

Kurt Lewin and complexity theories: back to the future?

BERNARD BURNES

Manchester School of Management, University of Manchester Institute of Science and Technology, Manchester, UK

ABSTRACT *Many writers acknowledge the significance of Kurt Lewin's contribution to organizational change. However, over the last 20 years, where the focus has been on rapid, transformational change, Lewin's work has increasingly become seen as outmoded and irrelevant to the needs of modern organizations. It might be expected that this tendency would increase as academics and practitioners draw on the work of complexity theorists to portray organizations as complex, dynamic, non-linear self-organizing systems. Though there are some who do take this view, there are others who point to the similarities between Lewin's work and that of complexity theorists. In order to examine these conflicting views, the article begins by reviewing Lewin's Planned approach for change and arguing that it is a more robust approach than many of its detractors acknowledge. This is followed by a review of the literature on complexity theories which draws out the main implications of these for organizational change. The discussion of the two approaches which follows argues that there is common ground between the two which can fruitfully be built upon. The article concludes by arguing that if the complexity approach is the way forward for organizations, then they may have to return to Lewin's work in order to implement it: very much a case of 'back to the future'.*

KEY WORDS: Kurt Lewin, planned change, complexity theories

Introduction

Change is a constant feature of organizational life and the ability to manage it is seen as a core competence of successful organizations (Burnes, 2004b). However, there are significant differences in how it is perceived: is it incremental, punctuated or continuous; can it be driven from the top down or is it an emergent process? (Quinn, 1980,1982; Gersick, 1991; Wilson, 1992; Romanelli and Tushman, 1994; Greenwald, 1996; Brown and Eisenhardt, 1997; Dawson, 2003). These differences are the product of the changing organizational landscape of the last 20 years, where globalization, technological innovation and economic fluctuations have led to a desperate search for increased competitiveness through more and more radical forms of change (Cooper and Jackson, 1997; Kanter *et al.*,

Correspondence Address: Manchester School of Management, University of Manchester Institute of Science and Technology, Manchester, M60 1QD, UK. Email: Bernard.Burnes@umist.ac.uk

1997; Peters, 1997; Beer and Nohria, 2000; Johnson and Scholes, 2002; Stacey, 2003).

However, increasingly over the last decade, academics and practitioners have come to view organizations through the lens of complexity theory, and this is beginning to have a profound impact on view of how organizations should be structured and changed (Wheatley, 1992; Lewis, 1994; Bechtold, 1997; Morgan, 1997; Tetenbaum, 1998; Arndt and Bigelow, 2000; Black, 2000; MacLean, 2001; Fitzgerald, 2002a; Stacey *et al.*, 2002). Complexity theory serves as an umbrella term for a number of theories, ideas and research programmes that are derived from different disciplines in the natural sciences (Rescher, 1996; Styhre, 2002; Stacey, 2003). To emphasize the diversity of viewpoints amongst complexity researchers, this article will follow Black's (2000) lead and use the term complexity theories rather than theory.

Complexity theories are concerned with the emergence of order in dynamic non-linear systems, such as weather systems, operating at the edge of chaos: in other words, systems which are constantly changing and where the laws of cause and effect appear not to apply (Wheatley, 1992; Beeson and Davis, 2000; Haigh, 2002). Order in such systems manifests itself in a largely unpredictable fashion, in which patterns of behaviour emerge in irregular but similar forms through a process of self-organization, which is governed by a small number of simple order-generating rules (Tetenbaum, 1998; Black, 2000; MacIntosh and MacLean, 2001). Many writers have argued that organizations are also complex systems which, to survive, need to operate at the edge of chaos and have to respond continuously to changes in their environments through just such a process of spontaneous self-organizing change (Lewis, 1994; Stickland, 1998; MacIntosh and MacLean, 1999, 2001; Hayles, 2000; Macbeth, 2002; Stacey, 2003).

This is a far cry from the 1950s, 1960s and 1970s, where the received wisdom was that change was an incremental process (Quinn, 1980) and that the best way to manage this was through Kurt Lewin's Planned approach to change (French and Bell, 1990; Cummings and Worley, 2001). Given its group-based, consensual and relatively slow nature, Planned change began to attract criticism in the 1980s from those questioning its appropriateness in an era of radical organizational change (Peters and Waterman, 1982; Wilson, 1992; Dawson, 1994; Buchanan and Storey, 1997; Hatch, 1997). The following quotation is perhaps typical of the criticisms levelled against Lewin's approach to change:

Lewin's model was a simple one, with organizational change involving three stages; unfreezing, changing and refreezing ... This quaintly linear and static conception—the organization as an ice cube—is so wildly inappropriate that it is difficult to see why it has not only survived but prospered. ... (Kanter *et al.*, 1992: 10).

Some commentators have seen the advent of complexity theories as strengthening the case against Lewin (Stacey, 1996; Styhre, 2002). Conversely, others have noted similarities between Lewin's work and that of complexity theorists (Back, 1992; Tschacher and Brunner, 1995; Kippenberger, 1998a; MacIntosh and MacLean, 2001; Elrod and Tippett, 2002). This article supports the latter view, arguing for the continuing relevance of Lewin's work in the light of complexity theories. The article begins by revisiting Lewin's Planned approach to change,

then goes on to examine complexity theories and change. The study then identifies common ground between Planned change and complexity theories. It concludes that Planned change can provide a vehicle for implementing a complexity approach to organizations.

Kurt Lewin and planned change

Few social scientists can have received the level of praise that has been heaped upon Kurt Lewin (French and Bell, 1990; Ash, 1992; Bargal *et al.*, 1992; Tobach, 1994; Dent and Goldberg, 1999; Dickens and Watkins, 1999). Indeed, his reputation was such that when Edward C. Tolman gave his memorial address for Kurt Lewin at the 1947 Convention of the American Psychological Association (quoted in Marrow, 1969: ix), he stated that:

Freud the clinician and Lewin the experimentalist—these are the two men whose names will stand out before all others in the history of our psychological era.

Echoing this praise some 40 years later, Edgar Schein (1988: 239) referred to him as ‘... the intellectual father of contemporary theories of applied behavioural science ...’

Lewin was a humanitarian who believed that only by resolving social conflict, whether it be religious, racial, marital or industrial, could the human condition be improved (Marrow, 1969; Lewin, 1992; Tobach, 1994; Cooke, 1999). He believed that only the permeation of democratic values into all facets of society could prevent the worst extremes of social conflict that he had seen in his lifetime (Lewin, 1943b). Lewin believed that the key to resolving social conflict was to facilitate Planned change through learning, and so enable individuals to understand and restructure their perceptions of the world around them. A unifying theme of much of his work is the view that ‘... the group to which an individual belongs is the ground for his perceptions, his feelings and his actions’ (Allport, 1948: vii). As Burnes (2004a) has shown, Lewin’s Planned approach to change comprised four elements: Field Theory, Group Dynamics, Action Research and the 3-Step model of change. Though these tend, now, to be treated as separate elements of his work (Wheelan *et al.*, 1990; Back, 1992; Gold, 1992; Hendry, 1996), Lewin saw them as a unified whole with all of them necessary to bring about Planned change (Allport, 1948; Bargal and Bar, 1992; Kippenberger, 1998a,b; Smith, 2001).

Field Theory

This is an approach to understanding group behaviour by mapping out the totality and complexity of the field in which the behaviour takes place (Back, 1992). Lewin stated that: ‘One should view the present situation—the *status quo*—as being maintained by certain conditions or forces’ (Lewin, 1943a: 172). Lewin (1947b) postulated that group behaviour is an intricate set of symbolic interactions and forces that affect group structures and individual behaviour. Therefore, individual behaviour is a function of the group environment or ‘field’ as he termed it. Consequently, any changes in behaviour stem from changes, be they small or

large, in the forces within the field (Lewin, 1947a). A field is 'a totality of coexisting facts which are conceived of as mutually interdependent ...' (Lewin, 1946: 240). Lewin believed that a field was in a continuous state of adaptation, which he termed 'quasi-stationary equilibrium' (Lewin, 1943a), and that 'Change and constancy are relative concepts; group life is never without change, merely differences in the amount and type of change exist' (Lewin, 1947a: 199).

Group Dynamics

Lewin was the first psychologist to write about 'group dynamics' and the importance of the group in shaping the behaviour of its members (Lewin, 1939; Allport, 1948; Cartwright, 1951; Bargal *et al.*, 1992). Group Dynamics stresses that group behaviour, rather than that of individuals, should be the main focus of change (Bernstein, 1968; Dent and Goldberg, 1999). Lewin (1947b) maintained that it is fruitless to concentrate on changing the behaviour of individuals because the individual in isolation is constrained by group pressures to conform. Consequently, the focus of change must be at the group level and should concentrate on factors such as group norms, roles, interactions and socialization processes to create 'disequilibrium' and change (Schein, 1988).

Action Research

Lewin conceived of Action Research as an iterative, two-pronged process whereby research leads to action, and action leads to evaluation and further action (Lewin, 1946; Bennett, 1983). Its theoretical foundations lie in gestalt psychology, which stresses that change can only successfully be achieved by helping individuals to reflect on and gain new insights into the totality of their situation (Smith, 2001). Lewin (1946: 206) stated that Action Research '... proceeds in a spiral of steps each of which is composed of a circle of planning, action, and fact-finding about the results of the action'. As Schein (1996: 64) comments, it was Lewin's view that '... one cannot understand an organization without trying to change it ...' Indeed, Lewin's view was very much that the understanding and learning which this process produces for the individuals and groups concerned, which then feeds into changed behaviour, is more important than any resulting change as such (Lewin, 1946).

Action Research draws on both Field Theory, to identify the forces that focus on the group to which the individual belongs, and Group Dynamics, to understand why group members behave in the way they do when subjected to these forces. It stresses that for change to be effective, it must be a participative and collaborative process which involves all of those concerned (Lewin, 1947b; Allport, 1948; French and Bell, 1990; Bargal *et al.*, 1992; Day *et al.*, 2002).

Over the last 50 years, Action Research has acquired strong adherents throughout the world (Elden and Chisholm, 1993; Eden and Huxham, 1996; Dickens and Watkins, 1999; Darwin *et al.*, 2002). However, Lewin (1947a: 228) was concerned that:

A change towards a higher level of group performance is frequently short lived; after a 'shot in the arm,' group life soon returns to the previous level. This indicates that it does not suffice to define the objective of a planned change in group performance as the reaching of a different

level. Permanency at the new level, or permanency for a desired period, should be included in the objective.

It was for this reason that he developed his 3-Step model of change.

3-Step Model

Lewin conceived of this as one part, along with Field Theory, Group Dynamics and Action Research, of an integrated approach to analysing, understanding and bringing about Planned change at the group, organizational and societal levels (Lewin, 1946; Bargal and Bar, 1992). Lewin (1947a) believed a successful change project involved three steps:

Step 1: unfreezing. For Lewin, human behaviour was based on a quasi-stationary equilibrium supported by a complex field of forces. Before old behaviour can be discarded (unlearned) and new behaviour successfully adopted, the equilibrium needs to be destabilized (unfrozen). Lewin did not believe that this would be easy or that the same techniques could be applied in all situations:

The 'unfreezing' of the present level may involve quite different problems in different cases. Allport ... has described the 'catharsis' which seems necessary before prejudice can be removed. To break open the shell of complacency and self-righteousness it is sometimes necessary to bring about an emotional stir up (Lewin, 1947a: 229).

Step 2: moving. Unfreezing is not an end in itself; it '... creates motivation to learn but does not necessarily control or predict the direction' (Schein, 1996: 6). It is necessary to take into account all the forces at work, and identify and evaluate, iteratively, the available options (Lewin, 1947a). This Action Research-based learning approach enables groups and individuals to move to a more acceptable set of behaviours.

Step 3: refreezing. This seeks to stabilize the group at a new quasi-stationary equilibrium in order to ensure that the new behaviours are relatively safe from regression. The new behaviour must be, to some degree, congruent with the rest of the behaviour, personality and environment of the learner or it will simply lead to a new round of disconfirmation (Schein, 1996). This is why Lewin saw successful change as a group activity, because unless group norms and routines are also transformed, changes to individual behaviour will not be sustained. In organizational terms, refreezing often requires changes to organizational culture, norms, policies and practices (Cummings and Worley, 2001).

Like other aspects of Lewin's work, his 3-Step model of change has become unfashionable in the last two decades (Kanter *et al.*, 1992; Dawson, 1994; Hatch, 1997). Nevertheless, such is its continuing influence that, as Hendry (1996: 624) commented:

Scratch any account of creating and managing change and the idea that change is a three-stage process which necessarily begins with a process of unfreezing will not be far below the surface.

Though Lewin's work has been strongly challenged, this has not prevented parallels being drawn between it and the work of complexity theorists (Kippenberger, 1998a). Back (1992), for example, argued that the formulation and behaviour of complex systems bear striking similarities to Lewin's conceptualization of Field Theory. Similarities have also been drawn between Lewin's approach to understanding and changing group behaviour and work on dissipative structures, self-organizing theory and non-linear systems (Tschacher and Brunner, 1995; Elrod and Tippett, 2002). This apparent common ground will be explored further below, but first the relationship between complexity theories and organisational change will be examined.

Complexity theories and organizational change

Complexity Theories

Complexity theories stem from attempts by meteorologists, biologists, chemists, physicists and other natural scientists to build mathematical models of systems in nature (Gleick, 1988; Lorenz, 1993; Styhre, 2002). In the process, a number of different but related theories have emerged, the key ones being chaos theory (Lorenz, 1979, 1993; Bechtold, 1997; Haigh, 2002), dissipative structures theory (Prigogine and Stengers, 1984; Prigogine, 1997), and the theory of complex adaptive systems (Goodwin, 1994; Stacey *et al.*, 2002). The main difference between these three theories, according to Stacey (2003), is that chaos and dissipative structures theories seek to construct mathematical models of systems at the macro level (that is, whole systems and populations), whilst complex adaptive systems theory attempts to model the same phenomena by using an agent-based approach. Instead of formulating rules for the whole population, it seeks to formulate rules of interaction for the individual entities making up a system or population. However, all three see natural systems as both non-linear and self-organizing. There are three central concepts which lie at the heart of complexity theories: the nature of chaos and order; the 'edge of chaos' and order-generating rules.

Chaos and order. Chaos is often portrayed as pure randomness, but from the complexity viewpoint, it can be seen as a different form of order (Frederick, 1998; Arndt and Bigelow, 2000; Fitzgerald, 2002b). Fitzgerald (2002a) states that chaos and order are twin attributes of dynamic, non-linear (complex) systems, and, within chaos, a hidden order may be concealed beneath what looks like utter randomness. For complexity theorists, chaos describes a complex, unpredictable and orderly disorder in which patterns of behaviour unfold in irregular but similar forms; snowflakes are all different but all have six sides (Tetenbaum, 1998).

Stacey (2003) identifies three types of order-disorder: stable equilibrium; explosive instability; and bounded instability. However, only under the last of these, bounded instability, are complex systems seen as having the ability to transform themselves in order to survive. If systems become too stable, they ossify and die. If they become too unstable, as with cancer, they may get out of control and destroy themselves (Frederick, 1998).

Edge of chaos. Under conditions of ‘bounded instability’ systems are constantly poised at the edge between order and chaos. Elsewhere, Stacey (Stacey *et al.*, 2002) refers to this as a ‘far-from-equilibrium’ state, whilst Hock (1999) coined the term ‘chaordic’. However, the term most commonly used to describe this condition is the ‘edge of chaos’.

... complex systems have large numbers of independent yet interacting actors. Rather than ever reaching a stable equilibrium, the most adaptive of these complex systems (e.g., intertidal zones) keep changing continuously by remaining at the poetically termed ‘edge of chaos’ that exists between order and disorder. By staying in this intermediate zone, these systems never quite settle into a stable equilibrium but never quite fall apart. Rather, these systems, which stay constantly poised between order and disorder, exhibit the most prolific, complex and continuous change... (Brown and Eisenhardt, 1997: 29).

It is argued that creativity and growth are at their optimal when a complex system operates at the edge of chaos (Frederick, 1998; Jenner, 1998; Kauffman, 1993; Lewis, 1994). It is the presence of appropriate order-generating rules, which permit self-organization to take place, that allow some systems to remain at the edge of chaos, whilst others fall over the edge.

Order-generating rules. In complex systems, the emergence of order is seen as being based on the operation of simple order-generating rules which permit limited chaos whilst providing relative order (Reynolds, 1987; Wheatley, 1992; Lewis, 1994; Frederick, 1998; MacIntosh and MacLean, 2001; Stacey *et al.*, 2002). As Gell-Mann (1994: 100) puts it:

In an astonishing variety of contexts, apparently complex structures or behaviours emerge from systems characterized by very simple rules. These systems are said to be self-organized and their properties are said to be emergent. The grandest example is the universe itself, the full complexity of which emerges from simple rules plus chance.

Therefore, the concept of order-generating rules explains how complex, non-linear, self-organizing systems manage to maintain themselves at the edge of chaos even under changing environmental conditions. Complex systems have a further trick up their sleeve. Under certain conditions they can even generate new, more appropriate order-generating rules when the old ones can no longer cope with the changes in the system’s environment (Wheatley, 1992; Bechtold, 1997; MacIntosh and MacLean, 1999).

The Implications for Organizational Change

A wide range of academics and practitioners have argued that organizations are complex, non-linear systems, the behaviour of whose members is characterized by spontaneous self organizing which is underpinned by a set of simple order-generating rules (Wheatley, 1992; Lewis, 1994; Bechtold, 1997; Morgan, 1997; Tetenbaum, 1998; Arndt and Bigelow, 2000; Black, 2000; MacIntosh and MacLean, 2001; Fitzgerald, 2002a; Stacey, 2003).

Frederick (1998) argues that companies who relentlessly pursue a path of continuous innovation succeed because they operate at the edge of chaos, and, indeed, because they inject so much novelty and change into their normal

operations, they constantly risk falling over the edge. Brown and Eisenhardt (1997) draw a similar conclusion from their research into innovation in the computer industry. They maintain that continuous innovation is necessary for survival and that this is brought about by a process that resembles self-organization in nature.

Perhaps the most well-known example of a self-organizing company is Visa. Visa has grown by 10 000% since 1970, comprises 20 000 financial institutions, operates in 200 countries and has over half a billion customers (Hock, 1999). However, as Tetenbaum (1998: 26) notes:

... you don't know where it's located, how it's operated, or who owns it. That's because Visa is decentralised, non-hierarchical, evolving, self-organizing and self-regulating. ... it is a chaordic system conceived as an organization solely on the basis of purpose and principle. Its structure evolved from them.

If organizations are complex systems, management and change take on a new dimension. Beeson and Davis (2000) make the point that whilst it might be fruitful to see organizations as non-linear systems, to do so will require a fundamental shift in the role of management. Like many others (for example, Wheatley, 1992; Sullivan, 1999; Tetenbaum, 1998; Boje, 2000; Stacey *et al.*, 2002), they point out that self-organizing principles explicitly reject cause and effect, top-down, command-and-control styles of management. Brodbeck (2002) suggests that the belief by managers that order and control are essential to achieve their objectives needs to be redressed Morgan (1997) maintains that complexity will require managers to rethink the nature of hierarchy and control, learn the art of managing and changing contexts, promote self-organizing processes, and learn how to use small changes to create large effects. For Tetenbaum (1998), the move to self-organization will require managers to destabilize their organizations and develop the skill of managing order and disorder at the same time. Managers will need to encourage experimentation and divergent views, even allow rule-breaking, and recognise that '...people need the freedom to own their own power, think innovatively, and operate in new patterns' (Bechtold, 1997: 198). For Jenner (1998: 402), the key to achieving this is a flexible, decentralized structure.

Brown and Eisenhardt (1997: 29) refer to such flexible structures as 'semistuctures' which they maintain '...are sufficiently rigid so that change can be organized, but not so rigid that it cannot occur'. They claim that organizations can only survive in highly competitive environments by continuously innovating and improvising which, they argue, relies on intensive, real-time communication within a structure of a few, very specific rules. Beeson and Davis (2000) echo this point and argue that, in such situations, change becomes an everyday event undertaken by all in the organization. Brown and Eisenhardt (1997: 28) also claim that in the firms they studied:

The rate and scale of innovation ... was such that the term 'incremental' seemed, in retrospect, stretched. Yet it was not radical innovation [but] ... a third kind of process that is neither incremental nor radical and that does not fit the punctuated equilibrium model ...

Similarly, Brodbeck (2002) draws attention to studies which cast doubt on the effectiveness of large-scale change programmes (see Clarke, 1999; Harung *et al.*, 1999). For Styhre (2002), the problem is that such programmes assume that it is

possible to predict the outcomes of change and attempt to plan, control and manage it in a rational, top-down, linear fashion.

These writers are depicting organisations operating at the edge of chaos and, therefore, needing to respond continuously to changes in their environments through a process of spontaneous self-organizing change in order to survive. However, as in the natural world, this process is driven by order-generating rules which themselves can be subject to transformation in certain situations (Lewis, 1994; MacIntosh and MacLean, 1999, 2001; Stacey, 2003). When this takes place in nature, it is an automatic process; in organizations, this is rarely likely to be the case. As Stacey (2003) argues, people are not unthinking molecules; they can and do exercise free will, they can and do pursue their own objectives, and they can and do interpret events in widely-differing ways. Therefore, self-organization may not occur even when appropriate order-generating rules are present, nor, if such rules cease to be appropriate, can it be assumed that they will automatically be transformed. Instead both will depend on the nature of the organization (Griffin, 2001).

MacIntosh and MacLean (2001) provide evidence of the existence and importance of order-generating rules, based on a case study of a long-established manufacturing company which had been in decline for over 30 years. This decline appeared to be caused by a combination of inappropriate order-generating rules (such as 'don't innovate unless it leads to cost reduction') and a rigid structure which stifled innovation. Once this was recognized, the company evolved more appropriate order-generating rules (such as, 'better, faster, cheaper') and implemented a new structure which gave greater freedom for self-organization to its constituent parts.

In order for organizations to promote change through self-organization, a number of writers have argued that organizations need to operate on democratic principles, that is their members will have to have the freedom to self-organize. For example, Bechtold (1997) argues that organizations seeking to adopt a complexity approach need a balanced distribution of power, strong customer focus, a strategy of continuous learning and an orientation towards community service. A further strand in this argument is provided by Kiel (1994), who argues that because small actions can have large and unpredictable consequences, individual human activity assumes great importance. Jenner (1998) claims that for self-organization to work, authority must be delegated to those who have access to the broadest channels of information that relate to the issue concerned. Nevertheless, Stacey (2003: 278) sounds a note of caution:

This seems to assume that self-organisation is some new form of behaviour rather than a different way of understanding how people have always behaved. The question is whether such self-organising behaviour produces patterns that block or enable change.

In considering complexity theories and organizational change, one of the key questions is to ask: 'What's new?' (Frederick, 1998). If what appears to be being said about management, structure, behaviour and change is looked at much of it seems very familiar. Writers from Peters and Waterman (1982) onwards have been arguing that managers need to abandon top-down, command-and-control styles, that organizational structures need to be flatter and more flexible, and that greater employee involvement is essential for success (Handy, 1989; Kanter, 1989, 1997; Peters, 1989, 1993, 1997; Kotter, 1996; Kanter *et al.*, 1997). However, as the

implications listed in Table 1 show, there are three areas where those seeking to apply complexity theories to organizations appear to depart from, or extend, the received wisdom of the last 20 years.

The basis for Implication 1 is that unless employees have the freedom to act as they see fit, self-organization will be blocked and organizations will not be able to achieve continuous and beneficial innovation. The rationale for Implication 2 is that neither small-scale incremental change nor radical transformational change work: instead, innovative activity can only be successfully generated through the 'third kind' of change, such as new product and process development brought about by self-organizing teams. Implication 3 is based on the argument that because organizations are complex systems, which are radically unpredictable and where even small changes can have massive and unanticipated effects, top-down change cannot deliver the continuous innovation which organizations need in order to survive and prosper. Instead, it is argued that organizations can only achieve continuous innovation if they position themselves at the edge of chaos. This position can only be achieved and maintained through self-organization, which in turn depends on the possession of appropriate order-generating rules. However, should these rules cease to be appropriate for the organization's environment, the process of self-organization allows new, more appropriate rules to be generated. Therefore, in a chicken-and-egg fashion, order-generating rules create the conditions for self-organization, and self-organization creates the conditions which enable order-generating rules to be transformed (Bechtold, 1997; Tetenbaum, 1998; Hoogerwerf and Poorthuis, 2002).

The next section will explore the common ground between Planned change and complexity theories, especially in relation to the issues raised in Table 1.

Planned change and complexity theories

Though there are those seeking to apply complexity theories to organizational change who specifically argue that Lewin's Planned approach to change is unsuitable (Stacey, 1996; Styhre, 2002), there are others who take the opposite

Table 1. Implications of complexity theories

Applying complexity theories to organisations	
Implication 1	There will be a need for much greater democracy and power equalization in all aspects of organizational life, instead of just narrow employee participation in change (Kiel, 1994; Bechtold, 1997; Jenner, 1998).
Implication 2	Small-scale incremental change and large-scale radical-transformational change will need to be rejected in favour of 'a third kind' which lies between these two, and which is continuous and based on self-organization at the team/group level (Brown and Eisenhardt, 1997; Broadbeck, 2002)
Implication 3	In achieving effective change, order-generating rules have the potential to overcome the limitations of rational, linear, top-down, strategy-driven approaches to change (MacIntosh and MacLean, 1999, 2001; Styhre, 2002; Stacey, 2003).

view (Back, 1992; Tschacher and Brunner, 1995; Kippenberger, 1998a; MacIntosh and MacLean, 2001; Elrod and Tippett, 2002). This section will argue that there is significant common ground between Planned change and complexity theories, by returning to the three issues raised in Table 1. Before doing so, though, it is important to understand Lewin's view of order in organizations: the area where Lewin is most frequently criticized.

Many have argued that Lewin's Planned approach is based on a static, simplistic and mechanistic view of organizational life (Nonaka, 1988; Pettigrew *et al.*, 1989; Pettigrew, 1990 a, b; Wilson, 1992; Kanter *et al.*, 1992; Garvin, 1993; Stacey, 1993; Dawson, 1994). However, as shown earlier, Lewin did not see organizations as rigid or fixed but instead believed that 'Change and constancy are relative concepts; group life is never without change, merely differences in the amount and type of change exist' (Lewin, 1947a: 199). He stated that:

One should view the present situation—the *status quo*—as being maintained by certain conditions or forces. A culture—for instance, the food habits of a certain group at a given time—is not a static affair but a live process like a river which moves but still keeps to a recognisable form. . . . Food habits do not occur in empty space. They are part and parcel of the daily rhythm of being awake and asleep; of being alone and in a group; of earning a living and playing; of being a member of a town, a family, a social class, a religious group . . . in a district with good groceries and restaurants or in an area of poor and irregular food supply. Somehow all these factors affect food habits at any given time. They determine the food habits of a group every day anew just as the amount of water supply and the nature of the river bed determine the flow of the river, its constancy or change (Lewin, 1943a: 172–3).

Far from viewing social or organizational groups as fixed and stable, or viewing change as linear and uni-dimensional, it is clear that Lewin understood the limits of stability at least as well as his critics. He argued that groups are in a state of constant change but that, just like a river, the rate varies depending on the environment (Lewin, 1947a; Kippenberger, 1998a; Burnes, 2004a). This appears remarkably similar to the 'order-disorder' which complexity theorists claim to have detected in nature and which some seek to apply to organizations (Back, 1992; Tschacher and Brunner, 1995; Frederick, 1998; Kippenberger, 1998a; Tetenbaum, 1998; MacIntosh and MacLean, 2001; Elrod and Tippett, 2002; Fitzgerald, 2002a). Consequently, there may be more similarities between Lewin and his critics than many realise.

Lewin's work can now be examined in the light of the three issues highlighted in Table 1.

Democracy and Power Equalization

There appears to be no disagreement between Lewin and complexity theorists on this point. Lewin was a strong and passionate advocate of democracy in all aspects of life and saw the freedom to pursue and test all lines of enquiry as being crucial to achieving the learning which lay at the heart of his Planned approach to change (Lewin, 1943b, 1946, 1947a,b, 1948, 1992). Indeed, Lewin's group-based, iterative, learning approach to change, as most clearly seen in Action Research,

bears a close resemblance to the concept of self-organization as espoused by complexity theorists. This can be seen not only from the fact that Lewin puts group learning at the core of the change process but also, as MacIntosh and MacLean (2001) demonstrate, in the way that his 3-Step model enables groups and organizations to identify and change the 'simple order-generating rules' which underpin self-organization in complex systems. Therefore, though Lewin coined the term 'Planned' change to distinguish it from accidental change, given the nature of his approach, it might equally well be termed 'self-organized' change (Marrow, 1969; Burnes, 2004a).

A Third Kind of Change

Lewin's approach to change sought to address significant group-base behavioural issues in organizations and society at large, ranging from the creation of self-managed teams in factories to the integration of black and white sales staff in New York department stores (Lewin, 1943b, 1946, 1948; Marrow, 1969; Lewin, 1992). These are clearly not small-scale or incremental change issues. Nor, as his critics quite rightly point out, was Lewin's approach directed at transformational change at the organizational level (Kanter *et al.*, 1992; Wilson, 1992; Dawson, 1994). He was seeking to achieve significant changes at the group and team levels in organizations. Complexity theorists also see the most beneficial types of change as being those achieved through the self-organizing activities of teams and group in organizations (Brown and Eisenhardt, 1997). Their 'third kind' of change appears to be remarkably similar to the type of group-based change Lewin was seeking to promote.

Order-Generating Rules

In seeking to identify existing order-generating rules in organizations, and develop and implement more appropriate ones, MacIntosh and MacLean (2001) drew attention to the usefulness of Lewin's 3-step approach to change. There are two reasons why this should not come as a surprise. Firstly, Lewin repeatedly writes of successful change in terms of the need to identify existing group norms, patterns of behaviour and routines, and to develop more appropriate ones (Lewin, 1939, 1946, 1947a, b). Another way of describing these would be to call them order-generating rules, as MacIntosh and MacLean do (2001). Secondly, an examination of the four elements of Lewin's Planned approach, as described earlier, shows that the first two (Field Theory and Group Dynamics) are concerned with identifying existing order-generating rules, whilst the last two elements (Action Research and the 3-Step Model) are concerned with developing and implementing new order-generating rules. In passing, we should also note that recent research by Elrod and Tippet (2002: 273) provides strong support for the 3-Step Model: 'Models of the change process, as perceived by diverse and seemingly unrelated disciplines (such as bereavement theory, personal transition theory, creative processes, cultural revolutions and scientific revolutions) . . . follow Lewin's . . . three-phase model of change . . .'

Therefore, as can be seen, whether one is examining Lewin's view of order and stability or the three areas where complexity theorists appear to be bringing a

new perspective on organizational life, there is considerable common ground between them.

Conclusions

This article has examined organizational change from the perspective of Lewin's Planned approach and that of complexity theories. Lewin's approach has been castigated over the last 20 years or so for being too mechanistic and having an overly-simplistic view of organizations and change. It might, therefore, be assumed that there would be no common ground between it and change from the perspective of complexity theories; however, as this article has shown, that is not the case.

The study began by reviewing the four elements which comprise Planned change, namely Field Theory, Group Dynamics, Action Research and the 3-Step model, and showing that they provide a rigorous and insightful approach to changing organizations. From the subsequent examination of complexity theories, there emerged three significant implications for organizations in terms of internal democracy, the most beneficial form of change and the role of order-generating rules (see table 1).

In comparing Planned change and complexity theories, the first point which was made was the similarity between Lewin's 'quasi-stationary equilibrium' view of stability within organisations and the complexity theorists' 'order-disorder' perspective. This similarity between Lewin's and the complexity theorists' work was strengthened when looking at table 1. This showed, firstly, that Lewin's commitment to extending democracy in organizations and his whole approach to change was not only consistent with that of the complexity theorists but also was similar to the self-organization advocated by them. Secondly, it was clear that the focus of Lewin's change efforts—self-organizing groups and teams in organisations—was similar to the 'third type' of change advocated by complexity theorists. Lastly, similarities between Lewin's work and that of complexity theorists could be seen in the way that the four elements of Planned change provided a process of identifying and changing order-generating rules.

This article has shown that rather than being outmoded, Lewin's Planned approach to change shares much common ground with those seeking to apply complexity theories to organizations. However, what has also been shown is that organizations will have to change considerably in how they are managed and the way power is distributed if they are to apply complexity theories. As attempts to promote empowerment have shown, this will not be easy (Eccles, 1993; Lee, 1999; Stohl and Cheney, 2001). Nevertheless, given the democratic, self-organizing and group-based nature of Lewin's approach, if organizations wish to move forward by adopting a complexity approach, they may find themselves having to return to the work of Kurt Lewin in order to do so: very much a case of 'back to the future'.

References

- Allport, G.W. (1948) Foreword, in G.W. Lewin (eds) *Resolving Social Conflict*, Harper & Row, London.
- Arndt, M. and Bigelow, B. (2000) 'Commentary the potential of chaos theory and complexity theory for health services management', *Health Care Management Review*, Vol. 25, No. 1, pp. 35–8.

- Ash, M.G. (1992) 'Cultural contexts and scientific change in psychology-Lewin', Kurt in Iowa, *American Psychologist*, Vol. 47, No. 2, pp. 198–207.
- Back, K.W. (1992) 'This business of topology', *Journal of Social Issues*, Vol. 48, No. 2, pp. 51–66.
- Bargal, D. and Bar, H. (1992) 'A lewinian approach to intergroup workshops for arab-palestinian and jewish youth', *Journal of Social Issues*, Vol. 48, No. 2, pp. 139–54.
- Bargal, D., Gold, M. and Lewin, M. (1992) 'The heritage of kurt lewin—introduction', *Journal of Social Issues*, Vol. 48, No. 2, pp. 3–13.
- Bechtold, B.L. (1997) 'Chaos theory as a model for strategy development', *Empowerment in Organizations*, Vol. 5, No. 4, pp. 193–201.
- Beer, M. and Nohria, N. (2000) 'Cracking the code of change', *Harvard Business Review*, May/June, pp. 133–41.
- Beeson, I. and Davis, C. (2000) 'Emergence and accomplishment in organizational change', *Journal of Organizational Change Management*, Vol. 13, No. 2, pp. 178–89.
- Bennett, R. (1983) *Management Research*, Management Development Series, 20, International Labour Office, Geneva.
- Bernstein, L. (1968) *Management Development*, Business Books, London.
- Black, J.A. (2000) 'Fermenting change: capitalizing on the inherent change found in dynamic non-linear (or complex) systems', *Journal of Organizational Change Management*, Vol. 13, No. 6, pp. 520–5.
- Boje, D.M. (2000) 'Phenomenal complexity theory and change at disney: response to letiche', *Journal of Organizational Change Management*, Vol. 13, No. 6, pp. 558–66.
- Brodbeck, P.W. (2002) 'Implications for organization design: teams as pockets of excellence', *Team Performance Management: An International Journal*, Vol. 8, No. 1/2, pp. 21–38.
- Brown, S.L. and Eisenhardt, K.M. (1997) 'The art of continuous change: linking complexity theory and time-paced evolution in relentlessly shifting organizations', *Administrative Science Quarterly*, Vol. 42, pp. 1–34.
- Buchanan, D.A. and Storey, J. (1997) 'Role-taking and role-switching in organizational change: the four pluralities', in: I. McLoughlin and M. Harris (eds) *Innovation, Organizational Change and Technology*, International Thomson, London.
- Burnes, B. (2004a) 'Kurt Lewin and the planned approach to change: a re-appraisal', *Journal of Management Studies*, Vol. 41, No. 6, pp. 972–1002.
- Burnes, B. (2004b) *Managing Change*, 4th Edition, FT/Prentice-Hall, Harlow.
- Cartwright, D. (1951) 'Achieving change in people: some applications of group dynamics theory', *Human Relations*, Vol. 6, No. 4, pp. 381–92.
- Clarke, M. (1999) 'Management development: a new role in social change', *Management Decision*, Vol. 37, No. 10, pp. 767–7.
- Cooke, B. (1999) 'Writing the left out of management theory: the historiography of the management of change', *Organization*, Vol. 6, No. 1, pp. 81–105.
- Cooper, C.L. and Jackson, S.E. (eds) (1997) *Creating Tomorrow's Organizations Today: A Handbook for Future Research in Organizational Behavior*, Wiley, Chichester.
- Cummings, T.G. and Worley, C.G. (2001) *Organization Development and Change*, 7th Edition, South-Western College Publishing, Mason, OH.
- Darwin, J. Johnson, P. and McAuley, J. (2002) *Developing Strategies for Change*, Financial Times, Harlow.
- Dawson, P. (1994) *Organizational Change: A Processual Approach*, Paul Chapman Publishing, London.
- Dawson, P. (2003) *Organizational Change: A Processual Approach*, Routledge, London.
- Day, C., Elliott, J. Somekh, B. and Winter, R. (eds) (2002) *Theory and Practice in Action Research: Some International Perspectives*, Symposium Books, Oxford.
- Dent, E. B. and Goldberg, S.G. (1999) 'Challenging resistance to change', *Journal of Applied Behavioral Science*, Vol. 35, No. 1, pp. 25–41.
- Dickens, L. and Watkins, K. (1999) 'Action research: rethinking lewin', *Management Learning*, Vol. 30, No. 2, pp. 127–40.
- Eccles, T. (1993) 'The deceptive allure of empowerment', *Long Range Planning*, Vol. 26, No. 6, pp. 13–21.
- Eden, C. and Huxham, C. (1996) 'Action research for the study of organizations', in: S.R. Clegg, C. Hardy, & W.R. Nord (eds) *Handbook of Organization Studies*, Sage, London.
- Elden, M. and Chisholm, R.F. (1993) 'Emerging varieties of action research: introduction to the special issue', *Human Relations*, Vol. 46, No. 2, pp. 121–42.
- Elrod II, P.D. and Tippett, D.D. (2002) The 'Death Valley' of change, *Journal of Organizational Change Management*, Vol. 15, No. 3, pp. 273–91.

- Fitzgerald, I.A. (2002a) 'Chaos: the lens that transcends', *Journal of Organizational Change Management*, Vol. 15, No. 4, pp. 339–58.
- Fitzgerald, L.A. (2002b) 'Chaos speak: a glossary of chaordic terms and phrases', *Journal of Organizational Change Management*, Vol. 15, No. 4, pp. 412–23.
- Frederick, W.C. (1998) 'Creatures, corporations, communities, chaos, complexity: a naturological view of the corporate social role', *Business and Society*, Vol. 37, No. 4, pp. 358–76.
- French, W.L. and Bell, C.H. (1990) *Organization Development*, 4th Edition, Prentice-Hall, Englewood Cliffs, NJ.
- Garvin, D.A. (1993) 'Building a learning organization', *Harvard Business Review*, July/August, pp. 78–91.
- Gell-Mann, M. (1994) *The Quark and the Jaguar*, Freeman, New York.
- Gersick, C.J.G. (1991) 'Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm', *Academy of Management Review*, Vol. 16, No. 1, pp. 10–36.
- Gleick, J. (1988) *Chaos: The Making of a New Science*, Heinemann, London.
- Gold, M. (1992) 'Metatheory and field theory in social psychology: relevance or elegance?' *Journal of Social Issues*, Vol. 48, No. 2, pp. 67–78.
- Goodwin, B. (1994) *How the Leopard Changed its Spots*, Weidenfeld and Nicholson, London.
- Greenwald, J. (1996) 'Reinventing sears', *Time*, 23 December, pp. 53–55.
- Griffith, D. (2001) *The Emergence of Leadership: Linking Self-Organisation and Ethics*, Routledge, London.
- Haigh, C. (2002) 'Using chaos theory: the implications for nursing', *Journal of Advanced Nursing*, Vol. 37, No. 5, pp. 462–9.
- Handy, C. (1989) *The Age of Unreason*, Arrow, London.
- Harung, H.S., Heaton, D.P. and Alexander, C.N. (1999) 'Evolution of organizations in the new millennium', *Leadership and Organization Development Journal*, Vol. 20, No. 4, pp. 198–207.
- Hatch, M.J. (1997) *Organization Theory: Modern, Symbolic and Postmodern Perspectives*, Oxford University Press, Oxford.
- Hayles, K.N. (2000) From Chaos to Complexity: Moving through Metaphor to Practice. Complexity and Chaos in Nursing, 4. Available at <http://www.southernct.edu/chaos-nursing/chaos4.htm> (accessed 31 March 2004).
- Hendry, C. (1996) 'Understanding and creating whole organizational change through learning theory', *Human Relations*, Vol. 48, No. 5, pp. 621–41.
- Hock, D. (1999) *Birth of the Chaordic Age*, Berrett-Koehler, San Francisco, CA.
- Hoogerwerf, E.C. and Poorthuis, A.-N. (2002) 'The network multilogue: a chaos approach to organizational design', *Journal of Organizational Change Management*, Vol. 15, No. 4, pp. 382–90.
- Jenner, R.a. (1998) 'Dissipative enterprises, chaos, and the principles of lean organizations', *Omega: International Journal of Management Science*, Vol. 26, No. 3, pp. 397–407.
- Johnson, G. and Scholes, K. (2002) *Exploring Corporate Strategy: Text and Cases*, 6th Edition, FT/Prentice-Hall, Harlow.
- Kanter, R.M. (1989) *When Giants Learn to Dance: Mastering the Challenges of Strategy, Management, and Careers in the 1990s*, Unwin, London.
- Kanter, R.M. (1997) *World Class: Thriving Locally in the Global Economy*, Simon & Schuster, New York.
- Kanter, R.M., Kao, J. and Wiersema, F. (eds) (1997) *Innovation: Breakthrough Thinking at 3M, DuPont, GE, Pfizer, and Rubbermaid*, Harper Business, New York.
- Kanter, R.M., Stein, B.A. and Jick, T.D. (1992) *The Challenge of Organizational Change*, Free Press, New York.
- Kauffman, S.A. (1993) *Origins of Order: Self-Organization and Selection in Evolution*, Oxford University Press, Oxford.
- Kiel, L.D. (1994) *Managing Chaos and Complexity in Government*, Jossey-Bass, San Francisco, CA.
- Kippenberger, T. (1998a) 'Planned change: kurt lewin's legacy', *The Antidote*, Vol. 3, No. 4, pp. 10–12.
- Kippenberger, T. (1998b) 'Managed learning: elaborating on lewin's model', *The Antidote*, Vol. 3, No. 4, p. 13.
- Kotter, J.P. (1996) *Leading Change*, Harvard Business School Press, Boston, MA.
- Lee, M. (1999) 'The lie of power: empowerment as impotence', *Human Relations*, Vol. 52, No. 2, pp. 225–62.
- Lewin, G.W. (1948) Preface, in: G.W. Lewin (Ed.) *Resolving Social Conflict*, Harper & Row, London.
- Lewin, K. (1939) 'When facing danger', in: G.W. Lewin (Ed.) (1948) *Resolving Social Conflict*, Harper & Row, London.
- Lewin, K. (1943a) 'Psychological ecology', in: D. Cartwright (Ed.) (1952) *Field Theory in Social Science*, Social Science Paperbacks, London.
- Lewin, K. (1943b) The Special Case of Germany, in: G.W. Lewin (Ed.) (1948) *Resolving Social Conflict*, Harper & Row, London.

- Lewin, K. (1946) 'Action research and minority problems', in: G.W. Lewin (Ed) (1948) *Resolving Social conflict*, Harper & Row, London.
- Lewin, K. (1947a) 'Frontiers in group dynamics', in: D. Cartwright (Ed.) (1952): *Field Theory in social Science*. Social Science Paperbacks: London.
- Lewin, K. (1947b) 'Group decisions and social change', in: T.M. Newcomb and E.L. Hartley (eds) (1959). *Reading in Social Psychology*, Henry Holt, New York.
- Lewin, M. (1992) 'The impact of kurt lewin's life on the place of social issues in his work', *Journal of Social Issues*, Vol. 48, No. 2, pp. 15–29.
- Lewis, R. (1994) 'From chaos to complexity: implications for organizations', *Executive Development*, Vol. 7, No. 4, pp. 16–17.
- Lorenz, E. (1979) 'Predictability: does the flap of a butterfly's wing in brazil set off a tornado in texas?', Address at the American Association for the Advancement of Science, Washington, DC.
- Lorenz, E. (1993) *The Essence of Chaos*, UCL Press, London.
- Macbeth, D.K. (2002) 'Emergent strategy in managing cooperative supply chain change', *International Journal of Operations and Production Management*, Vol. 22, No. 7, pp. 728–40.
- MacIntosh, R. and MacLean, D. (1999) 'Conditioned emergence: a dissipative structures approach to transformation', *Strategic Management Journal*, Vol. 20, No. 4, pp. 297–316.
- MacIntosh, R. and MacLean, D. (2001) 'Conditioned emergence: researching change and changing research', *International Journal of Operations and Production Management*, Vol. 21, No. 10, pp. 1343–57.
- Marrow, A.J. (1969) *The Practical theorist: The Life and Work of Kurt Lewin*, Teachers College Press, New York.
- Morgan, G. (1997) *Images of Organization*, 2nd Edition, Sage, London.
- Nonaka, I. (1988) 'Creating organizational order out of chaos: self-renewal in japanese firms', *Harvard Business Review*, November– December, pp. 96–104.
- Peters, T. (1989) *Thriving on Chaos*, Pan, London.
- Peters, T. (1993) *Liberation Management*, Pan, London.
- Peters, T. (1997) *The Circle of Innovation: You Can't Shrink Your Way to Greatness*, Alfred A. Knopf, New York.
- Peters, T. and Waterman, R.H. (1982) *In Search of Excellence: Lessons from America's Best-Run Companies*, Harper & Row, London.
- Pettigrew, A.M. (1990a) 'Longitudinal field research on change: theory and practice', *Organizational Science*, Vol. 3, No. 1, pp. 267–92.
- Pettigrew, A.M. (1990b) 'Studying strategic choice and strategic change', *Organizational Studies*, Vol. 11, No. 1, pp. 6–11.
- Pettigrew, A.M., Hendry, C. and Sparrow, P. (1989) *Training in Britain: Employers, Perspectives on Human Resources*, HMSO, London.
- Prigogine, I. (1997) *The End of Certainty: Time, Chaos, and the New Laws of Nature*, Free Press, New York.
- Prigogine, I. and Stengers, I. (1984) *Order Out of Chaos: Man's New Dialogue with Nature*, Bantam Books, New York.
- Quinn, J.B. (1980) *Strategies for Change: Logical Incrementalism*, Irwin, Homewood, IL.
- Quinn, J.B. (1982) 'Managing strategies incrementally', *Omega*, Vol. 10, No. 6, pp. 613–27.
- Rescher, N. (1996) 'Complexity: a philosophical overview', *Transaction Publishers*, New York.
- Reynolds, C.W. (1987) 'Flocks, herds and schools: a distributed behaviour model, proceedings of SIGGRAPH 87', *Computer Graphics*, Vol. 21, No. 4, pp. 25–34.
- Romanelli, E. and Tushman, M.L. (1994) 'Organizational transformation as punctuated equilibrium: an empirical test', *Academy of Management Journal*, Vol. 37, No. 5, pp. 1141–66.
- Schein, E.H. (1988) *Organizational Psychology*, 3rd Edition, Prentice-Hall, London.
- Schein, E.H. (1996) 'Kurt lewin's change theory in the field and in the classroom: notes towards a model of management learning', *Systems Practice*, Vol. 9, No. 1, pp. 27–47.
- Smith, M.K. (2001) 'Kurt lewin: group, experimental learning and action research', *The Encyclopedia of Informal Education*, pp. 1–15. Available at <http://www.infed.org/thinkers/et-lewin.htm> (accessed 31 March 2004).
- Stacey, R.D. (1993) *Strategic Management and Organizational Dynamics*, Pitman, London.
- Stacey, R.D. (1996) *Strategic Management and Organisational Dynamics*, 2nd Edition, Pitman, London.
- Stacey, R.D. (2003) *Strategic Management and Organisational Dynamics: The Challenge of Complexity*, FT/Prentice-Hall, Harlow.
- Stacey, R.D., Griffin, D. and Shaw, P. (2002) *Complexity and Management: Fad or Radical Challenge to Systems Thinking*, Routledge, London.

- Stickland, F. (1998) *The Dynamics of Change: Insights into Organisational Transition from the Natural World*, Routledge, London.
- Stohl, C. and Cheney, G. (2001) *Participatory Processes/Paradoxical Practices*, *Management Communication Quarterly*, Vol. 14, No. 3, pp. 349–407.
- Styhre, A. (2002) 'Non-linear change in organizations: organization change management informed by complexity theory', *Leadership and Organization Development Journal*, Vol. 23, No. 6, pp. 343–51.
- Sullivan, T.J. (1999) 'Leading people in a chaotic world', *Journal of Educational Administration*, Vol. 37, No. 5, pp. 408–23.
- Tetenbaum, T. (1998) 'Shifting paradigms: from newton to chaos', *Organizational Dynamics*, Vol. 26, No. 4 pp. 21–32.
- Tobach, E. (1994) 'Personal is political is personal is political', *Journal of Social Issues*, Vol. 50, No. 1, pp. 221–244.
- Tschacher, W. and Brunner, E.J. (1995) 'Empirical-studies of group-dynamics from the point-of-view of self-organization theory', *Zeitschrift Für Sozialpsychologie*, Vol. 26, No. 2, pp. 78–91.
- Wheatley, M.J. (1992) *Leadership and the New Science: Learning about Organization from an Orderly Universe*, Berrett-Koehler, San Francisco, CA.
- Wheelan, S.A., Pepitone, E.M. and Abt, V. (eds) (1990) *Advances in Field Theory*, Sage, Newbury Park, CA.
- Wilson, D.C. (1992) *A Strategy of Change*, Routledge, London.

Copyright of Journal of Change Management is the property of Routledge, Ltd. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.