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LIMITATION AND CREATIVITY: A CHAOS THEORY OF CAREERS PERSPECTIVE

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INTRODUCTION

In this chapter we first will argue that limitations need to be acknowledged simply as part of human experience and that if properly conceptualized, they will assist both career counselors and their clients, to a deeper appreciation of reality and to more effective ways of successfully negotiating it. Next the nature of limitation will be examined and its implications for how we ought to think about our lives and careers. We subsequently use the Chaos Theory of Careers (CTC) to provide a basis for incorporating both limitation and creativity as complementary influences within systems, in order to deal with the challenges of complexity. This is followed by the ways in which limitation and creativity can be used in career counseling along with some practical ways that can be used to assist individuals toward the development of meaningful and fulfilling careers. We conclude the chapter by

LIMITATION CANNOT BE IGNORED

The career development profession in particular and the self-help industry more generally, frequently appear to repudiate the idea of “limitation”. Such proponents enjoin us “to live without limits”, “to think and grow rich”, “to go beyond our wildest dreams”, “to live the dream”. They espouse slogans such as “the only limitations are those you place on yourself”, “that you can be anything you want to be if you will work hard enough”, “that you can live a life of constant fulfilment” and so on. Of course, often such exhortations and the publications which contain them, derive from a laudable sense of egalitarianism – anyone can be president/prime minister, opportunity should be available to all, that “worth not birth” should be the basis for success. Further the influence of the “positive psychology” movement which has tried to alter the focus of the social sciences away from disease, barriers, problems and restrictions to wellness, opportunities, optimism and proactivity, has had a significant impact on thinking in the career development field (for example, Csikszentmihalyi, 2008). One of the motivations for Seligman (1992) was to reinvigorate an approach to counseling that viewed clients in terms of their strengths, rather than deficits.

While the negative aspects of an exclusive focus on limitations and difficulties can be readily acknowledged, that does imply that all limitations on one’s life and career can be effectively ignored or worse still denied. Fundamentally this represents an over-simplification of the real world (Pryor & Bright, 2011) in which all of us are constantly confronted with limitations, some of our own making and others imposed upon us. Vocational rehabilitation after a major work or motor vehicle accident is an extreme but unmistakable example of this. Both authors have worked extensively with clients who have suffered workplace or motor vehicle accidents. Often these unfortunate people have to contend with significant physical, psychological and vocational limitations as a result. While exhorting rehabilitation patients to be enthusiastic and motivated may

have some positive impact on their future functioning and also while there may be a range of interventions that can improve their vocational and functional potential, it would be cruel to encourage them to believe that they can do anything, when objective clinical evidence and expert opinion both conclude that this is untrue.

THE NATURE OF LIMITATION

Perhaps the most obvious fact about our limitations is that life is limited. We have a limited amount of time and this alone means that we cannot be everything to which we might aspire, we cannot do everything that we might want to do nor can we know everything that we might like to know (Pryor & Bright, 2011). Life is inherently uncertain, and that uncertainty signals vulnerability (Pryor & Bright, 2011). However the nature of uncertainty is such that it points to untapped potential as much as restriction. To paraphrase Taleb (2007) we do not know what we do not know about ourselves, and our opportunities. Discovering those possibilities inevitably entails embracing uncertainty and the concomitant possibility of failure (Pryor & Bright, 2012).

Krumboltz (1998) observed that the career development theory had up until that time over-emphasized the level of control individuals have over their careers. Krumboltz has subsequently developed a happenstance learning theory of career development (e.g. Krumboltz, 2009). This action-theory approach emphasizes experimentation that inevitably will provide opportunities for unplanned events, feedback and learning as a way to discover appropriate career choices. Krumboltz essentially makes a complexity argument for the limitations on our ability to predict the future:

“The interaction of planned and unplanned actions in response to self-initiated and circumstantial situations is so complex that the consequences are virtually unpredictable and can best be labeled as happenstance.” (p. 136).

HLT reframes undecidedness as open-mindedness and encourages people to spot opportunities and to act on them. This notion has been termed “Luck Readiness” (Neault, 2002) and the authors have added to the work of Krumboltz and Levin (2004) and Neault (2002) to identify 8 dimensions of Luck Readiness or opportunity awareness: Flexibility, Optimism, Risk, Curiosity, Persistence, Strategy, Efficacy and Luckiness (Bright & Pryor, 2005).

It is a mistake to equate Happenstance Learning Theory (HLT) and the CTC due to the emphasis each places upon uncertainty and chance events. HLT provides some useful strategies for learning through exploration or taking action. However, in current formulations it largely overlooks stability, and the nature of change and emergent patterns. The CTC provides an account of the nature of certainty and uncertainty as composites and inevitable consequences of dynamical complex systems. As we will see, the CTC concepts of emergence, fractals and attractors provide a richer account of dynamic stability, unpredictable change and non-linearity that give rise to limitations of our control.

The role of chance in career development is now receiving much more theoretical and empirical attention. Pryor and Bright (2011) summarize this work. Chance exposes our limitations but this is not necessarily a cause for pessimism. Instead, it is simply a realization of the nature of reality as we experience it. Moreover, from a systems perspective limitations are the boundaries of entities and in effect differentiate them from other systems and as influences in mesosystems (Bronfenbrenner, 1977).

Ormerod (2005) observed that complexity is the root cause of most failure across a wide range of human endeavors including our careers and enterprises. Failure exposes our limitations of knowledge and control (Pryor & Bright, 2012). Thus limitation provides order by creating boundaries but this also means that there is some form of restriction or control of behavior. The word is derived from a middle English word *limes* meaning the path between fields. Very often individuals’ perceived or real limitations present a barrier to them crossing these paths into a new field of work. The Chaos Theory of Careers (Pryor & Bright, 2011) conceptualizes reality including individuals, in terms of complex dynamical systems characterized by interactive processes of pattern formation through boundedness leading to stability and at the same time, sensitivity to change, giving rise to unpredictability and phase shift transformation. Therefore in systems theory terms limitations as experienced by individuals may either as endogenous (from within the system) or exogenous (from outside the system).

ENDOGENOUS LIMITATIONS

Self-limitation

When limitation is voluntary it is often a behavior that is encouraged and rewarded. Largely this depends on whether the limitation is perceived to be adaptive or maladaptive. Some forms of self-limitation such as self-discipline work to constrain our behavior in virtuous ways such as eating healthily, getting enough sleep or acting ethically. Limiting a diet to fast food or refusing to engage in activities that one has fallaciously convinced themselves they are no longer capable of doing are examples of maladaptive self-limitation. Determining the adaptive value of self-limitation is not always straightforward due to complexity.

The implication of complexity is that self-limiting or choosing to focus on a limited number of factors may offer some benefits in the short term and appear to be adaptive, but in the longer term, the self-limitation may prove to be maladaptive. It is increasingly accepted that careers happen in the context of a complex system of influences (e.g. Cook, Hepner & O'Brien, 2002; Patton & McMahon, 2006; Pryor & Bright 2003ab, 2011; Vondracek, 1986). As a result of this complexity, uncertainty is inevitable. To illustrate, if a person's career was only influenced by five factors (e.g. mother, father, education, labor market, health) that could vary in five ways (e.g. very negative, negative, neutral, positive and very positive) there are 15,625 possible outcomes. Consequently imposing limitations to simplify complexity is an understandable and sensible reaction but it runs the risk of over-simplification. The nature of complex dynamical systems are that they continuously change and sometimes in non-linear and unpredictable ways. Dieting, a process of limiting calories to a complex dietary system, in the short-term more often than not produces positive results but in the longer term the impact is typically neutral or even negative as people regain the weight and go on to gain even more (Tomiya, Mann, Vinus, Hunger, Delager & Taylor, 2010). Similarly self-limitation in careers can have unpredictable longer-term effects.

Limitation not only operates to simplify complexity, limitations are commonly imposed to find order in complexity. This is an example of reductionist thinking - the belief that complex systems can be reduced to simpler building blocks whose operation can be better understood, predicted and controlled. Within career development, the characterization of a person solely within the constraints of a taxonomy such as Holland's (1959) theory of vocational choice is an example of the reductionist tendency to place limitations on the number of factors under consideration.

Restrictive Beliefs

Typical maladaptive responses to failure include frustration, despair, disgrace, depression, and embarrassment. These negative emotional states if left unchecked may lead to the development of self-limiting beliefs. These self-limiting beliefs in turn may motivate withdrawal behavior, pessimism and the increased possibility of self-limiting behavior. The candidate who is passed over for promotion may become demotivated and pessimistic about their career prospects. This thinking may lead them to withdraw and underperform at work. They may not voluntarily put themselves forward for promotion in the future, convinced perhaps that the system is rigged against them. Of course this self-limiting behavior merely feeds a self-fulfilling prophesy and sure enough they are not promoted. This in turn may lead to another reaction to limitation, namely denial.

Limitation as Denial

Denial of limitations can be the result of a range of cognitive and emotional biases such as cognitive dissonance (Festinger, 1957) and self-serving bias (Ross & Sicoly, 1979) and may have neuropsychological underpinnings (Travis & Aronson, 2007). Travis and Aronson claim that "most people when directly confronted by evidence that they are wrong, do not change their point of view or course of action but justify it even more tenaciously" (p.1). If denial goes beyond a social face saving device and is genuinely believed, no insight and learning can occur and there can be no appreciation of discovering a limit. It increases the chances that there will be no adaptation or acknowledgement of the limitation. Denial of limitations can take the form of straight denial of reality; minimization of the implications of the limitation; or denial of responsibility for the limitation and projection of responsibility onto others through blame. Confronting clients with a reality test – the presentation of incontrovertible evidence that is inconsistent with the denial - is an effective antidote. It is worth noting that because the concept of denial rests on the assumption of an objective reality, it is not clear how the more radical social constructivist approaches extant in career development that argue that perception is reality (e.g. Watson, 2006) could accommodate denial and the reality test. To understand the denial of limitations, it is helpful to understand fear of limitations.

Limitation as Fear of Failure

Fear of failure (Tseng & Carter, 1970) can be a significant and common barrier to endeavor, and in particular to exploring and acting upon possibilities. Its force operates to restrict thinking to probable outcomes

(Pryor, Bright & Amundson, 2008). Fear of failure often presents in other forms of self-limiting behavior, in particular in denial and self-limiting beliefs. This can lead to strong attachments to probable as opposed to possible solutions because probable solutions represent less risk. Probable solutions are likely to represent ones that have been tried before, are accepted by the majority, are normative, and require little creativity in their conception or application.

It is not difficult to see the conservatism inherent in probability approaches. They appeal to the risk averse, both clients who may not wish to feel (any more) vulnerable and to counselors who lack confidence in their abilities or for other reasons, fail to be more creative. The strength of probability approaches is that they acknowledge the fear and limitation. The weakness is that they do nothing to help a client overcome the limitation or fear. The alternative is to emphasize possibility thinking that is more creative and offers the possibility of overcoming limitations and fears, paradoxically by risking failure (Pryor, Amundson & Bright, 2008).

Most commonly negative psychological reactions can arise in the face of failure because failure is a way of exposing or reinforcing limitations. Endogenous limitations are generally considered to be reactions to perceived or real exogenous limitations.

EXOGENOUS LIMITATIONS

Limitation as Deficit

Limitation can mean deficit. Deficits may present themselves as, inter alia, medical, educational, financial, social, cultural, political, environmental influences in individuals. Such exogenous limitations are more likely to be involuntary and also less within the control of individuals. Car workers who lose their jobs due to global economic forces despite performing to a high level receive a sobering reminder of the limitations of personal control as well as the limiting force of economics. Conversely miners suddenly commanding top dollar for their labor in a resources boom may also feel as though they are the beneficiaries of global financial and energy systems, but which are well beyond their own capacity to control.

Labor market, political and economic factors are all forms of limitation that must be acknowledged in career counseling. In acknowledging these limitations we are not advocating a form of fatalism. Acknowledging a limitation is not synonymous with passively accepting the most disempowered implications of that limitation. Rather what is being advocated is an acknowledgement and acceptance of limitations as a basis for proactive and creative responses. Peck (1997) was correct in concluding,

“complete security is an illusion. Life is an inherently insecure business ... the only real security in life lies in relishing life’s insecurity” (p. 225).

Social, cultural and educational limitations may arise from holding a minority status in society, or from having disrupted or limited educational opportunities (Cook et al, 2002; Pope, 2011). Clearly limitations do not present themselves in discrete packages, but rather are systemic (Patton & McMahon, 2006). Consequently minorities in society typically face limitations and discrimination in jobs, housing, employment benefits; limitations in access to resources such as education, counseling and language, religious and cultural limitations due to conflicts between their culture of origin and the dominant local culture (Pope, 2011). These limitations are interconnected and can be reinforcing. Multiple limitations can mean multiple barriers, and the solutions for overcoming these can become rapidly as complex as the problems they are trying to address. Many limitations faced by those holding a minority status in society may in part be due to limitations arising from ignorance or lack of knowledge and insight.

Limitations of personal knowledge and insight were highlighted by Taleb (2007). He described a quadrant of knowledge comprising what we know we know, what we know we don’t know, what we don’t know we know and what we don’t know we don’t know. He labelled the last quadrant a Black Swan for things that we do not know we do not know. It is a reminder that despite our efforts to increase our knowledge, we are never going to be completely informed or insightful, and humility in the face of this fact is warranted.

Universality of limitation

Limitation is a universal condition of what it is to be human. Any comprehensive account of career development must have a coherent account of limitation, and provide clear practice implications for counselors to help clients acknowledge and work creatively with their limitations. The desire for “success” is significantly greater than our appetite for limitation and failure. A Google search for “Career Success” yields 1, 370,000

records, whereas a search for “Career failure” yields 24, 300 records and a search for “Career Limitations” ever fewer at 21, 600. As Pryor and Bright (2012) point out,

“it appears no client and no careers counsellor wants to know about failure” (p.69).

This contribution contends that understanding and working with limitations is critically important for career counselors and that the Chaos Theory of Careers (Pryor & Bright, 2003ab, 2011) provides a coherent framework for understanding limitations.

LIMITATIONS AND THE CHAOS THEORY OF CAREERS

If people can be seen as complex and dynamical systems, and the identity of those systems is dependent upon their limitations, it is incumbent upon us to understand the nature of systems and their boundaries. Within the Chaos Theory of Careers (Pryor & Bright, 2003ab, 2011) the mechanisms that limit systems are called Attractors (Bright & Pryor, 2005; Pryor & Bright, 2007a). Carver and Scheier (2002) define an attractor as “an area of phase space the system occupies or approaches more frequently than others... An attractor exerts a kind of metaphorical pull on the system bringing the system’s behaviour close to it” (p. 306).

In the CTC, Pryor and Bright (2007ab, 2011) identify four different types of attractor:

- Point attractor
- Pendulum
- Torus
- Strange

Point Attractor

Bright and Pryor (2013) define a point attractor in the following terms:

“Point attractors operate when a system is limited to move only toward a clearly defined point” (p190).

The point attractor operates by restricting a system to move toward a fixed point. Goal directed behavior has been described in general terms as the result of the operation of an attractor (Carver & Scheier, 2002) and specifically in point attractor terms by Bright and Pryor (2005). From the perspective of the CTC goal setting can be seen as an attempt to impose limitations on behavior of the system. Setting a goal offers the promise of predictability and reduces distractions. It simplifies the complexity of reality into a closed system and at the same time imposes a form of order on the system by prioritizing certain behaviors over others.

What is seen as focus or preoccupation to one person may be seen as blinkered thinking or obsession to another. The strength of the point attractor is that it severely limits the functioning of the system and appears to make it simpler, more manageable and therefore predictable. However, in attempting to eliminate complexity, rigid adherence to a point attractor may result in self-limited thinking and inflexibility in the face of continual and sometimes dramatic change.

While the career development literature is replete with encomiums of the benefits of goal setting, becoming narrowly preoccupied with a particular thought or outcome may represent very maladaptive behavior and form a barrier to adaptation. For instance a person suffering from occupational stress may become preoccupied with the shortcomings of their boss, and return continually to this topic in preference to working constructively to alleviate their symptoms or find alternative more congenial work. Alternatively the person who convinces themselves falsely that they have the talent to succeed in a particular occupation may waste time and energy pursuing their dream that they are patently not suited to and ignore alternative opportunities that may be ultimately more rewarding.

Pendulum Attractor

Bright and Pryor (2013) define pendulum attractors in the following terms “Pendulum attractors operate when a system is limited to move only between two defined points”. This form of limitation is commonly seen in career development when people narrow their options to a choice between two alternatives. It is also evident in repetitive patterns of behavior when people move between two states. Pendulum attractor thinking has long been recognized in clinical psychology as a form of self-limitation and distortion (e.g. Ellis, 1969). McIlveen (in press) provides a CTC account of repetition compulsion that he characterizes in terms of fluttering between the two states of career building and career destruction.

Pendulum attractor thinking is also evident in an over-eagerness to curtail exploration of possibilities and to focus on the strengths and weaknesses of a limited number of options. If a career plan can be seen as a point attractor, the notion of a “plan B” reflects pendulum attractor thinking. The shortcoming here is that individuals will often only consider two options – “either/or” decision making. The upside of complexity and uncertainty is that it may provide opportunities to create new options, modify existing options, combine new and old options and “borrow” options through imitation of others’ career decisions.

The torus attractor also provides a powerful way to think about habitual behavior. In the torus attractor the system repeats behavior over and over. This repetition can establish very strong reward patterns that become hard to break out of. Career counselors often see the trace of the torus attractor in clients who lose the job they have been doing and then say that this is the only work they know how to do and that they cannot do anything else that retraining is too hard and alternative employment is unrealistic. Once established such habitual thinking and behavior represent significant challenges for the career counsellor to assist individuals to look with new eyes at their careers.

Open and closed systems

When confronted by the complexities of career development, the point, pendulum and torus attractors offer differing ways, to impose limitations to make that complexity more manageable. They offer the prospect of only having to think on one occasion, after which decisions are directed by the operation of the attractor. They set up automatic or compiled behavior that may become so commonly utilized, that individuals are not consciously aware of the parameters within which they are confined themselves and their careers. This can present difficulties when this self-limited behavior is no longer adaptive, as people are attached to the familiar or in denial that they are limiting their behavior. These three attractors are indicative of closed systems thinking which is characterized by assumptions such as outcomes will be predictable, life should meet my expectations, individuals are in control and the exceptional can be disregarded.

In CTC counseling, identifying closed-system thinking and replacing it with open-systems reality is a central theme as illustrated by the Strange Attractor.

Strange Attractor

The final attractor is called the strange attractor and is distinct from the others because it is an open system. This attractor operates to hold a system together sufficiently for it to demonstrate characteristic self-similar behavior however is sufficiently open for it to continually change and due to its openness to change in ways that are unpredictable. Gharajedaghi (1999) described the strange attractor as a system that self-organizes into complex patterns emerging over time that are themselves due to the range of potential influences on the system, to also be sensitive to change. Thus such systems function via the iterative interplay of stability and change, pattern and unpredictability, self-organizing and contingency.

In CTC counseling, helping clients appreciate their strange attractor, and in particular to be open to new possibilities and change in all of its forms is a central theme. This can be seen as a move from closed system thinking to open systems thinking, from probabilities to possibilities (Bright & Pryor, 2008). However it is a mistake to think that in moving from closed to open systems that we are removing all limitations. As we shall see limitations matter.

CTC COUNSELING: LIMITATIONS AND CREATIVITY

It should be abundantly clear from the preceding sections that there are limits on what we can be and do. We are not infinitely capable and opportunity is not infinitely available. While it may be foolhardy to act as though we have no limitations and reckless and cruel to encourage our clients so to do, the skill in CTC counseling is to help a client appreciate the myriad possibilities that exist within these limitations. This is where one of the properties of the strange attractor, bounded infinity can be very powerful.

Bounded Infinity

Bounded infinity in the context of chaos theory is most closely associated with Benoit Mandelbrot (1975) who asked the question: how long is the coastline of the United Kingdom? It turns out the answer depends upon how one measures it. As smaller and smaller variations in the coastline are taken into account, each bay, each inlet within a bay, each inlet within each inlet, the length gets longer until it approximates to infinity. Yet clearly within this infinite perimeter is a clearly bounded country.

Pryor and Bright (2013) highlighted that the popular puzzle, the Rubik's cube is limited to six large faces, and 54 small faces in total. However the cube can generate almost 43 quintillion combinations. Pryor and Bright (2013) demonstrated a transferable skills technique inspired by the cube puzzle and Holland's taxonomy of interests. Each face of the cube represents one of the six Holland interest categories. Clients are asked to identify 9 skills for each interest category – one for each small square on each face. The “unscrambled” cube will now have each of its six faces containing 9 relevant skills. Then the client is asked to twist and rotate different layers of the cube so that the skills are mixed up and each face now contains skills from a number of different categories. The result may look like figure 1. Clients may then be asked to make up occupations that might employ the skills listed on the middle row (Caring animals, Maintaining vehicles, Sell Products and Services). This confronts the client with novel combinations of their existing skill set, which may radically change their perspective on their skills and help them generate novel and creative solutions (Amundson, 2010). For instance the client may suggest working as a mobile Dog washer.

This exercise employs two principles of creativity to overcome barriers. Firstly, scrambling the cube forces the client to adopt a radically new perspective on their skill-sets. Amundson (2010) presents a convincing argument that metaphors can limit perspectives on a problem and the changing metaphors and using multiple metaphors is a powerful way to overcome barriers. We have interpreted metaphors within the CTC as a way of navigating around the fractal pattern of a client to provide new insights. The cube scrambling achieves a similar purpose.

The second principal of creativity is derived from our Beyond Personal Mastery® model (Pryor & Bright, 2011) of creativity and is called combining and adding. The cube activity encourages people to combine and add their skills in novel ways to come up with new solutions. Ultimately the cube is limited, but there are so many combinations of skills possible that the solutions for the client are effectively infinite. This ultimately is an exercise that can boost hope (see Niles, Amundson, Green & Kang this edition; Niles, Amundson & Neault, 2012; Poehnell & Amundson, 2011). You cannot be anything you want, but bounded infinity suggests there may still be an infinite number of things that you can be.

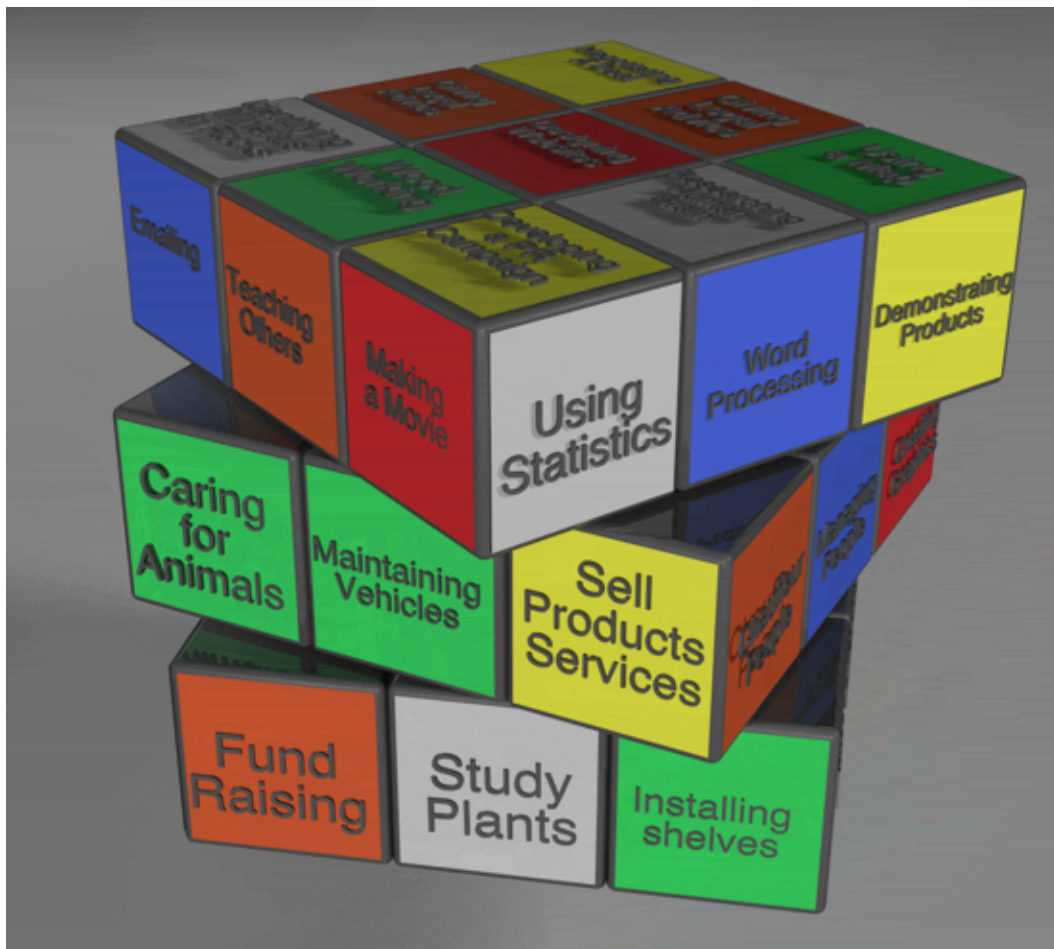


Figure 1. A transferable skills cube

Exploring the limits of the strange attractor: The Edge of Chaos

The CTC analyses the person in terms of their strange attractor and the fractal patterns that capture the operation of their attractor. This is a complex “basic unit of analysis”. In comparison Holland (1959) primarily saw people in terms of a 3-letter interest code and their congruence to different occupations. Patton and McMahon (2006) criticized this approach for oversimplifying people’s career concerns. Holland essentially

reduces complexity to a point attractor. Super (1957) characterized people as being at various stages of a cycle within a grander rainbow that essentially reduces people to a Torus attractor. More recently narrative approaches (e.g., Brott, 2001; Savickas, 2011) have suggested that a story derived from a lifeline (Brott, 2001) or a grand narrative (Savickas, 2011) be used as the basis for career counseling. Narrative captures more complexity than earlier approaches, however in seeking to resolve the client into single life story or grand narrative, such approaches may impose unnecessary limitations such as cause and effect linearity and a singularity of perspective.

Narrative describes a trajectory in a client's life and so if a test score can be seen as a snapshot, then narrative is more akin to a movie, or a series of snapshots that are linked by the plot of the story. However narrative is still limited in many ways that are rarely sufficiently acknowledged or explored. Consider the following example that illustrates the strong tendency of narrative to reduce complexity to linear cause and effect chains and to assume a singular perspective on events: "Ollie started to saw through the wooden plank and Stan fell to the ground". This story establishes a simple cause and effect: Ollie's sawing cut the plank causing Stan to fall. However it is quite possible that this is incorrect. Perhaps Stan overbalanced and it was a coincidence that Ollie happened to be cutting. Possibly Stan was simply vacating the plank to make it easier for Ollie to cut. Maybe the two events were not related, and Stan happened to be falling when Ollie commenced cutting.

This illustrates the strong tendency of narrative to follow a linear, cause and effect plot. It has a tendency to tie up all of the loose ends, and in essence it provides a closed-system account of reality by not considering other factors. For instance in our story, perhaps Stan fell to the ground because a dog grabbed his leg, or there was a strong gust of wind. Neither the presence of the dog nor the weather conditions nor any other influences are captured by the narrative. Further, the perspective of the story makes Ollie agentic and Stan the hapless victim. Perhaps from Stan's perspective he was jumping off the plank to play a prank hoping the other end that Ollie was cutting would spring up and hit Ollie under the chin. Narratives rarely capture multiple perspectives, and when they do, they tend to capture relatively few perspectives. In this way narrative, like any other method available to counselors is subject to limitations.

To explore the strange attractor is to appreciate that the fractal symmetry of a person cannot be readily captured within a single story. The emergent pattern that is continually changing will require multiple methods including multiple stories. Some of these stories are likely to be contradictory, because people are complex. As Snowden (2010) said, people are mysteries to be explored, not puzzles to be solved. Conflicting stories can be embraced as paradox as opposed to dilemmas that require resolving into a singular story. The more different stories a person can tell about themselves, the more creative possibilities that are likely to be able to generate (Amundson, 2010). Elsewhere (Pryor & Bright, 2008) we have suggested the use of alternative archetypal stories to assist clients who feel trapped or constrained in the stories that they have been telling themselves.

This unashamedly more complex approach encourages clients to embrace the messiness, paradox and uncertainties of their existence. It emphasizes the contingent nature of action taken under inevitable conditions of uncertainty with the concomitant requirement to take risks while not being reckless. The role of the counsellor is to encourage exploration and reflection and to assist the client to appreciate potentials and plausible possibilities rather than focusing exclusively on probabilities.

Just as CTC eschews over-reliance on single stories, it also eschews mono-procedural methods. Setting psychometric assessment in opposition to narrative oversimplifies the value of testing on the one hand and the complementary and synergistic use of both methods. We are sympathetic to Brott's (2001) recommendation that "quantitative assessment instruments are not used as discrete pieces of information but rather are woven into the client's story" (p. 307).

Critically, the purpose is not to come to an emphatic, crisp or all-encompassing self-description, but rather to highlight some apparent patterns, relationships, landmarks and other remarkable aspects of the person with a view to considering how collectively and in context these may serve to inform, guide or motivate the client as expectations require. It follows from this that one of the aims of CTC counseling is to help clients simultaneously appreciate the limitations of their strange attractor, and the limitations of their knowledge, and consequently to embrace uncertainty.

Living with change, chance and uncertainty

The limitations of human knowledge and control indicate that all of have to live and work in the context of change, chance and uncertainty. In the final analysis seeking either consciously or unconsciously to deny this, is

to cherish an illusion which experience will expose at some time or another. Building on the work of (Harford, 2011), Pryor (2013) outlined an evolutionary career development strategy for adapting to our complex, changing and uncertain world that incorporates both limitation and creativity:

1. Use opportunity awareness (Pryor & Bright, 2005) to try new possibilities with the expectation that some will be likely to fail – looking at what career options are already there and/or creating new options;
2. See what works and make failure survivable – conserve some resources and build resilience (Pryor & Bright, 2012);
3. Make sure you know when something has failed – using feedback loops to foster further change (positive feedback) or cut your losses (negative feedback);
4. Learn as you go and change accordingly – review situations, adjust expectations, re-evaluate goals;
5. Iterate – start the process again with what you have learned.

The following case study illustrates this approach. Sam had failed second year architecture and his parents were no longer able to finance further study for him. Initial counseling focused on “normalizing” failure as a reasonable outcome in an uncertain world. Counseling then explored why he failed. Sam liked the creativity of the course but he could not cope with the material science. Sam’s first limitation was money and after some job search counseling he found work doing basic drafting for a furniture design company. It utilized some of his drawing skills but he had to work within constrained specifications. He was not impressed with furniture design in general. He then was encouraged to find out more about various university and college design programs, to talk to workers in the design field and to volunteer to work for different design companies including fashion, industrial and graphic, in his spare time. He started making submissions of ideas to various agencies, firms and competitions and even drawing cartoons for magazines. None of Sam’s submissions were taken up or seriously considered and none of the enquiries he made or his work experiences seems to have really excited him. With his counselor Sam reviewed all these efforts and concluded he still wanted to work in a creative field and design seemed appropriate but he simply could not find what really captured his imagination. He was still working for the furniture design company when one of the designers hearing about all his efforts, told him of a friend who worked in stage design. Sam spoke to this friend, was excited at the prospect of working in “the media”, researched available training options and has applied to do a stage design course. His aspiration is to one day be able to work in films but he realizes that advertising and television also provide useful employment options. There is no guarantee that Sam will ultimately find stage design to be occupation that he will pursue on a long term basis. It seems to be closer to the kind of creativity that he seeks and finds most interesting, however, he will need to continue to monitor his progress, look for opportunities, create possibilities and take some risks.

Ultimate limits

Meaning making and finding purpose are frequently espoused as the ultimate goals of career counseling (Amundson, 2010; Savickas, 2011). Pryor and Bright (2007a) identified the limits of individuals’ strange attractors with personal identity. Humans define themselves both by what they do believe and how they behave and also by what they will not believe or do. Personal growth is a systemic process of both identification with and separation from other complex dynamical systems in our world as helpfully outlined by Patton and McMahon (2006). Pryor and Bright (2011) observe that with systems as complex as individuals’ strange attractors, precisely distinguishing these limits can be a difficult and sometimes arduous process. In fact for some people the search for identity may be a lifelong process in which work and other purposeful activities, are learning experiences as part of the journey. In this sense therefore, discovering and setting limitations in our lives is part of the creative process of finding ourselves and our place in the world - a noble process to which career counselors may humbly and crucially contribute.

CONCLUSION

In this chapter we have sought to provide a counterbalancing perspective to some of the rather mindless even if well-intentioned rhetoric about the extent of human knowledge and control in our careers and in our lives. We readily acknowledge the negative aspects of a complete focus on limitations such as lack of persistence, hopelessness, not trying, risk aversion, taking the easy way out, indolence and procrastination.

However, while helping individuals not to fall foul of such reactions, is an important challenge for career counselors, limitations cannot by the same token, be ignored. Using the Chaos Theory of Careers this chapter has indicated that limitations are inevitable, uncertainty is unavoidable and failure should be expected in a complex dynamical world. Therefore, if this is the reality of the world in which individuals have to make career decisions, then the challenge is well expressed by Peck (1997)

“In the face of uncertainty, we still have to be able to act and make decisions at some point. In weighing our thoughts and feelings, what matters most is whether we are willing to wrestle with the realization that we don’t know it all.” (p. 66).

Just as emergence is the change process whereby chaotic systems develop patterns so career counselors can use the same process in the task of assisting clients to develop open systems strategic thinking skills. Ridgley (2012) defined such an emergent thinking strategy as

“given that we cannot predict what Fortuna will hand to us we must develop the internal qualities and capabilities that enable us to meet these uncertainties in the best possible manner.” (p. 16).

We have tried in this chapter to reveal both the inevitability of limitations in human experience and therefore career development, and at the same time the crucial value of limitations. Properly understood in CTC terms, limitations do not thwart creativity rather they focus it more intensely. Limitations challenge us all to live our lives and deal with our experience creatively, meaningfully and courageously. Thus death, the ultimate limitation for us all, can be seen as the tragedy of loss but its awareness can also be the spiritual inspiration for living, loving and working well which no less a figure in psychology than Sigmund Freud once defined as the good life.

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