young Alice fell. Faced with choosing a fork in the road ahead, Alice poses her predicament to the Cheshire Cat lounging on the branch of a nearby tree: "Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where," said Alice.

"Then it doesn't matter which way you go," replied the Cat.

Management gurus can learn a lot from the Cheshire Cat. Things always appear pretty puzzling—even chaotic—to those who don't know where they are going. It remains impossible to divorce the techniques of management from an analysis of the destination. As Conner points out, good leadership creates a "journey" in which growth takes place, as opposed to simply managing a "trip" made up of travel alone.

THOMAS H. LIPSCOMB

Managing the Unknowable

Strategic Boundaries Between Order and Chaos in Organizations

Ralph D. Stacey (Jossey-Bass, 1992)

Complexity and Creativity in Organizations

Ralph D. Stacey (Berrett-Koehler, 1996)

Ralph Stacey clearly did a lot of studying between the times he published *Managing the Unknowable* in 1992 and *Complexity and Creativity in Organizations* in 1996. It's just not clear that his learning translates into better learning for his readers. *Managing the Unknowable* discusses chaos theory—the edge of, the multiple characteristics of, use of fractals in—and what it all means in managing organizations. *Complexity and Creativity in Organizations* tells us about complexity science—fitness landscapes, Boolean networks, cellular automata, adaptive feedback networks—as well as learning theory, psychoanalytic theory, and what it all means in managing organizations.

Managing the Unknowable challenges management's current mental models, and, although the book was published seven years ago, they are

still, for the most part, management's current mental models. Stacey writes:

> The purpose of the book is to provoke managers into questioning their received wisdom about organizational control and considering the possibility of new strategic directions.

He uses chaos theory to challenge the long-cherished but often disappointing belief in prediction and control. He tells managers that they should not abandon their concern for the long term but to recognize the uncertainty of its nature. He points out that their mental model of control is out of touch with the nature of change: "Trying to control the outcome of open-ended situations carries with it the certainty of ultimate failure."

Peter Senge's *The Fifth Discipline* is a strong influence in *Managing the Unknowable*. Senge's book was two years old in 1992 and a bestseller among managers, particularly those who had been exhorted by W.E. Deming to study systems. Stacey widely quotes Senge in discussing patterns, structure, vision, mental models, inquiry and organizational learning. He takes these ideas and builds on them nicely with the principles of chaos theory.

One blow to conventional wisdom in the book is that long-term planning's only value may be as a talisman against the anxiety of uncertainty. This is like a passenger on a sputtering aircraft who wards off fear and danger with thoughts of his plans for tomorrow's golf game. Stacey gives us pause to think that we may still be fairly primitive in our thinking—in the barrooms and in the boardrooms.

Stacey brings to light in *Managing the Unknowable* that we can't accurately and reliably predict and control what happens in the future, and that we may as well admit it and manage our organizations from that perspective. This view would at least make an executive think before he or she makes a "Read my lips" statement.

The reader learns that stability is a fantasy and not particularly desirable. Instability—the edge of chaos—generates creativity. However, the creative product may be the result of a very painful and difficult birth.

References to power and leadership are thought provoking. Top managers' use of power affects the tightness or looseness of the boundaries. Fluctuating boundaries allow for adaptability.

Stacey discusses the tension between the hierarchy that is necessary

for stability and efficiency and the informal networks that generate new issues and change. He is wary of flexible management structures, which he defines as characterized by "unclear roles, dispersal of power and widespread participation in decision-making." The vision and values are tightly shared. Participative management and self-managing teams were highly regarded in the management literature of the early 1990s. But according to Stacey, the danger in these activities is that the control system vital to dealing with the short term and predictable is at risk. And the single-vision, monolithic belief system in this type of organization does not nurture innovation.

He says that the network model and the hierarchy are not mutually exclusive but are processes that should be used as the situation demands—the self-organizing manager emerges.

Managing the Unknowable is a gift from the author—not only to managers, but also to those who have to work for them.

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Complexity and Creativity is a very different kind of book. It is as alive with complexity jargon as Minnesota is with mosquitoes in July. Dr. Stacey is clearly a brilliant man and, like a dying genius, he is trying to tell us everything he knows at once.

He relates the science of complexity to psychoanalytic explanations of creativity. He discusses fitness landscapes and learning theory within paragraphs of each other. Deterministic networks bump up against dialectical evolution. Organizational theory is sprinkled throughout the book like coconut on a birthday cake.

The purpose of the book is unclear but appears to be stated in the preface:

> We need a new way of understanding life in organizations and that is what this book sets out to do, by looking for more useful ways of understanding the intertwined stability and instability, the dynamic between legitimate and shadow systems, that we repeatedly encounter in organizational life.

The glossary is very useful and provides clear definitions for words that seem frequently to change their meaning throughout the management/complexity literature.

An attentive editor would have been helpful in the following areas:

1 The book is a superficial synthesis of multidisciplinary knowledge. Each chapter could have been developed into a book in itself—though not necessarily one of interest to managers who have to get up and do a day's work in the morning. It is a spider's web of sturdy individual threads that don't connect well and won't catch any flies.
2 It appears to have been rushed. He states, "we use antibiotics as a survival strategy against viruses…" That antibiotics are not used against viruses but against bacteria is common knowledge.
3 Many sentences are so long and arduous that by the time the end is reached the reader is in danger of having forgotten the beginning.

The book may be interesting to those who are complexity addicts and enjoy trekking through the jargon jungle. However, for the busy manager who has to deal with work as real life, *Managing the Unknowable* is far more useful and far far more likely to be read past the first chapter.

Essentially, the advice offered to managers is the same in both books—appreciate that the concepts of chaos (in *Managing the Unknowable*) and complexity science (in *Complexity and Creativity in Organizations*) offer a more useful framework for understanding our world and our organizations.

The difference in these two books poses a question for consultants and management advisers. How much do managers have to know about the science to apply the fundamental principles of the nature of complex adaptive systems to their work? Maybe not very much at all.

HELEN HARTE

Complexity has been a hot topic for more than a decade, with a few pioneers like Ralph Stacey among the leaders in working to apply the concepts to human organizations. Like a host of distinguished theories borrowed from psychology (Bion's fight, flight and bonding: Bion, 1959), history (Neustadt and May, 1986), sociology (Blau, 1955), economics (Penrose, 1959), and general systems (von Bertalanffy, 1968), for example, complexity theory comes to management from other disciplines. The theory of self-organizing systems emerging from a particular form of complexity has roots in the mathe-

matics of fractals and in biology. Like its predecessors too, its application to organizations serves to open the doors of our perception to new insights on how people interact, and thus how they might be managed more effectively.

Because complexity theory addresses organization *per se*, it is an especially appropriate import, as Stacey, professor of management and director of the Complexity and Management Centre at the Business School of the University of Hertfordshire, makes clear in *Managing the Unknowable*, the earlier of these two volumes. His thesis is that since business organizations and their managers cannot accurately predict the future, conventional advice to pursue organizational stability and internal harmony by planning and control is doomed. Indeed, because at some level everyone knows that the future is unknowable, strategic plans are typically ignored. Meanwhile, efforts to enforce long-term consensus around the plan merely stifle an essential diversity of views, the very raw material that might engender success if only dissent were permitted.

Instead of rigidly enforced plans and lockstep responses, Stacey advises managers to embrace uncertainty and dissent, using controversy to surface relevant facts. Disputation thereby contributes to the quality of solutions around particular strategic agenda items, permitting temporary, negotiated consensus after thorough discussion. Such an approach rests on argument, not harmony; on a disparate, not a homogenous culture; and on explicit contradiction, not artificially smoothed interactions. Strategy for the future is simply too complicated and too ambiguous to be dealt with in any other way. Moreover, Stacey points out that the edge of chaos—a formally defined region between total disorder on the one hand, and too much order on the other—is where true creativity resides.

Complexity and Creativity in Organizations, the more inclusive of the two volumes, builds on these ideas and adds in psychoanalytic theory as well. The dominant managerial paradigm advises managers to create order and control, pretending that human emotion is irrelevant, but leads them instead to create a vicious circle of self-sealing behavior that undercuts and prevents the order for which they strive. Since both the organization and its environment are continually changing, richly interlinked and responsive to unpredictable factors beyond management's purview, they are impossible to predict accurately. As a result, anxiety and fear of failure drive ever-tighter controls for plans that become less and less representative of the changing environment, and thus less and

less legitimate. With their efforts' failure, managers turn frantically to the next guru in the hope of salvation. The more managers seek to foresee and control, by whatever method, the less successful their efforts are, while their failures "end up provoking cynicism, disillusionment, anxiety and hostility" (p. 9). In short, the old rules don't work.

What is needed instead, says Stacey, is an approach that frankly acknowledges the nature of human organizations as complex, adaptive nonlinear-feedback networks. Complexity theory addresses the fundamental properties of such systems, comprised of a number of agents that interact in response to each other's behavior, seeking to improve their outcomes and thus that of the system of which they are a part. In *Complexity and Creativity*, Stacey is at pains to describe just how complexity theory maps to human beings in organizations, and to suggest analogs at various levels—individual, group and organization—that, like fractals, reproduce a subtly different yet recognizable pattern at each level. Stacey builds on much earlier work in individual and group psychology, scaling up to organizational levels. The power of this idea is difficult to understate: it cues up our attention to seek out the similarities-with-a-difference that enable Stacey to explain "organizational creativity," his focus here, without reifying.

Creativity in adaptive systems occurs in a special zone between the unstable disorder of chaos and the stability of no change—"at the edge of chaos, in the space for novelty." Using complexity theory's discoveries in the biological sciences, Stacey outlines the characteristics of the space where novelty occurs in organizations. His description of the novelty space for groups is instructive. First, novelty occurs in a phase transition between stability and instability. A state of paradox exists, sustaining contradictory possible outcomes; and alternative perspectives exist within the group. Further, as the group "plays," enacting nontask or offtask "shadow" agendas, real objects may be used in fantastical ways, and images, metaphors, and analogies arise to change the way in which people think. This essential creative destruction (of old habits of mind) in a group can be sustained long enough to overcome the tendency to revert to the safe, stable patterns of the past only if some intermediate level of tension or anxiety is maintained. Too little anxiety, and stability rules; too much, and defensive behaviors dominate:

> For individuals, as for groups of people, we see that the space for novelty has a clear meaning that is already identified in the psychoanalytical lit-

> erature on group behavior and that this space has the same characteristics as other nonlinear feedback networks. (p. 151)

This discussion of group novelty space sits at the heart of Stacey's discussion of creativity in organizations. It is essential to address the scaling up, since groups are not individuals, and organizations are groups of groups. At the same time, however, individuals make up both groups and organizations. Tradeoffs occur between inspiration and anxiety, conformity and individualism, leadership and followership, and participant and observer roles within individuals and groups, to affect organizational creativity: "Organizations are creative when their individual members learn and interact creatively with each other in groups" (p. 165). For organizations, as for individuals and groups, creativity occurs in the phase transition between stability and instability.

This idea is quite consistent with a more deeply thoughtful version of the old "unfreeze, change, refreeze" model: the more recent "creative tension between stability and change" noted by Jelinek and Schoonhoven, (1994), or the cyclical view of organizational renewal as predicated on the failure of the prior stability regime (Hurst, 1995), among others. In essence, Stacey argues that since the human mind is a complex, nonlinear adaptive system, it is networked and playful, and its play occurs in a phase transition state between stability and chaos, where anxiety is sufficient to motivate "something different," but not so great as to call forth defensive mechanisms to reinstate former stability. Similarly, groups operate in a quite parallel fashion, as do organizations, both being made up of individuals.

Rather than maintaining stability and control, managers' and executives' roles, in Stacey's view, move increasingly toward fostering the conditions to permit active learning. This means maintaining diverse viewpoints, rapid information flow, rich connectivity among individuals and groups, and a culture that legitimates constructive confrontation. Stacey's reliance on underlying psychoanalytical theory forms a counterpoint to the complexity theory that is his subject: it's an interesting juxtaposition, melding the abstraction of complexity to the intimate subjectivity of psychoanalysis. His insistence on the importance of anxiety and of acknowledging the role of the shadow organization (what earlier researchers called "the informal organization"; Homans, 1950) reclaims a close link with the emotional business of people in groups that has often

been missing in discussions of strategy or knowledge management.

The management research community's current dominant schema, its metaparadigm, reflects the origins of that schema in neoclassical economics, an attempt to understand the organizational world at a level that ruthlessly abstracts from human behavior. An abundant literature of organizational change, power and interpersonal interaction exists, as Stacey acknowledges. Too often, such work has been dismissed as illegitimate or irrelevant to "real" organizational concerns. Yet because organizations are made up of human beings, whether it is convenient to acknowledge this or not, including them is quite central to understanding organizations, and to making theoretical headway in our strategy research. Blending complexity theory with psychoanalysis allows Stacey to actively include well-documented human interaction patterns, and to scale them up to group and organizational levels. Doing so subverts widely accepted research agendas and methodologies, as well as the traditional managerial paradigm.

The dominant strategic management paradigm, as articulated by Rumelt, Schendel and Teece (and innumerable management gurus), insists on equilibrium, causality and predictability, internal consistency, choice and intention (Rumelt, Schendel *et al.*, 1994). Yet these are precisely the assumptions rendered ineffective by the very nature of complex, nonlinear adaptive networks. Complex feedback systems are not equilibrium systems, for stability is at best a temporary condition, at worst the organizational equivalent of heat death. They are neither predictable nor do they perform in anything like a simple cause–effect fashion, since unanticipated consequences, exogenous factors and nonscalable reactions characterize their interactions. Internal consistency stamps out the variety that might engender creative response (Dougherty, 1992; Dougherty and Heller, 1994), and choice and explicit intention are possible only in the short term. Firms do not behave as the current paradigm suggests that they "should," and the best of firms appear to constantly inhabit a messy, disorderly region of creative change. The entire process is substantially less predictable and "rational" than most researchers would have us believe.

Having argued this view of organizations, Stacey argues as well for a new research agenda to test it. Such research, based on complexity and psychoanalysis, would address how people behave in organizations, and thus how their differing behavior creates different sorts of organi-

zations. Understanding is to be found "in terms of the feedback network system that human agents constitute when they interact" (p. 255). Among the fundamental research questions newly posed by this approach are these:

- How do groups of people form and behave in the shadow system of legitimate organizations? Is there evidence that organizations are creative at the edge of chaos? What causes an organization to occupy this space? What control parameters serve to keep an organization in this state, how might an organization measure them, or determine whether it is at the edge? How can power use be managed? What causes self-organization? Emergence?
- What are the characteristics of the leader–follower dynamic in the space for creativity? How is controlled behavior maintained? What is the role of leaders in this space? What are the consequences of being in this space for specialization as leader or follower?
- What link can be identified between processes in organizations and successful competitive capability? What can cause an organization to lock into a particular strategy? What determines how long such locked-in organizations survive? What is the role of redundancy and slack resources in practice? How does thinking differently alter behavior in organizations?
- What kinds of management and consulting interventions make sense in the space for creativity?

Among the most thought-provoking aspects of Stacey's approach to organizations is his conclusion about research methodology. Since human organizations are reactive, live, and changing in response to the very presence of a researcher: "Any residual notion that a researcher is some kind of independent, objective observer has to be abandoned" (p. 261). Of course, Stacey isn't the first to assert this; ethnographic researchers have acknowledged it for some time (e.g., Goodall, 1994; Geertz, 1973). However, Stacey's is the most carefully argued and rigorous rationale to date for why such a shift is both inescapable and highly desirable. It is also coupled with a stance of informed skepticism and attention to the need for corroboration. But there are many more questions than answers.

Stacey points out that the organizational research problem is vastly more complex once we recognize that some organizations may be

operating at the edge of chaos in their creativity space, while others have been sucked back into stability; comparing the two will be like apples and oranges. Large-scale cross-sectional analysis, particularly where long lag times exist, will be worthless, because conditions change over time. Worse still, people in organizations say one thing while they are doing another (Argyris and Schon, 1978), and may be unaware or unable to articulate what they are doing (Nonaka, 1991). Thus simple questionnaries, surveys, and interviews will then not reveal what is really going on. In these circumstances, the clinical methods of the psychoanalyst or consultancy stance are more appropriate. The sensitive participant observer can use his or her feelings in the situation to hypothesize what is actually happening. This means that we have to give up the notion that we can understand the system by formulating falsifiable hypotheses and then seeking to disconfirm them. Instead, we may have to reformulate what we are doing as trying to make more sense of our own and others' experience of organizational life (p. 262).

How, then, is rigorous research to be performed? How, under conditions of such uncertainty, can we hope for corroboration to prevent us from seizing the comfortable, the convenient, or the titillating explanation? As H.L. Menken had it, "For every complex problem, there is a simple, obvious answer. That is wrong." To his credit, Stacey advises seeking methods to measure and test whether his framework indeed does predict. But the appropriate methods, criteria and tests for complexity and psychoanalytic perspectives are yet to be determined. Computer modeling may offer some means to test; yet, even here, stochastic approaches or fuzzy logic (Zadeh and Kacprzyk, 1992) will be more appropriate than the current *armamentarium* of predictive tests and statistics. New methods are needed.

There are no easy answers, for researchers or for managers. However, by frankly recognizing the nature of the phenomena we seek to comprehend—that human organizations partake importantly of their human agents' characteristics—we may have at least some hope of deeper insight to carry us beyond the clearly inadequate simplifications of our current approaches.

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Open Boundaries

Creating Business Innovation through Complexity

Howard Sherman and Ron Schultz (Perseus, 1998)

The purpose of *Open Boundaries* is to bring the philosophical principles of complexity thinking to bear on modern-day problems of business management. The authors claim that a shift in thinking about principles, models, rules and behaviors