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Violent Conflict in Northern Ireland:

Complex Life at the Edge of Chaos

Chaos, Complexity, and Conflict Resolution Theories

REVISED

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Introduction

The purpose of this paper is threefold. First, to develop a comprehensive multi-level theory on the causes and conditions of violent conflict that can be used as a basis for intervening into violent conflict at any level. Second, to analyze the causes and conditions of a particular violent conflict (Northern Ireland). And third, design a third party intervention into that conflict that 'captures its complexity' (Sandole, 1999). Before these tasks are attempted we will cover the sources of this theory in the next section entitled 'Pre-Theory'. Here we will outline the theoretical antecedents that have lead to the development of the model.

This theory has been developed from a number of well-developed theories and assumptions about violent conflict. First, it is based on Burton's Basic Human Needs theory as the foundation on which we construct the framework. We assume that humans have essential ontological needs that they will pursue at any cost. Second, it incorporates elements of Volkan et. al's Enemy System theory, and we assume that humans have a need to dichotomize and create systems of enemies and allies. Third, we accept Vasquez's territoriality thesis, and also his notion that a Realpolitik approach will often lead to conflict and war. Fourth, Sandole's Three Pillar model of conflict and conflict resolution serves as a focal point in which to anchor our concepts and build my model of conflict theory. Fifth, this is an attempt to link the previous four elements to chaos and complexity theories in order to develop a comprehensive, multi-level theory. The reader is hereby cautioned that the non-linear mathematics that are the hallmark of chaos and complexity theories will not be covered here in detail. Instead, we seek to adapt the concepts from these natural science theories to use metaphorically, in order to shed light on the complex and chaotic nature of violent conflict.

Pre-Theory

Before we delve into the actual model, it is prudent if we acknowledge some assumptions and explore the key concepts from our foundational theories from which we draw. First, we must establish criteria for our theory and operationalize a few terms. From the introduction we know that the theory must be multi-level and it must explain the causes and conditions of violent conflict. Multi-level means that it needs to account for conflict at the individual (interpersonal), group-organizational, societal, international, and global-ecological levels (Sandole, 1998: 3, see pillar 2). We add the group-organizational level to Sandole's conception because in situations of terrorism, and what is referred to as 'low intensity' warfare, many important decisions and actions originate at this level. This could be covered under the rubric of 'societal' level. However, in the case of Northern Ireland where there are literally dozens of paramilitary groups, ten political parties involved in the peace process, and many influential social organizations (e.g. the Orange Order, Catholic and Protestant churches, NGOs, etc.), in order to capture the complexity of the conflict it is important to acknowledge that there is an intermediate step between the individual and the societal levels.

In order to operationalize the causes and conditions of conflict, the following criteria will be used. The theory must account for behavior at all system levels. We are particularly interested in the individual level, which is our primary basis of analysis as all behavior originates with the individual. The theory must also account for interaction between variables and units at all levels. This is often overlooked in social theories because of the assumption of system stability. However, conflict is inherently about change, often dynamic and catastrophic change, and we must account for the interaction of variables over time. Related to this is the need to account for conflict system dynamics. What happens to the system under the stresses of a

dynamic conflict is of interest. Next, we must account for structural factors that cause conflict. The presence of structural violence, relative deprivation and rank disequalibrium affect the environment and interaction of individuals, groups, and societies in conflict. Penultimately, we must tie these elements together to form a generic theory, that can address conflict at all levels in all situations of violent conflict. Finally, we must test this theory by using it as the basis for conflict analysis and third party intervention.

Basic Human Needs

One of the most important contributions of basic human needs theory is that the individual is the most appropriate unit of analysis. Humans have ontological needs that they strive to fulfill under all circumstances. Humans all have basic needs of identity, security, recognition, development, as well as basic physiological and physical needs. Basic needs are relevant to conflict resolvers because the source of much conflict comes from the frustration and prevention of basic needs satisfaction (Burton, 1997). If humans are prevented from satisfying their needs due to the perception of conflicting or incompatible goals, then they will fight to eliminate the frustration in order to satisfy their needs. As Edward Azar notes, "It is the denial of human needs, of which ethnic identity is merely one, that finally emerges as the source of conflict, be it domestic, communal, international, or inter-state" (Edward E. Azar, 'Protracted International Conflicts: Ten Propositions', in Burton and Dukes, 1990:146). One of the most important elements influencing the conflict in Northern Ireland is the issue of ethno-national identity among the Irish Catholic nationalists and the British-Ulster Protestant unionists. Kelman supports this view.

Identity, security, and similarly powerful collective needs, and the fears and concerns about survival associated with them, are often important causal factors in intergroup and intercommunal conflict (Herbert C. Kelman, 'Social-Psychological Dimensions of International Conflict', in Zartman, et al, 1997: 195).

The frustration of basic human needs is the ultimate source of much violent conflict, particularly among ethnic groups. This is an important theme in this analysis and a foundation for the rest of our theory. In order to understand how basic needs influence groups in conflict, we turn to Enemy System theory.

Enemy System Theory

Enemy System theory introduces the human need to dichotomize (bifurcate) people into out-groups (enemies) and in-groups (allies). Enemy System theory is important to consider because it helps to tie together micro and macro levels of analysis by introducing key multi-level phenomenon. For example, we have seen that identity is a basic human need that will be pursued regardless of cost. Self and group identities are intertwined through the process of socialization. Ethnic identity is particularly salient because it represents family and kinship ties that give a sense of belonging, security and meaning.

When ethnic groups are victimized the sense of identity is threatened on an individual and group level. Ethnic victimization often leads to what John E. Mack calls the *egoism of victimization*; which Mack defines as "the incapacity of an ethno-national group, as a direct result of its own historical traumas, to empathize with the suffering of another group (Mack, 'The Psychodynamics among National Groups in Conflict' in Volkan, 1990: 125). This concept is very important because it enables a terrorized victim to become a terrorist, with little guilt

about committing violence. This mechanism helps to create and perpetuate conflict cycles that

Sandole refers to as "self-stimulating / self-perpetuating conflict processes" and "negative self-

fulfilling prophesies" (Sandole, 1999: 80). Demetrius Julius outlines this process below.

> Very simply put, the perpetuation of aggression is insured by the victimization
> action of one group upon another. . . .These reciprocal hostile actions *stimulate*
> and *enlarge* the opponent's historical enmity and validate each other's
> dehumanization. . . Victimization is the process that leads to the final behavioral
> action of the cycle. . . Since each attack triggers the process in the other, the two
> adversaries are locked in an ever expanding and vigorous dance of hostility
> (Demetrios Julius, 'The Genesis and Perpetuation of Aggression in International
> Conflicts' in Volkan, 1990: 106-7).

These cycles are fed by ethnic groups' fears over their *chosen traumas*, a concept that is related

to victimisation. A chosen trauma is an event whereby a group is badly victimised. The group

usually suffers from complicated mourning about this event. The group becomes obsessive

about the trauma and often feels a sense of entitlement or payment for past wrongs. Aggressors

and terrorists often focus on these chosen traumas to justify their unjustifiable acts. Indeed it is

not uncommon for terrorist groups to name their organisations after chosen traumas. Examples

of this would be the *Revolutionary Organization 17 November* (17 November) in Greece and the

October 1st Antifascist Resistance Group (GRAPO) in Spain. Examples of chosen traumas

would be the Holocaust for Jews, the famine and Bloody Sunday for Irish Catholics, and the IRA

bombings of "Bloody Friday" and Enniskillen for Northern Irish unionists (Protestants).

The chosen trauma is a group element, whereas the *conversion experience* is an

individual phenomenon. Joseph Montville defines this as a personalized chosen trauma; an event

in which an individual is victimized and the remote sense of group victimization becomes

personalized (Montville, 'The Psychological Roots of Ethnic and Sectarian Terrorism', in

Volkan, 1990: 174). For example, Francis Hughes, who was to die in a hunger strike with

Bobby Sands, as a teenager was beaten by members of the Ulster Defense Regiment (UDR).

This incident was to play a powerful role in his subsequent decision to join the IRA. This is another example of a multi-level phenomenon that affects behavior on the micro and macro levels.

Peter A. Olsson developed a model to explain how people become terrorists called the *personal pathway model*. Terrorists (motivated by ethno-nationalism not ideology), having suffered ethnic identity victimization, perceive themselves to be the personification of a victimized ethnic group's fantasized liberation; they try to regain what has been lost. Olsson defines this model with four primary elements:

1. Early socialization into a violent environment (e.g.: West Belfast, Bogside)
2. Narcissistic injuries (i.e.: negative identity)
3. Escalatory events (i.e.: conversion experience)
4. Personal connections to terrorist groups (Peter A. Olsson, 'The Terrorist and the Terrorized: Some Psychoanalytical Considerations', in Volkan, 1990:187)

We begin to explain how individuals, based on their victimized ethnic identity, become involved in destructive and violent behavior. With the exception of psychopaths, most terrorists, paramilitaries, freedom fighters, whatever you choose to call them, who are motivated by ethno-nationalism, are not people who would normally choose to become involved in violent political conflict. Most of them experienced a conversion experience or a traumatic pathway that led them to violence. Most of them were normal people, placed in abnormal violent contexts and forced to survive. This is not by way of excusing their unjustifiable acts. It is by way of explaining them, so that we can learn how to deal with them and their underlying issues in a proactive, rather than reactive way.

Our last concepts from enemy system theory are the inability to mourn and complicated mourning. Volkan introduces these concepts because they are directly related to a victimized ethnic group's attachment to territory, identity and an overwhelming sense of loss. Volkan

outlines this below.

> When territory - or even prestige - is lost to an enemy, and a group had difficulty forming a remembrance formation, the group can still be seen trying to recoup ancient losses. Under political, military or economic stress the mourning may become complicated when the representation of what is lost cannot be surrendered because it is too highly idealized or too necessary to self esteem (Volkan, 1990: 43).

This helps to explain why territory is so important to ethnic groups in conflict and in particular to those with irredentist claims to territory. Northern Ireland serves as a perfect example with both the nationalists claiming the six counties and the unionists fighting to remain a part of the United Kingdom. Territoriality is our next topic.

Vasquez's Territoriality Thesis

Vasquez contributes to conflict theory by introducing several key hypotheses (Vasquez, 1993). First, humans are territorial by nature. Second, territory is intertwined with our sense of self and group identities; the link between territory and ethno-national identity is particularly salient. Third, because territory has such importance to one of our fundamental basic human needs (identity), having this need frustrated makes us very anxious and more prone to respond to territorial threats with aggression. Consequently, humans respond to threats of territoriality most often by adapting realpolitik strategies. These power-based aggressive decisions most often lead to escalation and war. As Vasquez notes, "The existing theoretical understanding about the relationship between territory and war is that all other factors being equal, states or other sovereign groups, like tribes, will use aggressive displays to demark boundaries" (Vasquez et al., 1995:144). Aggressive displays are part of the realpolitik response to territorial threats. Aggressive territorial displays such as marches are some of the most common and contentious

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events in Northern Ireland each summer. Not only are humans predisposed to aggressive defense of territory, but ethno-national links also help to exacerbate this tendency by making the matters more intense and complex. Vasquez contends that "…one of the major factors that separates territorial disputes that give rise to recurrent war and those that do not is the presence of ethno-national links in the disputed territory with one or both of the contending sides" (Vasquez et al., 1995: 145). One of the most salient features of the conflict in Northern Ireland is the presence of irredentist claims by Irish republicans and nationalists to the six counties of Ulster. Further, as the Republic of Ireland (Eire) was once part of the United Kingdom of Great Britain and Ireland (including Scotland and Wales), hardcore unionists often lament the loss of the 26 counties that comprise Eire.

The situation is one in which there is a 'triple minority' scenario. First, Irish nationalists (Catholics) are the minority community in the UK province of Northern Ireland where Ulster unionists (Protestants) are the majority. Second, Ulster unionists are the minority on the island of Ireland, which is a key reason why they do not wish to leave the union with Britain in exchange for minority status within a united Ireland. Third, within the British Isles, the Irish are a minority compared to the English majority. Consequently, each and every community feels threatened by minority (potential victimization) status and the loss of territory.

Sandole's Generic-Complex Theory

When one explores Sandole's theoretical writings, particularly 'Capturing the Complexity of Conflict' (1999), they are exposed to two important goals: (1) it is meant to derive a generic theory that can deal with conflict at all levels (pillar 2); and (2) it is meant to deal with conflict at all intensities (latent → manifest → aggressive manifest conflict processes, Sandole, 1999: 16-17). Sandole, having taken the challenge of the former, attempts to chart the complex realm of protracted social conflicts. Subsequently, we have termed his theory 'Generic-Complex theory'. We do this in part to distinguish it from complexity theory from which it derives some of its concepts.

The important concepts of this theory are Sandole's three pillar model (see below; Sandole, 1998); his '4+2' approach to conflict orientations and environment (Sandole, 1993); his definitions of manifest and aggressive conflict processes (Sandole, 1999: 16-17); the concepts of 'conflict as start up conditions' and 'conflict as process', as well as the 'self-stimulation, self-perpetuating' and 'negative self-fulfilling prophesies (NSFP) (see Sandole, 1999 for details). We would like to pause and briefly mention a conceptual contradiction between Sandole's theory and chaos theory, from which some of his ideas are derived.

> "Conflict as start up conditions" generates "conflict as process", and once process comes to characterize conflict, it does not matter how (or when) the conflict started. As indicated earlier, *equifinality* (italics added) is the operative concept here: different startup conditions can lead to the same process (initiation, escalation, controlled maintenance, etc.) (Sandole, 1999: 129).

The concept of equifinality, and one of the fundamental tenets of chaos theory, extreme sensitivity to initial conditions, is contradictory and mutually exclusive. Different initial conditions leading to similar outcomes contradict the premise of outcomes being intensely

dependent upon initial conditions. Perhaps this is of no particular importance. However, we draw attention to it because we have not yet found a solution to reconcile the two theoretical constructs. Before we leave Sandole to explore chaos and complexity theories, he provides us with a link to these topics. Sandole says of catastrophe, chaos and complexity theories:

> All three perspectives reflect a general systems type of interdisciplinarity, in that expressions of them can be found in the social as well as natural sciences. The three are clearly linked, in that, for instance, catastrophe can be generated by chaos, while chaos inheres complexity (Sandole, 1999: 194).

Chaos, catastrophe and complexity theories are subsets of what is also referred to as the complexity sciences. They are all based on a number of common assumptions; the most important of which is their dynamic nonlinear nature.

Table 1 A Comprehensive Mapping of Conflict and Conflict Resolution: A Three Pillar Approach*		
Pillar 2	Pillar 1	Pillar 3
Conflict Causes and Conditions	**Conflict: Latent (Pre-MCP), MCP, AMCP**	**Conflict Intervention 3rd Party Objectives**
Individual Level	Parties	Conflict Prevention
Organizational / Group Level**	Issues	Conflict Management
Societal / National Level	Objectives	Conflict Settlement
International Level	Means	Conflict Resolution
Global / Ecological Level	Conflict / Conflict Resolution Orientations	Conflict Transformation
	Conflict / Conflict Resolution Environment	[Conflict Provention]
		3rd Party Approaches
		Competitive v. Cooperative
		Negative v. Positive Peace
		Track 1 v. Track 2 / Multi-track

*Sandole, 1998.
** Sandole does not have the Organizational / Group Level in his model. I have added it here because this level is of the utmost importance when analyzing terrorist group violence.

Theory

Our pre-theory gives us many useful concepts to relate to our model. Now that we have established a theoretical foundation to build upon, we need to explore the concepts and implications of chaos and complexity theories. From there we will review our comprehensive multi-level theory prior to using it as a tool for conflict analysis and intervention. Renate Mayntz provides us with an observation about the multi-level nature of non-linearity underlying chaos and complexity theories.

> The potential relevance of natural science theories of nonlinear dynamics lies in the promise to gain a better understanding of discontinuous changes at the macro-level as a consequence of micro-level processes (Renate Mayntz, 'Chaos in society: Reflections on the impact of chaos theory on sociology', in Grebogi and Yorke, 1997: 300).

The crossing of boundaries between micro and macro is an important quality of nonlinear dynamics. We shall shortly see this phenomenon illustrated by fractals. This makes an important contribution toward the development and understanding of the multi-level nature of our model.

Chaos Theory

In James Gleick's popular book *Chaos*, he elegantly summarizes chaos and complexity by stating, "Simple systems give rise to complex behavior. Complex systems give rise to simple behavior. And most important, the laws of complexity hold universally, caring not at all for the details of a system's constituent atoms" (Gleick, 1987: 304). The reason that we turn to chaos and complexity theories in conflict analysis and resolution is that it offers novel and interesting ways to analyze the behavior of dynamic systems. In human social life there are few processes or systems that are as dynamic or complex as conflict systems. Chaos and complexity theories

will be examined in order to borrow some conceptualizations that we can incorporate in our theory, analysis, and intervention.

Chaos theory has evolved over the last hundred years but most important contributions were introduced beginning in the 1960s. The basic assumption of chaos theory is that variables and systems often behave in nonlinear fashion, as opposed to simple linear movement down a straight line. It developed as an attempt to understand seemingly random behavior in systems such as the weather and turbulence. This 'randomness' is a function of nonlinearity – the parts of the equation do not add up, nonlinear equations cannot be easily solved (Gleick, 1987: 23). They could not be readily solved until the advent of the computer microprocessor. With the use of this tool, scientists began to solve nonlinear equations. An important part of nonlinear equations, that necessitates the use of a computer, is that one or more terms are not constant, they change over time. Consequently, this necessitates a computer that can calculate iterations of an equation over thousands or millions of calculations based on the changing values. This leads us to one of the most important concepts of chaos theory: extreme sensitivity to initial conditions or what is known as the butterfly effect.

Essentially the butterfly effect means that seemingly insignificant variations in the initial starting conditions of a system, such as a storm system, have enormous effect on the outcome – the path and intensity of the storm, for example. The relevance of this is that for dynamic chaotic systems predictability is extremely difficult, and in some cases impossible. What determines predictability are the initial conditions, general laws of behavior (e.g. laws of thermodynamics), and whether the system experiences weak or strong chaos. Weak chaos (also referred to as low dimensional chaos) refers to simple systems in which one variable may change, and strong chaos (also referred to as high dimensional chaos) refers to more complex

systems in which many variables change over time. The difference is that in weak chaotic systems some predictability, at least in the short and medium terms, is possible. In systems that exhibit strong chaos, predictability is not possible. Mathews, White and Long explain the importance of this for social scientists:

> …at least one implication is suggested: the unpredictable behavior exhibited by these simple mathematical exercises calls into questions the possibility of the prediction and control of social system outcomes. The question remains as to the limits of that predictability and control: are social systems characterized by low- or high-dimensional chaotic processes? (Mathews, White and Long, 1999: 446).

We suggest that social systems in general can be characterized by either strong or weak chaos, depending on system stability. Social scientists are divided over the issue of whether systems are generally stable or unstable. However, one thing is clear: conflict systems, as they move from latent to manifest conflict processes, exhibit high-dimensional chaos, and consequently prediction and control are difficult, if not impossible.

Before we move on to specific concepts, it is helpful to turn to Nina Hall to summarize chaos theory.

> It presents a universe that is deterministic, obeying the fundamental physical laws, but with a predisposition towards disorder, complexity and unpredictability. It reveals how many systems that are constantly changing are extremely sensitive to their initial state – position, velocity, and so on. As the system evolves over time, minute changes amplify rapidly through feedback. This means that systems starting off with only slightly differing conditions rapidly diverge in character at a later stage (Hall, 1991: 8-9).

In chaotic systems change affects the system through feedback. Feedback is an important concept for chaotic systems. Ian Percival, a mathematician specializing in chaotic systems, explains, "Chaos is persistent instability" (Ian Percival, 'Chaos: a science for the real world', in Hall, 1991: 12). He suggests that this instability "often arises when an object feels the effect of more than one force" (Percival in Hall, 1991:13). The importance of this is that conflict systems

are inherently unstable. Further, the effects of forces can be demonstrated by an individual or group that is striving to fulfill basic human needs, such as positive group identity (force 1), while being hindered in this process by the presence of structural violence, such as lack of political participation (force 2). This is an example of a simple chaotic system. When one adds in such forces or variables as 'historic enmity', 'ethnic victimization', 'territoriality', 'realpolitik ideology', and 'conflict as process', we see a simple system become very complex and exhibit high-dimensional chaos.

The next concept is a non-Euclidean geometric shape known as a fractal. Benoit Mandelbrot, the discoverer of fractals, in his chapter 'A Geometry of Nature' in Hall, explains this concept.

> Fractals are geometrical shapes that, contrary to those of Euclid, are not regular at all. First, they are irregular all over. Secondly, they have the same degree of irregularity on all scales. A fractal object looks the same when examined from far away or nearby – it is self-similar. (Hall, 1991: 123-4)

This self-similarity at all scales is important because it illustrates the presence of chaos theory and nonlinearity on all levels: the individual, group, societal, international and global. Each fractal has the same shapes and qualities at all scales and levels. This reflects the nature of complex conflict – its self-similarity across all levels of analysis.

Fractals lead us to explore the concept of 'phase space'. Phase space was developed by physicists as a way to map systems behavior pictorially. Phase space is usually four-dimensional (3 dimensions- height, length, width, plus time). Gleick explains this concept:

> Any state of the system at a moment frozen in time was represented as a point in phase space; all the information about its position or velocity was contained in the coordinates of that point. As the system changed in some way, the point would move to a new position in phase space. As the system changed continuously, the point would trace a trajectory (Gleick, 1987:49-50).

These trajectories are mapped out in models of phase space to form pictures of system behavior. For example, the portrait of a swinging pendulum in phase space looks roughly like a doughnut. It was noticed that a swinging pendulum would form patterns around points known as attractors. These attractors are areas in phase space that systems tend toward, a point at which a system would converge. These attractors are basically solutions to the randomness of chaotic systems. It is a way to examine patterns of tendency by getting rid of the 'noise' in chaotic systems. Being able to identity patterns in chaotic systems is a great benefit that allows for chaotic system analysis. The drawback is that researchers need an enormous amount of raw data in order to construct a complex chaotic model. This data is not readily available for most social science problems.

Related concepts are the 'basin of attraction', which is essentially the border around an attractor, and a strange attractor, which is an attractor, such as the Lorenz Attractor, that is not easily explained mathematically (see Ian Stewart's chapter, 'Portraits of Chaos' in Hall, 1991). Strange attractors are also fractal – they are self-similar on all scales (Stewart in Hall, 1991: 52). Consequently, we can see that attractors are points of system behavior that can be plotted in phase space. The strange attractors are also self-similar behavior patterns (systemic tendencies) across all levels. Stewart also explains the related concept of bifurcation.

> Any change in the qualitative nature of the attractor is called a bifurcation. More complicated bifurcations can create strange attractors from conventional ones. Thus bifurcations provide a route from order to chaos, and it is by studying such routes that most of our understanding of chaos has been obtained (Stewart in Hall, 1991: 56-7).

Bifurcations are important to understanding system behavior at the edge of chaos – between order and disorder. Decisions that are made, for instance whether to call a cease-fire or continue a violent campaign, are highly important to determine the path of chaotic systems. This is one of

the reasons that chaos theory is so important to conflict resolution. Whether or not someone is going to bomb a crowded pub next Saturday night is not just an abstract probability question, nor is it simply a matter for the security services. It is an important question for the society, and, more specifically, for the patrons and barmen of the pub. Such concepts of chaos theory can be readily applied to conflict system dynamics. This will be done in more detail in the sections on analysis and intervention. It is important to remember that we are treating these concepts metaphorically and not mathematically. The next important concepts for our theory are derived from complexity theory, to which we now turn.

Complexity Theory

Complexity theory picks up roughly where chaos theory leaves off. Chaos theory leaves us with the understanding that dynamic systems are unpredictable, at least over the long term. However, it does offer some hope of prediction in the form of phase space, attractors, and modeling dynamic system behavior. Complexity theory is derived from chaos principles with the added insight that complex systems are self-generating and self-stimulating. Stuart Kauffman, a leading complexity theorist from the biological sciences, terms complex systems *emergent* – "The whole is greater than the sum of its parts" (Kauffman, 1995: 24). As opposed to chaos theory, which is the generation of disorganized behavior from simplicity, complexity involves the development of an organized complex system from a random group of elements with simple rules. Features of complex systems include:

1. It is *complex*: the system is not just complicated; its parts interact in dynamic nonlinear ways.
2. Spontaneous *self-generation* and *self-organization*: order arises naturally in the universe – complex systems are self-organizing and self-generating.

3. Complex systems are *adaptive*: they do not merely react innately to stimuli, they learn and adapt to changing environments.
4. *Control is dispersed*: systemic behavior is not centrally controlled, there are many actors influencing system behavior.
5. Complex systems are *dynamic* systems that *change over time*; equilibrium and homeostasis mean system failure and collapse.
6. Successful complex systems *evolve to the transition area between order and chaos*. (Adapted from Waldrop, 1992, Kauffman, 1995 and Chet Miller [unpublished notes, 1999] based on Waldrop).

One of the most significant features of complexity theory is that it introduces a model of dynamic systems that change over time and space; they are not static systems in equilibrium. This is an important feature for social scientists who have been working with non-dynamic systems models that rely on linearity. As Mathews, White and Long suggest, "One of the more significant substantive implications of the complexity sciences is that dynamic, nonlinear systems may exhibit surprising and counterintuitive behavior, making prediction and control problematic" (Mathews, White and Long, 1999, 450). Predictability and control are important issues when dealing with conflict resolution and intervention.

As complexity theory was developed in the natural sciences, some of its important concepts come from evolutionary biology and one of its leading proponents, Stuart Kauffman. Kauffman illustrates the self-generating and self-stimulating nature of complex systems with the autocatalytic set and the collectively autocatalytic system (Kauffman, 1995: 49). Essentially, autocataytic refers to the interaction of two molecules that react and catalyze – they form new units of themselves – given a supply of raw materials. These units form connecting webs and crystallize into a complex-adaptive system through a process known as a phase transition (Kauffman, 1995: 57). Kauffman explains this phenomenon below.

> The wonderful possibility, to be held as a working hypothesis, bold but fragile, is that on many fronts, life evolves toward a regime that is poised between order and chaos. The evocative phrase that points to this working hypothesis is this: life exists at the edge of chaos. Borrowing a metaphor from physics, life may exist

near a kind of phase transition. Water exists in three phases: solid ice, liquid
water, and gaseous steam. It now begins to appear that similar ideas might apply
to complex adapting systems (Kauffman, 1995: 26)

The concept of a phase transition, where complex adaptive systems evolve to the edge of chaos

is important for conflict resolution. A phase transition occurs when latent conflicts become

manifest and manifest conflicts become violent (see Sandole, 1999, 16-17). It is during this

phase transition that systems undergo significant changes both to the constituent units and to the

interaction of those units. It is within this region of time and space, this phase transition that is

the most dynamic and critical for conflict analysis and resolution. It is within this critical region

at the edge of chaos where third party intervention is most fruitful. As Kauffman suggests, "It is

as though a position in the ordered regime near the transition to chaos affords the best mixture of

stability and flexibility (Kauffman, 1995: 91). Stability and flexibility are essential for third

party intervention to be successful. This is where interactive conflict resolution and preventive

diplomacy take place.

The next important concept is 'self organized criticality' (Kauffman, 1995: 29).

Essentially, this means that in dynamic complex systems, there is no way to tell if an event will

be insignificant or catastrophic. This concept is easily illustrated by the example of the

assassination of Archduke Francis Ferdinand by Gavrillo Princip in Sarejevo that led to the

outbreak of the First World War. There were many crises between the Great Powers at the

beginning of the twentieth century, but there was no way to tell which event would trigger a

general war or not. Not many observers at the time would have guessed that it would erupt as

the result of such an event. These concepts, self-organized criticality, and the phase transition,

give us insight into the complex interactions of units and system dynamics. Next we turn to two

concepts that are useful for problem solving and conflict resolution: patches and fitness landscapes.

The simplest way to explain the complicated concept of patches is to refer to the concept of 'chunking'. When one has a third party intervention to design or another difficult problem to solve, the best way to handle its complexity is to 'chunk' or divide it into manageable pieces. This concept has been around for some time, but it has particular relevance to finding solutions to complex problems using complexity theory. Kauffman explains the concept of patches:

> We are about to see that if the entire conflict laden task is broken into the properly chosen patches, the coevolving system lies at a phase transition between order and chaos and rapidly finds very good solutions. Patches, in short, may be a fundamental process we have evolved in our social systems, and perhaps elsewhere, to solve very hard problems (Kauffman, 1995: 253).

This is one of the reasons why the phase transition between order and chaos is so important. It represents an area where the necessary qualities of flexibility and stability exist almost in paradoxical harmony within this region. This allows for organisms to create solutions to complex problems and thereby survive and evolve. This is an important lesson for conflict resolution. Kauffman explores this theme further below.

> The results hint at something deep and simple about why flatter, decentralized organizations may function well: contrary to intuition, breaking an organization into 'patches' where each patch attempts to optimize for its own selfish benefit, even if that is harmful to the whole, can lead, as if by an invisible hand, to the welfare of the whole organization. The trick, as we shall see, lies in how the patches are chosen (Kauffman, 1995: 247).

How the patches are chosen correlates to how parties choose to resolve their conflicts. Patches may facilitate cooperative, competitive, or adversarial orientations. These will help to determine strategies and tactics for obtaining the desired result. For the aggressor, the desired result is victory and hegemony. For the cooperator and collaborator, the end result is a win-win solution.

The final concept we shall borrow from complexity theory is *fitness landscapes*. Fitness landscapes are related to patches in that they both operate as a means to find the best possible solutions to complex problems. Kauffman describes fitness landscapes and fitness peaks:

> Evolution is a story of organisms adapting by genetic changes, seeking to improve their fitness. Biologists have long harbored images of fitness landscapes, where the peaks represent high fitness, and populations wander under the drives of mutation, selection, and random drift across the landscape seeking peaks, but perhaps never achieving them. The idea of fitness peaks applies at many levels. ... Fitness peaks also refer to the fitness of whole organisms (Kauffman, 1995: 26).

Fitness peaks are a multi-level phenomenon that are an illustration of how animals evolve based on their genetic search for solutions to complex survival problems. Humans seek similar solutions to complex problems but we do it consciously, not genetically (perhaps we do as well). We find it a useful metaphor to illustrate how humans or groups (e.g. ethno-national) may search for the best possible solutions to problems such as basic human needs satisfaction. Kauffman further brings its importance to light by stating: "Tracking peaks on deforming landscapes is central to survival. Landscapes, in short, are part of the search for excellence-the best compromises we can make" (Kauffman, 1995: 247). Survival, compromises, and the search for solutions at the edge of chaos are all of interest to conflict resolvers. These concepts help us to come to terms with the complexity of the situations that we face. Finally, before we turn to the analysis of Northern Ireland, Mathews, White and Long describe the relationship between social processes and complexity concepts.

> Processes in social, political, economic and conflict systems can be characterized as complex systems. Social relationships can be characterized as having:
> a.   dynamic nonlinear relationships among a multitude of components
> b.   complex, recursive or highly iterative interactions among components
> c.   systems with these characteristics may have the potential to evolve dynamically over time (Mathews, White and Long, 1999: 451)

This summarizes the elements of social systems that make the use of chaos and complexity theories not only relevant, but also insightful, and useful in contributing to our understanding.

Analysis of the Conflict in Northern Ireland

On October 23, 1993, the Provisional IRA (PIRA) bombed a fish and chips shop on the Shankill Road, a predominantly Protestant and unionist neighborhood of West Belfast (see Mallie and McKittrick, 1996, chapter 10 for details). Ten people were killed in the explosion including two young girls and one of the bombers. Almost sixty people were injured. The PIRA claimed that they were trying to assassinate leaders from the Ulster Defense Association (UDA), who they believed were meeting in rooms above the shop. They said the bomb exploded prematurely. A week later, on Halloween night, two men carrying guns entered a crowded pub in Greysteel, County Derry. They fired forty-five shots in total, killing eight, including a mother of six children, and wounding nineteen. One of the men, carrying an assault rifle, emptied his clip and reloaded the weapon during the attack. This was claimed as retribution for the bombing a week earlier. These incidents occurred ten months before the PIRA declared their cease-fire in August 1994 (Cunningham, 1998:1).

These were not typical events of the conflict in Northern Ireland, known euphemistically as the 'Troubles'. Nor were they unheard of. They were too familiar to the families and friends of the 3,500 who were killed during the thirty-year violence. Most observers of terrorism note the seemingly randomness of the violence, as well as its senselessness. However, terrorism is not exactly random, it is chaotic. It is not senseless in the sense that it can be explained. To those who have lost loved ones during terrorist incidents, we do not explain to justify or rationalize these acts. We explain so that we can analyze, understand, and resolve.

The 'conflict as start up conditions' that led to the outbreak of violence in 1969 were largely issues of structural violence and basic human needs such as ethno-national identity, security, development, and recognition. These included political gerrymandering, so the unionist politicians could control the province, significantly higher unemployment for the minority Catholics than majority Protestants, unequal access to education, and lower quality and quantity of housing for Catholics. These issues had been problems throughout the fifty-one year period 1921-1972, when the province of Northern Ireland was ruled by a majority unionist-dominated parliament at Stormont, outside Belfast. Most of these issues were addressed by the authorities in the decades following the outbreak of violence. However, since the worst of the fighting occurred during the first decade (it peaked in 1974), it lasted another twenty years as 'conflict as process', with many failed attempts at settlement and resolution. Even after a four-year peace process, splinter hardcore paramilitaries are still trying to destabilize the province and prevent a peaceful resolution.

One of the reasons that it has taken so many years to develop a comprehensive peace process is because all of the attempts to resolve it, prior to 1994, were based on marginalizing the paramilitary fringes of the nationalist (republican) and unionist (loyalist) communities. Mainstream politicians would not 'sit down with terrorists' on either side. Having no stake in the political settlement, the paramilitaries did their best to prevent it. Perhaps as important, in a less tactical sense, the processes also ignored the basic human needs of the identity groups, particularly the minority nationalist community.

Throughout the Troubles there was no sense of security for those on the front lines, whether on the Shankill or Falls Roads in West Belfast, the Bogside in Derry, or in the rolling hills of South Armagh. The nationalist community was shattered by the events of Bloody

Sunday, on January 30, 1972, when a British Army parachute regiment in Derry killed thirteen unarmed civilian protestors. This was followed in July 1972 with 'Bloody Friday'; the IRA's response was a bombing campaign against the unionist community throughout Belfast. Each community was traumatized by these events and each developed its own litany of chosen traumas and conversion experiences from such events. As neither side felt safe and secure, they armed themselves to defend their communities and neighborhoods. The IRA developed 'no go' areas of Belfast and Derry, in which the police and army could not safely operate. The response to this nationalist territoriality was 'Operation Motorman' a British Army campaign that used armored cars to smash through barricades and street defenses on order to regain control of the territory in these neighborhoods.

Security was not the only basic human need in short supply during the Troubles. Recognition of ethnic identity was denied to the minority community by authorities trying to ban both the Gaelic language and Gaelic sports, not to mention the display of the Irish tricolor flag. However, these were minor issues when one examines the cultural hegemony as personified by the Royal Ulster Constabulary (RUC), particularly in their auxiliaries, the 'B-Specials'. Symbols such as a crown and the Red Hand of Ulster threatened nationalist identity as much as symbols such as the harp and the Irish tricolor threatened the identity of the unionist community. These symbols were used in aggressive displays every summer during the contentious marching season. Displays of territoriality and 'identities under siege' are the hallmarks of these marches by the unionist Orange Orders and related organizations.

Assaults on the basic needs of development and meaning were thwarted by structural violence such as the appallingly high 20% unemployment rates that were common during the Troubles. Both communities suffered under these conditions, and it was the underclass of each

that suffered the most. It was from these ranks that the paramilitaries drew their most faithful recruits. The chronically unemployed filled the ranks of the IRA, UDA, and the many splinter groups that formed due to internecine warfare.

The assault on basic human needs was ample fodder for the development of enemy systems to form. There was no shortage of ethnic victimization, on both sides, that fuelled the conflict. Each side has their chosen traumas, every paramilitary member had their conversion experience and their personal pathways to terrorism, and both communities suffered from the inability to mourn and complicated mourning. With so much death and injury invested in the conflict it is hard to let go and say that their sons died in vain. For the relatives of the slain nothing less than a united Ireland, or a strong union with Britain, is acceptable. This is what has perpetuated the seemingly endless cycle of violence that has not lasted 30 years, but for some, 400.

What exactly the conflict is about is not an easy question to answer. Each of the ten political parties elected to participate in the peace process has their own interpretation. John Darby, a professor at the Centre for the Study of Conflict at the University of Ulster, Coleraine outlines the conflict problems:

- there is a central constitutional problem…
- there is a continuing problem of social and economic inequalities . . .
- there is a problem of cultural identity …
- there is clearly a problem of security ...
- there is a problem of religious difference …
- there is certainly a problem of the day to day relationships between the people who live in Northern Ireland (John Darby, 'Conflict in Northern Ireland: A Background Essay' in Dunn, 1995: 21).

From this list we distill constitutional issues with sovereignty and legitimacy (structural), social and economic inequalities (structural violence, relative deprivation), cultural identity, security, religion and relationship issues (basic human needs). The conflict is rife with human needs

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issues, enemy system dynamics and all the hallmarks of protracted social conflict. McGarry and

O'Leary confirm this hypothesis.

> Interpretations of Northern Ireland which emphasize the primacy of religion err
> by ignoring the multiple nature of the divisions between the two communities,
> and by understating the evidence which shows the national conflict to have
> greater salience. Protestants and Catholics are divided by religion, by definition,
> but they are also divided by difference in economic and political power, by
> historical experience, and, most intensely, by national political identity (McGarry
> and O'Leary, 1995: 221-2).

It should be stated for the record in this analysis that the conflict in Northern Ireland is not

primarily about religion per se, it is about national identity. It is fought between republicans

(Irish nationalists who are mostly Catholics) and loyalists (Ulster-British unionists who are

mostly Protestants). However, the conflict has religious identity issues tied in with complex

cultural and ethno-national identity issues. In this, religion plays a very prominent role as a

cultural marker.

Directly related to the ethno-national issue are that of territoriality and realpolitik

decision making, as introduced by Vasquez. As Vasquez notes, "In the long run, the best

solution to prevent war from arising from ethnic disputes is to separate ethnic identity from

territoriality" (Vasquez, et al., 1995: 150). This of course, is easier said than done. Donald

Horowitz ties the issues of territoriality, sovereignty and ethnic conflict together by stating:

> Finally, the state system that first grew out of European feudalism and now, in the
> post-colonial period, covers virtually the entire earth provides the framework in
> which ethnic conflict occurs. Control of the state, control of *a* state, and
> exemption from control by others are among the main goals of ethnic conflict
> (Horowitz, 1985: 5).

Horowitz sheds light on why territory, or at least the control of the state mechanisms that control

the territory, is important to ethnic groups. It allows them to control their resources and their

destinies. It allows them to pursue their basic human needs free from interference by conflicting

claims by other ethno-national groups. This is the essence of the underlying issues in Northern Ireland. However, as Vasquez notes, it isn't just territoriality that causes wars, it is how we choose to deal with territoriality issues. "War comes about not simply because humans are territorial, but because they deal with territorial issues in certain ways. The ways they select to resolve territorial issues determine whether there will be war or peace" (Vasquez, 1993: 152). Since the time of the Plantation of Ulster (1610) the issues of territory and political control of Ireland have overwhelmingly been dealt with by the use of force. This is where the salience of history and culture are most important.

Sandole's Generic-Complex theory has light to shed on Northern Ireland. As stated earlier, we must add a fifth level to Sandole's pillar II, conflict causes and conditions, to include an intermediate level that accounts for ethno-national group decision making. This would allow for the analysis of inter-group interaction that would account for the differences in aims and goals between the Provisional IRA, the so-called 'Real IRA' and the other republican fringe splinter the Continuity Army Council (CAC). If we are to analyze the conflict in its entirety, and include all the parties that are stakeholders, then we must add them to our list along with the UDA, UVF, Red Hand Commandos, and their related political parties the PUP and the UDP.

Additional concepts from Sandole are useful for our analysis. His conflict as start-up-conditions and conflict-as-process model enables us to examine the dynamics and progress of the conflict more closely. As noted earlier, the conditions that led to the outbreak of violence in 1969 were largely resolved by the end of the 1980s. It is the underlying identity and basic needs issues that are left unresolved, and remain so to this day. These issues need to be dealt with in our intervention.

We now turn to chaos and complexity theories to add to our analysis. Two of the most important contributions of chaos theory are the salience of dynamic, catastrophic change, and the lack of predictability and control. These elements were present at the outbreak of violent conflict in 1969, and for the next three decades. As Renate Mayntz notes about complex social systems: "Social systems are complex, nonlinear systems, but they are partially organized rather than disorganized complex systems, i.e. the type giving rise to both processes of self-organization and deterministic chaos" (Mayntz in Grebogi and Yorke, 1997: 315). There are few examples better at confirming the nonlinear and complex nature of social systems than Northern Ireland. Lebanon, Israel/Palestine, and the Balkans rate high on this scale as well. Ethnically divided societies that suffer protracted social conflicts are inherently unstable, chaotic, and tend towards collapse. Mayntz also discusses the sudden collapse of social systems:

> In contrast to gradual transformations, such a sudden collapse of social order is followed by a period of turbulence. Social processes become erratic, patterns of conventional behavior dissolve, latent forces become manifest, and mass behavior reigns where social interactions used to be normatively controlled; in such a turbulent state, future developments are largely undetermined and subject to the influence of accidental events (Renate Mayntz, Chaos in society: Reflections on the impact of chaos theory on sociology, in Grebogi and Yorke, 1997: 301).

Social systems that become destabilized by high levels of violent conflict experience turbulence, which is inherently chaotic. Once the social system breaks down there is little to prevent violent conflict from erupting and spreading. Intervention becomes difficult because the more turbulent the situation, the less predictable the system behavior and outcomes become. The less predictable the outcomes and system behavior, the less likely will politicians, diplomats, and generals desire to contribute troops and personnel to intervention. Commanders and leaders do not wish to commit resources, particularly when lives are at stake, to uncertain outcomes. Witness Somalia and Rwanda. No one wants to intervene if their peacekeepers are going to get

captured or slaughtered. Because of the chaotic and unpredictable nature of complex systems, interventions into protracted social conflicts will always be a last resort of the decision-makers. Related to this issue of the unpredictable nature is the problem of unique system outcomes and the relevance to other cases. Campbell and Mayer-Kress discuss this below.

> One of the essential lessons of chaos theory is that individual solutions (histories) are basically non-reproducible and therefore of very limited relevance. A system might have many different but equivalent solutions to the same problem (Campbell and Mayer-Kress, 'Chaos and politics: Application of nonlinear dynamics to socio-political issues' in Grebogi and Yorke, 1997: 41).

A popular complaint of people, who live in Northern Ireland, against those who sit quietly in their university libraries and study them, is that the researchers do not understand the unique nature and dynamics of their conflict. We are torn by our attempts to understand from within, and our search for generic theory that will not only help the people of Northern Ireland, but that might also be relevant to people in Sri Lanka, the Balkans, and the Middle East. This tension between the particular and the general can be a creative tension that does not necessarily need to be resolved, but, in light of chaos and complexity theories, its implications need to be addressed.

The problem of uniqueness is evident in the lack of predictability and control that are endemic in complex chaotic systems such as Northern Ireland. In the past, issues of control have been dealt with by the authorities by realpolitik power-based initiatives. They have, without question, failed to produce the desired effect. The inclusive peace process has begun to deal with the underlying issues in a proactive manner. This approach may finally bear fruit if it is given the support of the people and resources from abroad.

There are economic, political, social, military, and security issues intertwined that add to the complexity of the conflict. It is not possible to use simple analysis to capture its complexity. We must use the tools of basic human needs, enemy system theory, Vasquez's territoriality and

realpolitik theses, as well as Sandole's Generic-Complex theory to understand the background to the conflict. In order to understand its development, dynamics and short term future, we must use chaos and complexity theories to explore its process.

Third Party Intervention

As we have seen from our analysis social conflicts are dynamic and not stable systems. Conflicts escalate and de-escalate stalemate, become latent and can resurface at a later time. Dynamic protracted social conflicts are chaotic and complex. Because they change over time, and the people involved in them change as well, they need to be reassessed in order to take advantage of this change for conflict resolution. Before we explore our intervention strategy it will be helpful to examine, briefly, what methods of intervention and conflict resolution have been tried in Northern Ireland in the past. Cunningham sums this up by noting that:

> First, all attempts to mange, regulate, or solve the conflict to date [1998] have ended in failure. This includes the political initiatives by parties in Northern Ireland, Britain, and the Republic of Ireland (Eire) during the last 30 years, as well as historical antecedents going back four centuries. Recently, many different solutions have been tried including military and police operations, judicial control, suspension of the local assembly (Stormont, 1972), power sharing (1974), constitutional convention (1975-6), devolution talks (1981-2), international agreements (Anglo-Irish Agreement, 1985), and [multilateral] peace negotiations (1996-8). These failures have led some observers to the conclusion that the problems underlying the conflict are intractable and unsolvable (Cunningham, 1998: 2).

Indeed, the peace process that began in 1996, as a result of the PIRA cease-fire in 1994, has been precarious for some years. The implementation of the Good Friday Agreement of 1998 has been stalled largely by the issue of decommissioning paramilitary arsenals, particularly the PIRA's. However, this issue is tied, by the republicans, to the reform of the Royal Ulster Constabulary.

What is evident in this is that realpolitik attempts at coercive settlement have all failed. The resolution of the conflict in Northern Ireland is dependent upon a paradigm shift to idealpolitik and non-Marxist Radical (NMRT) conflict resolution ideologies and cooperative conflict orientations (see Sandole, 1993, 1998).

Realpolitik attempts at resolution, including using security forces (police and army) and the judiciary (Prevention of Terrorism Act, 1974), have ended in failure. These do not need to be explained in detail. However, all previous attempts at negotiated settlements, prior to the current peace process, have also ended in failure. The short answer to the question, why, is that they have all failed to take into consideration the underlying basic human needs of both communities as well as account for the dynamic complexity that makes this situation so intractable. Prior attempts at negotiation also failed to include all major stakeholders, in particular the paramilitaries. The successful third party intervention will have to account for these problems.

The current peace process has lasted as long as it has for the simple reason that it has been the first attempt at resolution that has begun to address basic needs such as identity, and also because of the groundbreaking work of Track Two Diplomacy (Track-2). Prior to the PIRA cease-fire in 1994, a lot of work had been invested in pre-negotiation and in building relationships, and trust, with those involved on the peripheries of violence. People involved in these processes influenced the behavior of their colleagues and neighbors, and began to bring about a change in worldviews, albeit slowly and cautiously. However, this is how paradigm shifts begin; not with a bang, but a whisper. Track-2 initiatives are important complements to Track-1 official negotiations. Sandole notes the importance of this for conflict resolution.

> Track-2 processes could be used in the short term to help avert or reduce and terminate hostilities (negative peace), and in the middle to long term to facilitate the collaborative solving of problems underlying violent conflict situations and reconciliation among the parties (positive peace) (Sandole, 1999: p. 157).

This is precisely what has happened in Northern Ireland. Track-2 processes helped to establish a climate in which the paramilitary cease-fires could be introduced. Next, they helped the parties to identify important issues and problems to be addressed in multilateral negotiations. However, things began to unravel when consensus was sought from the wider population. Populists, such as the arch-unionist Rev. Ian Paisley, began campaigns to derail the peace process. Hardcore paramilitary members on both sides decided that they would rather fight, than give up their weapons and their lifestyles. Five years after the peace process began, we find the situation deteriorated to the point of threats of new Christmas bombing campaigns (December 2000), once a staple of the republican strategy. However, all is not doom and gloom, as Taoiseach (Irish Prime Minister) Bertie Ahern was quoted in The Belfast Telegraph as he welcomed President Clinton to Ireland in December 2000:

> In a speech paying tribute to Mr. Clinton's role in the peace process, Mr. Ahern identified the current difficulties as decommissioning, policing, demilitarisation and sanctions against Sinn Fein on the Stormont Executive attending meetings on cross-border co-operation. "There needs to be a police service in Northern Ireland which can attract the full support of both communities. In the Good Friday Agreement, we have an historic accommodation which brings together unionists and nationalists, North and South, as well as British and Irish, on the basis of the shared principles of equality and partnership," the Taoiseach claimed. "We now see the prospect of radical change in human rights, justice and policing."
> (The Belfast Telegraph, December 13, 2000, on the web at:
> http://www.belfasttelegraph.co.uk/today/dec13/News/ahernpa.ncml)

The important themes repeat themselves. The sticking points are realpolitik-based problems of decommissioning paramilitary weapons, policing, and participation in the political process. Until these issues are dealt with in an environment of interactive problem solving and conflict resolution, they will continue to haunt the people of Northern Ireland.

In light of this analysis, an appropriate third party intervention would include the following elements:

- Cooperation between the Irish and British governments and the Northern Irish political parties at the highest levels (Track-1).

- Commitment from U.S. President Bush to continue to invest American political and economic resources in the peace process (Track-1).

- Commitment from the European Union to provide economic development assistance

- Continued use of Track-2 methods to encourage cross-community and cross-border cooperative economic enterprises and peaceful political activities.

- A team of highly skilled conflict resolvers to manage an interactive problem solving conflict resolution process involving key stakeholders including members of all the parties of the Northern Irish Assembly (Stormont), members of the Irish and British governments and prominent community and religious leaders. The goal would be to work through the difficult basic needs, relationship and national identity issues underlying the manifest conflict.

- Recognize that the most important basic human need that hinders progress is security for both communities. Identity is closely intertwined with this need.

- Develop creative ways to de-link territoriality from national identity; create safe shared spaces

- Develop alternative idealpolitik approaches to replace realpolitik decision making.

- Use lessons and concepts from Enemy System theory to teach the parties about conflict dynamics and their sense of shared responsibility for their future.

- Use Sandole's 3-pillar model to help them to see the complexity of their conflict, and the hope that understanding conflict processes bring.

- Incorporate theoretical constructs and concepts from chaos and complexity theories to analyze the dynamic nature of life at the edge of chaos and learn to live with the unpredictable nature of their environment. As the peace process becomes further institutionalized and begins to influence substantive change, life in Northern Ireland will move further from the edge of chaos.

One of the most important points above is the salience of the security issue for both communities. Until each community feels safe it will not be able to trust the other side. Consequently, the nationalist community will not be able to accept paramilitary disarmament (decommissioning) and the unionist community will not accept the reform of the RUC and security services. Resolving this issue is essential for the success of the peace process. The

problem is that the security issue is strongly affected by the chaotic and complex nonlinear forces of the conflict system dynamics.

In stable societies weak or low dimensional chaos is at work. Short and medium term prediction and control are possible. In unstable societies, such as Northern Ireland at the height of the Troubles, strong and high dimensional chaos is the operative problem. The sources of this instability are both the precipitant security situation and the underlying preconditions of basic needs frustration. Let us not forget that the very goal of terrorism is instability and loss of governmental control (asset to liability shift theory). The goal of the IRA was to destabilize the province so that the British would finally give up and leave (persistent instability of chaotic systems – see Percival in Hall, 1991). They knew that they could not defeat the British Army on their own terms. Consequently, the government and security forces did what they could to control the random chaotic violence by realpolitik methods by employing the security forces and the judiciary. After all, the government is charged with securing the lives and property of its citizens. However, this approach works in the short term to control the precipitant conditions but it does nothing but exacerbate the underlying problems of basic needs and structural violence. This needs to be addressed further in the current peace process. We will conclude by noting that we agree with Sandole's hypothesis that force is sometimes necessary to ensure a negative peace prior to working on the underlying problems that preclude a positive peace (see Sandole, 1999, chapter 8).

An interesting link between chaos theory and Northern Ireland is the fractal nature of the conflict. As we recall, fractals are self-similar on all scales. The conflict begins with neighbors, extends to the local community, the council, the county, the province and the islands of Ireland and Britain. The issues, people, problems and dynamics are the same on all scales. Enemy

system theory plays an important part in helping to explain this by such concepts as the conversion experience and chosen trauma. Our intervention must therefore be based not only on solving the problems of the province, but also on the level of neighbors. We must establish mechanisms and structures to support community dispute resolution. The people who staff such enterprises must be familiar not only with conflict resolution, but the complex intricacies of daily life in Northern Ireland. They must understand the cultures and the histories of the communities.

Chaos theory can also offer some hope by using the concepts of phase space, strange attractors and basins of attraction. These elements are essentially solutions to the problems of random noise, they help to clear the clutter so that the underlying patterns emerge. It also hints at the possibility of finding creative solutions to the chaotic problems. Our intervention must try to move the people away from the attractors of violence toward the attractors for peaceful solutions. We must try to influence a shift in the phase space toward the peace process. This concept is related to Kuhn's paradigm shift.

Complexity theory also offers some useful concepts that are helpful for our intervention. Complex systems are emergent, the total is greater than the sum of its parts. We must use this quality of emergence in our complex conflict-resolution system that will replace our complex conflict system. We need to design a conflict resolution system to be in place to stay and evolve with the changing needs of the people. Conflict resolution is not an event, it is an emergent complex system that can be spontaneous, self-organizing and self-generating. It needs to be adaptive and control needs to be dispersed. There should be a centralized system of communication and perhaps goal setting, but to resolve the conflict in Northern Ireland, we must work from the bottom-up, not top-down. We need many facets of life to be influenced: political, economic, social, spiritual, educational, cultural, judicial, and infrastructural. NGOs and

community groups are uniquely situated to play a significant role here. There are no organizations in place that could serve these needs in their entirety. The government is certainly not trusted or capable of the task by itself. We must give up at least some control in order to let the system work creatively and spontaneously.

Finally, we turn to life at the edge of chaos – the phase transition between order and disorder. Since there are phase transitions on the way from latent to manifest to aggressive manifest conflict processes, there must be phase transitions in the de-escalation cycle as well. If Kauffman is correct, then life evolves to the edge of chaos where flexibility and stability interact in dynamic nonlinear ways. This is the region where our third party intervention must operate. It requires an appropriate mix of stability and flexibility in order to influence the changes that are necessary for positive peace. Our intervention will make use of patches and fitness landscapes in order to find the best solutions to our complex problems. Our interveners will have to lead but also follow the needs and desires of the local communities. We must enable them to search their fitness landscape so that they can take ownership and responsibility for their solutions as well as their problems. The third parties must act as guides, not regulators. Sandole summarizes this by noting:

> Complexity theory, therefore, in the full sense of integrated systems of conflict resolution networks, involves more than stable balances associated with negative peace; it also involves building upon and transcending these and, in positive peace fashion, dealing with the deep-rooted causes and conditions that make, in the shorter run, the balances necessary (Sandole, 1999: 200).

Conclusions

Protracted social conflicts, such as the one in Northern Ireland, are complex and chaotic nonlinear conflict systems. The conflict is fractal – it is self-similar on all scales. Consequently, the same conflict dynamics and issues operate at the individual, group, societal, international and global levels. The source of the conflict is based on the complex interaction of forces, the most salient being basic human needs and the structural impediments to needs satisfaction. The dynamic nature of the conflict also impedes the satisfaction of needs. The enemy system is self-organized and self-generating. Sandole would term it a negative self-fulfilling prophecy. What is indicative of this situation is the need for change. Burton summarizes this below.

> The reason is that political systems so far experienced have rarely had means of system change, other than system overthrow by violent means. Conflict is a symptom of the need for system change" (Burton, 'Conflict Resolution as a Political Philosophy' in Sandole and van der Merwe, 1993: 63).

Much of conflict and conflict resolution is about change. Intervention is about finding the most appropriate processes and resources in order to influence positive changes. In complex conflict systems conflict resolution approaches can operate as catalysts for phase transitions from manifest conflict to negative peace, and from negative to positive peace.

This paper has attempted to develop a model of violent conflict, on all levels, that can be used to analyze conflict and serve as a basis for a third party intervention. Our theory is based on assumptions of basic human needs, the problems of territoriality and realpolitik decision-making, the dynamics of enemy system theory, and Sandole's generic-complex theory. I have attempted to combine these antecedents with chaos and complexity theories. The impression that we, and perhaps the reader, are left with is that there is a need for much more research on these topics.

There is a lot of material that needs to be sifted, analyzed, and incorporated. Perhaps this could serve as the basis of future theoretical work.

A final note to conflict resolvers involves the concept of self organized criticality. Essentially, in chaotic and complex systems we do not know if what we do in going to be insignificant or catastrophic. We hope that our mistakes will be insignificant and our successes catastrophic – at least in the sense of changing a conflict system to a conflict resolution system. However, because of the unpredictable nature of life at the edge of chaos, it pays to be cautious, particularly if the conflict we intervene in is violent.

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