



Eoyang CDE and Self-Organization:

Human Systems Dynamics at Work

Human beings tend to organize themselves. Kids on playgrounds, street gangs, people at parties, cliques, teams, corporations, committees, and families all generate patterns that persist, even as time passes and circumstances change. Anyone who supports change in human systems recognizes and responds to these emergent and robust patterns. Human systems dynamics (HSD) is an emerging field of theory and practice that draws from chaos and complexity science to provide theory, models, and methods to identify, make meaning of, and act to influence such self-organizing patterns in human systems.

One of the first and most powerful of the HSD models is the Eoyang CDE—conditions of self-organizing in human systems¹. It posits three conditions that influence the speed, direction, and outcomes of self-organizing processes in human systems: containers, differences, and exchanges.

Emergent patterns require **containers** that bound the system. Containers draw the elements of a system together or hold it together over time. Containers may be physical (e.g., offices, houses, city limits); psychological (e.g., powerful ideas or charismatic leaders); or connections based on affinities (e.g., gender, race, culture). Many different containers influence the patterns in any given complex adaptive human system, and often they are massively entangled. For example, patterns in a team can be influenced by meeting place, purpose, past friendships or professional relationships, reporting structures, professional disciplines, and other bounding factors that may or may not be relevant to the work of the group.

Within any given container, **differences** articulate patterns that influence and are influenced by individual and group behaviors. Every human system embraces an enormous number of differences—power, age, gender, experience, role, language, race or ethnicity, stature, hair color, and so on and on. Only some of these differences are relevant at any particular place or time. Differences that are relevant within any container may be formal or informal, explicit or implicit, permanent or temporary, physical or metaphysical. A difference in a complex adaptive system may refer to various parameters (e.g., height or weight), or it may refer to a distinction within one parameter (e.g., short or tall). Because differences manifest patterns, they are key to understanding human systems, but they are far more. They also influence change in systems because a difference establishes an asymmetry that motivates and builds energy for changing the very pattern it represents. So, for example, a difference in financial status not only gives information about a society, it also has the potential to move the market toward productive activity or to move the society toward reform.

¹ Eoyang, G. (2001). Conditions for Self-Organizing in Human Systems. Unpublished Doctoral Dissertation. The Union Institute and University.

If a complex adaptive system is to change over time, then there must be active **exchanges** across the relevant differences. An exchange may involve the transfer of information, energy, money, force, or material. As participants in a self-organizing system, people talk and listen, give and take, and act and observe each other. They share their stories, inform one another of their needs, and together they establish patterns of being and behavior.

These conditions arise naturally and are always present for human systems, but they can be influenced through intentional interventions. They are not independent of each other. A change in one affects both of the others, as well as the emergent pattern in the system. Because the conditions determine the degrees of freedom or constraint, they can be shifted to affect changes in system patterns and behaviors. Small or few containers tend to speed up self-organizing processes. More or larger containers slow the process down. An overabundance of differences slows self-organizing; while too few establish a pattern quickly. Systems with many and/or very tight exchanges self-organize quickly, and fewer or weaker exchanges tend to slow down the self-organizing process. Because containers, differences, and exchanges are many and varied, in any given situation a system's response to a change cannot be predicted or controlled. On the other hand, careful observation, thoughtful meaning making, and iterative adaptive action can allow individuals and groups to engage with complex adaptive human systems in ways that shift persistent patterns of meaning and action.

For more information about human systems dynamics, the Human Systems Dynamics Institute, and the CDE Model, visit www.hsdinstitute.org.

