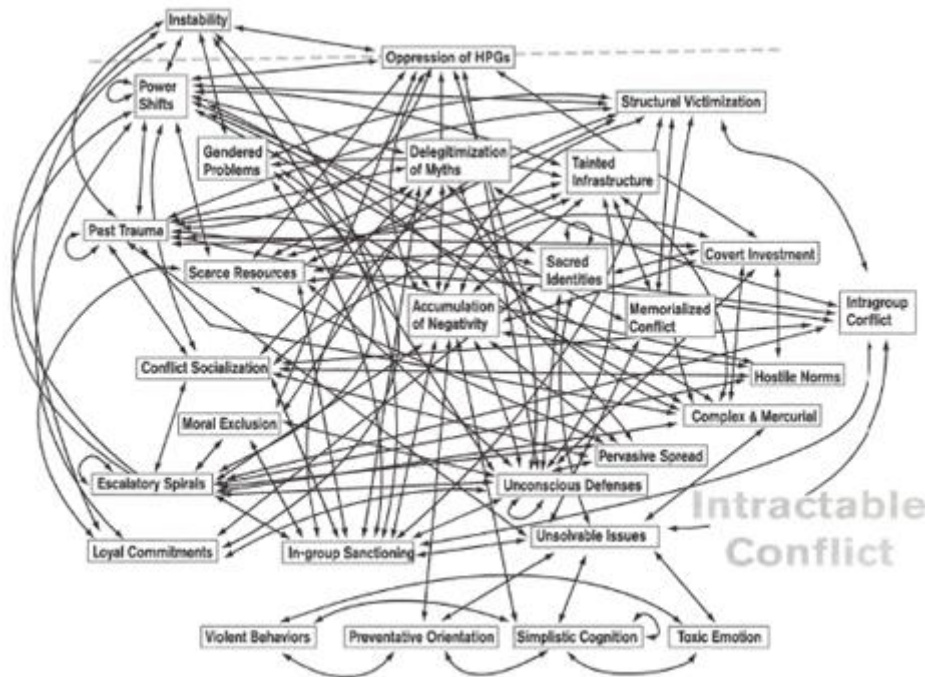


# Introductory Course on Dynamical Systems Theory and Intractable Conflict

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This **self-guided 4-part course** will introduce the relevance of dynamical systems theory for understanding, investigating, and resolving protracted social conflict at different levels of social reality (interpersonal, inter-group, international). It views conflicts as dynamic processes whose evolution reflects a complex interplay of factors operating at different levels and timescales. The goal for the course is to help develop a basic understanding of the dynamics underlying the development and transformation of intractable conflict.



## DST Course Objectives

Participants in this class will:

- Learn the basic ideas and methods associated with dynamical systems.
- Learn the relevance of dynamical systems for personal and interpersonal processes.
- Learn the implications of dynamical models for understanding and investigating conflict of different types and at different levels of social reality.
- Learn to think about conflict in a manner that allows for new and testable means of conflict resolution.

## Foundational Texts

- Nowak, A. & Vallacher, R. R. (1998). *Dynamical social psychology*. New York: Guilford Publications.
- Vallacher, R., Nowak, A., Coleman, P. C., Bui-Wrzosinska, L., Leibovitch, L., Kugler, K. & Bartoli, A. (Forthcoming in 2013). *Attracted to Conflict: The Emergence, Maintenance and Transformation of Malignant Social Relations*. Springer.
- Coleman (2011). *The Five Percent: Finding Solutions to Seemingly Impossible Conflicts*. Perseus Books.
- Coleman, P. T. & Vallacher, R. R. (Eds.) (2010). *Peace and Conflict: Journal of Peace Psychology*, Vol. 16, No. 2, 2010. (Special issue devoted to dynamical models of intractable conflict).
- Ricigliano, R. (2012). *Making Peace Last*. Paradigm.
- Burns, D. (2007). *Systemic Action Research: A Strategy for Whole System Change*. Policy Press.

## Short Introductory Blog Posts

- <http://www.psychologytoday.com/blog/the-five-percent/201110/the-mathematics-middle-east-conflict-and-peace>
- <http://www.artsjournal.com/speaker/2011/05/new-ways-to-think-about-solving-intractable-problems/>
- <http://blogs.ei.columbia.edu/2011/05/02/making-peace-new-book-provides-tools-for-solving-intractable-conflicts/>
- <http://www.psychologytoday.com/blog/the-five-percent/201109/navigating-the-impossible-5-percent-work>
- <http://www.mediate.com/articles/ColemanP1.cfm>
- [http://www.huffingtonpost.com/peter-t-coleman-phd/washington-is-fixed-and-n\\_b\\_811307.html](http://www.huffingtonpost.com/peter-t-coleman-phd/washington-is-fixed-and-n_b_811307.html)
- [http://www.huffingtonpost.com/peter-t-coleman-phd/the-decade-for-peace-in-i\\_b\\_1514383.html](http://www.huffingtonpost.com/peter-t-coleman-phd/the-decade-for-peace-in-i_b_1514383.html)
- [http://www.huffingtonpost.com/peter-t-coleman-phd/america-needs-political-s\\_1\\_b\\_1790327.html](http://www.huffingtonpost.com/peter-t-coleman-phd/america-needs-political-s_1_b_1790327.html)
- [http://www.huffingtonpost.com/peter-t-coleman-phd/give-peace-a-last-chance\\_b\\_830420.html](http://www.huffingtonpost.com/peter-t-coleman-phd/give-peace-a-last-chance_b_830420.html)

## Short Introductory Videos

- <http://www.youtube.com/ICCCRTC>
- DST session overview: <http://www.youtube.com/watch?v=c7PrLXSIt3o>
- [http://www.ted.com/talks/lang/en/eric\\_berlow\\_how\\_complexity\\_leads\\_to\\_simplicity.html](http://www.ted.com/talks/lang/en/eric_berlow_how_complexity_leads_to_simplicity.html).
- <http://www.youtube.com/watch?v=zdrdhU8WrfA&feature=plcp>

## Part I: Introduction to Dynamical Systems Theory

The class will begin by introducing the basic assumptions, concepts, principles and theories of the dynamical systems approach. The potential benefits of the dynamical approach will be developed by contrasting dynamical assumptions with the assumptions underlying traditional perspectives on social relations.

<b>Standard &amp; Dynamical Models</b>	
<b>■ Problem-solving model:</b>	<b>■ Dynamical systems model:</b>
<b>■ Assumptions:</b>	<b>■ Assumptions:</b>
<ul style="list-style-type: none"><li>Short-term outcome focus (agreements)</li><li>Rational decisions</li><li>Linear change processes</li></ul>	<ul style="list-style-type: none"><li>Dynamic, long-term change (patterns)</li><li>Emotional context of decisions</li><li>Non-linear dynamics</li></ul>
<b>■ Orientation: Situations</b>	<b>■ Orientation: Dynamics</b>
<ul style="list-style-type: none"><li>Identify presenting conflict issues &amp; underlying needs</li></ul>	<ul style="list-style-type: none"><li>Map links &amp; feedback loops between elements</li><li>Visualize manifest &amp; latent attractor landscape</li></ul>
<b>■ Objectives:</b>	<b>■ Objectives:</b>
<ul style="list-style-type: none"><li>Satisfy needs, resolve conflict</li></ul>	<ul style="list-style-type: none"><li>Accuracy, agency, possibility, sustainability</li><li>Reconfigure attractor landscape</li></ul>
<b>■ Approach:</b>	<b>■ Approach:</b>
<ul style="list-style-type: none"><li>Planned</li><li>Conflict analysis, intervention &amp; agreement - implementation</li></ul>	<ul style="list-style-type: none"><li>Emergent</li><li>Case study (loop mapping), visualization, address probabilities &amp; read feedback</li></ul>
<b>■ Tools:</b>	<b>■ Practices:</b>
<ul style="list-style-type: none"><li>Problem-solving, negotiation, mediation, compensation, log-rolling, pressure, coercion.</li></ul>	<ul style="list-style-type: none"><li>Complicate to simplify</li><li>Build up and tear down</li><li>Change to stabilize</li></ul>

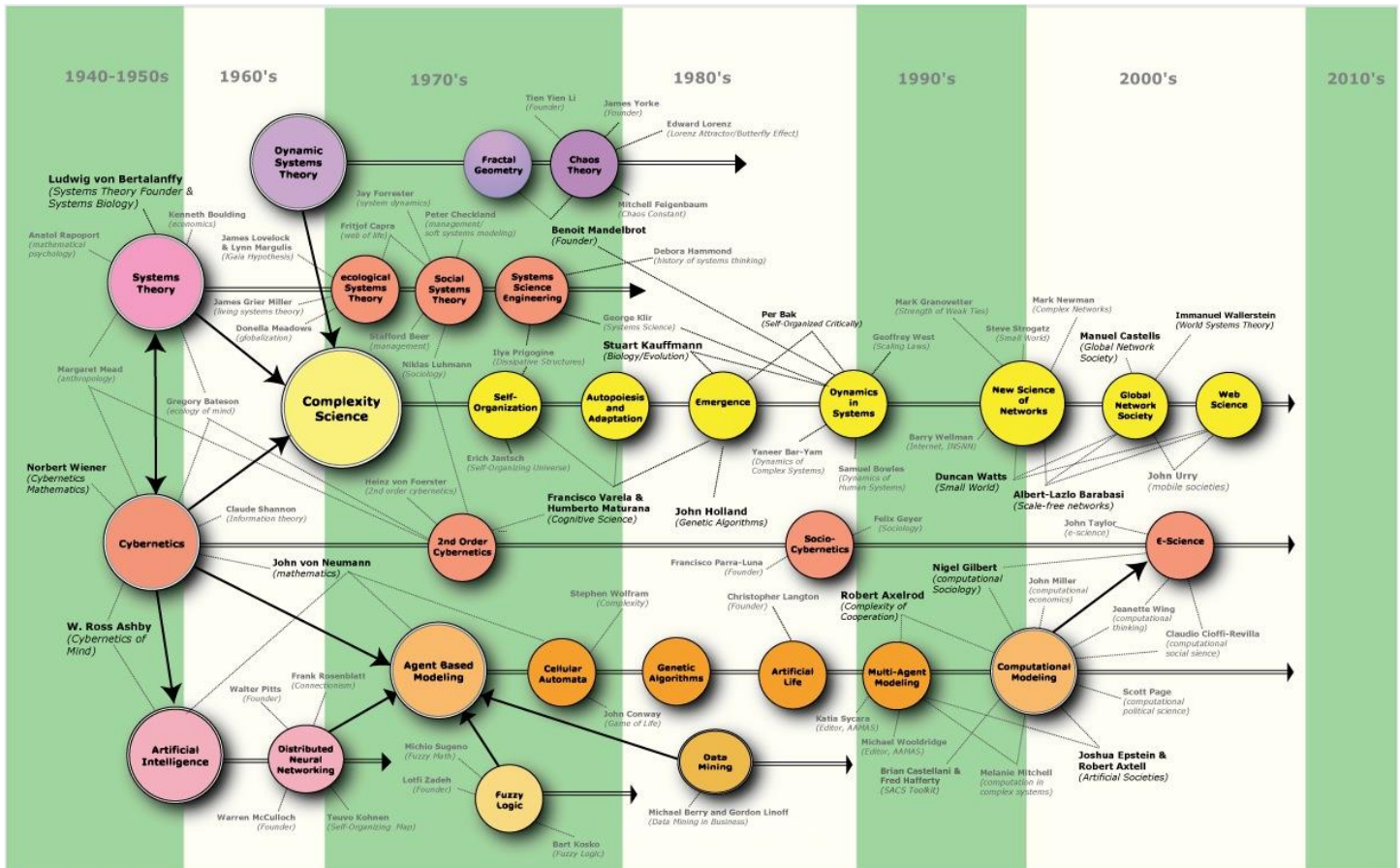
### Readings:

- Vallacher, R. R. & Nowak, A. (2007). Dynamical social psychology: Finding order in the flow of human experience. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles, 2<sup>nd</sup> Edition*, (pp. 734-758). New York: Guilford Publications
- Nowak, A. (2004). Dynamical minimalism: Why less is more in psychology. *Personality and Social Psychology Review*, 8, 183-192.
- Nowak, A. & Vallacher, R. R. (1998). *Dynamical social psychology*. New York: Guilford Publications.
- Dorner, D. (1997). *The logic of failure: Why things go wrong and what we can do to make them right*. New York: Holt.
- Gersick, C. J. G. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *Academy of Management Review*, 16, 10-36.
- Morgan, G. (1997). Images of Organization. Change and transformation chapter. London: Sage Publications.
- Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations*. San Francisco: Jossey-Bass.
- Kegan, R. (2004). In *Over Our Heads: The Mental Demands of Modern Life*. Harvard University Press. Chapter 9.
- Svyantek, D. J., & Brown, L. L. (2000). A complex-systems approach to organizations. *Current Directions in Psychological Science*, 9, 66-74.
- Insead, Q. N. H. (2001). Time, temporal capability, and planned change. *Academy of Management Review*, 26, 601-623.

### Theoretical background:

- Complexity Science and Physics
- Gestalt and Social Psychology
- Peace and Conflict Studies

Vallacher, R., Nowak, A., Coleman, P. C., Bui-Wrzosinska, L., Leibovitch, L., Kugler, K. & Bartoli, A. (Forthcoming in 2013). *Attracted to Conflict: The Emergence, Maintenance and Transformation of Malignant Social Relations*. Springer. Chapters 1-2.



**Constructs:**

- Complex Systems
- Multi Levels
- Dynamical Systems (Time and Space)
- Non-linearity
- Unintended consequences
- Emergence
- Networks
- Feedback loops
- Extrinsic and intrinsic dynamics
- Fixed-point attractors (visible and latent)
- Self-organization and the collapse of complexity
- Catastrophe theory and bifurcations

Nowak, A. & Vallacher, R. R. (1998). *Dynamical social psychology*. New York: Guilford Publications. Chapters 1-2.

## Part II: The Dynamical Model of Intractable Conflict

The second part will be devoted to the presentation and discussion of concepts and tools that are crucial for a **dynamical model of conflict**. We will introduce the basic features of dynamical systems that have been identified in the natural sciences, show their relevance to personal and interpersonal processes, and discuss their implications for understanding the dynamics of conflicts.

### Conceptual models and constructs:

- **Attractor Landscape Model (ALM):**

Vallacher, R., Nowak, A., Coleman, P. C., Bui-Wrzosinska, L., Leibovitch, L., Kugler, K. & Bartoli, A. (Forthcoming in 2013). *Attracted to Conflict: The Emergence, Maintenance and Transformation of Malignant Social Relations*. Springer.

Vallacher, R., Coleman, P. T., Nowak, A., Bui-Wrzosinska, L. (2010). Rethinking intractable conflict: The perspective of dynamical systems. *American Psychologist*, 65(4), 262-278.

Musallam, N., Coleman, P.T., and Nowak, A. (2010). Understanding the spread of malignant conflict: A dynamical-systems perspective. *Peace and Conflict: The Journal of Peace Psychology* 16(2), 127-151.

Nowak, A., Bui-Wrzosinska, L., Vallacher, R., & Coleman, P. T. (2012). Complexity and peace. In P. T. Coleman, M. and Deutsch (Eds.), *Psychology's Contributions to Sustainable Peace*. Springer.

Coleman, P. T. (2012). The Essence of Peace? Toward a comprehensive and parsimonious model of sustainable peace. In P. T. Coleman, M. and Deutsch (Eds.), *Psychological Contributions to Sustainable Peace*. Springer.

- **Network Models**

Barabosi, A. (2003). *Linked: How everything is connected to everything else and what it means*. Plume Publishing.

- **Punctuated Equilibrium Model**

Diehl, P. F., & Goertz, G. (2001). *War and Peace in International Rivalry*. Michigan University Press.

Gersick, C. J. G. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. *Academy of Management Review*, 16, 10-36.

- **SAT Model**

Ricigliano, R. (2012). *Making Peace Last*. Paradigm.

### Additional Readings:

Coleman, P. T. (2006). Intractable conflict. In Morton Deutsch, Peter T. Coleman, and Eric C. Marcus (Eds.) *The Handbook of Conflict Resolution: Theory and Practice*. San Francisco: Jossey-Bass.

Coleman, P. T. (2003). Characteristics of protracted, intractable conflict: Towards the development of a meta-framework - I. *Peace and Conflict: Journal of Peace Psychology*, 9(1), 1-37. Lawrence Erlbaum Associates, Inc.

Coleman, P. T. (2006) Conflict, complexity, and change: A meta-framework for addressing protracted, intractable conflicts - III. *Peace and Conflict: Journal of Peace Psychology*, 12(4).

Coleman, P. T., Hacking, A., Stover, M., Fisher-Yoshida, B, and Nowak, A. (2008). Reconstructing ripeness I: A study of constructive engagement in protracted social conflicts. *Conflict Resolution Quarterly*, 26(1) 3-42.

- Jervis, R. (1997). *System effects: Complexity in political and social life*. Princeton University Press.
- Pearce, W. B., & Littlejohn, S. W. (1997). *Moral conflict: when social worlds collide*. Thousand Oaks: Sage Publications
- Coleman, P. T. & Deutsch, M. (Eds., July, 2012). *Psychology's Contributions to Sustainable Peace*. Springer Books. (Introduction and Conclusion)
- Conway, L. G., Suedfeld, P. and Tetlock, P. E. (2001). Integrative complexity and political decisions that lead to war or peace. In D. J. Christie, R. V. Wagner & D. D. Winter (Eds.) *Peace, Conflict and Violence: Peace Psychology for the 21st Century*. Upper Saddle River, NJ: Prentice Hall
- Jones, W. & Huges, S. H. (2003). Complexity, conflict resolution and how the mind works. *Conflict Resolution Quarterly*, 20, 4-20.
- Lederach, J. P. (1997). *Building peace: Sustainable reconciliation in divided societies*. Washington, D. C.: United States Institute of Peace
- Pruitt, D., & Olczak, P. (1995). Beyond hope: Approaches to resolving seemingly intractable conflict. In B. B. Bunker & J. Z. Rubin (Eds.), *Cooperation, conflict, and justice: Essays inspired by the work of Morton Deutsch*(pp. 59-92). San Francisco: Jossey Bass.



## Part III: The Evidence

The third part will present empirical research supporting the dynamical approach to conflict.

- **Case studies:** Mozambique, Burma, Nepal, South Sudan, Nigeria, Detroit Symphony, Brookline abortion, Columbia University, Family Divorce:

Praszkier, R., Nowak, A., and Coleman, P. T. (2010). Social entrepreneurs and constructive change: The wisdom of circumventing conflict. *Peace and Conflict: The Journal of Peace Psychology*, 16(2), 153-174.

Bartoli, A., Bui-Wrzosinska, L., & Nowak, A. (2010). Peace is in movement: A dynamical systems perspective on the emergence of peace in Mozambique. *Peace and Conflict*, 16, 211-230.

Coleman (2011). *The Five Percent: Finding Solutions to Seemingly Impossible Conflicts*. Perseus Books. Chapters 4 & 6

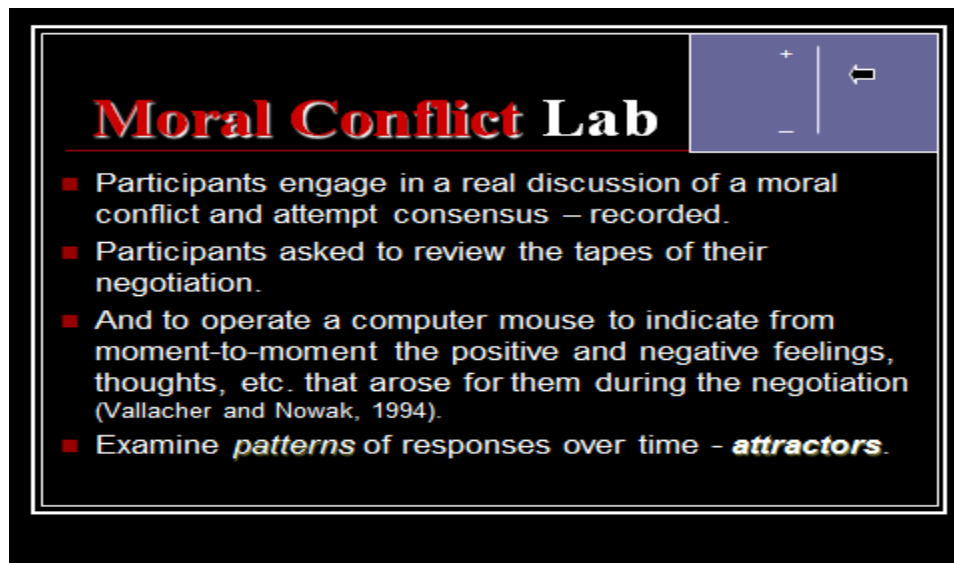
- **Lab research:** Difficult conversations lab, optimality research, Action Identification research, Culture and complexity, non-linear escalation studies:

Gottman, J., Swanson, C., and Swanson, K. (2002). A general systems theory of marriage: Nonlinear difference equation modeling of marital interaction. *Personality and Social Psychology Review*, 6(4), 326-340.

Kugler, K., Coleman, P. T., and Fuchs, A. M. (working paper). Conflict, complexity and openness: Constructive versus destructive dynamics of discussions over intractable issues.

Chung, C., Coleman, P. T., & Gelfand, M. (working paper). Conflict, culture and complexity: The effects of simple versus complex rules in negotiation. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1872868](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1872868)

Coleman, P. T., Tan, R. Y., Bui-Wrzosinska, L., & Nowak, A. (working paper). Are they with us or against us? The effects of need for closure on conflict orientations and catastrophic escalatory dynamics.



**Moral Conflict Lab**

- Participants engage in a real discussion of a moral conflict and attempt consensus – recorded.
- Participants asked to review the tapes of their negotiation.
- And to operate a computer mouse to indicate from moment-to-moment the positive and negative feelings, thoughts, etc. that arose for them during the negotiation (Vallacher and Nowak, 1994).
- Examine *patterns* of responses over time - **attractors**.

## Summary of DCL Findings Study 2: Results (Experimental Study)

### ■ High complexity matters:

#### ■ Outcomes:

- High complexity condition reached consensus more and had better quality statements
- High complexity condition more cooperative and more satisfied with the relationship.

#### ■ Emotional:

- High complexity condition had more positive emotions and less negative emotions
- High complexity condition had higher positive to negative emotional ratio.

#### ■ Cognitive:

- High complexity condition discussed the topic with higher degrees of integrative complexity.
- High complexity condition increased their level of integrative complexity significantly more from pre to post test.

#### ■ Behavioral:

- High-complexity condition evidenced more integrating and obliging behaviors

- **Mathematical modeling and computer simulations:** Cooperation-competition, Crude Law Model, Complexity model:

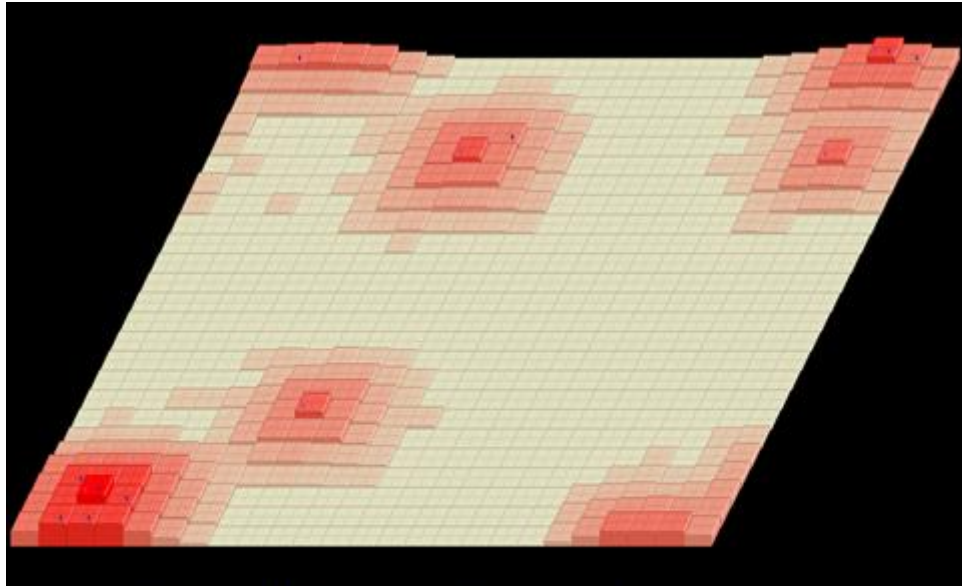
Nowak, A., Deutsch, M., Bartkowski, W., & Solomon, S. (2010). From crude law to civil relations: The dynamics and potential resolution of intractable conflict. *Peace and Conflict: Journal of Peace Psychology, 16*(2), 189–209.

Nowak, A., Bui-Wrzosinska, L., Coleman, P. T., Vallacher, R., Jochemczyk, L., & Bartkowski, W. (2010). Seeking sustainable solutions: using an attractor simulation platform for teaching multistakeholder negotiation in complex cases. *Negotiation Journal, 26*(1), 49–68.

Liebovitch, L. S., Naudot, V., Vallacher, R., Nowak, A., Bui-Wrzosinska, L., & Coleman, P. (2008). Dynamics of two-actor cooperation–competition conflict models. *Physica A: Statistical Mechanics and its Applications, 387*(25), 6360-6378.

Coleman, P. T., Schneider, A., James, C. C. F., Adams, D. S., Gameros, T. A., Hammons, L. R., Orji, C. C., Waugh, R. M., & Wicker, R. F. (2005). Intragroup subgroup attitude clustering, external intervention, and intergroup interaction patterns: Toward a dynamical model of protracted intergroup conflict. *Peace and Conflict Studies, 12*(1), 55-70.





**Figure 1d.** Creation of Negative Orientations

- **Archival research:** Correlates of War dataset.

Diehl, P. F., & Goertz, G. (2001) War and Peace in International Rivalry. Michigan University Press.

## Part IV: Applications - Addressing Realities on the Ground

The fourth part of the course outlines applications of the DST approach to addressing seemingly impossible conflicts.

- **ALM Three Practices**

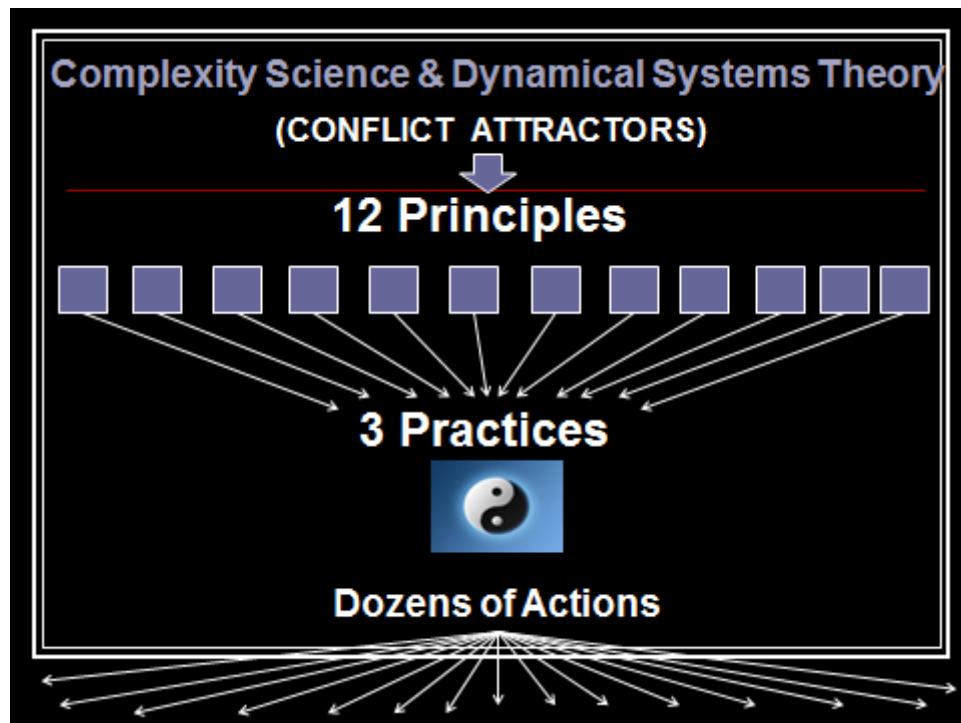
- Complicate to Simplify (*conflict analysis and feedback loop mapping*)
- Build up and Tear down (*strategic action: disassembly and reconfiguration of an existing attractor; activation or creation of a latent attractor; change in the number and types of attractors*)
- Change to Stabilize (*adaptation and sustainability*)
- Attractor Software Model

Coleman (2011). *The Five Percent: Finding Solutions to Seemingly Impossible Conflicts*. Perseus Books.

Coleman, P. T., Vallacher, R., Nowak, A., Bui-Wrzosinska, L., Bartoli, A. (forthcoming). Navigating the landscape of conflict: Applications of dynamical systems theory to protracted social conflict. In Ropers, N. (Ed.), *Systemic Thinking and Conflict Transformation*. Berlin, Germany: Berghof Foundation for Peace Support.

Coleman, P. T., Fisher-Yoshida, B., Stover, M., Hacking, A., and Bartoli, A. (2008). Reconstructing ripeness II: Models and methods for fostering constructive stakeholder engagement across protracted divides. *Conflict Resolution Quarterly*, 26(1). Jervis, R. (1998).

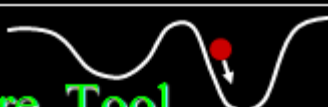
Nowak, A., Bui-Wrzosinska, L., Coleman, P. T., Vallacher, R., Borkovsky, W., and Jochemczyk, L. (2010). Seeking sustainable solutions: Using an attractor simulation platform for teaching multi-stakeholder negotiation. *Negotiation Journal*, 26(1), 49-68.



## Getting **Un-Attracted** to Conflict: Three Practices



## The **Attractor Software Tool**

- 
- Offers simple visualization of how elements link to affect patterns of constructive/destructive behaviors.
  - It helps to untangle the web: simplifies understanding of a system w/o oversimplifying the problem.
  - It suggests a sequence of activities that can lead to a **reconfiguration of the system**.
  - It shows that the same action can have multiple consequences and distinguishes short- and long-term (+ & -) consequences.
  - And points to **sustainable solutions**.

Go to: <http://www.iccc.edu.pl/as/>

- **SAT Model**
  - Structure, Attitudes, Transactions

Ricigliano, R. (2012). Making Peace Last. Paradigm.

- **Systemic Action Research**
  - Principles, Practices

Burns, D. (2007). Systemic Action Research: A Strategy for Whole System Change. Policy Press.