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Career Counseling at the Confluence of Complexity Science and New Career

Edward N. Drodge

Royal Canadian Mounted Police
eMail: edward.drodge@rcmp-grc.gc.ca

The complexity science metaphor provides an opportunity for imaginative innovations in the field of career counseling. Chaos, complexity, and self-organization are particularly important in light of the demands placed on individuals confronting the "new career" culture. This article describes the key conceptual structures of the complexity science metaphor for counseling, in general, and elaborates on the connections between those conceptual structures for the field of career counseling practice and theory at the dawn of the new career era.

New ways of looking at naturalistic and social phenomena provided by chaos theory, complexity theory, and self-organization—"complexity science" (Mathews, White, and Long, 1999), hold great promise for the field of career development. It is important to state at the outset that this paper is not proposing another theory of career development based on complexity science; there are currently many excellent models with a long history of research (See, Brown, Brooks and Associates, 1996). Nevertheless, complexity science does provide a powerful metaphor for understanding both human career development and the development of the career concept, and offers important pragmatic insights about evolving issues at the intersection of these two systems.

For example, an important discovery derived from complexity science is that unpredictability is the status quo for all complex systems including human ones. As the Nobel laureate physicist, Murray Gell-Mann noted, «The most obvious effect of chaos is to enhance enormously the effect of ignorance of prior outcomes...» (1999: 6). A key question arising from such an acknowledgement is what complexity science offers by way of descriptive and prescriptive information in the domain of career development beyond that provided by current methodological and ontological models. Complexity science gives us cause to reflect on the prevailing models of theory and practice in the field of career development, particularly as to how those models might be based on the false premises of stability, predictability, and linearity. This is a significant theme throughout the present paper.

Concurrent with the emergence of complexity science we have a "new career" (Arnold and Jackson, 1997) perspective that compels career counselors to examine critically the prevailing models of prac-

tice. Complexity science and new career share metaphorical concepts such as deterministic non-linearity, bifurcation, complexity, and self-organization, therefore, understanding the implications of one can assist in shaping the application of the other. By understanding how unpredictable events occur and function in naturalistic systems, career counselors, for example, can normalize a client's experiencing of uncertainty in the career system and, furthermore, assist the client to more effectively cope with future uncertainty through developing effective responses to present conditions. Normalizing clients' experiences of anxiety and confusion is an important counseling activity that entails providing additional information and empirical data, describing the affective responses that the client might experience, and outlining some sense of duration (timeframe) for the current situation. The underlying message to the client is "you are not alone in having such experiences about career dislocations". In short, complexity science is a rich metaphor with the potential of providing a fresh perspective on the dynamics of the career development system and, ultimately, better meeting the needs of career counseling clients. This is another key theme that will be discussed in the present paper.

Metaphor is valuable to a culture because it provides the conceptual lenses that allow the culture to understand itself, represent its activities to the larger world, and create new metaphors that sustain the life of the culture. Academic endeavor in all disciplines hinges on the ability to create new metaphors to explain phenomena. In the case of career development, particularly career counseling, it is difficult to jettison ways of knowing that are fundamentally a part of that culture in order to permit genuinely fresh ways of examining the counseling enterprise. On the other hand, uncritical acceptance of a new metaphor may foster values incompatible with the goals of career counseling, or may recycle beliefs that the profession had previously sought to distance itself from. It is difficult to predict what undesirable effects might creep into career counseling practice because of uncritical acquiescence to a theory. However, lacunae in clinical practice and research are only evident when another metaphor creates the ground against which the discipline of career counseling can be more clearly examined. In this case, complexity science has drawn attention to the point that the more varied and numerous the relationships between entities (cells, molecules, individuals), the more likely that a new, more functional pattern of existence might develop. While this point may have been tacitly understood in career development, greater knowledge about the nature of those interactions has important implications for the career consultant working with individuals navigating the new career. This is the final broad theme to be elaborated in the paper at hand.

The metaphorical overlap between complexity science and new career may be translated to the practical work of career counselors working with a range of client concerns. And while this paper provides a basic sketch of such activities for the practice of career counseling, these prescriptions are not particularly novel, rather they are an attempt to

bridge the gap between new career and complexity science. The main points are:

- the certainty of uncertainty in the new career;
- the necessity of personal and skills flexibility;
- interpersonal competence;
- lifelong learning;
- critical self-reflection.

The work of Hall and his colleagues (Hall, 1996b; Hall and Moss, 1998) will be central to the discussion of new career because of its emphasis on the altered psychological context of contemporary work life, particularly its relational perspective (fostering a culture of interpersonal care in organizations) on career development. DeFillippi and Arthur's (1994) discussion of the "boundaryless career" also informs the new career theme explored in this paper. Finally, Lewin and Regine's (2000) compelling portrayal of business organizations that have embraced complexity science offers insights about the pressures individuals must confront within organizations that have adapted to the new business climate. The narratives derived from their work provide a background tapestry for the figural work of the career consultant engaged with the individuals at the heart of all organizations.

Much of the ensuing discussion about career counseling illustrates how principles of nonlinear dynamics might be fruitful for the field of career development. This should not be misunderstood as an attempt to create yet another paradigm, rather as one of many «pragmatic and progressive approaches to experience that would enable us to learn to transform our deep-seated and emotional grasping after a ground» (Varela, Thompson, and Rosch, 1991). At the confluence of complexity science and new career the instability of the "ground" is something to be utilized to the benefit of career development, and not to be naively avoided and feared.

NEW CAREER

The phrase, "new career", was used by Arnold and Jackson (1997) in a symposium on the challenges facing career counselors in light of the rapid changes occurring in the technological, economic, and information domains of Western society. It is important to underscore the point that the so-called new career is not a global phenomenon; most of the world's population continues to live in severe economic hardship. And, of course, there are many traditional societies for whom the notion of a new career is meaningless and there is little economic hardship. From a career development perspective, individuals in most so-called "developing nations" struggle with more fundamental issues such as finding work at all. However, from an organizational standpoint, the psychological contract, defined as the complex relationship of benefits, contributions, and satisfaction between employer and employee, has been altered in all parts of the world as a result of the shift in global economics. As a result, and the point being raised by this brief interlude, is that this paper is necessarily limited by the cultural connota-

tions of using a concept such as new career because it does not mean the same thing to all individuals in all parts of the world.

The new career defies precise conceptualization no matter what the cultural context. Nevertheless, one can point to the broadening of the term "career" to include those aspects of self that shape, and are shaped by, the activities one engages in during the process of living in the world. In this sense, then, career is no longer bound exclusively to traditional notions about work-life that connote a circumscribed set of activities that one engages in for a great portion of one's life. Nor does one's career largely define one's identity, rather it is the other way around, developing a clearer understanding of one's identity is seen to be central in shaping one's career. Furthermore, the phrase new career connotes a shift in those traditions about work toward a radically altered career vision that includes:

- more frequent job changes;
- greater uncertainty about work opportunities and job longevity;
- more demands on individual skills, particularly problem-solving and creativity;
- more intense involvement in team-building and team work;
- more time committed to personal and skill development through continuing education.

The "protean career" (Hall, 1996b) is a useful starting point in defining the changed psychological contract that exists in the new career: «The protean career is a process which the person, not the organization, is managing. It consists of all of the person's varied experiences in education, training, work in several organizations, changes in occupational field, etc. The protean person's own personal choices and search for self-fulfillment are the unifying or integrative elements in his or her life. The criterion of success is internal (psychological success), not external» (Hall and Mirvis, 1996: 20).

Clearly, this holistic view of the empowered individual is consonant with the systems, narrative, and constructivist positions that have emerged in the social sciences within the past decade. And central to all of these perspectives is the relational dimension, improving interpersonal relationships and personal meaningfulness within organizations, that occupies center stage in Hall's discussion of the organizational responsibilities and career consulting implications of the new career. The critical issue for career counselors is, How do we assist individuals to make the transition to this position where self-knowledge, relational development, and empowerment are integrated into one's career development?

In terms of the organizational culture, Hall and Moss (1998) have summarized the fallout of downsizing, divestiture, and the global economy by identifying three stages in the psychological contracts that companies have with their employees. Companies are either in current trauma, are trauma survivors, or have evolved to a state where continuous learning is the status quo. Furthermore, in research cited by Hall and Moss (1998), they contend that it takes about seven years for the new career relationship between employer and employees to reach this third stage of adjustment where continuous learning and the relational

aspects of the career culture are deeply entrenched. Career counselors have an important role to play in this period of adjustment as Hall and Mirvis (1996) noted.

The emergence of a new career perspective should not be interpreted as a signal for the rejection of existing models of career development and career counseling. On the contrary, the perspective offered by self-organization and complexity studies makes it clear that diversity is necessary for change and improvement to systems. In this sense, both complexity science and the new career perspective share much with the constructivist position in counseling that emphasizes multiple ways of knowing, the centrality of narrative, and the importance of observing and addressing patterns of relating. Indeed, constructivism in psychotherapy is addressed (Mahoney and Moes, 1997) in a recent American Psychological Association book on the topic of chaos theory and psychology (Masterpasqua and Perna, 1997). However, unlike the position taken by many constructivists to reject previously dominant paradigms within counseling, complexity science implies embracing any and all metaphors for understanding career phenomena and their concomitant approaches in working with individuals confronting new career difficulties.

Hall (1996b) has presented a relational theory of career development grounded in the premise that an individual's career in the contemporary context must encompass continuous learning, flexibility, as well as personal meaningfulness and connection with the larger community. This "protean career" (Hall and Mirvis, 1996) has taken some time to be realized by many individuals because the shift in the nature of career has occurred rapidly and there is a psychological lag in the human response to this altered reality. The unpredictability and complexity of the new career may present a daunting task for many individuals resulting in a sense of helplessness that career planning is impossible. Despite this, neither counselors nor clients seeking career guidance should assume that unpredictability is an excuse for apathy and inaction where one's career is concerned. On the contrary, I contend that complexity science can be an antidote to meaninglessness and a source of empowerment in one's career. In the remainder of the paper I present what I take to be the key lessons to be learned from chaos and complexity theory, and briefly describe the implications for career counselors in the new career climate.

NETWORKS OF RELATIONSHIPS

Complexity science suggests increasing the number of connections and amount of energy invested in our interpersonal relationships so that we increase the chances of something new and better emerging. That "something new and better" inevitably implicates the career domain by virtue of the importance we ascribe to our career life. In discussing the self-organization of life on earth, Goodwin (1994: 174) said, «Life doesn't need DNA to get started; it needs a rich network of facilitating relationships». Career counseling should not be considered as a de-contextualized activity separate from the personal and interpersonal world of clients. The new career more aptly includes the

entire life domain of individuals, therefore career counseling can no longer simply focus on work life. In particular, career counseling should more directly assist clients to attend to their interpersonal relations because the new career places greater demands on the ability to work closely with others in a small group in a facilitative manner.

Insight from Kauffman's (1995) work on complexity is valuable in this regard for a number of reasons. For instance, chaos exists when there are a large number of functional units sparsely connected to each other. By increasing the number of connections between each unit, order was observed to develop. For social science there are a couple of important points to be made based on this observation. First of all, creativity is born out of chaos. That is, when individuals interact with others for a period of time there is greater opportunity for adaptation and learning to occur. However, few interactions with fewer individuals inhibit the chances that the individual will change. The ordered regime that the individual resides in will be preserved.

People often seek career counseling when the ordered regime in which they live no longer feels satisfying. One task for a career counselor, then, might be to assist with the development of interpersonal skills so that the individual is more capable of social interaction with people from diverse backgrounds with diverse interests and personalities on a variety of new tasks. This personal development process might be accomplished in the context of group counseling, attending workshops, seeking retraining or educational upgrading, or simply socializing with others in a new activity. The basic issue is to encourage greater social interaction in an attempt to trigger some new ways of engaging with the social sphere. The more varied and numerous the social relationships between individuals, the greater the chance that a new, more functional pattern of existence might develop. As constructivists Mahoney and Moes have suggested, «At many levels, research indicates that variability in activity is at least a prerequisite to change, and often an integral element in the creative solutions or expressions that may emerge» (Mahoney and Moes, 1997: 192). Fostering this network of relationships is not as simple as the foregoing would suggest. It presumes strong ego functioning on the part of the client to initiate and sustain the kind of interpersonal relations being indicated. In the absence of such ego strength, personal therapy as a precursor to career development activities might be warranted.

Hall (1996a: 319-320) refer to «secure bases» and «developmental sanctuaries» in discussing the career counselor as a broker. These are concepts from the object relations and attachment fields (e.g., Winnicott, 1958; Bowlby, 1969), and reflect the importance of self-reflection and self-knowledge as the bases for healthy relationships. Clearly, another important avenue for career counseling is assisting with the development of career-related relationships that are supportive and facilitative as opposed to antagonistic and competitive. The career counselor may act to stimulate the client to seek/engage in mentoring relationships or opportunities to receive/engage in coaching. More directly within an organization, a career counselor can act as a consultant to aid in the development of networks, support groups, and

team building. But all such activities are contingent upon healthy relational skills in the first instance, and this is something that personal counseling can assist with.

To summarize, counseling efforts to assist individuals in building a network of interpersonal relationships provide opportunities for learning about self and learning about career options. The kinds of counseling activities described in the foregoing section also highlight the point that there are no clearly defined boundaries between career counseling and personal counseling. In both cases there is a whole human being experiencing some dissatisfaction cognitively and emotionally that cannot be split into discrete aspects of self other than at a purely rational level. Work life and emotional life are inseparable domains of experience.

INEVITABILITY OF CHANGE AND EMBRACING UNCERTAINTY

Embracing the certainty of uncertainty seems fundamental to understanding both complexity science and new career, but this entails more than passive acceptance of a sterile phrase. It requires the dynamic struggle of counselors and clients to understand that innumerable contingencies culminate in the position that both the counselor and client find themselves in, and that there are ways of utilizing uncertainty in a constructive manner. The "assess, interpret, and match" approach widely used to address client's career choice indecision, for example, is seen to be an attempt to invoke order in a domain where disorder is the natural state of the complex system defined by person, environment, and behavior. It is far more realistic and proactive to foster an attitude of open-mindedness and experimentation in clients than to continue pigeon-holing individuals through matching clients and careers.

Business management guru Tom Peters (1987) urges people to energize their lives and careers by "re-potting" themselves every five years. Similarly, Hall (1996b) argues that individuals set short-term work goals lasting between three and five years. So, a short-term view of career is an important mindset for career counselors to adopt and to encourage in clients. This task entails valuing career indecision as a normal part of career development, not pathologizing it. The barrage of assessments frequently accompanying career counseling has the potential to fosters clients' dependence on both the counselor and the method, and to create the false belief that their career is outside and beyond their ken. Technical rationality and linearity creep into career counseling when interest inventories, aptitude tests, and personality measures take center stage in career counseling. Such practices do not stimulate clients to find meaning, connection, and community, key elements of relational theory in organizations (Hall, 1996b) that are so valuable in light of the new career.

It is important not to forget that diversity is a key element in stimulating creativity and growth. One contention made in this paper is the necessity of eclecticism. Therefore, the wholesale trashing of career assessment procedures and tools is not recommended because this would reduce the diversity of approaches that might be useful for clients.

Similarly, all theories of career development have some merit and should be used some of the time. But, no theory should be used all of the time to the exclusion of others that may have meaning for a particular client at a given moment in time. It is poor practice to delude people into believing that testing, interpreting, and matching them to a career is an infallible practice, for this entails prediction, and even extremely short-term prediction of complex systems is at best an exercise in probability. Nevertheless, finding a good fit between person and work environment is a good short-term strategy for counselors and clients to engage in. It is a misguided practice when long-term career planning is the goal because of the volatility of the contemporary work world, changing cultural beliefs about the meaning of work, and the changing needs and interests of individuals.

Career counselors often encounter clients who are terribly uncertain about their career choice, or they are experiencing an existential crisis that leaves a hole in the life they are leading. Uncertainty and meaningfulness are tightly bound. When one is certain about something then one is filled with meaning and purpose, indeed people are driven when they have such certainty. On the other hand, uncertainty leads one to seek answers and this can feel like one is constantly being fragmented into multiple selves unless one develops the key insight that uncertainty is the natural state of the world. Complexity science can play a role in developing this insight for clients that the safety net of rationality, so powerful in our traditional understanding of the career development process, is a myth.

Rational scientific thought, the product of the Enlightenment, has erroneously bestowed human thinking and action as linear, predictable, and inevitable. As a result, human thinking and action about events has come to be characterized by an avoidance of chance, and a totally negative view of contingency and unpredictability. But complexity science has revealed that rationality and linearity are human products reflecting our epistemology and not the “natural” state of living systems. Natural systems, human societies, and humans themselves are largely unpredictable and nonlinear. A philosophical shift is necessary to recognize that the natural state of human existence is precisely one of contingency and non-rationality. Without making the point sound too nihilistic, there is little point in perpetuating a client’s false belief in the rationality of the world, or that one can control all dimensions of one’s life through contrivance, as if one could control one’s career destiny simply by doing the “right” things.

Counseling, in a generic sense, has always attempted to seek out the resources that clients possess, to accentuate the strengths and possibilities in a negative turn of events in order to build coping ability and stimulate productive change. Re-framing change, even those aspects of career life such as downsizing and turnover, as positive events is an important counseling strategy. Viewing forced changes in one’s career as a negative event is energy wasting and counter-intuitive given the body of evidence from chaos and complexity theory that all physical and chemical systems are in a state of perpetual flux in response to the smallest change in conditions. Why should something as complex

as one's career life be immune from similar changes in conditions? It is far more productive to accept the natural uncertainty prevailing in the world and to examine one's personal resources (interpersonal skills, network, work skills, knowledge) that allow one to move forward with one's career. What is different here is the emphasis on altering the mind-set, a subtle attempt at a philosophical shift about career development, indeed about the nature of the self.

DIVERSITY

A diversity of agents in a system increases the potential creativity and adaptability of that system (Goodwin, 1994; Kauffman, 1995; Lewin, 1999). The famous Belosov-Zhabotinsky reaction (Prigogine and Stengers, 1984), wherein a mixture of organic and inorganic molecules in a petri dish spontaneously generate a series of colored concentric circles that appear and disappear, is a vivid example of how a diverse array of freely interacting entities is capable of generating novelty. Similarly, diverse cellular automata generated by a computer demonstrate a complex range of emergent behavior as they interact with one another, simultaneously inhabiting a digital landscape and altering that landscape as a result of their interactive behavior. Boolean networks are another example of how increasing the number of connections between individual cells in a matrix leads to widespread, constantly changing interactions between those cells. Both feedback and feed forward are operating between individuals in such non-equilibrium systems so that there is a constant ebb and flow of conditions. If the individual cell, automata, or molecule is somehow restricted in its interactions, or isolated from others, the overall level of diversity of that particular system is decreased and there is a concomitant loss of potential creativity and adaptability.

At the human scale, diversity is apparent in the variety of social, physiological, cultural, and psychological structures and belief systems that exist. In the realm of career development, diversity is realized by the wealth of resources that are available to individuals and organizations. Self-help groups, email, cyber-meetings, conferences, training sessions, team-building, and work retreats are some of the ways that modern organizations increase the networking between individuals that can generate greater adaptability and increased creativity. The savvy career counselor is an expert in motivating clients to utilize this wealth of resources in the service of personal change. Motivated clients are empowered individuals, and empowerment is the wellspring for organizational change. Counselors, by assisting with personal motivation, goal-setting, and incremental behavioral change, can trigger further systemic change in a feedback loop. By recognizing the diverse world we live in and the potential for creativity that may be unleashed by freely interacting and engaged individuals, career counselors expand the range of career development options that exist for a motivated, goal-directed, self-learner.

Part of the counselor's work is to promote self-knowledge and the benefits of lifelong learning. The new career is synonymous with the imperative to engage in continuous upgrading and acquisition of skills

to remain competitive and adaptable in the face of prevailing changes in the world of work. Again, the knowledge gained from our understanding of pattern, self-organization, and complexity is helpful for conceptualizing the types of activities necessary in the new career. For example, it is important to trigger client change, but also to raise the level of self-awareness concerning how change occurs and the necessity of re-inventing oneself in the face of constant change. By actively participating in and experiencing the multiplicity of career paths that exist, individuals feel empowered to change the course of their lives. Thus, counselors work to encourage acting as opposed to reacting, engaging with others as an alternative to excessive self-consciousness, and stimulating the unexpected as opposed to fearing it.

Consonant with a recommended strategy proposed by Hall (1996b) concerning the realities of the new career, counselors should actively work to de-emphasize the importance previously attributed to task mastery so as to highlight the value of continuous learning. Career mobility is as valuable as peak performance for career development. That is, the personal skills associated with career mobility previously undervalued, indeed regarded negatively by organizations are now justly seen to be a vital skill set for individuals in the new career. Thus, along with promoting this psychological shift, counselors must continue to be career information specialists, assessment experts, educators, and personal counselors. All of the tools at a counselor's disposal are potentially useful in triggering personal change.

Career counselors using the knowledge derived from complexity science are aware that individuals fall easily into a preferred basin of attraction, that is, a personal space that is familiar and secure but that may be stagnant and ungratifying. Strategies that encourage risk-taking and that challenge cherished beliefs and cognitive styles are essential for kick-starting the change process.

THE EDGE OF CHAOS

The metaphor of chaos theory should not be interpreted as a call for counselors to foster chaos, in the colloquial sense, in clients as a prelude to awakening their creative impulses. This would be dangerous and unethical. Mahoney and Moes (1997: 192) suggest that «periods of destabilization are not always preludes to the emergence of a healthier and happier system». Nevertheless, in order for career development to occur it may be necessary for the person to experience some kind of instability and we know that the social, cultural, and psychological worlds we inhabit are non-equilibrium systems, hence naturally unstable. The key for counselors is to normalize this experience, to work through the difficulties via supportive counseling, and to enlist both the personal resources of the client and the resources in the environment in order to navigate the instability. Normalizing here simply means engaging the client in a rational discussion about the natural, widespread state of uncertainty in human affairs, the world, and perhaps the universe.

“At the edge of chaos” is synonymous with the openness of a system, being poised to adjust current behavior in synchrony with the environ-

ment. For career development this means being proactive and adaptable. Specific counseling strategies in light of this might assist clients to use resources that provide information about corporate goals and plans, that direct clients to advanced technology tools and courses, and to newsletters that announce conferences and supply inspirational narratives about career change and success in the new career climate. Being poised might also entail preparing an electronic resume that is posted on the Web, or becoming certified on a variety of tasks that are connected to one's skills or to one's leisure activities. Fitness landscapes (Lewin, 1999) are constantly changing as complexity science points out, and this is particularly evident in the new career. To avoid running hard just to stay in the same place (the "Red Queen effect"), it is critical that individuals take steps to get them near the edge of chaos, that fruitful zone where small changes in the landscape can be handled easily without triggering excessive stress on the system.

PATTERN

Fractals are examples of apparent chaos that contain beautiful patterns (order). The chaos is determinate, that is, a precise mathematical model generates the fractal and small perturbations during iterations of one variable will eventually lead to some pattern. But all complex systems need to run awhile for pattern to become apparent and close scrutiny needs to be paid to the details to see the shape of the pattern. Understanding the "cause" of the pattern is not particularly important; after all, it is a simple logistic equation. But knowing that a small shift in a variable can alter the pattern is a powerful metaphor for seeing the possibility of human change. Altering some aspect of one's cognitions, feelings, or behavior can trigger a cascade of changes resulting in a more positive career, a new fractal of living.

Career counselors can be helpful in reflecting the client's pattern of relating to others and to self. Of course this pattern is commonly understood as personality, the relatively enduring aspects of an individual's behavior, emotions, and thinking that may be largely unknown to that person. The counselor, then, acts as a mirror to reflect those recurring patterns that were hindering the client and to highlight any emerging patterns that may signal change. Coping with and thriving in the new career requires that individuals develop an awareness of the cultural and personal biases they bring forth. Such self-knowledge is a cornerstone of the relational perspective (Hall, 1996b) on career life and fits nicely within the general model emerging from new science that emphasizes learning about one's psychological needs, personality, interpersonal skills, and career skills as a prelude to fostering flexibility and adaptability.

Organizational systems, too, fall into basins of attraction, a preferred way of functioning (a pattern) that may suddenly be found to be rigid, unproductive, and costly in both human and financial terms. External consultants may be needed to make the unconscious, imperceptible, dysfunctional pattern of behaving recognizable to the organization as a precursor to jolting the system out of its basin. The ironic aspect of pattern is that it is typically more obvious to someone outside the sys-

tem than someone living within it, whether that system is an organization or an individual person. Career consultants have a range of tools at their disposal to make detection and reflection of patterns valid to the client, including interest inventories, values assessments, personality tests, and structured interview protocols. The key for optimal use of such instruments is the openness and motivation of the client for intervention and change.

CONCLUSION

Fundamentally, humans are complex adaptive systems living amidst other complex systems. The career system is one significant aspect of human life that is simultaneously defined by human social-cultural conduct, and is a powerful shaper of human identity and behavior. Currently, there are multiple changes occurring in the career system signifying a new pattern of human relating that poses new challenges for individuals, families, and society. The new career encompasses greater uncertainty and change than has been previously experienced by generations of workers in Western culture. There are greater pressures on individuals to enhance their professional skills and interpersonal qualities necessitating lifelong learning and continual adaptation. The global economy's pressure to improve productivity and efficiency places paradoxical demands on individuals to work more independently for longer hours, while also promoting a cooperative, small-team approach to problem-solve and produce creative solutions. The new career is also characterized by rapid technological change that cycles individuals through occupational purges and splurges. In sum, contemporary work careers are synonymous with change.

Given this state of complexity, predicting where the next boom and bust might occur, and as a result, aiding individuals who are embarking on work careers or otherwise requiring a change of career, may best be regarded as an impossible if not unwarranted exercise. Complexity science, situated in recent theoretical and research advances in mathematics, physics, biology, and chemistry, has come to be significant for the social sciences by virtue of its metaphorical resonance with human systems phenomena. Complexity science has highlighted the inevitability of change and the beauty of unpredictability. The absence of foreshadowing and plot linearity in a story does not detract from its essential wholeness, neither from its intelligibility and meaning. Indeed, just as structural and content shifts that provide new metaphors stimulate a creative surge in literature, concepts such as deterministic non-linearity, bifurcation, complexity, and self-organization aid in re-framing our understanding in a field such as career counseling.

The complexity science metaphor invites career counselors to embrace uncertainty and chaos as a precursor to order and change. In practical terms, complexity science provides a broad strategy that involves working with clients to recognize patterns evolving in the work career domain and patterns in their own personal and interpersonal

functioning as a first step towards a bifurcation (change) point. The importance of developing rich networks of relationships that stimulate creative work in clients is also apparent in the metaphor of complexity and self-organization. Lifelong learning, critical self-evaluation, and acceptance of the fact that there are multiple ways of knowing are also implied as tasks for career counselors in their work with clients. Career counseling, then, makes a significant step towards being united with the discipline of counseling as a whole, jettisoning its more circumscribed, functionary role.

For counselor educators, complexity science offers an inclusive rather than exclusionary perspective regarding the role of theory in career counseling. Recent career development formulations emphasize constructivist and social cognitive descriptions with the implication that other models may be mere artifacts worthy of our curiosity. Complexity science makes it clear that theoretical heterogeneity is necessary because no single theory can account for all career experiences. All, rather than one, is the credo of complexity science because diversity is the fuel for creativity. Theoretical eclecticism is, therefore, an important mainstay of counseling pedagogy along with multiculturalism and anti-racist discourse. In short, career counseling is energized by complexity science because of the open-endedness symbolized by order out of chaos. Nearly all accounts of complexity science as it is applied to social science exude confidence and optimism about the opportunities for change and creativity. Most importantly, these accounts also advocate a culture of caring and wholeness.

Edward N. Drodge completed his doctorate in the area of Counseling at the University of Toronto. He has taught at Memorial University of Newfoundland and the University of Ottawa, and currently works as a researcher with the Royal Canadian Mounted Police.

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