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# 'I HAD SEEN ORDER AND CHAOS, BUT HAD THOUGHT THEY WERE DIFFERENT.' THE CHALLENGES OF THE CHAOS THEORY FOR CAREER DEVELOPMENT

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ROBERT PRYOR and JIM BRIGHT

School of Psychology, University of New South Wales

This paper highlights five challenges to the accepted wisdom in career development theory and practice. It presents the chaos theory of careers and argues that the chaos theory provides a more complete and authentic account of human behaviour. The paper argues that positivism, reductionism and assumptions of linearity are inappropriate for capturing career behaviour. Equally, predicting effect from cause is difficult and often impossible given the complexities of modern life. This paper calls for career development theory to accept a broader purview and concludes that ignoring other aspects of life both limits and undermines the utility of narrowly defined theories. Traditional notions of logic, rationality and objectivity are called into question. Finally, it is argued that chaos theory provides a natural connection between science and spirituality.

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The quotation title of this paper is a paraphrase of a line from T. S. Eliot's poem 'Journey of the Magi' (Eliot, 1969), in which one of the three astrologers at the end of his life reflects that the

revelation they witnessed at Bethlehem did not lead to certitude, but to a whole new series of questions—that is a chaotic perspective on reality.

## CHAOS THEORY

Chaos theory views reality as complex dynamical systems which have a number of distinctive characteristics (Pryor & Bright, 2003a; 2003b). The term 'complexity' recognises that reality has to be comprehended in its totality, despite what challenges of investigation this poses (Lewin, 1999). The more complex chaotic systems are, the more likely it is that unpredicted events will begin to appear in the course of the functioning of the system. The unpredictability of the weather is a classic illustrative case. The dynamical nature of chaotic systems is a consequence of complex systems' sensitivity to change that can be quite disproportionate to the alteration in the initial conditions. This is popularly known as the 'butterfly effect'.

Up to this point, chaos theory may appear to be only about chaos or disorder, when in fact it is also about order (Kellert, 1993). 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. Chaos theory recognises order as the emergent and often synergistic properties of systems functioning (Morowitz, 2002). The leaves on a particular species of gum tree all produce recognisably similar configurations. Order is a consequence of the boundedness of the functioning of a system. This is known in mathematical systems theory as the attractor. Chaos theory introduces the idea of the strange attractor, which is essentially the self-organising patterning of a system which repeats itself, but not in such a way that can always be predicted (Kellert, 1993). That is what it means to be a complex dynamical system. But where does this so-called 'theory of everything' (Morowitz, 2002) intersect with career development theory and practice, and what are some of the consequent implications? This paper addresses some of these issues.

## SOME CHAOTIC CHALLENGES TO RECEIVED WISDOM

Five areas of career development are briefly outlined in which chaos theory provides a new perspective on issues that many of us thought were accepted truths.

### 1. Positivism, reductionism and linearity

Most of us have been taught that the scientific method is exemplified in the laboratory, where the manip-

ulation of predictor variables leads to measured changes of criterion variables, according to stated hypotheses, under conditions in which the effects of all extraneous variables are nullified or controlled. Chaos theory challenges the notion that reality can always be subdivided, partialled out, sample stratified and subjected to ANOVA and regression assumptions of the relationships between variables. If human experience is not understood in terms of the complex interrelatedness of people to others and to their world at one and the same time, then such positivist approaches will fail to capture the emergent properties of such experience, which are often the characteristics about ourselves that we most value such as identity, integrity and meaningfulness. Moreover, if change in complexity is non-linear, then it may be the outlier influence which needs to be investigated rather than disregarded in the attempt to fit regression lines to data. The 'real world' calls for designs that are field-oriented, qualitative, flexible, have an open system and mixed-method (Robson, 2002).

### 2. Predicting effect from cause

The traditional scientific paradigm assumes that the universe operates on a cause-effect chain such that, in theory at least, every effect is predictable. For example, the fact that our ability to predict the everyday behaviour of humans is very poor is typically attributed exclusively to our lack of knowledge of all the necessary and sufficient conditions for that behaviour to occur.

In direct contradiction to this, chaos theory asserts that randomness, chance and unpredictability are not merely consequences of the limits of human knowledge at a particular time, but are instead intrinsic to reality. The more complex a system is, the greater the likelihood that unpredicted outcomes will occur, even with the mathematical precision of initial known formulae (Holland, 1995). Career counsellors have led the way in pointing to the effects of the unplanned on career development. Our own research (Bright, Pryor & Harpham, in press; Bright, Pryor, Wilkenfeld & Earl, in press) has demonstrated that around 70 per cent of various samples of the population can clearly indicate the impact of unplanned events, however defined, on their careers and that such results cannot be accounted for by attribution response sets. It has become fashionable to include, ad hoc, a chance

variable recently in career development formulations; however, only chaos theory has such phenomena as an integral component in its explanation of reality and individuals' career development experience.

### 3. Career development theory and only career development theory

In methodology and conceptualisation career development theories have tended to mimic physical sciences. As well, they have borrowed perspectives from other intellectual currents in psychology such as life-span psychology (Savickas, 1997; Super, 1994), social learning theory (Mitchell, Jones & Krumboltz, 1979) and information processing (Peterson, Sampson, Reardon & Lenz, 1996). However, as a rule, career development theories have tended to be formulated and refined within the narrow domain of vocational psychology. Even those working in the closely allied field of vocational rehabilitation typically have bemoaned the lack of incorporation of disability, accident and misadventure into mainstream career development theories (e.g., Jacques & Kauppi, 1983; Szymanski & Hershenson, 1997).

Counter to this trend to insularity, chaos theory is fundamentally a formulation about the nature of reality as a whole. In this, it has application across all fields of human endeavour to understand and interact with reality. As a result, it is possible to have a wide range of chaos theories spanning politics, economics, physics, biology, theology, education and psychology—all the way to career development theory and practice (Morowitz, 2002). The same broad principles which govern the universe as a complex dynamical system are applicable to every individual's career decision making (Strogatz, 2003). Therefore, in principle, the chaos theory of careers is able to incorporate complex and multivariate influences on decision making, such as globalisation policy, meteorological variation, media bias, cultural stereotyping, history, geography, plague, all the way down to the specifics of the impact of a single motor vehicle accident on someone's career development.

### 4. Logic, rationality and objectivity

Although it has been acknowledged for decades that individuals adopt different career decision-making styles, it was always either tacitly or explicitly asserted that the rational and logical use of objective infor-

mation about self and occupations was the most superior approach and the one that should be taught to counselling clients. The simple problem is that we can decide things irrationally without adverse consequences and most of us do not have minds of logical rigour. Moreover, even if we can rise to the occasion in deciding, and exhibit logic and rationality, the information we use will repeatedly fail the test of objectivity due to the selective perception of the decider, unrepresentative exposure to information, bias in information sources, unstated underlying assumptions of the information, the datedness of the data and so on.

Without a complete knowledge of initial conditions we cannot hope to know in any objective or complete sense how a system will function. This necessarily limits our knowledge, not only of the universe, but for each of us it limits our knowledge of ourselves. All we can do is map parts of the fractal of our own and others' lives. Some things will always remain hidden (Amundson, 2003).

Moreover, the inherent unpredictability of complex dynamical systems will confound, at some points, our best rational and logical predictions (Holland, 1995). This lays open the potential for the unplanned and serendipitous in the form of magic. Increasingly writers are noting the importance of the possibilities of magic in our experience (Gellat, 1991; Vallence & Deal, 2001). An exclusive emphasis on logic, rationality and objectivity will ultimately stifle some of the essential qualities needed to deal with a complexly changing world of work, such as creativity, imagination and intuition.

### 5. Science and spirituality

The accepted wisdom among psychologists used to be that these two domains of human experience do not have much overlap and that while psychology may contribute to the understanding of religious behaviour, spirituality really had nothing to tell hard-nosed empiricists and conceptually confined theoreticians.

The resurgence of interest in spirituality in the general community is becoming increasingly reflected in the career development literature. Counselling strategies and assessment techniques abound which deal with spiritual concepts such as purpose, meaning, balance, harmony, passion, mission, commitment, contribution and integrity (Anderson, 1998; Bloch,

2000; Bolles, 2003; Johnston, 2000). Chaos theory stresses pattern and emergent order as characteristics of the functioning of complex dynamical systems. The pattern or fractal of a person's life and career development are functions of each individual's strange attractor. The strange attractor can be understood in terms of what really matters to someone, their 'ultimate concern', the paradigm they have for perceiving, understanding and acting in the world. Thus, chaos theory draws no distinction between the scientific and the spiritual. They are both elements in the functioning of the complex dynamical system that we call our human existence (Morowitz, 2002).

## EPILOGUE

What is being claimed is not that all these new currents of thinking, conceptualising and counselling practice owe their origins to chaos theory. These new realities have derived principally from careers counsellors confronting the daily challenges of 21st century career development, not theorists. Rather, what is being claimed is that chaos theory can provide a coherent understanding of such new currents' significance, their links to each other and to reality in general.

If a lot of this sounds abstract and theoretical, let us conclude by bringing it down to some real life clients. Recently, a couple who had been involved in a very bad motor vehicle accident two and half years ago were referred to one of the authors. They had been partners and sole owners of a home handyman business. They had both sustained many severe injuries and the wife had come close to death. Treatment had been long, arduous and painful. As they contemplated the rest of their lives and the future of their work, they agreed that the whole experience had helped them to appreciate the preciousness of each day and to recognise the limits of their control and knowledge, and the tenuousness of all their plans and goals. They were resolved to make the best of the rest of their lives—personal and vocational—and to contribute to the lives of others. Their experience over the last two years had infused their lives with a new sense of reality and meaning. They had learned what it is for them to live on the edge of chaos—in fact that is where all of us live our lives.

## ACKNOWLEDGEMENT

The authors wish to acknowledge that their work on the chaos theory of careers has been supported by a university research support grant from the University of New South Wales.

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## AUTHORS

DR ROBERT PRYOR has taught and researched career development at UNSW for over 15 years. He has published extensively on career choice, decision making, assessment and ethics. Through his company Congruence, he has developed numerous career assessment instruments that are used widely across Australia in government and private enterprises. He is also a Director of the Vocational Capacity Centre—a multidisciplinary medico-legal practice that specialises in assessing the vocational capacity of injured workers.

DR JIM BRIGHT has taught and researched career development at UNSW since 1995. He has published many papers on job applications and career choice theory. He is author or co-author of several international career books. He also runs training courses for career counsellors around the country and conducts individual coaching, vocational assessment and medico-legal work.

## THEORY AND PRACTICE

This section is designed as a brief professional review of the article. It provides relevant study questions and answers for readers to test their knowledge of the article.

**What is the relevance of chaos theory to contemporary career development theory, research and practice?**

Answer: Chaos theory provides a coherent theoretical framework for understanding career development thinking and behaviour at both the conceptual and the counselling levels, which incorporates many of the lived realities of contemporary career decision making and career management. Chaos theory integrates chance, uncertainty, spirituality, constructivism, complexity and

change—all of which constitute some of the major challenges confronting both counsellors and their clients. In doing so, it offers new perspectives and connections on such challenges, and out of which promising new counselling techniques are being derived. We believe there is a high probability that chaos theory and its derivatives represent the new face of 21st century science in general and career psychology in particular.