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COMPLEXITY, CONNECTIONS, AND SOUL-WORK

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Organizational theory and personal behaviors are both shaped by contemporary thinking and theories regarding spirituality, history, and the order, shape, and direction of modern culture. Complexity theory, discussed in this article, offers some helpful insights into appreciating the relationships and connections often overlooked in today's fast-paced world.

INTRODUCTION

If there is any doubt about the intertwining of science and spirituality in current thought, it should be dispelled by a headline in *The New York Times Science* section, “Labs Close in on the ‘God Particle’” (Browne, 1999). The article described the newest search for Higgs boson at the European Organization for Nuclear Research (CERN) laboratories in Switzerland. Given that it is believed that the interactions of Higgs boson, an ephemeral particle, are responsible for giving mass to all matter, it is easy to see why this leads to the imaginative title of “God Particle.” It is a metaphoric extension of the ideas of creation.

But metaphor is multi-directional. Just as spirituality becomes the metaphor for science, so images from the physical sciences serve as metaphors for human actions and interactions. And as the metaphors are explored and examined, it appears more and more likely that they are accurate portrayals of the workings of all complex organisms—from organizations to individuals. It is hoped that the exploration of ideas from the physical sciences, particularly complexity theory, can help us understand how we make sense of the swirling changes in which we live and work.

Complexity theory is one of several theoretical orientations that have come out of the work of scientists and others since the late 20th century. Since that time, many supposedly fixed truths have been thrown into question not by those who simply questioned the truths, but by those who have gone beyond doubting the individual beliefs to doubting the very system of thought in which the beliefs were constructed. This has happened in areas of

inquiry as varied as literary criticism, educational curriculum revision, census taking, and historiography.

The theory of relativity and subsequent discoveries in physics overturned the previous truth of Newtonian or classic physics as certainly as Copernicus and Galileo overthrew the belief system of the ancients. In the physical sciences, understandings of the largest systems—chaos and complexity theories—and of the smallest systems—quantum mechanics—have changed dramatically. These changes in understanding include the following: (a) from a search for specificity to an acceptance of uncertainty; (b) from a search for predictability to an acceptance of non-local causes; (c) from a science of objective, controlled experimentation to an acceptance of the subjective link between the observer and the observed; (d) from a belief in linear cause and effect to a perspective of multiple, non-replicable paths; (e) from a model of equilibrium to a concept of self-organizing structures; and (f) from a view of life as reducible, separate entities to an understanding of a complex, interconnected universe.

Complexity theory explains actions and reactions in dynamic, complex systems, systems that seem at first glance to operate in random ways. The most common example of complexity theory is the weather and what has come to be known as the “butterfly effect.” Lorenz (1993) wanted to find better methods for predicting the weather. What he found was that small differences in initial conditions could magnify ultimate effects. He asked a now familiar question: Can a butterfly fluttering its wings in the Amazon produce a tornado in Toronto? Because there is no straight line of cause and effect between the distant butterfly and the local weather, prediction of today’s weather is rarely precise and sometimes completely wrong despite the general predictability that spring will follow winter and autumn will follow summer.

In complex systems, minuscule changes in circumstance bring about large changes in outcome behaviors. “Place a cork upstream and it will travel what appears to be a random path. Repeat the experiment, placing the cork as close as humanly possible to the same starting position, and it will follow a completely different trajectory” (Johnson, 1995, p. 92). The behaviors are characterized as nonlinear because the change in the input does not produce an equal change in the output. There is no clear line of relationship between the cause and the effect. One explanation for the seemingly random events of chaotically behaving systems is in strange attractors, which are in themselves mathematical equations developed by pattern-seeking human minds.

Complexity theory also contradicts earlier theoretical propositions that all systems seek equilibrium and in their quest lose energy, the theory of entropy. In contrast to this belief, Prigogine and Stengers (1984) pointed out that

Stability is no longer the consequence of the general law of physics. In some cases...certain fluctuations, instead of regression, may be amplified and invade the entire system, compelling it to evolve toward a new regime that may be qualitatively quite different from the stationary states corresponding to minimum entropy production. (p. 141)

Complex systems, in other words, continually regenerate themselves. As they build in complexity, they are moving toward dissolution, but as they move toward dissolution, they are moving toward greater cohesiveness.

The ultimate change in perspective draws together quantum mechanics and complexity theory, as Prigogine and Stengers (1997) have done in their work. When all of the ideas come together, they produce the concept of a complex, interconnected universe. Bronowski (1978) in an introduction to a series of lectures to the scientific community said, "I believe that the world is totally connected: that is to say that there are no events anywhere in the universe which are not tied to every other event in the universe" (p. 58).

How do people generally relate to the idea of interconnectedness? Much of the belief in many religions is based on the belief in connections that cannot be seen. In day-to-day life, altruistic acts reflect a sense of connection between people who may have no apparent relationship to one another. When unexpected events that have meaning in one's life occur without seeming cause or effect, synchronicity may be offered as an alternative explanation to coincidence.

This paper (a) applies the principles of dynamic systems to the contemporary workplace, (b) discusses career development in terms of dynamic systems, (c) develops conceptual links among the ideas of dynamic systems, career development and spirituality, and (d) provides a series of implications for practitioners.

DYNAMIC SYSTEMS AND CHANGES IN ORGANIZATIONAL PERSPECTIVES

The changes in scientific perspective have direct parallels in the understanding of how organizations function and in expectations of individuals within those organizations. By analogy, one can say there are Newtonian organizations—those that operate out of older paradigms or models—and emergent organizations—those whose leaders recognize the power of the new scientific principles. These principles are translated into six changes in perception of how organizations function: (a) from ordered, hierarchical, compartmentalized organizations to community- or team-based functioning; (b) from an emphasis on stability to the acceptance of change as a constant; (c) from the

development of elaborate change models to a recognition of the potential impact of small changes; (d) from an assembly line image to the valuing of diversity; (e) from controlled, periodic information delivery to shared, immediate information flow; (f) from a singular world view to the awareness of complementarity; and (g) from operation under unexamined rules to values-based policies and practices.

In the introduction to this paper, connectedness was identified as the culminating scientific principle. In the emergent organization, this is evident in the ebb and flow of team-based work as compared to the ordered, hierarchical, compartmentalized structure of the Newtonian organization. In the newest organizations, one can see not only formal, fairly stable teams but teams that form as work requirements dictate and are loose arrangements developed for these ad hoc purposes.

Not only is there an awareness of connectedness within the organization, but the singular world view of us and them—the company and the customers or clients—has been replaced with an awareness of complementarity. Complementarity is the holistic view of what had previously been seen as opposites. In a world view embracing complementarity, there is no separation of self and other. Each seemingly opposite aspect of the complementary pair or group only exists meaningfully in the context of the other. While the scientific bases of this belief are only now being discovered, the concept of complementarity is not new. More than 2,500 years ago, Lao Tsu (1989) wrote:

Thirty spokes share the wheel's hub;
It is the center hole that makes it useful.
Shape clay into a vessel;
It is the space within that makes it useful. (p. 13)

Today's customer—or even rival—is tomorrow's partner.

Complexity theory, with its emphasis on self-organizing structures and the oversized potential of small events, also changes organizational perspective. Instead of seeking stability as the *sine qua non*, change is expected. And when change is desired, leaders are aware of the potential of small changes to have large effects, thereby vitiating the power of the elaborate change models formerly in place (Hock, 1999).

This power of small changes also affects the very way in which sameness is valued. From a search for replicability in products and an assembly line image, there is stress on the development of different solutions for individual problems. So product lines of software and hardware companies explode with variations to meet the needs of a diverse marketplace. And organiza-

tions that value diversity in their work force are as successful as the American pop music scene in creating and reaching markets.

The shift from the objective to the subjective view translates organizationally in two ways. First, because of the need to involve virtually all workers in decision making in their fields, the former use of controlled, periodic delivery of information has changed to a demand for immediate and widely shared information. The wired business travelers with their beepers, cell phones, palm pilots, and laptops are walking illustrations of this change. Second, the unexamined rules of the time-clock organization have shifted to values-based operations that involve not only management but all workers.

Importantly, the view of workers has changed. The old view of workers as driven solely by economic motivations—rational economic “man”—is slowly changing to a view of workers with complex, multiple motivations. The Cartesian view of the duality of reason and emotion, mind and body is giving way to an understanding of the essential interplay of all aspects of each human being. There is an understanding that organizations do better when they recognize that people seek balanced lives rather than expecting people to compartmentalize work and play. Hewlett Packard set a policy of asking employees to set leisure goals as well as productivity goals. Ernst & Young, one of the Big Five accounting firms, initiated an emphasis on “empathy and humanity” and other companies have been following suit with efforts to increase worker happiness, or at least decrease burnout (Kaufman, 1999; Mitroff & Denton, 1999).

DYNAMIC SYSTEMS AND THE NATURE OF CAREER DEVELOPMENT

Living in the non-deterministic world of complexity is confusing to humans. Humans look for patterns, often yearn for certainty. Operating in organizations that accept the new paradigms adds to the confusion. Given the actuality of life and the predisposition to seek order, individuals often experience their own careers as illogical, having no clear relationships between actions and reactions. They believe there is some sequence of work roles that they are expected to follow. They believe that others make career decisions based on logical links of past experience, and that others expect this logic of them as well. But that is not what most people experience. That is why many people keep the real stories of their careers secret. They keep to themselves the strange links between events, links they describe as “just luck” or coincidence. In truth, it is the secret career stories that reveal the reality. Career paths are characterized by unexplained trajectories and apparent, but not actual, disconnections. Career paths include all the aspects of dynamic systems and people experience synchronicity, uncertainty, complementarity.

Since human beings are complex organisms, the principles of complexity theory are evident in their lives, in this case in their work lives or careers (Bloch, 2005; Bright & Pryor, 2005). The principles include the following elements: (a) non-recurring patterns; (b) non-linearity; (c) the potential for small changes to bring about large effects; and (d) self-regeneration.

NON-RECURRING PATTERNS

Non-recurring patterns are difficult to describe because the phrase seems to be an oxymoron. Returning to the example of the weather may help. We experience the four seasons each year and can generally predict the weather in any season. But if we look at the weather of any given date or dates over several years, we will see that it is different. Prigogine and Stengers (1997) have pointed out that points of origin do not determine trajectories. "We come to a new formulation of the laws of nature, one that is no longer built on certitudes, as in the case for deterministic laws, but rather on possibilities" (1997, p. 29). So too, people experience parts of their worklives which seem to form patterns for them but these patterns are either not explicable, or are only partially explained, in terms of the patterns of the worklives of others. Instead, the career development of each individual is a series of choices that have internal harmonics or resonances for that individual.

NON-LINEARITY

The patterns of complex systems are themselves non-linear. When they are plotted mathematically, they will not yield linear or slope equations. Instead, the patterns will each form unique figures, Mandelbrodt fractals. Mandelbrodt (1982) invented the term fractal when analyzing the difficulty of measuring a coastline. Describing the futility of trying to develop a linear measure of the coast of England with its many inlets, peninsulas, bays, and necks of land, Mandelbrodt pointed out that even if you tried to create a measure of the coast taking into account all the irregularities you could see, you would soon be faced with additional irregularities as each bay repeated, on a smaller scale, the same patterns of inlets and outcroppings of land. The term fractal describes those entities that have this characteristic of self-similarity. If you cross-section a fractal, you will see the same pattern within the cross-section as in the whole. In other words, the patterns will have self-similarity. Self-similarity refers to a characteristic of a form exhibited when a substructure resembles a superstructure in the same form. This is also known as nested similarity: "similar structures that repeat at different scales of generalization" (Dimitrov, 1998). The importance of the concept of nested similarity is in the interdependence that this reveals. So despite the differences

among people, each person's career development pattern makes sense in terms of that entire person's work life, the specific dynamics of the environment in which it occurred, and the internal dynamics of that person.

SMALL CHANGES

Small changes bring about large effects. Within the non-recurring, non-linear patterns, small changes may be seen to bring about large effects. This phenomenon, known as "sensitive dependence," is a quality of all complex systems. No matter how similar the starting states of dynamic systems, one cannot be sure that they will not "drift apart" after a while (Banks, 2000). When the patterns of a career are examined in depth, it will often appear that links that at first seemed determining actions within a career were not the causes of later events or were not wholly the causes. Just as the butterfly is the metaphoric strange attractor in weather systems so there are strange attractors that influence each person's career. Often small, apparently random associations lead to major career shifts. These attractors may be enduring, such as a search for challenge, or one of a kind, such as a chance social meeting.

SELF-REGENERATION

The nature of dynamic systems described thus far might lead to the conclusion that they are unstable. Yet they do not spin apart. Instead, they have within them a force that allows them to remain organized, and when faced with dissolution to emerge in new patterns drawing upon both external and internal energy.

The maintenance of organization in nature is not—and cannot be—achieved by central management; order can only be maintained by self-organization. Self-organizing systems allow adaptation to the prevailing environment, i.e., they react to changes in the environment with a thermodynamic response which makes the systems extraordinarily flexible and robust again against perturbations from outside conditions. We want to point out the superiority of self-organizing systems over conventional human technology which carefully avoids complexity and hierarchically manages nearly all technical processes. (Briebacher, Nicolis, & Schuster as cited in Prigogine & Stengers, 1997, p. 71)

People continually reinvent their worklives moving freely among, within, and outside the macro-cycles and roles previously identified as the anticipated career paths of "healthy" individuals.

DYNAMIC SYSTEMS, SPIRITUALITY, AND CAREER DEVELOPMENT

Dynamic systems exist only as part of nested inseparability or connectedness. In other words, there are no living systems without interdependence. Spirituality is the experience of this unity. We may envision this as a connection to something larger than ourselves or to something deeper within ourselves, but we know it is beyond the material. At the same time it is the material. And the something larger than ourselves, deeper within ourselves, and indeed, ourselves, are all “it” because “it” is the connection, the sense of oneness.

The search for connection, for oneness, is the essence of all spiritual beliefs and is expressed in many religions. In Christianity, the doctrine of the Trinity, the Father, the Son, and the Holy Spirit is also the worship of One. This is known as a Mystery: three Persons, one God. In Judaism, a central prayer begins, “Hear O Israel, the Lord our God, the Lord is One.” Some people believe that this prayer was written to help the early Jews distinguish themselves from people who believed in many gods. However another interpretation, one that is consistent with the emphasis generally placed on the word one in meditation on this prayer, is that God equals One. In the Kabbalah, this image of oneness is in the ever-repeated image of each of us as a mustard seed in a sphere that is a mustard seed in a sphere that is in turn a mustard seed in the sphere of the moon (Matt, 1996). The same sense of one is reflected in Hanh’s (1996) lotus flower within each petal of a lotus flower. And, of course, these images are themselves the mental fractals of complexity theory.

Connectedness at work has been described as “flow” by the psychologist Csikszentmihalyi (1990). “‘Flow’ is the way people describe their state of mind when consciousness is harmoniously ordered and they want to pursue whatever they are doing for its own sake” (p. 6). The American poet Hall (1993) described a sense of being called to the work, of a poem “beckoning joyously,” of “absorbedness” filling the self from “footsole to skulltop” (p. 41). In *Zen and the Art of Motorcycle Maintenance*, Pirsig (1984) wrote,

If you want to build a factory, or fix a motorcycle, or set a nation right without getting stuck, then classical, structured, dualistic subject-object knowledge, although necessary, isn’t enough. You have to have some feeling for the quality of the work. You have to have a sense of what’s good. That is what carries you forward. (p. 284)

However, the spirituality that characterizes the search for connectedness goes beyond the experience of “flow.” Gallup and Jones (2000) found that

more than three fourths of Americans feel the need to experience spiritual growth in their lives. In 1994, this was true of only one fifth of Americans. Wuthnow (1998) has described contemporary spirituality as a “seeking spirituality,” one in which people “increasingly negotiate among competing glimpses of the sacred, seeking practical knowledge and practical wisdom” (p. 3). In addition, Mitroff and Denton (1999) reported studies in the United States and Australia that show the power of spirituality in work situations: Employees in companies that they consider to be spiritual are more productive and less likely to leave. Lips-Weirsmas (2002) found that spiritually oriented workers would seek job transitions if they believed they could not express their spirituality which included developing and expressing oneself, finding unity with others, and serving others in the workplace. In *Modern Man in Search of a Soul*, Jung (1933) described “the general neurosis of our time,” as a feeling of “senselessness and emptiness” encapsulated in the expression “I am stuck” (p. 61). In search of solutions to the problems of “being stuck” and with a belief in the power of spirituality to deal with this dilemma, Bloch and Richmond (1997) brought together a group of commissioned writings to explore the connections between spirit and work from a number of theoretical and practical perspectives.

From this initial exploration, Bloch and Richmond (1997) moved to the development of practical approaches to help individuals experience the sense of connectedness. In their second work, *SoulWork, Finding the Work You Love, Loving the Work You Have*, Bloch and Richmond (2007) posited seven connectors between spirit and work, as follows:

- *Change*: Being open to change in yourself and the world around you;
- *Balance*: Achieving balance among the activities of your life such as work, leisure, learning, and family relationships as well as balance between the old and new;
- *Energy*: Feeling that you always have enough energy to do what you want to do;
- *Community*: Working as a member of a team or community of workers;
- *Calling*: Believing that you are called to the work you do by your particular mix of talents, interests, and values;
- *Harmony*: Working in a setting that harmonizes with your talents, interests, and values; and
- *Unity*: Believing that the work you do has a purpose beyond earning money and in some way serves others.

The post-modern theory of spirituality and work is thus woven of the three threads of complexity, connections, and soul-work. Complexity theory

provides a basis for understanding the complexity of human worklives. Further it leads inexorably to the conclusion that there is an underlying unity, the unity, or connection, that is the essence of spirituality. Soul-work provides the opportunity to help individuals experience the unity through a pattern of connectors so that their worklives in themselves become enriched by and expressions of their spirituality.

IMPLICATIONS FOR PRACTICE

1. In working with individuals, understand that the opportunity for creativity occurs at the transition points. Everything depends on (a) recognizing transitions, (b) recognizing attractors of the past, and (c) moving the individual to new patterns, where desirable.
2. Classic career development theories and related instruments and methodologies of structure and processes explain parts of the whole but are not additive. The place to begin in practice is with the whole.
3. Mosca (1995) suggested that narrative and play are the most effective methods for helping clients and students seek happiness. He defined happiness as “the potential to be totally consonant with what is as it unfolds....It is allowing oneself to choose to go with the ontogenetic or intuitive drift” (p. 181). Narrative approaches are certainly not new to career development. As Savickas (1997) wrote, “The empirical tradition of rational career counseling does not encompass complex human qualities such as spirit, consciousness, and purpose. Science examines parts; personal stories explain the whole” (p. 9).
4. Listen to the stories to help individuals find the links and nodes of their networks. Use storytelling to help clients identify who they are or who they want to be—not just their occupational titles—and where they fit in the larger picture.
5. Knowing that change is inevitable but uncomfortable, use the concepts of complexity theory to help reduce client discomfort. Help clients recognize their transferable skills, whether learned at work or in formal education, as a way of reducing the discomfort of complexity.
6. Help clients understand the power of small changes and help them identify those they might attempt.
7. Explore how individual careers are kept alive—by attractors that allow for growth or attractors that stifle growth. Career interests, career anchors, social and socioeconomic constraints, habits of mind, and other internal and external factors are examples of possible attractors. Identify our own patterns and dynamics and how they influence our work.
8. Help clients and students appropriately assess the degree of risk that is appropriate during transitions.

9. Help clients who want to rush off the edge of complexity to see where, in the past, the rushing itself has been a non-productive attractor and led to non-satisfying outcomes. Recognize our own discomfort at the edge of complexity and do not rush clients away from the edge of complexity.

CONCLUSION

What is the question we are answering? It is the same question asked throughout the ages: How do we humans make sense of our own lives and of the world in which we live? Our profession of counselors and educators is particularly interested in people's worklives or careers. But as soon as we begin to define worklife or career we realize that we cannot isolate that aspect of anyone's life from every other part of life. The ideas explored in this article present an effort at articulating a view that embraces the unity and diversity of each person's life experience. In "Pied Beauty," Hopkins (1918) sings in praise of the diversity-within-unity of life.

Glory be to God for dappled things—
 For skies of couple-colour as a brindled cow;
 For rose-moles all in stipple upon trout that swim;
 Fresh-firecoal chestnut falls; finches' wings;
 Landscape plotted and pieced—fold, fallow and plough;
 And all trades, their gear and tackle and trim. (p. 30)

The rhythms of Hopkins capture the swirl, the change, the contradiction of patterns that exist and yet differ. And, reading the poem, we feel why Hopkins connects this dynamism and color of life to something beyond or greater than the individual, whether we see that something as the traditional all-powerful anthropomorphic figure or dynamic ever-creating energies.

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