

CHAPTER TWENTY-FIVE

Human Systems Dynamics

Competencies for a New Organizational Practice

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WHAT'S THE PROBLEM?

Today's organizational challenges are different in kind from those of the past. As Organization Development professionals, we and our clients cope with global diversity, virtual relationships, unpredictable outcomes, and unflinching demands for performance, profitability, and sustainability. We are called upon to help others manage change that is instantaneous, unpredictable, and cross-functional. While familiar, hierarchical roles and relationships are being transformed into "collaborative leadership," the drive toward measurable outcomes and lean performance continues to escalate. While global virtual teams work together toward common goals, cultural conflicts erupt in communities and organizations. While cycle time and client expectations for response time shrink, processes and procedures to ensure consistent quality expand. These and many other tensions drive our clients' organizations and our own.

Such an environment requires that we rethink the theory and practice of organization development and our roles as practitioners. Many emerging theories and practices help us adapt to this new and less stable environment. Barry Johnson talks about the many polarities that shape individual, social, organizational, and community realities (Johnson, 1992). Lisa Kimball talks about positive deviance (<http://www.positivedeviance.org/>). Harrison Owen expands Open Space (Owen, 2008). Large scale intervention techniques are transformed to meet local needs and resources (Bunker & Alban, 2006; Holman, et al, 2006). Many other innovative tools and methods are emerging to help our practice evolve to meet the demands of this transformed marketplace, but something is missing.

Any innovative tool or method can be brought into a traditional OD practice. It can be integrated into the process that we trust and that we repeatedly ask our clients to trust. We can co-opt even the most radical approach and adapt it—tame it—to fit with our tried-and-true approaches. While this path allows us to stretch our toolkits, it will not prepare us to meet the challenges of a radically different organizational ecology and a transformed professional services market. Around the world organization development practitioners and their clients and client systems are dissatisfied with the standard theories and practices of OD. Many people find that, even with an assortment of radically

new tools, they are unprepared to meet the challenges of this emerging world. Sometimes native abilities and deep intuitions lead practitioners and their clients in the right direction, but even that sometimes-reliable strategy can break down at the most inopportune times. These practitioners are as frustrated as they are experienced. They realize that effective OD practice of the future will require a new foundation of assumption, method, and theory. This new foundation must adapt to local and changing requirements, support rapid response, and integrate the use of a wide variety of tools and practices. To make such a significant and meaningful difference, we OD practitioners have to re-examine our common notions. We have to take a risk and challenge our fundamental practices and assumptions with new ways to think about change. We have to consider our options and our roles as responsible, active agents of change.

This chapter outlines a theory base that is both radical and familiar. While it fits the intuitions of the most experienced OD practitioners, it breaks through the locked-in assumptions of traditional OD practice. This new approach to organization development has emerged from the new sciences of nonlinear dynamics, chaos, and complexity. It incorporates a wide range of philosophies and social science disciplines. It has been tempered with on-the-ground theory and practice. It is an open and adaptive approach to dealing with the unpredictability of organization development in the twenty-first century. It is human systems dynamics.

HUMAN SYSTEMS DYNAMICS DEFINED

Human systems dynamics (HSD) is field of research and practice that emerges at the intersection of complexity and social sciences. It is grounded in the assumption that human systems—at all levels of organization from intrapersonal to national—are complex adaptive systems. A complex adaptive system (CAS) is a collection of semi-autonomous agents that are free to interact in unpredictable ways, and whose interactions generate system-wide patterns. Over time, those emergent patterns influence the subsequent behaviors of the participating agents. Within an individual, emotional, cognitive, and physical factors interact as agents, and a recognizable personality emerges. In a team, diverse members interact over time to create patterns of success or failure, which then influence the behavior of members of the team. In an organization, individuals, teams, or departments interact in creative ways to generate patterns that are recognizable as organizational culture, performance, or profitability. Families act as agents when neighborhoods are considered complex adaptive systems. Stockholders are agents in an active market. Players are agents in games. Organization Development practitioners are agents with others in patterns of organizational performance over time.

Human systems dynamics takes seriously the assumption that social systems are complex adaptive systems, and incorporates a range of models, methods, and tools to support conscious and intentional action for individuals and groups. Many of the practices of HSD mimic those of traditional OD because the best of that tradition evolved as individuals and groups took action to respond to the complex adaptive, pattern-forming properties of teams, organizations, and communities. On the other hand, HSD practice contradicts some of the fundamental assumptions that form the foundation of OD theory.

Human systems dynamics is grounded in the following assumptions:

- Change in human systems is emergent, based on the interactions of the participating agents.
- The same complex adaptive dynamics shape individual and group behaviors at all levels of organization—from personal to national patterns of behavior.

- Human systems are open to unknowable forces from dynamics that are internal to agents, among agents inside and outside of any given boundary, and from overarching systems that incorporate other, self-organizing patterns of influence.
- Change in human systems can be modeled as static (at rest waiting to be moved), dynamic (moving in a smooth response to constant forces), or dynamical (influenced by unknowable and unstable forces). The “correct” model at a specific place and time is the one that is a best fit to the emergent patterns of the interest in the moment.
- In CAS, the change may be slow and deliberate (organized), fast and random (unorganized), or patterned and emergent (self-organizing).

If organizations truly conform to these assumptions and function as full-fledged complex adaptive systems, then practitioners seeking to influence change must demonstrate the competencies of human systems dynamics. The next section outlines those competencies in contradistinction to some of the more traditional competencies of OD.

HSD COMPETENCIES

Complex adaptive systems cannot be predicted or controlled. Agents, their complex interactions, and the openness of the system create an unpredictable future for individual or the collective patterns of behavior. To be effective in such an emergent ecology, an HSD practitioner needs to see what is happening in the self-organizing system around them, understand the implications of those patterns and generate options for action, and take action to influence those patterns as they emerge. The HSD Institute (www.hsdinstitute.org) expects each of its associates to practice a short list of simple rules. These rules function as guidance to action and as fundamental competencies to support effective change in a human system.

Teach and learn in every interaction.

Every complex adaptive system is unique. Each moment in a complex adaptive system is unpredictable, so an HSD practitioner must be committed to constant inquiry and perpetual meaning-making. This simple rule is quite complex in its application. It means that an effective practitioner will NOT:

- Habitually depend on a small set of tools.
- Disregard of the clients’ view of the clients’ situation.
- Assume that similar patterns represent identical dynamics.
- Expect to transform others without being transformed yourself.
- Encourage client dependency by withholding information or resources.

Though a professional plan is certainly a part of the HSD approach, it is equally balanced with the ability to observe changing patterns and adapt to meet them. Each moment is a transaction of potential transformation for both the client and the HSD practitioner.

An HSD practitioner teaches and learns in every interaction.

Reinforce strengths of self and others.

Many OD processes focus on positive patterns to build strength, reinforce effectiveness, feed creativity, and encourage energy for individuals and groups. This rule focuses on the capacity to see, acknowledge, and use the unique gifts of each and every agent in the system. While this might seem a Pollyannaish response, it is quite the contrary. It requires that the HSD practitioner be discriminating enough to find the special strengths of others and creative enough to find appropriate

and pro-active ways to reinforce those strengths. This rule also requires deep introspection, as the professional discerns his or her own strengths and finds ways to use those strengths most effectively for the good of the clients' agents and systemic patterns of performance.

An HSD practitioner reinforces strengths of self and other.

Search for the true and the useful.

This rule builds the capacity for praxis—action at the intersection of theory and practice. Every client's environment is evolving in surprising and unpredictable ways, so practitioners need to be able to build and test hypotheses to understand and help clients understand the emerging dynamics. Thinking alone, however, runs the risk of not being grounded in the reality of emergent complex dynamics. HSD requires that practitioners consider both the underlying theory of action as well as its practical outcomes. Effective ideas and actions in complex adaptive systems require both truth and usefulness because agents and their patterns are constantly in flux and cannot be measured against some external, absolute measure or expectation. On the other hand, practice without theory—the useful without the true—is not effective, either. Generally referred to as “implicit knowledge,” practice without theory creates unconscious experts who may function as magicians rather than responsible professionals.

An HSD professional searches for the true and the useful.

Give and get value for value.

Each agent in a healthy self-organizing system contributes to the good of the whole and depends on the contributions of its neighbors. HSD practitioners should be aware of the dynamic balance of giving and getting in a health human ecology and refuse to participate in one that is unbalanced. Of course an honest professional will not expect to get value out of proportion to what they provide, but clients are not well served either when the practitioner gives more value than they receive. Over time, the relationship sours, expectations and reality do not match, and one or both players feel cheated in the transaction. This rule, too, requires a modicum of self-reflection because the professional must consider the value of what they give and receive both in their own judgment and the understood judgment of the client.

An HSD professional gives and gets value for value.

Attend to the whole, the part, and the greater whole.

Every human system incorporates multiple levels of active self-organizing. Intrapersonal interactions frame individual patterns. Individual patterns frame team patterns. Team patterns frame departmental ones. Departmental patterns frame corporate patterns, and so on through industry, sector, and economy. It is not possible to consider all interacting levels all the time, but it is not wise to focus on only one. Any intervention that attends only to one level in isolation from others risks ignoring important and powerful forces. Or, stated more positively, runs the risk of missing potentially powerful options for action. The HSD compromise is to focus on three levels at the same time. The whole constitutes the primary level of focus—individual, team, or department. The part includes the agents whose interactions generate the whole. The greater whole is the broader context in which this whole plays the role of a single agent. By focusing on one level and the adjacent levels above and below, the practitioner increases ability to anticipate patterns of the future and to generate counter-intuitive options for action.

An HSD professional attends to the whole, the part, and the greater whole.

Engage in joyful practice.

Anxiety is a natural reaction to the unpredictability and lack of control in a complex adaptive system. Too often practitioners will revert to a well-known intervention, blame individuals or groups who appear resistive, or exercise undue control when a client system begins to move in unexpected ways. Professionals who are not prepared for the surprises of self-organizing can react with fear or frustration and disrupt the natural pattern-forming process of a group. The alternative is to develop a comfort with self-organizing and delight in the emergence of new patterns and the opportunities for action they represent. This final competence, joyful practice, establishes the personal and emotional resilience that allows an HSD practitioner to hold his or her own anxiety in check and to turn the anxiety of others toward productive complex adaptive, pattern-forming action.

An HSD professional engages in joyful practice.

HSD SELF-ASSESSMENT

The key to developing HSD competencies is to assess and adapt continually. It is helpful to reflect with colleagues, but it is also helpful to complete a series of personal reflections. The attached self-assessment document provides a series of questions that can help you focus on, assess, and adapt your current behaviors to improve your performance as a human systems dynamics professional in future.

You should complete the self-assessment either at the close of a project or at regular intervals—monthly or weekly. Plans from previous assessments should inform performance on the current one, as well as plans for future action.

Keep copies of your assessments over time. Periodically look back on your emerging practice and review how your expectations for yourself and your performance have changed over time.

As you reflect on your practice and build HSD competencies, you will find that your expectations increase, so you will always find new ways to enhance your adaptive action over time. Like any complex adaptive system, you will continue to grow and adjust to the changing needs in your environment. In this way, you will develop new and creative models, methods, and tools to help you set conditions for adaptive self-organizing in the human systems you serve.

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Self-Assessment

Who are you?		What is today's date?			
Describe a recent project and or client interaction:					
In this interaction I . . . (Check one column for each question.)	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1. Taught clients/colleagues to see new things in new ways.					
2. Taught clients/colleagues to act in new ways.					
3. Learned something surprising about myself.					
4. Learned something new about my client.					
5. Learned something new about my professional field.					
6. Identified strengths of individual clients.					
7. Reinforced strengths of individual clients.					
8. Identified strengths of groups of clients.					
9. Reinforced strengths of groups of clients.					
10. Identified my own strengths.					
11. Reinforced my own strengths.					
12. Applied existing, received theory.					
13. Developed or extended existing, received theory.					
14. Applied practices I've found useful in the past.					
15. Developed new practices I will find useful in the future.					
16. Gave value for value.					
17. Received value for value.					
18. Defined and attended to the part.					
19. Defined and attended to the whole.					
20. Defined and attended to the greater whole.					
21. Engaged in joyful practice.					
TOTAL number of checks in each column.					
Which HSD competencies should I focus on in future?					
What actions will I take to reinforce my strengths?					
What actions will I take to strengthen my weaknesses?					

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HUMAN SYSTEMS DYNAMICS EMERGING THEORY AND PRACTICE

Practitioners in organization development and management are learning from the new sciences of complexity. Sometimes called chaotic, self-organizing, nonlinear, complex adaptive, or emergent, these new sciences give voice to the intuitions and experiences of persons who work competently to support change in human systems. Around the world, individuals and teams are exploring—in theory and in practice—how to apply lessons from these new sciences to their engagements with human systems.

Today their approaches are as diverse as the individuals who practice and the environments in which they work:

- An HR manager at a development bank in Saudi Arabia considers the role of Islamic principles of purposefulness, values, and intention in establishing coherence in human systems.
- A school administrator builds generative collaborative relationships to provide health services to children when challenges are increasing and funding is decreasing.
- A master facilitator brings insights about complex human dynamics to support decision making and action among teams in business, government, and nonprofit environments.
- An official of family court supports the emergence of new patterns of relationships that help kids develop into healthy and happy adults.
- An international pharmaceutical company applies human systems dynamics principles to understand and influence the use of its products by patients, caregivers, and professionals.
- An international financial services company incorporates complexity competencies into its leadership development programs.
- A consulting team in Canada integrates emergent project management with “open space technologies” to help businesses realize their shared visions in record time.
- A government official in Columbia establishes an infrastructure for community peace and justice.
- A new venture capital firm uses insights about human systems dynamics to foster collaboration among high-tech start-ups and sources of funding.
- An expert in information technology leads an effort to design and implement the next generation of Internet technologies for educators and researchers.
- Healthcare professionals, including CEOs, physicians, and nurses, use principles of complexity and human systems dynamics to improve both clinical and financial outcomes.

All of these professionals and many more around the world use the principles of complexity every day to respond to the emerging needs and dynamics of human systems. They draw from the age-old wisdom of effective leaders. They learn from the discoveries of 20th Century scholars and practitioners in organizational sciences. They derive metaphors, tools, and methods from the study of complex dynamics in physical sciences, information theory, and mathematics. They bring these various threads together into a single, emerging field of knowledge—human systems dynamics (Eoyang, 2003).

What do these students of human systems dynamics (HSD) have in common? How can you, as a professional, develop competencies to do this work? How can the OD field establish standards and developmental pathways to help others explore this exciting and innovative territory?

The answer is, “Nobody knows.” We don’t know because the field is in its infancy, and we’ve only begun to explore what’s possible. We don’t know because each of these environments and each practitioner brings unique gifts and challenges to the table. We don’t know because we are all so busy doing the work and building our own conceptual models and suites of tools that we have no time to articulate and share what we’ve learned with the larger community of practitioners. Perhaps we will never know because the field of complexity application is as complex as the systems it works within.

What we can do is to use the principles of self-organizing systems, which we’ve learned from complexity theory and practice, to reflect on ourselves as individuals and as a cohort of OD professionals. Within this context, I will try to share with you my emerging learnings about what it means to engage in the self-organizing development of myself as a practitioner, my clients’ productive systems, and this field at the intersection of the complexity and social sciences that we call human systems dynamics (HSD). Toward that end, I will explore two questions: (1) What is a complex adaptive system? and (2) What does it mean to work as a change agent in a complex adaptive system?

WHAT IS A COMPLEX ADAPTIVE SYSTEM?

Complexity is a diverse field that includes threads from mathematics, computer science, meteorology, fluid dynamics, and a host of other fields of research (Kelly, 1994). In my own work, I’ve found the concepts from one to be most applicable to behavior of human systems—complex adaptive systems (CAS). A CAS is defined as a collection of semi-autonomous agents that interact in unpredictable ways and generate system-wide patterns over time. A team is a good example of a CAS in human systems. The team members are the agents. Each comes with unique perspectives, skills, and interests. Through a variety of means (meetings, documentation, email, voice mail, informal chats), the agents interact. Over time, the team generates patterns of group behavior that can be observed in its work, the personal relationships of members, and the members’ individual growth and development. Sometimes those patterns are highly productive and sometimes they are not, but always some pattern emerges that is identifiable as the “team” behavior apart from the contributions of individuals. This human system, and many others that meet these criteria, can be considered complex adaptive systems (Eoyang, 1997).

These complex adaptive systems demonstrate similar behaviors, regardless of the nature of the agents or the context of their engagements. Similar patterns of behavior appear in fluid dynamics, ecology, economics, and human physiology as well as human social and organizational systems (Pascale, Millemann, & Gioja, 2000). Among the characteristic behaviors are

- Self-organization. The pattern in the whole emerges from the internal dynamics of the system. It is not imposed from some objective outside influence. Organizational culture, for example, emerges from the complex interactions of the people within the system, not from a management edict that defines “what it’s like around here.”
- Sensitive dependence on initial conditions. A very small change can generate enormous effects. Sometimes this is called the “butterfly effect.” The metaphor derives from the flap of a single butterfly wing that can change systemic patterns in parts of the system that are remote in space or in time. Rumors are wonderful examples of the butterfly effect in organizations. A comment overheard at the water fountain can mushroom into a crisis of confidence or action.
- Dynamism. A CAS is always in motion. A single snapshot of the agents at any point in time is insufficient to represent the system’s emerging existence. Even when a CAS appears to be in a stable state, its internal interactions continue to emerge over time. A locked-in

bureaucratic environment maintains its stability because the individual people and processes generate action that discourages deviation and reinforces compliance.

- Nonlinear causality. In these highly interdependent systems, one thing causes and is simultaneously caused by another thing. A causes B at the same time that A is caused by B. Trust is a good example of nonlinear causality in human systems dynamics. You behave in such a way that I trust you, and I trust you because you behave in such a way. This causal circle makes it quite difficult to see which comes first, the behavior or the trust.
- Fractal structures. Similar patterns are repeated at various levels and parts of the complex system. The repetition gives coherence to the whole, like the geometrical patterns of fractals or biological patterns of broccoli when the part is a miniature version of the whole. Lived organizational values provide such scaled patterns in human systems. Competitive - individuals exist in competitive teams. Competitive teams emerge in competitive corporations. Competitive corporations thrive in competitive industries and economies. Because of this replicated structure, different levels of organizing (individual, dyad, team, organization, and community) exhibit similar patterns and can be affected by similar interventions.
- Path dependency. Each complex system is unique. It has a complex combination of current patterns that emerged from a unique history. For each system, the future will emerge out of the complex dynamics of the current moment. In this way, history is of major significance in the dynamics of human systems. Patterns of the present will be understood in terms of, although they were not predetermined by, the dynamics of the past. For example, an organization may craft a thrilling vision, but its ability to make the vision a reality lies in its current capacity and its patterns of performance that have emerged in the past.

These characteristics of complex adaptive systems are obvious in the organizations with which I work. Every organization and each project exhibits these patterns of behavior. When I ignore them, my expectations may be clear and my plan may be certain, but the system's behavior will deny me every time. In some circumstances, I may avoid attending to these patterns for a short period of time or with a small subsection of an organization, but ultimately my best-laid plans will be ineffective because the interactions of the whole are much more powerful than my well-planned interventions. On the other hand, when I acknowledge these natural dynamics, explore them, and work in concert with them, my path is unpredictable, but the outcomes are usually productive and satisfying to my client and me.

WHAT DOES IT MEAN TO WORK AS A CHANGE AGENT IN A COMPLEX ADAPTIVE SYSTEM?

In Chapter One, a change agent was defined as “a person who attempts to alter some aspect of an organization or an environment.” As a responsible professional, what is my role as a change agent in a system where outcomes have more to do with the internal dynamics of the system than with anything I might assess, implement, or evaluate?

It does not mean selecting one tool or approach and using it with all my clients. It does not mean that I can call a single event an intervention. It does not mean that I (or leaders or anyone else) know what's right for a system today and tomorrow. It does not mean that I can make useful, detailed, long-range plans. It does not mean that I can promise specific outcomes to clients within specific time frames. It does not mean that I can reach a level of professional competence and stop learning and growing. It does not mean that there's a set sequence of developmental stages that are predictable and controllable. It does not mean that I can help a client system transform without also being transformed.

It does mean that I will participate as a self-organizing agent in the emerging dynamics of a complex environment in which my clients live and work (Olson & Eoyang, 2001). To do this work effectively, I must be able to think about, talk about, and act within self-organizing dynamics of human systems. I must be conscious of the conditions that affect self-organizing processes and work with others to shape those conditions over time. I must be a learner. As a learner I am responsible for the complex self-organizing dynamics of myself as a professional. As I learn and engage with others, I also accept responsibility to help shape the conditions for emergent patterns for larger human systems of which I am a part.

My research in theory and practice has shown that there are three conditions that shape the speed, path, and results of self-organizing processes (Eoyang, 2001). It is significant that I say these conditions “shape.” They do not determine the dynamics because many other factors also intervene. These three conditions do, however, influence what happens as the internal dynamics of the system form their dynamical patterns. This model for the condition for self-organizing is called the CDE Model, and it emerged from my own exploration of the theory and practice of human systems dynamics. It reflects the conditions that are necessary and sufficient to influence the speed, path, and outcomes of self-organizing systems. Although these conditions pertain in any CAS, they take on different manifestations depending on the context. For example, when I plan a party, I have to have a place (container) to hold the action, a diverse group of guests who bring interesting personalities and experiences (differences), and opportunities for the guests to interact (exchange) in meaningful ways. In the current context of competencies for OD practitioners, we can see these same conditions in the categories outlined by Christopher Worley, Roland Sullivan, and William J. Rothwell elsewhere in this volume. They call them categories of OD competence—being, knowing, and doing.

Being the Container

The first category (being) defines the “self” that is self-organizing. It establishes the identity of the system and distinguishes what is “inside” from what is “outside.” In the CDE Model, it is known as the container (C) for the system. In the work of the OD practitioner, the functional container is the consciousness of the self—who and what one is. In the language of Chapter Five, this is “being.” To work in emergent systems successfully, the OD practitioner uses competencies of being to establish for him- or herself a coherent whole. Through the complex dynamics of the system, the individual is reflected in the greater whole and makes it possible for the whole system to reflect this individual’s coherence. The self-organizing pattern depends on the ability of the OD practitioner to be present and complete in the moment of engagement.

In my own journey, I am continually reminded that my personal presence is a powerful influence on the system, whether I intend it or not. If I’m distracted or unprepared or over- or under-dependent on the people and situations around me, I am incapable of serving my clients to good effect. My “being” forms a foundation for the other competencies that make me an effective agent of change. The approach to existence that I find most helpful, and the one that I observe most often in fully competent colleagues, is simple: I am a learner. This means that I take a stance of inquiry and curiosity and see myself as one who is engaged in the productive processes of inquiry and learning. Competencies related to being can be represented by a very large number of observable traits, many of which are embedded in the lists of general OD competencies that appear elsewhere in this volume. Some that are substantially relevant to practice human systems dynamics include the capacity to be:

- Curious about how complex human systems work and why they work as they do;
- Humble about the capacity for a client system to organize itself and one’s capacity to understand complex processes either in general or in particular;
- Generous with one’s self and others as personal praxis emerges over time; and
- Comfortable with ambiguity, uncertainty, and lack of control.

Knowing the Differences That Make a Difference

The second condition for self-organizing in human systems establishes the necessary creative tension by articulating differences (D) within the whole that are significant. They constitute (or should constitute) the emerging pattern for the whole system. Significant differences are represented in “knowing” competencies. An effective CAS consultant must be able to recognize, name, and help others see the differences that make a difference to the productive work of the whole. He or she must know enough about human systems dynamics, the work of the client, and the capacities of engaged individuals to be able to focus attention on the differences that can generate the most effective system-wide patterns.

Because I am a learner, I continually expand my own knowledge about relevant differences that affect my emerging personal praxis in the field. I need to know about what other scientists and mathematicians in the field of complexity are learning, even though the field of complex dynamics is advancing at an incredible rate. When I entered the field in the late 1980s, I could stay abreast of much of the diverse activity in the field. Now, the information explosion is so great that I must pick and choose information about the differences that are most relevant to me. In addition to my own reading, I also stay connected to a network of other learners who share their findings with me. Such shared learning allows my repertoire of complexity models and significant distinctions to continue to expand.

Knowledge about the field is important, but I also have to explore emerging differences that affect my clients’ situations. At a first encounter with a client and at each subsequent step, I learn the differences that make a difference in helping them move from their current patterns to new and more desirable ones. Knowing the relevant differences helps me support self-organizing of productive - system-wide patterns. Many of the broad categories of knowledge that are relevant to OD in general are focused on discerning and influencing significant differences. Some of those most closely related to HSD work include the following:

- Fractals (Briggs & Peat, 1989);
- Self-organizing processes (Prigogine & Stengers, 1988);
- Boundaries (Eoyang, 1997);
- Scaling (Talbot, 1992);
- Emergence (Johnson, 2001);
- Sensitive dependence on initial conditions (Zimmerman, Lindberg, & Plsek, 2001);
- Bifurcation path to chaos (Briggs & Peat, 1989);
- Self-organized criticality (Bak, 1996);
- Scale-free networks and power law (Barabasi, 2002);
- Computer simulation models (genetic algorithms, cellular automata, agent-based models) (Casti, 1997);
- Catastrophe theory (Guastello, 1995);
- Simple rules (Olson & Eoyang, 2001);
- Biological models of co-evolution and complexity (Cohen & Stewart, 1994);
- Time series modeling and attractor reconstruction (Poole, Van de Ven, Dooley, & Holmes, 2000); and
- Fitness landscapes and fitness parameters (Kauffman, 1995).

Additionally, there are options for using the concepts of complexity in HSD applications. Many practitioners and researchers have developed tools and techniques to support change agents; information is available to support new explorations and experiments; and learning networks are emerging to support shared learning (www.hsdinstitute.org).

Doing the Work to Build Transforming Exchanges

Container (being) and differences (knowing) are only two of the three conditions for self-organizing competence of the HSD professional. The third, and final, condition connects parts of the emerging system together in relationships that have the capacity to transform both the participating agent and the emerging patterns of the whole. We call these change-driving connections “transforming exchanges” (E). For the OD practitioner the primary exchange—that without which nothing happens—is captured in the competencies of “doing.” It is when we act that we build the possibility for new patterns to be generated in the self-organizing dynamics of our own and our clients’ systems.

The ability to establish transforming exchanges is the most obvious of the OD practitioner’s competencies. We all know that a qualified OD practitioner must be able to establish meaningful connections with clients, colleagues, and sponsors. We have long lists of interventions that help client communities establish transforming exchanges among themselves and with us. Some of the most common include large group technologies, training, coaching, meeting design and management, team building, inter-team contracting, experiential exercises, dialogue, online and print communications. Of course, all of these are important. No practitioner can be successful without some competencies in one or more of these modalities. On the other hand, the outstanding practitioners I know do not claim to be equally qualified in all of them. They know what they do well, and they know when they need help. They do not try to act beyond their competencies, but they bring in colleagues with complementary areas of expertise. In short, they learn about the client’s needs, they do what they do well, they learn to do new things, and they depend on others to do what they cannot. These doing competencies are outlined for general OD in other parts of this book. Specific ones related to HSD include the following:

- Recognize and describe patterns of emerging dynamics;
- Use a variety of tools and techniques to influence self-organizing processes and to choose among them to fit with the clients’ needs and constraints;
- Respect the client system’s historical patterns and emerging dynamics as critical to future possibilities;
- Recognize patterns that appear across scales (individual, dyad, team, division, organization, industry, community) and work at multiple scales as necessary to facilitate the self-organizing processes;
- Describe complex human systems dynamics in ways that are meaningful to clients and colleagues; and
- Ask probing questions and listen to and interpret the answers received.

THE LEARNING CONTINUES

The three conditions that constitute the CDE Model (container, difference, and exchange) work together as a complex adaptive system. The three sets of competencies that shape these conditions for OD practitioners (being, knowing, and doing) interact in complex ways to generate self-organized patterns of competence. Each of the competencies influences and is influenced by the others. Identity shapes and is shaped by what one knows and does. Knowledge derives from the interactions of being in a place and time and acting in the local context. Effective action emerges in a place and time when the conscious consultant brings his or her knowledge into real-time decision making and action taking. The process of learning captures the complex dynamics of simultaneously being, knowing, and doing.

In summary, I think of the complexity-based OD practitioner fundamentally as a learner. My consciousness of myself as a learner establishes who I am in this work and provides a container for the self-organizing processes for myself and my clients. My curiosity about critical distinctions in the

work articulates my identity as a learner with regard to the things I know about complexity and my clients' circumstances and forms the differences that make a difference to move my practice forward. Finally, when and what I do is driven by my ongoing learning about what I can do well and about how to do new things to help my clients reap the real-world benefits of their self-organizing processes.

The competent practitioner of human systems dynamics never exists in a single state. He or she is constantly participating in dynamical processes of learning and growing and changing. A list of competencies for professionals in HSD has to be based on fundamentally dynamic assumptions. There is no finite set of competencies that represent the field because the list continues to move - forward. There is no one who embodies the perfect HSD practitioner because each of us should be working perpetually toward perfection. As with other self-organizing systems, the goal is to move continually toward a state that makes the most productive and effective use of the opportunities and resources at hand. We must be good learners.

I believe that the list of competencies for a practitioner in the complexities of HSD will never be complete, so the preceding list is not intended to be exhaustive. Also, I believe that it is perfectly possible to be an effective practitioner in HSD with a subset of these competencies, so the competencies on this list are not necessarily required. In my opinion, the only competency that is both sufficient and necessary in HSD is a commitment to continuous learning about theory and practice in the field. With that said, I hope that the list of HSD competencies outlined here will provide some insight and guidance for practitioners who are looking for ways to shape their own HSD learning journeys and those of others.

Many other competencies can (and I assume will) be added to this list. It is certainly not definitive, but it reflects my current understanding of the fundamental competencies that distinguish among those who only know how to talk about human systems dynamics and those who are able to use their knowledge to work effectively in organizations. My fervent hope and reason for sharing this perspective on human systems dynamics is that others will join the journey. The more each of us learns, the more we will all learn, and our competencies as individuals and as professionals will continue to evolve.

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