Forum

The Complexity Science Organizational Development Practitioner

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Abstract

Complexity science ideas have recently begun to be applied to organizational dynamics. This set of ideas, primarily learned from the natural sciences, appears to hold great promise for improving organizational functioning. At this early stage, it has not been obvious how to apply some of these ideas to organizations. A wide variety of schemes and designs are being considered and attempted. By its nature, complexity science provides great variation in its approaches. At the same time, a common body of concepts exists among other differences. This paper will offer the first known taxonomy for understanding different and similar complexity science OD interventions.

Complexity Science Ideas Enter Organization Development

A body of knowledge has recently come onto the scene which has offered a challenge to much traditional OD. The book in this genre most familiar to OD practitioners is *Leadership and the New Sciences* by Margaret Wheatley (1992). In that book, Wheatley explores findings from quantum physics, self-organizing systems, and chaos theory and imagines applications for organizations. The underlying rationale is that if change processes, structural dynamics, cooperative and competitive dynamics, and other organizational phenomena work well in nature, then, perhaps, nature should serve as a guide for how organizations could function.

The journal *Emergence: A Journal of Complexity Issues in Organizations and Management* (1999) devoted a special issue to a review of the major books on the market applying complexity science ideas to organizations. The struggle for OD practitioners has been, how do they apply these new and exciting ideas for organizations? The literature is inconsistent in reporting progress in applying complexity science ideas to organizations (Levy, 1994). There is not yet a "complexity science theory of organizations" or even a unified view. One purpose of this paper is to demonstrate several different ways in which complexity science ideas are applied viably in organizations. Moreover, this paper will suggest a taxonomy for understanding different types of complexity science OD interventions.

Common Complexity Science Ideas for Organizations

Most of this paper will focus on the differences among complexity science OD interventions. Yet, significant commonalities appear. Because of the importance of the "edge of chaos," self-organization, and organizations as complex adaptive systems (CAS), a brief overview will be provided here. In the natural world, scientists have discovered that life is most dynamic in a region known as the "edge of chaos." Organizations can also be characterized in terms of dynamism, ranging from equilibrium to chaos. Organizations can most effectively change if they are at the edge of chaos (Brown & Eisenhardt, 1998). Organizations closer to equilibrium are too rigid and stable. Organizations in chaos are too disorganized and unordered.

Self-organization is a "fundamental principle of the universe in which we live and work. Open, self-organizing systems use energy, material, and feedback (information) from their internal and external environments to organize themselves" (Kelly and Allison, 1999, p. 4). Self-organization thrives when a system is at the edge of chaos. Under those conditions, systems fundamentally transform themselves. Self-organization has a number of benefits including being adaptable, evolvable, resilient, boundless, and creative. These benefits must be weighed against the disadvantages, which include being nonoptimal (in that they often require redundant resources), noncontrollable, nonpredictable, non-understandable, and nonimmediate (Kelly, 1994, p. 22).

For some time now, it has been in vogue for OD practitioners to provide clients with non-mechanical metaphors for organizations. Perhaps the most popular notion is that organizations are organisms (or amoebas). Complexity science invites us to think more systemically and see that organizations are CAS's, more like ecosystems than organisms. Central to this perspective is the view that organizations be seen as networks of multiple, interacting agents which are fairly autonomous. Each agent is constantly acting and reacting to what the other agents are doing. They are coadaptive, taking "mutual advantage of each other in order to change more effectively" (Brown & Eisenhardt, 1998, p. 60). Organizations whose members see themselves as part of an ecosystem are often highly decentralized, collaborative (focus on relationships), adaptive, see change as normal, and value-based.

Complexity Science OD Interventions

All of the categories of OD interventions described below ascribe to the above description of edge of chaos, self-organization, and seeing organizations as CAS's. The approach used to highlight the differences among them is to offer an exemplar publication(s) to feature a particular category. This taxonomy does not purport to cover all complexity science OD interventions comprehensively but rather is a start at seeing common threads across disparate types of interventions.

A number of different complexity science interventions can be classified into the four categories listed here which are labeled by the author(s) who is used here as the exemplar for that category. The labels are intended to be descriptive of that category.

1. Intervene by performing different tasks - Brown and Eisenhardt
2. Intervene in a similar way with different assumptions - Dent
3. Intervene by creating far-from-equilibrium (FFE) conditions - Goldstein
4. Intervene in the shadow organization - Shaw

Intervene by Performing Different Tasks

The work of Brown and Eisenhardt (B&E) (1998, 1997) will serve as an example of those advocating that complexity science OD practitioners should intervene in organizations by performing different types of tasks than those traditionally performed. B&E argue that traditional approaches to strategy have overemphasized the degree to which planning is possible in the face of rapid change. They suggest that the most relevant way for OD practitioners to intervene in organizations is to develop methods which address an organization's ability in the areas of improvisation, coadaptation, regeneration, experimentation, and choreography of transitions. This list is quite different from other approaches in classical strategic management or OD. B&E contend that what is often cast as bad management could be more generously interpreted as well-intentioned managers who are executing management practices consistent with the punctuated-equilibrium model. These practices, however, are simply not effective in an increasing number of settings.

B&E's first area of review, improvisation, is essentially a check to see whether the organization is operating in the unstable edge between the two attractors of structure and chaos, where businesses adaptively innovate and consistently execute. B&E provide checklists (and give normative responses for their excellent cases) which can serve as guides. A second example is coadaptation, which B&E define as "the process whereby systems of related agents take mutual advantage of each other in order to change more effectively; yet still be adaptive in each agent's particular situation" (Brown & Eisenhardt,1998, p. 60). The authors encourage organizations to determine whether they have appropriate mixes of collaboration and competition. Coadaptation consists of everyone performing a specific role.

One of their concluding images nicely captures the change in the OD consultant's role. B&E suggest that managers who compete on the edge must grow their businesses like prairies, rather than assemble them like toasters. The OD consultant assists, then, by becoming skilled in the balancing and timing act of prairie management rather than in the relatively stable environment of humanizing production.

Intervene in a Similar Way with Different Assumptions

The work of Dent (1999) will serve as an example of those advocating that complexity science OD practitioners should intervene in organizations by performing similar types of tasks as those traditionally performed, but do so using a different set of assumptions. Dent defines complexity science as "an approach to research, study, and perspective which makes the philosophical assumptions of the emerging worldview (EWV) (these include holism, perspectival observation, mutual causation, relationship as unit of analysis, and others [described below]" (p. 5). Dent argues that traditional OD, and much of science, rests upon the philosophical assumptions that comprise the traditional worldview (TWV). These include objective observation, linear

causation, reductionism, and other assumptions often listed in narrow definitions of the scientific method. Perhaps the most useful mental model for thinking about the TWV and EWV is that of a polarity (Johnson, 1992). Polarities are sets of interdependent opposites.

How OD practitioners conduct an intervention greatly depends on the assumptions they make. Training, for example, can be vastly different if TWV or EWV assumptions are made. Trainers making TWV assumptions set themselves up on a pedestal in the position of imparting knowledge to the students. EWV trainers may see their roles as primarily creating a fertile environment in which learning, that is largely self-directed, occurs. Appreciative inquiry (AI) is an approach to problem solving which shows that similar work, using different assumptions, can be vastly dissimilar. Central to AI is the assumption of perspectival observation - that inquirers alter the phenomena under observation in the way that they inquire (Cooperrider 1990). This is fundamentally opposite the traditional scientific assumption that inquiry takes place in an objective manner at an arms-length distance, allegedly unbiased by the observer. Steeped in traditional OD practice is the problem-solving mindset. Typical OD textbooks suggest a number of approaches which advocate determining the gap in performance and taking steps to bring the current situation up to the expected or ideal situation. The emphasis is on what is wrong and how to fix it.

AI focuses on what is right in an organization rather than what is wrong. A typical data collection interview would focus primarily on what issues an interviewee has, what problems he sees, what improvement ideas he has, and so forth. An AI interview focuses on what is working, identification and storytelling about the life-giving forces, and imagining what might be (Bushe, 1995). If an organization has a 94% customer satisfaction rating, and they want to improve it, traditional OD interventions would center on gathering data from the 6% who are unsatisfied, assuming that if their issues can be addressed, then customer satisfaction would be enhanced. An AI intervention would center on the 94% who are satisfied, find out what has satisfied them, and have the organization make efforts to be consistent in delivering that and improving it.

Intervene by Creating Far From Equilibrium (FFE) Conditions

As mentioned above, self-organization is central to each of the complexity perspectives on OD. It is perhaps most greatly emphasized in the work of Goldstein (1994). Goldstein finds several common OD practices unhelpful. He questions the pillars of traditional change management - extensive planning and design of the change effort, precise assessment of the current situation, accurate anticipation of resistance to change, and adeptness at overcoming resistance - are all predicated on assumptions that rarely hold in situations of organizational change. Moreover, this classic success strategy may not only be unhelpful, it may make the situation even worse.

Most common approaches to change can be categorized as either the overt use of management pressure or the gentler, participative approaches advocated by OD. Both, however, are hierarchically driven. The humorous example of the CEO who decides his organization will implement Deming's TQM by telling his top team, "either you find a way to drive out fear in this organization or your replacement will!" incorporates parts of both approaches.

In order for an organization to grow and develop, it must enter into a state of FFE conditions. Goldstein (1994) sees the challenge of organizations as "not how to pressure a system to change, but how to unleash the system's self-organizing potential to meet a challenge" (p. 9). The work of change agents then becomes identifying equilibrium attractors and facilitating FFE conditions that will allow for system transformation. Equilibrium attractors are often discovered by the lack of new information entering an organizational process. Many techniques have been developed to increase the introduction of information available to a system concerning its own functioning and thereby generating FFE conditions. Goldstein advocates techniques such as cultural difference questioning and purpose contrasting. The intent is to amplify differences in information which releases the nonlinearity inherent within an organizational system.

Intervene in the Shadow Organization

The work of Shaw (1997) will serve as an example of those advocating that complexity science OD practitioners should intervene in the shadow organization. Shaw accepts Stacey's (1996) argument that "self-organizing processes are to be found primarily in an organization's shadow system - that is the complex web of interactions in which social, covert political and psycho-dynamic systems coexist in tension with the legitimate system" (Shaw, 1997, p. 235). In the traditional conceptualization, organizations are seen as open systems in dynamic equilibrium with their environments. The informal organization, then, is seen as working at cross purposes to the formal organization. Shaw believes that conceptualizing organizations as complex adaptive systems is a much more powerful perspective.

Shaw provides a detailed example of how she and her colleagues intervened in a municipality pseudo-named "Boroughsville." Shaw notes that if an organization is an open system in dynamic equilibrium, then the natural activities for an OD consultant are to encourage participative management, improve teamwork and communication, and manage change and transition. None of these activities was central to the work in Boroughsville. Shaw and colleagues did do some work with the formal organization, but for purposes of establishing relationships, not collecting data. The primary focus of the work was to follow where connections led, create venues for employees to hear and tell their stories, and to experience being adrift within the system.

Shaw provides a fascinating example of efforts to thwart self-organizing activities, intentionally or otherwise. In a discussion at one of the open forums, a low-ranking employee related an incident of problems she was having with her management. A much higher-ranking executive in the room took great interest in the story and engaged in actions to validate the story and improve the situation. This activity, though, disturbed the managers in intervening levels. They and their colleagues felt undermined and instigated several formal actions (union action, letter to the CEO, etc.) to put a stop to the open forums. At the next meeting, the consultants were able to explain to the much larger group that gathered that the self-organizing activity represented amplifying feedback loops. The actions to squelch the activity were all equilibrium-seeking practices that the organization had long institutionalized. Framed in these terms, the several executives and others in the room were able to see that their control orientation was too heavy handed, and they allowed the self-organizing activities to continue.

Final Thoughts on Complexity Science OD Interventions

Over time, we can expect to see a broadening and deepening of the elements described in this paper. The commonalities may increase and become more unified. The classification taxonomy may expand. There may be a greater use of ecosystem metaphors. Rather than thinking of OD work in terms of interventions - which connote a controlled, coming-between activity - the field may adopt a term such as *cultivation* which implies an ongoing nourishing of desired change.

Finally, an example of a new category for the taxonomy might be "working with different parts of the system." Self-organization requires some type of boundary or container to keep dynamics from flying off into chaos. Many OD interventions consistent with complexity science are drawing boundaries in different places. Many large-group interventions, for example, are including customers within the boundaries, and they are attempting to deal with the whole system or a large portion of it. Complexity science may result in a seismic shift in OD from dealing primarily at the individual and group levels to the group and organization levels.

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