependence ("you are working on a common project at work"). Fourteen subsequent vignettes are scaled according to the level of destructiveness and aggressiveness of the behavior they represent: the first 7 scenes outline a scenario of progressive escalation of provocation by a colleague at work, from a relatively mild disagreement ("Your colleague criticizes your work") to open confrontation and humiliation ("During a company picnic, your colleague insults your partner / relative publicly"). The remaining 7 scenes outline a progressive de-escalation scenario, with descriptions of conciliatory behaviors aimed at reversing each escalatory step ("Your colleague apologizes publicly for his inappropriate behavior toward your partner / relative").

2.2 Response Scale

The response scale includes a list of 30 behaviors, scaled with regard to the level of destructiveness to the relationship (between the parties) that they represent, from relatively constructive ("talking it over") to extremely hostile and destructive behaviors ("hurting him / her as much as possible"). Items were generated via focus groups conducted with individuals working in organizations as well as discussions with subject matter experts (professional mediators, and scholars from the conflict resolution field). Subsequently, large samples of individuals scaled items along conflict dimensions by employing multidimensional scaling techniques. These efforts were aimed at collecting qualitatively informed items (focus groups and subject matter experts), with the possibility to translate qualitative properties to quantitative data (scaling of the items along social psychological dimensions), and thus map a party's response trajectory on the defined phase space with some relative precision given the qualitative character of the data. In sum, the response scale is designed to measure changes in the order parameter (destructiveness of the response behavior) of the system.

2.3 Conflict Trajectories

Results from the questionnaire (responses on the scale of possible behaviors for each level of the provocation) can be mapped as a trajectory on a two dimensional space. The space is defined by the level of conflict provocation displayed by the other party (control parameter), and by the level of response destructiveness and aggression (order parameter). The trajectory represents a sequence of states. Each state is

described as participant's "map of possible behaviors" (the ensemble of behaviors considered as possible to display at a given time) in response to a given level of conflict provocation from the other party. This allow for the identification of patterns of dominant behaviors, but also latent clusters of behavior that remain stable across situations. Results from studies using the described questionnaire constitute a starting point for modeling, causal inference, as well as for the testing of the effect of various parameters on a laboratory simulation of escalation dynamics.

3 Example from a Preliminary Study

As an example here, we describe a preliminary study investigating the impact of relational closeness between parties on conflict escalation and de-escalation trajectories. The study revealed that closeness induces abrupt changes and nonlinear trajectories in conflict, while more distant relationships are characterized by gradual escalation trajectories. Results from this study [15] demonstrate that close relationships induce trajectories displaying a major shift from a series of responses, where, despite contentious behaviors from the other party, the responses are stabilized at a very low level of destructiveness, until a threshold is passed. At this point, the trajectory follows a sudden shift to a sequence of responses characterized by extremely high levels of destructiveness and open aggression. This type of dynamics is well known in nonlinear physics, and thus could be better understood with the use of DST concepts. Empirical results show a nonlinear progression of responses from one stable state of incontestably positive relations toward another stable state [16]; this finds coherent explanation as attractors dynamics, from the "friendship attractor" toward the "enmity attractor". Conversely, more distant relationship were associated with more gradual escalation patterns, where mid-range levels of aggression provoked intermediate responses. It is important to note that single static measures at a given moment in time would not predict the paradoxical effects of such conditions on the system's dynamics: from a static point of view, close friends are expected to uphold a stable, conflict free relationship [17]. However, the DST perspective demonstrates that this is true, but only for low levels of the control parameter (level of provocation).

Further, exploration of responses items revealed that dimensions other than destructiveness, as well as triggers for nonlinear dynamics could have emerged as control parameters for the escalation process. For example, trust appeared to be critical in close relationships, and thus in a situation of rupture of trust, a shift has occurred in close relationships conditions, while this factor appeared irrelevant in the distant relationship condition. Such shifts between control parameters are being further investigated, and open an interesting line of research for the study of cultural differences. Results from this study are a basis for further development of theoretical and computational models exhibiting and extrapolating dynamical properties emerging from laboratory simulations.

4 Culture and Conflict Escalation

Conflict is a universal phenomenon, yet the way in which culture affects conflicts can vary dramatically across cultures [18] [19]. Nevertheless, cross-cultural research on conflict dynamics is in its infancy. Much research examines static differences in *stable conflict styles* with little or no attention to the dynamics of conflict across cultures. Building on our prior work, we are now developing new tools and examining the impact of culture on conflict escalation. Several initiatives are underway for the study of culture and conflict escalation. Through in-depth interviews in Egypt, Iraq, Jordan, Lebanon, Pakistan, Turkey, and the UAE, we are extracting local conflict episodes to develop new stimuli and new behavioral responses that are generalizable to the Middle East.

With our new tools, we will examine how cultural factors that are relevant to the Middle East, the U.S., and Asia—and in particular—honor, dignity and face, respectively affect conflict dynamics [20] [21]. Cultural logics of honor, face, and dignity imply different trajectories of aggression. For example, people in *honor cultures* have a “keen sensitivity to the experience of humiliation and shame, sensitivity manifested by the desire to be envied by others and the propensity to envy the successes of others” ([22, pp. 116]. In such cultures, individuals are expected to go to great lengths to uphold the reputation of oneself and one’s family and to avoid appearing vulnerable [23]. Reputation is critical within cultures of honor, while payback serves as an organizing principle for individuals’ interactions when they have been provoked ([21, 23, 24, 25, 26]. Individuals from cultures of honor are thereby expected to respond *quickly* and with high levels of destructiveness in order to show they are not vulnerable. Individuals are expected to have a quick reaction to even minor acts, due to the importance of reputation maintenance (the premium placed on having a ‘tough’ reputation necessitates a strong reaction to seemingly small breaches of respect). It is also predicted that individuals will continue to act aggressively towards the perpetrator even after time has passed since the initial transgression; that is, there will be little ‘cooling off,’ consistent with “hysteresis effects” described in DST [5]. Particular triggers such as damage to female honor, shame, and humiliation are expected to also be important control parameters affecting thresholds of escalation in honor cultures.

In contrast to honor, wherein self-worth can be taken away by other’s actions, individuals in *dignity cultures* are theoretically born with equal worth and rights which cannot be taken away by others [21, 25]. In dignity cultures, external evaluations matter little, while internal valuations are of the utmost importance. Values such as autonomy, freedom, and standing up for one’s beliefs play a crucial role in dignity cultures. Such cultures are also likely to endorse rationality, strong person-task separation, and an independent self-construal [27]. We hypothesize that individuals from dignity cultures will generally react to increasingly aggressive acts in a linear fashion. Put differently, the escalation of aggression may be described as a rational, tit-for-tat strategy. In the same manner, individuals should react with decreasing levels of aggression as a perpetrator attempts to de-escalate the situation by apologizing or attempting to restore the relationship. However, particular triggers are expected to result in more severe reactions on the part of a victim from a culture of dignity, such as insults towards one’s genuineness and challenges to one’s freedom, rights, and autonomy [28] or status as an equal member of society [25], and thus might be seen as critical control parameters of conflict trajectories in dignity cultures.

Finally, in *face cultures*, individuals place a large premium on external evaluation of the self, while lending little credence to internal evaluations. *Face* represents an individual's claimed sense of positive image in the context of social interaction [29]. Similar to honor cultures, upholding the reputation of both the individual and the family is critical. Face cultures tend to have strong norms for communal responsibility, person-task interdependence, and maintaining harmony.. Compared to honor and dignity cultures, we expect that individuals from face cultures will be slow to react to initial aggressive acts and will react with less destructiveness. Over time, however, with continued provocation, we expect that conflict dynamics in face cultures can take on a "*catastrophic escalation*" pattern. Moreover, certain transgressions may trigger strong aggressive reactions in face cultures such as public criticism or embarrassment, communal shame, or violations of duties [30].

5 Discussion

The dynamical-systems approach to the study of culture, negotiation, and collaboration offers the potential to enhance our understanding of the culture and conflict in three distinct ways: metaphorically, mathematically, and empirically. First, dynamical-systems theory offers a rich array of new metaphors, constructs, and principles which might be fruitfully applied to the culture and conflict literature. Dynamic system constructs such as attractors, emergence, and self organization can serve as useful metaphors to help the researcher understand the dynamic nature of conflict and culture. Second, the dynamical systems approach provides the social scientists tools facilitating the mathematical description of the hypothesized mechanisms underlying specific culture and conflict dynamics. Thus, although social science theory is typically expressed verbally, the dynamical systems tools translate these theories into computer simulations. This will allow identification of assumptions inherent in our theories, but difficult to identify when theories are maintained in their verbal form. Finally, the dynamical-systems approach has implications for the types of empirical methodologies developed and employed in research. Typically, traditional social sciences focus on the central tendency of variables and ignore important dynamics reflected in variables' variances. Further, dynamical-systems models and methods push the social sciences to focus on events as they unfold overtime to understand the general *pattern of interactions* of the parties overtime.

The dynamical tool described in this article is a work in progress. Current versions, periodically updated are made available on the following web platform:

<http://houselab.ca/DEA/teece>

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