Probabilities and Possibilities: The Strategic Counseling Implications of the Chaos

Theory of Careers

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Abstract

The Chaos Theory of Careers emphasizes both stability and change in its account of

career development. This paper outlines counseling strategies derived from this emphasis

in terms of convergent or probability thinking and emergent or possibility thinking.

These two perspectives are characterized along with some practical counseling strategy

implications. In addition, an illustrative technique example is described. It is concluded

that the challenges of modern career development demand the complementary and the

interactive use of both probability and possibility thinking strategies.

Probabilities and Possibilities: The Strategic Counseling Implications of the Chaos Theory of Careers

Historically, career development theory and counseling practice have focused on the stable aspects of both individuals and occupations. For example, the matching models of Dawis and Lofquist (1984) or Holland (1997) are predicated on the assumption that there is sufficient stability within the characteristics of both individuals and their working environments to make such matching both coherent and reasonable. More recently however, both theorists and counselors have had to acknowledge the importance of change (Hesketh, 2001) and the reality of chance (Krumboltz & Levin, 2004) as also fundamental to the ways in which career development plays out in human experience. In this paper we endeavor to show how the application of the chaos theory perspective can be used to develop career counseling strategies to address these issues and to provide a specific example of a technique derived from such strategies.

The Chaos Theory of Careers (CTC)

Chaos theory points to the need to consider the interactive and emergent properties of wholes or systems as a new focus for theory and research in science (Kellert, 1993). The Chaos Theory of Careers views the objective world in terms of complex dynamical systems which have a number of distinctive characteristics (Pryor & Bright, 2003 ab). Complexity is the recognition that reality including human experience has to be comprehended in its totality. While there is some value in examining the parts of a complex whole, there is also the danger that the emergent properties of complex systems

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will be overlooked. As systems become more complex, the more likely it is that unpredicted events will begin to appear in the course of the functioning of the system. With respect to human experience this means that what happens is necessarily only one of the possibilities that could have occurred. Concisely expressed – all history is contingent. The dynamical nature of chaotic systems is a consequence of the sensitivity of complex systems to change. Such initial change can result in quite disproportionate impacts on the system subsequently. Chaos theorists call this "non-linear change". Thus for example, a single bite from one mosquito may give people a virus that could be influencing their health for the rest of their lives. The systemic component of chaos theory emphasises the interconnectedness of elements which when functioning as a system begin to display characteristics of pattern and order (Kaufman, 1995). Chaos theory recognises order and stability as the emergent and often synergistic, properties of systems' functioning (Morowitz, 2002).

When applied to career development individuals are understood as complex dynamical systems and "career" can be understood as an emergent property of the interaction of individuals as systems with the rest of the world also understood in terms of systems (for a taxonomy of such systems refer Patton and McMahon, 1999). The defining characteristic of chaotic systems is sensitivity to change (Lorenz, 1993). This is the famous "butterfly effect" which has seeped into popular through a variety of films such as Sliding Doors and The Butterfly Effect. The implications of this sensitivity to change is that complex dynamical systems are subject to "phase shifts" in which the system can transform as when water freezes and becomes ice. As a consequence of the complexity

of such systems predicting such change is often difficult and often impossible. As a result chaotic systems may sometimes appear subject to randomness when in fact it is simply unpredictability resulting from complexity. The most familiar chaotic system is the weather. It illustrates overall patterns which we discern as climates and seasons, however, the precise prediction of the weather conditions at a particular place at a specific time beyond about seven days becomes at best probabilistic and at worst, simply chance. Thus chaotic systems demonstrate order in the form of general patterns of functioning but at the same time may be unpredictable at any particular moment. Systems theorists have identified these general patterns of system behaviour. They are called "attractors" (Bloch, 2005; Bright & Pryor, 2005). The three traditional attractors are the point attractor (the system moving to a single end state); the pendulum attractor (the system oscillates between two extreme states) and the torus attractor (the system moves in a complex but regular pattern over time). Chaos theory has added to this collection the strange attractor which is characterised by a complex pattern of movement from which a general sense of order emerges and yet also the system never acts in precisely the same way on any two occasions. Such systems also are sensitive to change and as a result the propensity for transformation remains a perpetual possibility either as a consequence of the impact on the system by "outside" influences or simply as a result of the complexity of the system's own functioning.

Some of the specific empirical support for the Chaos Theory of Careers includes the following. Bright, Pryor, Wilkenfeld and Earl (2005) investigated the complex array of influences on the career choices of high school and university students. The results of

this study confirmed that a wide range of different influences impact upon career decision-making. Furthermore chance events were frequently reported. The results were interpreted as supportive of a perspective on career development that emphasizes complex dynamical systems. Bright, Pryor and Harpham (2005) found that approximately 70% of students reported chance events had significantly influenced their careers to date and furthermore these results could not be explained solely in terms of attributional style. Davey, Bright, Pryor and Levin (2005) and Mackay, Bright and Pryor (2005) attempted to measure the efficacy of chaos-based career interventions. Davey et al found that a video-based intervention depicting some of the key tenets of the Chaos Theory of Careers proved effective in creating more realistic career thinking in undergraduates.   Mackay et al conducted a controlled comparison of chaos-based counseling, traditional matching-based counseling and a waitlist control. They found that the chaos-based counseling was rated as highly or more highly than matching based-counseling by the clients. Furthermore chaos-based approaches were more effective in imbuing a more realistic outlook on career development in the clients. A one month follow up showed that the chaos theory's counseling impact continued to be rated positively whereas the matching-based counseling declined in rated efficacy.

The Counseling Challenge of the Chaos Theory of Careers

To date specific counseling techniques have been developed or adapted using the chaos perspective. (Borg, Bright & Pryor, 2006; Pryor & Bright, 2005 & 2006). However, more general strategic perspectives to date have been lacking. Given the new realities of

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both order and chance, stability and change which the chaos theory seeks to integrate, a question that arises for careers counselors is likely to be: what strategies could be used to introduce and utilize both stability and change in our counseling?

Convergent and Emergent Perspectives

One way to conceptualize order/stability and chance/change is as differing perspectives for decision making. Using the Chaos Theory of Careers, two perspectives have been adumbrated (Pryor & Bright, 2006; McKay, Bright & Pryor 2005). Order and stability can be characterized as a convergent perspective while chance and change can be understood as emergent perspective. The convergent perspective on career decision making focuses on seeking to identify "probable" outcome. The aim is to "converge" through processes of analysis, elimination and logic to one or a few choice options that would be most likely to be able to be implemented. The convergent decision making perspective to identify probable options has the following characteristics.

- performing a detailed analysis
- assessing the likelihood of outcomes
- using standardized instruments
- gathering reliable information
- proceeding with caution
- studying economic and social trends
- searching for good opportunities
- making educated guesses

- weighing carefully the evidence

- incorporating rational decision making

- focussing on relatively few variables

- assuming "irrelevant" variables will have no systematic effect

- seeking a single description of a situation

- seeking a complete description

- maximising certainty

The emergent perspective on career decision making focuses on seeking to explore "possible" outcomes. The aim is for thinking to "emerge" from current self-limiting structures to processes where there is greater room for creativity, intuition and openness leading to new options that could be constructed or crafted into viable alternatives (Amundson, 2003). The emergent decision making perspective focuses on possibilities and has the following characteristics:

- assuming personal responsibility

- making choices

- refusing to let fear conquer action

- maintaining positive action

- looking to the future with optimism and excitement

- searching for new and enlightening knowledge

- adopting multiple descriptions simultaneously

- recognising and welcoming uncertainty

- working with incomplete knowledge and recognising it will always be so

- following your curiosity

- taking risks

- learning from failure

- pursuing your passion

- listening to your intuitive self

Some Strategic Implications for Counseling

Three major strategic counseling challenges can be identified deriving from the use of these perspectives.

1. **Biases in Estimating Probability.**

The Chaos Theory of Careers (CTC) emphasizes the impact of complexity on career development. Among the consequences of complexity are the limitations on our ability to think rationally, to have complete knowledge before deciding and to have total control over the outcomes of decisions.

Traditional decision models tended to overemphasize logical and rational thinking in investigating options, evaluating alternatives and making the optimal choice. From the convergent perspective this can sometimes be seen in clients' overconfidence in their thinking abilities and an uncritical attitude to the accuracy, generalizability and

comprehensiveness of the information to which they have access.   Five potential biases in estimating probability have been noted for counselors to be aware of:

a) **Past experiences**. For example, if a young person had a parent that struggled with periods of unemployment it might influence the way in which they approached career planning. Furthermore Loftus and Palmer (1974) have convincingly demonstrated the constructive nature of our long term memories indicating that our current state of mind influences our supposedly veridical memories. Savickas (1997) calls this the present informing the past.

b) **Social Influences**. Our ability to make accurate judgments is influenced by the opinions of others (family, friends, community members). It can be difficult to "go against the crowd". Furthermore, our judgements become constrained by implicit and explicit stereotyping, script and schema development.

c) **Starting Point Bias**. Probability often is adjusted as the situation unfolds. For example, incoming students might adjust their expectations for success after receiving their first set of grades. This process of adjustment can be influenced by their starting point.

d) **Communication Errors.** Subjective probability terms such as "often", "unlikely", "may" and "could" serve as sources of ambiguity and misunderstanding. This is particularly the case in situations where is a high

degree of complexity. This can be a problem for counsellors since they are trained

to use tentative language (subjective probability) in expressing opinions about

situations where there is uncertainty.

e) Scenario Complexity. In our complex world we often are assessing the

likelihood of certain events based on the convergence of a number of different

events. In mathematics the calculation of probability occurs through a procedure

where each event is independently assessed and then the results are multiplied

together. The more complex the scenario is then the lower the probability of

occurrence. The impact of this added complexity is often ignored when people

make their judgments.

2. Probability/Possibility shifts

Since the Chaos Theory of Careers (CTC) integrates both order/stability and

chance/change the convergent and emergent perspectives are not viewed as competing

but rather as complementary ways to understand human experience and take purposive

action. Counselors and their clients can utilize either or both perspectives depending

upon the issue identified as germane to individuals' career development. Sometimes this

may mean that decision makers need help in moving from one perspective to the other.

Such shifts may need to occur in a recycling manner several times during the course of

counseling at each point at which clients start to feel "stuck".

i) Indecisive Clients

Perspective shifts might need to occur when possibilities have to be refined into possible decisions and actions. This requires a "possibilities to probabilities" shift. This illustrates the perennial counseling problem of indecisiveness. Indecisive clients usually do not have problems generating possibilities their problem is choosing between alternatives. How to implement a choice and the likely strategic counseling challenges can be identified deriving from the use of these career decision perspectives.

Consequences of such choices sometimes paralyze their ability to choose. Newell (2005) has argued that people use evidence accrual methods in decision-making and that in doing so, they vary in the amount of evidence they require before making a decision. Some clients may need to be encouraged to start developing and using the strategies of the convergent perspective. As options are gradually whittled down to several alternatives then a further perspective shift may be required from probabilities to possibilities. At this point, clients may need to be encouraged to consider creatively in what ways several attractive options might be combined. For example, someone trying to decide between engineering and medicine could be encouraged to explore options involving the construction and development of medical technology, the safety dimensions of industrial design or even ergonomics.

Very often people who seek more information before making a decision will search externally for this information, rather than looking inwards and using creativity and

imagination to think through potential scenarios and their potential to meet the person's needs.   Traditional job search advice (e.g. Bright, 2001) has tended to focus on external exploration of relevant labor market information (convergent perspective). The emergent perspective compliments this by emphasizing the importance of developing new realities through imagination, metaphor and creativity (e.g. Amundson, 2003; Ibarra, 2003).

ii) **Clients in a State of Indecision**

Alternatively, counselors often have clients in a state of indecision. Such clients often cannot see any alternatives. They will frequently say that they have no options. For example, someone who worked in middle management in a specialized manufacturing organization for the last fifteen years who is forced into redundancy, may think that his or her skills are so narrow that no-one else would want to employ them, - especially after about twenty or thirty unsuccessful job applications. Such clients need to be encouraged to engage in a convergent to divergent perspective shift. They need to be encouraged to start using "possibilities" thinking to explore, discover and create possibilities to consider, refine, restructure and combine. Preoccupations (Savickas, 1997) and sweet spots (Lucado, 2006) may need to be identified and explored. Meaning, purpose and passion may need to be reviewed and deeply thought through (Pryor & Bright, 2004). Thus for example if our redundant manufacturing manager decided as a consequence of this change of perspective to initiate a major life transition (called a "'phase shift" in CTC) then this might in turn require an emergent to convergent perspective shift as the

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manager endeavors to decide on the new location for the family and the training course required to become for example, a library technician.

3. Convergent and Emergent Perspective Change.

A chaos theory conceptualization of reality has change as in integral component of the way systems function. Change often restructures the dynamics of systems. Such change can be abrupt or gradual. It can be linear or non-linear. It can be planned or unplanned. In fact most humans experience all these types of change in every conceivable combination during their lives. Career counseling usually is about change (Amundson, 2003). Therefore careers counselors are in the business of encouraging appropriate, helpful and positive change for their clients. Using convergent and divergent perspectives on career decision making four possible change strategies can be outlined in terms of the kind of issues that counselors might want to stimulate their clients to explore. Listed below are the issues and also some of the questions that counselors can use to stimulate such discussion.

i) Beating the Odds

Counseling Issues/Questions: Can you describe some of the ways that people "beat the odds" when facing challenging situations? How is it that they are able to overcome what seems to be insurmountable odds? Can you think any times in your past when your efforts have "beaten the odds" in accomplishing something? What could you learn from that experience?

ii)   Improving the Odds

Counseling Issues/Questions: Can you describe some of the ways that people "improve their odds" when facing challenging situations? How is it that they are able to position themselves in a way that makes for a greater likelihood of success? Can you think any times in your past when your efforts have "improved the odds" of something you wanted to happen? What could you learn from that experience?

iii)   More than Chance

Counseling Issues/Questions: Can you describe some situations in which people focus too much on "luck" and do not recognize their own part in influencing life / career events? How could they become more aware of their own capacity and also learn to employ these strategies in a systematic fashion? Can you think any times in your past when you have relied on luck or blamed circumstances when you could have taken positive action but did not? What could you learn from that experience?

iv)   Becoming Realistic

Counseling Issue/Questions: Can you think of times when people are unrealistic about possibilities? What are some of the ways that they could become more realistic about their options? Can you think any times in your past when you have totally overestimated or underestimated the possibilities of something happening? What could you learn from that experience?

Although this paper focuses primarily on career development counseling strategies the authors thought it would assist counselors if we provided an example of a specific counseling technique which illustrates how possibility thinking might be encouraged. This technique can be used to generate new alternatives to an option already being considered. It may also be useful for contingency planning by assisting clients to think about the most probable unplanned events and how they might need to respond to them.

Possibility Thinking Example: The "Wotif" Exercise

This exercise is designed to encourage students who are already considering a particular vocational option, to develop "Plan Bs and Cs" – that is, alternative options or contingency plans in case circumstances dictate that their original goal becomes infeasible. "Wotif" stands for "What if" as in "What if the sky fell in?", "What if you got better grades than expected".

Procedure: Introduce the exercise with a discussion of "Unplanned Events in Careers". Start by citing Bright, Pryor and Harpham (2005) who reported that around 70% of young people said that an unplanned event had significantly influenced their career plans.

If in a group setting, ask students to suggest chance events that could influence a career (or that have influenced either their own lives or those of people they know or know about). Record these suggestions out on a whiteboard using a mind mapping technique (see figure 1).

If the students fail to generate many examples try these prompts (the percentages refer to the proportion of young people who report these types of chance events and are the results of research by Bright, Pryor and Hapham, 2005): a personal or work relationship (44%); previous work or social experiences (60%); barriers to your previous career plan (36%); an injury or health problem (11%); unintended exposure to a type of work or activity that you found interesting (43%); unintended exposure to a type of work or activity that you did not enjoy (33%); a major change of residence over which you had little or no control (11%); any other unplanned event (10%).

When a list has been generated ask the students if they have any personal experience of any of those events. Ask them what happened in the aftermath of the event. What did they learn from the event?

Step 1. Get each student to identify to a personal career goal. If they cannot do this, suggest an example such as "I want a Sales Traineeship", "I want to study Commerce at University", "I want to start an apprenticeship in Plumbing/Hairdressing" etc

Step 2. Now ask the students to think "What if_____" and fill in the blank with one of the chance events.

Step 3. Then ask them:

    A. how would things be changed as a result of this event?

B. what other career goals could be achieved given that this change occurred?

C. how could such alternative goals be pursued and implemented?

Repeat this 3 times to generate a Plan B, C and D as ways to practice dealing with unpredictability.

Conclusion

Traditional career counselling for decision making has tended to teach decision making skills which it is hoped would generalise from the specific situation to future decisions conceptualised as more or less similar to the current one for the client. Typically this included matching characteristics of the individual with those of the environment or occupation, generating alternatives, weighting alternatives according to these criteria and personal values, evaluating the generated options in a rational way and then choosing and committing to the most preferable and viable option and its implementation. Such an approach views each decision maker as a kind of "vocational Sherlock Holmes". Holmes was the Master Detective who through the application of rigorous deductive reasoning was able to eliminate successively potential suspects until the true perpetrator of the felony was discovered.   In the world of Sherlock Holmes all the information required to make the right decision is "out there" waiting to be discovered and one merely needs to apply acute observation and irrefutable logic to solve the problem. However, no matter how attractive the "murder mystery" genre is in popular sentiment, unfortunately the real world has a curious habit of being messier and less consistent and in it the available information tends to be rather more partial and inconsistent

Using the Chaos Theory of Careers as a theoretical framework in this paper we are arguing for a broader process that includes both probability and possibility thinking. Improving career decision making for individuals requires flexibility including the need to view the decision making process from two complementary perspectives – the convergent and the divergent. In our exploration we have included some examples of concrete counseling strategies that can be employed in various situations. Ours is an age which craves freedom of choice over our lives. Western societies in particular, have been founded on concepts of individual freedom. Post-modernism has presented us with many choices for twenty-first century career development. However, opportunity without strategy will lead to frustration and guilt. However, opportunity with the strategies of probability and possibility thinking can lead to innovation, personal meaning, original contribution and career fulfillment. As William Arthur Ward (1970) said "….a true friend knows your weaknesses but shows you your strengths; feels your fears but fortifies your faith; sees your anxieties but frees your spirit; recognizes your disabilities but emphasizes your possibilities."

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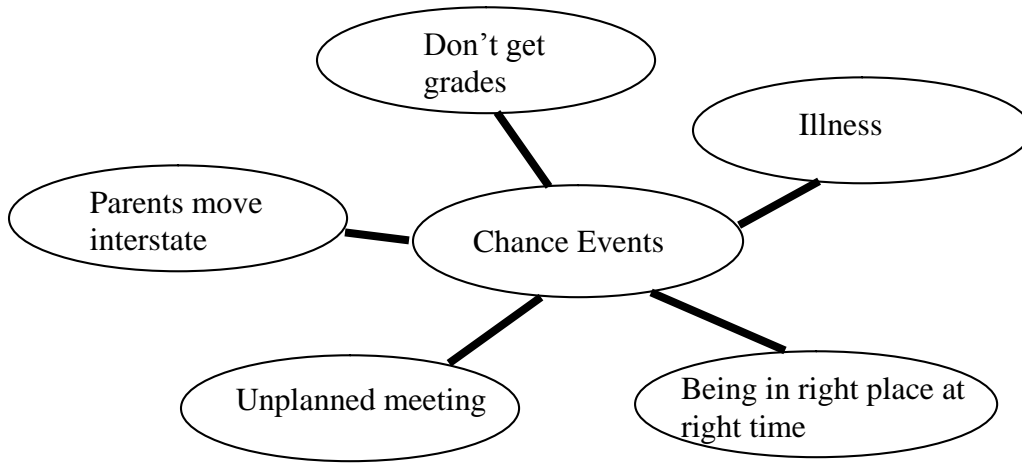Ward, W.A. (1970). *Fountains of faith: the words of William Arthur Ward.* USA: Droke

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FIGURE 1
A mind map of chance events