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Book Review

Strange attractors: Chaos, complexity, and the art of family therapy. Michael R. Bütz, Linda L. Chamberlain and William G. McCown. New York: John Wiley & Sons, Inc., 1996. Pp. xvi + 267.

There is a natural affinity between the terminology of nonlinear dynamical systems theory and the language we use to characterize family processes. Notions of *stability*, *relationship*, *disorder*, *structure*, and *differentiation* have been used to characterize families long before they were subjected to the scientific scrutiny of nonlinear dynamics. Words like these capture something of the essence of what families are about, and they can be clearly linked to concrete family related matters and events. For example, *stability* means, that a child can rely on his or her parents; *relationship* means among other things that there is a mutual sense of belonging, for example between spouses, or between a child and his or her parents. *Disorder* could mean that there are lots of conflicts and few rules in the way the family carries out its daily affairs, or it could mean that there is disarray in the family because of a sudden crisis. *Structure* means, among other things, that there is a division of roles and responsibilities, or that there are distinctions according to gender and generation, which are respected in the way family members interact. *Differentiation* could mean that family members, no matter how much they cherish their togetherness, would also like to be left alone occasionally, to read a newspaper or to play with a new toy. The connection between nonlinear dynamical terminology and our intuitive ideas about how the family works, is not difficult to appreciate.

There is a more specific reason, however, why the discussion of family processes from a chaos perspective is interesting and important. In the area of family therapy, dynamical systems thinking has been a fundamental premise for almost fifty years. Family systems thinking emerged in part in response to the inability of traditional psychoanalytic models to account for the embeddedness of problematic behavior of children and adolescents in the context of family interaction. Therapists observed, for instance, that when patients appeared to be 'cured', another member of the same family often developed symptoms. Similarly, it was noted that children and ado-

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lescents are assigned the role of symptom carrier of functional problems on the family level, or the role of a 'go-between' between spouses in a marriage which has gone sour. In response to such phenomena, the use of dynamical systems approaches has become an indispensable part of the way in which families are approached for intervention or treatment. Because the use of dynamical systems frameworks is such a time honored tradition in this area, there is an obvious need to examine in greater depth the potential usefulness for family practitioners of recent theoretical developments in nonlinear dynamical systems theory, such as chaos and catastrophe models. This book makes a very meaningful beginning with this endeavor.

This text captures some of the genuine excitement in the field of nonlinear dynamics, in the same way as, for example, Gleick (1987) does; the present volume attempts to convey some of that enthusiasm to family practitioners. Chapters and sections have dynamically suggestive titles such as 'The Eye of the Storm', ' The Eerie Beauty of Strange Attractors', and 'A Walk Through the Canyons', 'Flapping the Butterfly's Wings', and 'Into the Phase Space'. Although the title of the book itself may strike the nonlinear dynamicist as generic, it seduces the newcomer into the esoteric wonders of a potentially powerful new paradigm. After all, new paradigms often carry a promise of great scientific discoveries, and new perspectives on the reality we know. By citing Kuhn's *Structure of Scientific Revolutions* (1970), the authors remind the reader of the inevitability of scientific progress, even though acceptance of this progress may not always come easy at first. The ability of the nonlinear dynamical systems approach to produce a paradigm shift in the Kuhnian sense depends, of course, on its ability to effectively criticize established scientific practices.

This book is divided into four sections. The first part, provides the rationale for the use of nonlinear dynamical principles in psychology, introduces some basic terminology, and addresses some metatheoretical issues associated with the application of chaos theory in the social sciences. The authors offer a critique of the logical positivist assumptions, and of the psychological reductionism which still underlies most empirical work on families. It is suggested that chaos theory offers a viable alternative mode of understanding and interpretation. Five paradigms are identified which form the basis of a nonlinear dynamical systems (NDS) approach to families, i.e., (1) Gregory Bateson's theory of double bind and metacommunication, (2) Wiener's cybernetic theory, as applied to family systems by many family process scholars, such as Haley, and the Milan group, (3) von Bertalanffy's notion of disequilibrium in open systems, (4) autopoiesis, and (5) Prigogine's chaos theory. In addition, nine theoretical constructs are introduced in this section to characterize the differences between NDS theory and traditional paradigms: objectivity versus subjectivity, irreversibility,

complexity, failure of the machine metaphor to understand the behavior of organic systems, the 'butterfly effect', bifurcation, self organization out of chaos, punctuated equilibria, and unpredictability. The remainder of the text is loosely organized around these principles and constructs.

In the second part of the book, the text dives into the elusive complexity of family processes, and explores the clinician's role as a potential healer should families find themselves in a state of disruption. This section also identifies possible strange attractors in the family: 'Perhaps the definitive strange attractor pattern in [family] relationships is the fluctuation between fear (loss of the other) and love (loss of self). The strange attractor reflects the complex interaction of these elements within and between individuals.' (p. 74)

In the third, and best, section of the book, case examples vividly illustrate how the central dilemmas of the field may be approached using a complexity perspective. Often, when families enter treatment, they are in a state of great turbulence, and need help finding more stable options of self regulation than the ones that seem available to them; in other instances, families who are rigidly dysfunctional need to be destabilized in order to make structural changes possible. However, if families are destabilized, it is difficult to fully oversee the consequences, as a number of case discussions presented in this book illustrate with great (and sometimes painful) clarity. The unpredictability of outcomes, if high levels of instability are reached, is a clear example of where recent developments in NDS modeling may offer new guidance to family practitioners. In many systems approaches to family therapy, such as Minuchin (1974), inducing crises is used as an approach to break through rigid communication patterns. Chaos theory offers a word of caution here: in periods of great instability, bifurcations may occur, and the nature of the transformations which follow are not fully predictable.

The fourth and final section of the book offers some general observations about the family-therapeutic profession, and how NDS perspectives may help clarify its role in the mental health professions.

The strength of this book lies significantly in thoroughness of its digestion of the family therapy literature. There is an excellent discussion of how nonlinear dynamical thinking has dominated the field of family therapy for quite some time, and the text takes advantage of the fact that family practitioners will be able to relate to its premises and terminology. The conceptual points of departure, such as double bind, metacommunication, openness, and feedback, are nevertheless briefly outlined for the novice, before the text embarks upon its exciting and turbulent journey into the most recently uncovered territory in NDS theory. Description of this theory is inspiring and engaging, and it helps family practitioners start their own

thinking as chaos theoreticians. Very amusing is the illustration of the different types of attractors. (How would you explain the difference between fixed point attractors and chaotic attractors if you have a bear, a skunk, a trail, and a hiker at your disposal?!) As in many chaos texts, the visual display of attractors, fractals, and period doublings is very effective in illustrating the dynamical nature of the conceptual framework.

The book is also very candid about the limitations of nonlinear dynamical family systems paradigms to help practitioners change reality in desirable directions. There is great integrity in many of the discussions of how chaos theory can be used to approach professional dilemmas. Using vivid case discussions as examples, it is discussed how certain decisions may in retrospect not have been the best ones, and the book shows how chaos theory might have helped us to at least better phrase problems, and perhaps even suggest better solutions. For example, a working couple have a son, whose problem behavior brings them into therapy. After the therapist attempts to destabilize the system by suggesting to the parents that their jobs are, in effect, their 'lovers', the family drops out of treatment, leading to a further deterioration of the behavior of their son. The retrospective moral of this case vignette is that attempts to drastically restructure the family system may meet an equally drastic stabilizing response.

Also very good are the illustrations of the unpredictability of behavior at high levels of turbulence, and the descriptions of how such major transformations may initially result from minor fluctuations. In one case, a couple in their sixties are caretakers of their thirty seven year-old son, who, in part as a result of brain injuries, is unable to take care of himself, and whose behavior is extremely disagreeable. The family has been unresponsive to previous treatment efforts, and the son's behavior is deteriorating to such a point that he is involuntarily committed to a psychiatric institution. Noticing the central role of the son in the lives of these spouses, the family therapist disallows visits to unbalance the system. An incidental conversation between these parents and an acquaintance about disabled children sets the parents off on an entirely different course. They take off to retire in Florida, and consistently refuse to take their son back, or have any sustained contact with him.

Other case discussions illustrate how upsetting family stability can have the desired effect. In one family, a 13-year old boy had fallen into a pattern where he switched households between mother and grandmother in order to avoid adult supervision. In response to this situation, the adults were in effect competing with each other to be the "nicest" caretaker of the boy. The therapist successfully unbalanced this system by coaching the caretakers into a consistent set of rules. Her intervention initially caused a crisis,

which, however, was followed by consistent improvements in the behavior of the boy.

Retrospectively, therapists can wonder about the unpredictability of behavior once a system is pushed into a state of disequilibrium. Cases such as these illustrate the potential danger of therapeutic destabilization, but also their necessity, when qualitative structural change is part of the therapeutic objectives. The authors rightly stress the importance of therapists' desire to avoid that families drop out of treatment, making further therapeutic monitoring impossible. Traditional approaches to family therapy such as those of Minuchin, and the Milan group, were sufficiently aware of the potential dangers of destabilization of family systems. However, chaos theory adds a new element to the discussion by formalizing the unpredictability of its consequences. At high levels of fluctuation, a bifurcation of attractors (stable orientations) occurs, and the 'new' orientation points required for self organization are often beyond the control of the therapist.

As a general principle, the authors suggest that in addition to exercising proper caution in the approach to family crises, therapists must carefully select specific areas of turbulence, and dampen rather than amplify potential disruption. Among the alternative approaches discussed in this book are lowering tension in the early stages of the therapy. In addition, the therapist can focus, in the initial stages of treatment, on the pursuit of 'first order change' by enhancing problem solving strategies in the family, while leaving its structure in place. In other instances, the therapeutic challenge is to add new information, or behaviors, to an existing behavioral pattern in order to help move the family to the far-from-equilibrium point that is required for structural transformation. However, in such cases, the therapist needs to reduce the threat of undesirable consequences.

Other professional concerns are not equally well served by NDS theory in this book. The inability of empirical research to demonstrate the effectiveness of various psychotherapeutic approaches, including family therapy, should be an area of grave concern in the field. To dismiss these findings, as this book does, as reflecting the limitations of linear approaches to research does not strike me as the most ingenious response from family therapy circles. Similarly, the use of nonlinear dynamical principles to advocate insurance coverage for longer treatment does not seem to best clarify how a nonlinear approach might enhance our understanding of the therapeutic process. If it comes from family therapists, this point of view may actually strike some suspicious souls as self-serving. The question of how the use of nonlinear dynamical principles in the analysis of family data may alter our outlook on the field is somewhat more complex than its treatment here suggests.

This book also shares with quite a few other nonlinear dynamical texts, a tendency to justify the use of complexity theory in psychology by critiquing a very narrow reading of the linear model. It is repeatedly suggested in this text that the NDS approach is the only alternative to a linear way of thinking about data analysis. This is not true, of course. Many statisticians are well able to fit nonlinear curves, without necessarily adhering to an NDS paradigm, and chaos theoreticians are similarly able to extend model fitting procedures borrowed from the linear model to include nonlinear dynamical models (e.g. Clair, 1998; Guastello & Philippe, 1997).

Also a less interesting part in this book is the historical perspective that is offered with respect to the place of NDS in the evolving discipline of psychology. NDS is presented as the answer to just about any limitation in traditional approaches in psychology, from the lack of context in behaviorism to the lack of a dynamical description of adaptive behavior in artificial intelligence, logical positivism, generalizibility of results from experiments, and so on. Take behaviorism for example. The analysis of how behavior is strengthened through reinforcement seems to be a very suitable area of application of NDS: It is an example of a nonlinear feedback process; it could be a test case for catastrophic transformation, and it exemplifies a qualitative transition from random behavior to contingent behavior. A more precise appreciation of the place of NDS in the field of psychology might allow us to contemplate such possibilities.

In my opinion, it is somewhat misleading to suggest that NDS is the only alternative to the dominant logical positivist paradigm in psychology. There has been a long phenomenological tradition in many social sciences, including psychology, which has rejected the traditional assumptions of logical positivism, including the naive empiricist assumption of objectivity, psychological reductionism, value free science, and so on (e.g. Kaplan, 1964) in pretty much the same way as NDS would do. It seems appropriate to view NDS in light of developments in both intellectual traditions.

Whether NDS can be seen as part of existing alternatives to nomothetic science in psychology is an interesting question in its own right. Perhaps NDS is a 'third force', which addresses the limitations of both logical positivist and more qualitatively oriented approaches to science: instead of disregarding irregularities, as traditional logical positivist thinking tends to do, these irregularities are of primary interest to the nonlinear dynamical systems scholar. Like phenomenological, hermeneutic, and other idiographic traditions, NDS is concerned with the dynamical underpinnings of psychological processes, qualitative changes in behavior, and the significance of coincidental occurrences. Unlike phenomenology and hermeneutics, however, NDS renders great precision to the description of such

processes and particularities, because its terminology is mathematically grounded.

In sum, the appreciation in this book of nonlinear dynamical approaches to family therapy is more effective than its critique of existing scientific practices in psychology in general. For practitioners in the field of family therapy, reading this book should be an exciting eye opener. For research oriented scholars, its value lies in the extensiveness of the discussion of the connection between NDS and the classical family systems approach. In addition, the text also illustrates the need for a more precise definition of terms in this area, and for a more thorough consideration of the methodological implications of the use of NDS in the study of families.

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