strategy+business

Learning from the Links: What Systems Thinking Teaches About Golf and Management

For further information:
editors@strategy-business.com
Booz & Company

from **strategy+business** issue 21, Winter 2000

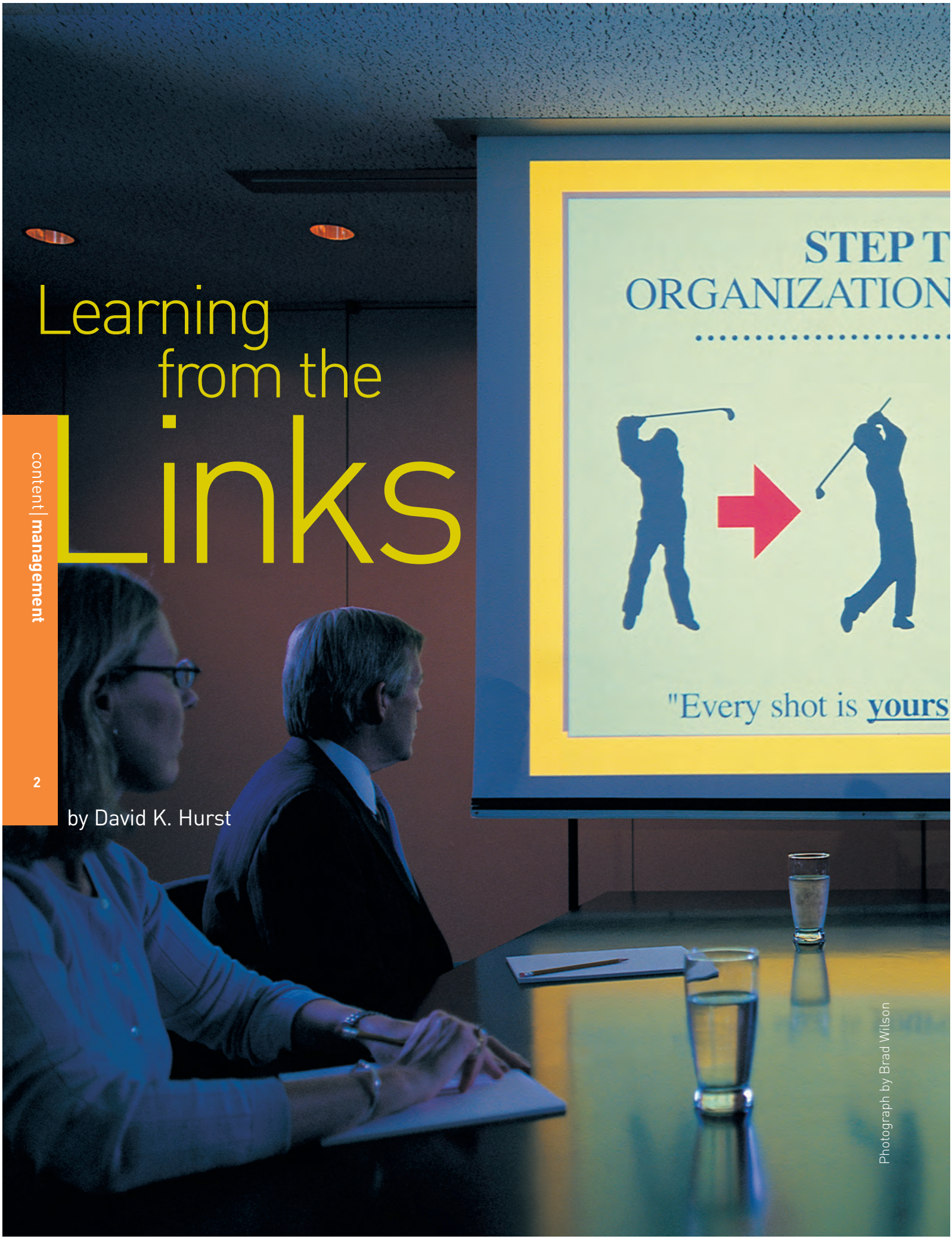
reprint number 00404

booz&co.

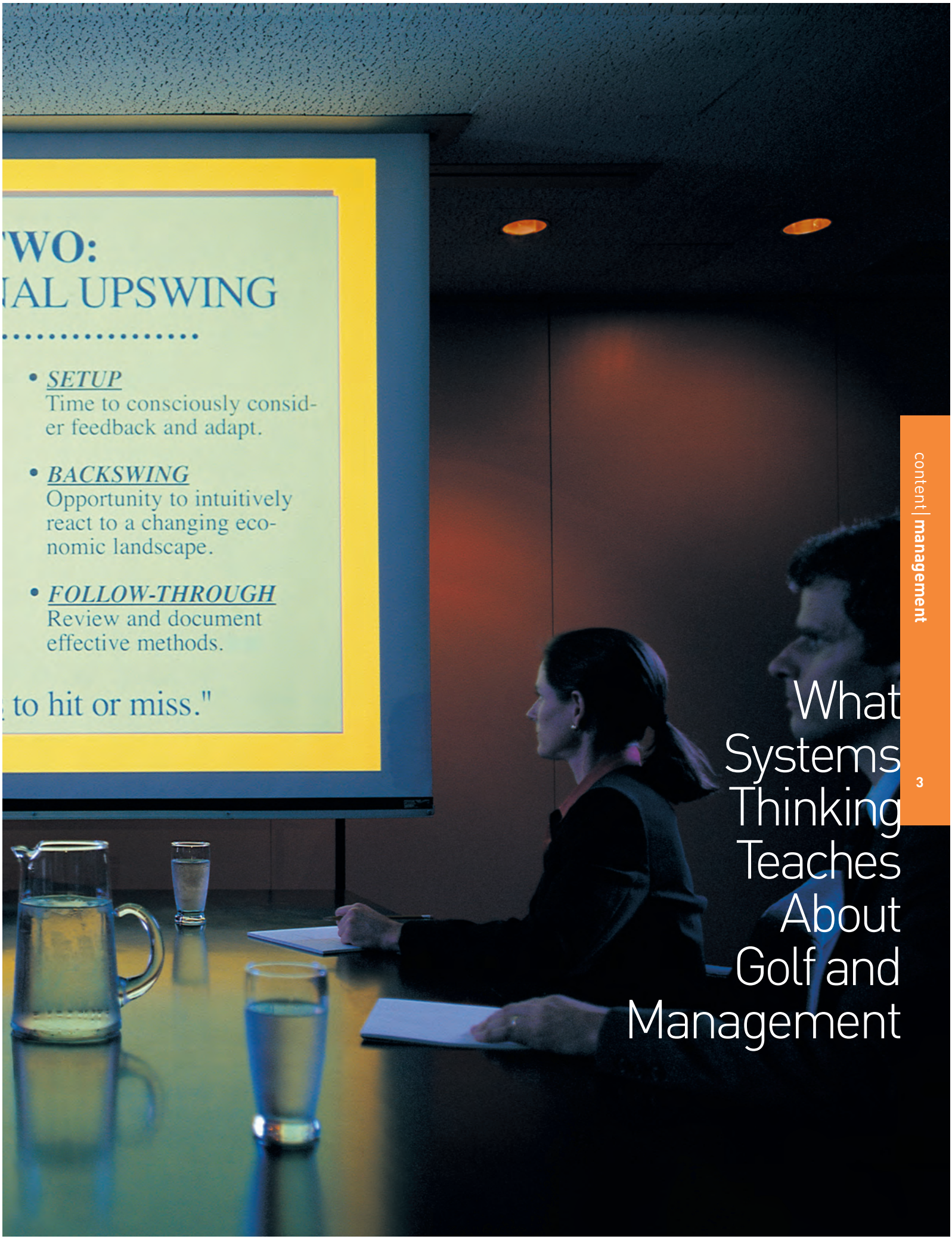
Reprint

Learning from the Links

by David K. Hurst



Photograph by Brad Wilson



What Systems Thinking Teaches About Golf and Management

David K. Hurst
(dhurst1046@aol.com) is a speaker and writer on management. He is the author of *Crisis & Renewal: Meeting the Challenge of Organizational Change* (Harvard Business School Press, 1995) and was a visiting scholar/practitioner at the Center for Creative Leadership in Greensboro, N.C., in 1998-99. His writing has appeared in *Harvard Business Review* and other business publications. He is currently writing a book on golf and management.

The June 1998 issue of "Golf Digest" contained the first-ever ranking of the golf handicaps of the CEOs of America's largest corporations. The magazine surveyed the 300 publicly traded corporations in the Fortune 500 and succeeded in obtaining 110 U.S. Golf Association–sanctioned handicaps. Soon afterward, *The New York Times* commissioned a well-known compensation expert to correlate the handicaps with the performance of the corporations. He found that over the previous three years the firms that generated the best total returns to shareholders were led by the CEOs with the lowest handicaps.

The results were statistically significant, and *The Times* speculated as to why this was the case. Were natural leaders also natural athletes? Did time on the golf course build social skills and personal contacts that allowed golfers to make better business deals? Perhaps the CEOs spent years caddying as youths, developing golf skills and gaining exposure to business jargon early in life? And so on.

These theories may have merit, but there is a deeper and more direct connection between golf and management that is readily seen by applying systems thinking to both. For golf, as a game, continually challenges us to improve the performance of a complex system (the human organism) through focused attention and the practice of well-disciplined routines. As pro golfer Tom Watson once observed, "To me, a great golfer illustrates two very precise pictures. One is proper fundamentals. The other is unencumbered motion. Without the first, it follows that the second is impossible to produce."

This is why I believe that the process of a golfer trying to play and improve his game is systemically identical to that of a manager trying to control and improve the performance of an organization. Both are faced with the challenge of enhancing the performance of systems that are far too complex for them to understand in any detail — and whose details, in any event, are inaccessible in real time.

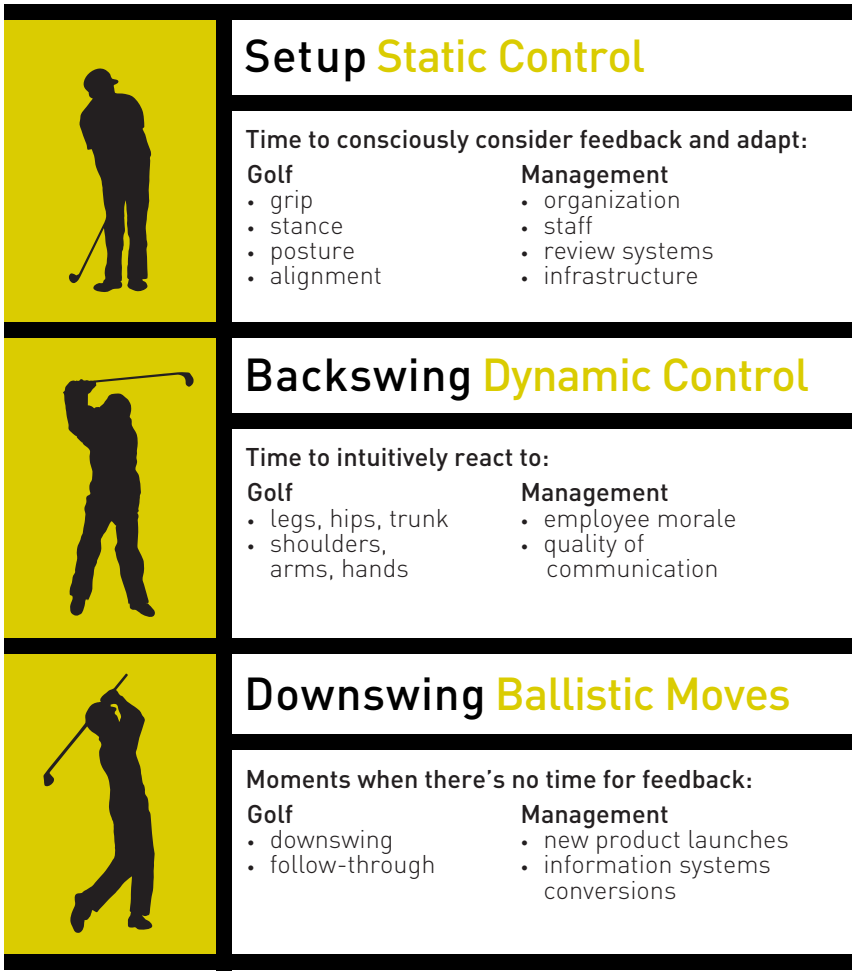
Golf offers first-hand experience in the difficulties of organizational change and demonstrates the huge gap between good ideas and effective action. In short, the game gives its devotees a glimpse of the subtle relationship between discipline and freedom in complex systems. It shows how sound fundamentals, drilled into habit, can facilitate the unencumbered motion characteristic of expert performances in all kinds of complex environments, ranging from the human body to teams to communities and corporations. Golf also illustrates a basic dilemma — the futility of practice without timely, specific feedback — that also occurs in management.

Of Systems and Strategy

As a complex system, a business organization clearly operates on a larger scale in space and time than an individual swinging a golf club. The central assumption in systems thinking, however, is that differences in scale between types of systems do not affect their fundamental similarities.

Golf teaches us about systemic thinking, and in so doing it helps us understand the intricacy of cause-and-effect relationships and the difficulty of making changes in complex systems. It teaches not through lessons and lectures, but through structured experience. We absorb the notion of a system by paying attention to the movements of our bodies: We grasp the meaning of synergy by feeling the controlled explosion through the ball. Golf teaches us to work with persistence and focus, and it reminds us that behavior is changed mainly by experience and feedback, not by the stimulus of good ideas.

Exhibit 1: **A Systems View of Golf and Management**



Golf played seriously teaches us strategic thinking. We can't just hit and hope — we have to think ahead continually and construct imaginative stories, or memories of the future, as they have been called. What's the best way for me to play this hole? Where should I plan to putt from? What kind of second shot must I play? Where should I put my tee shot? And what kind of swing must I make? How must it look, and how must it feel?

In golf we take abstract intentions and turn them into concrete actions. Golf encourages us to contemplate multiple scenarios and consider the downsides of our strategies. Suppose the ball doesn't slice. What if I hit it short, or straight? In golf, questions of strategy can never be separated from questions of competence and circumstance. The game, like effective management, requires analysis, but will not yield to it. We know that we cannot risk getting too far ahead of our ability to execute our plans. When we do, disaster is at hand. And in golf, just as in management, we are often the architects of our own misfortunes.

The Challenge of Implementation

The reader may well be skeptical about the existence of a connection between golf and management. But think about the challenge of implementation — the turning of good ideas into effective action.

As every golfer knows, muscles, tendons, and other executors of the swing do not speak English or any other language. Strategic goals and the actions needed to achieve them can be expressed using language, but that's only one part of the task. First, our limited conscious attention capacity means that the goals and actions we formulate are rarely comprehensive, because we can't think of all the details. Second, it's impossible to send all the instructions to the various parts of one's body in real time, because everything happens too quickly. And third, any verbal instructions sent are not understood when they arrive! Despite the popular belief that our heads tell our hands what to do, no complex system can function effectively based on top-down instruction. All our heads can actually do is start or stop a variety of automatic processes. The degree to which those processes are honed and integrated determines the reliability of the outcomes of action. Skilled golfers can summon multiple effective routines, assemble them into appropriate coalitions, and then release them to operate autonomously.

This challenge is no different systemically from that of implementing strategy in a business organization. Plans formulated at the top of corporations are notoriously difficult to put into practice for precisely the same reasons as in golf. Operators at the lower levels of the system may understand the language of strategy in some

Golf offers first-hand experience in the difficulties of organizational change and demonstrates the gap between ideas and action.

abstract context, but they rarely grasp what they have to do to make the strategy a reality. Indeed, if it is to be effective, strategy formulated at the upper levels of a system has to go through a lengthy translation process as its manifold implications for action are discovered, tested, and perfected at many levels. The other golfing gremlins apply with equal force to business — limited attention spans and precious little time to get things done, especially with ineffective routines and inadequate or nonexistent feedback.

The Golf Swing — A Systems View

Golf offers rich insights into the kind of feedback needed for complex systems both to perform and to learn. As Exhibit 1 shows, from a systems perspective the golf swing can be divided into three separate moves: the setup, the backswing, and the downswing. This is a fairly common division in teaching, but the systemic rationale behind it is not always clear. The phases of the swing differ from each other systemically according to the role feedback plays in their control by the golfer — provided, that is, we pay attention to it.

Specifically, the golf swing illustrates three feedback regimes common to all human systems — static control, dynamic control, and ballistic moves:

1. Static control. When the golfer addresses the ball and takes her grip, stance, and posture, there is plenty of time to listen to the observations of an instructor, look in the mirror, or use other sources of feedback to achieve a correctly aligned starting position. Likewise, in a business's formal organizational structure, adjustments can be made at a leisurely pace, using expert advice, and its setup can be compared with those of excellent organizations. Time is not a serious constraint — the real problem is sustaining focus and attention to detail. Even though this phase of the swing is critical, many golfers find it boring to spend much time on how they address the ball. As a result it's easy to be careless, which is why one finds that amateurs set up much less consistently than professionals. Similarly, in this age of ad hoc project teams, constant change, and pressures for speed, business organizations, too, can become careless about the soundness of their basic structural setup. As we shall see, this can have disastrous consequences.

2. Dynamic control. Although the backswing in golf is a dynamic move with many components, there is still time for some feedback mechanisms to work. To the golfer the important information loops are usually internal and are based on feelings in muscles and joints. The evidence is that skilled golfers can sense where their club heads are throughout the backswing. Witness Tiger Woods's amazing ability to stop his backswing near the very top if he is distracted. Jack Nicklaus, too, says that when his timing is good he is able to correct sensed errors during his backswing. Both men's backswings are made under feedback-based control, in contrast to the frenetic, snatching moves made by many amateurs.

Dynamic-control situations are found everywhere in business. As in golf, high-performance organizations and teams can exercise effective feedback-based control in these circumstances while corporate duffers cannot. For example, skunk works developing new products cannot be controlled through a static formal structure, but skilled project managers can easily sense whether things are on track or not. The feedback mechanisms they use are usually intuitive — a sensing of individual morale, the state of interpersonal communications and relationships, and so on. This feedback allows them to make effective inter-

ventions in real time to keep projects on course. Less-competent organizations may not be sensitive to feedback. As a result, undetected problems fester and projects can run out of control before triggering belated efforts to rescue them. This inability either to sense or to act on feedback allows what should be dynamic-control situations to fall into the third feedback regime — the ballistic move.

3. Ballistic moves. In golf, the downswing has to be executed without the benefit of any real-time feedback. The move is conducted so quickly, and is implemented by structures and processes so remote from the brain, that there is no time for messages to travel on the nervous system's network. The golfer has to trust that he has selected the right strategy, rehearsed the move correctly, and put himself in the correct position at the top of the backswing from which to deliver the club head.

Ballistic moves abound in business. Every corporate initiative, from an information systems conversion to a new product launch, has to go ballistic at some stage in its life, to enter the phase where real-time feedback is no longer available to make midcourse corrections. But the lesson from golf is that the ballistic phases should be kept as brief as possible, and their component moves should be practiced carefully. Too many golfers rush all phases of their swing — the setup, the backswing, and the downswing. Scared that they will lose their swing, they needlessly turn the entire procedure into a ballistic move!

The Case of the Corporate Duffer

Corporations, particularly those with ambitious growth objectives, are like overanxious golfers prone to rushing their swings. Further, one can identify in the struggling corporation many of the same problems that struggling golfers experience in each of the phases of their swing.

Consider the saga of the health maintenance organization Oxford Health Plans Inc. Oxford went public in 1991 as an HMO, with an innovative fee-for-service plan that attracted top physicians, and a variety of health-care options that appealed to young, healthy people. The business took off, growing from 105,000 enrollees in 1992 to 1.9 million in 1997. The total return on a share of stock bought in early 1992 was 2,429 percent. Oxford was the darling of Wall Street, and its founder and chairman, Stephen F. Wiggins, was hailed as a wunderkind, making the *Forbes* list of "Corporate America's Most Powerful People" in May 1997.

And then it all fell apart. In October 1997 the company announced it was taking a charge of up to $53 million as a result of problems in billings and claims that had recently "come to its attention." The stock price fell 63 percent, wiping out $3.4 billion in market value. Then things got worse. In the fourth quarter the company reported a loss of nearly $285 million, eliminating all the profits it had ever made as a public company. Six months later the firm reported a further loss of over $500 million, destroying its shareholders' equity.

The proximate cause of the collapse was the breakdown in the computer systems that tracked revenues and costs, making the business unmanageable. The seeds of the disaster had been sown much earlier, however, back in 1993, when Oxford had only 217,000 members. At that time, management set out to update Oxford's computer systems, which were slow, but forgiving. HMO computer systems are complex — they have to collect premiums from a membership that is continually changing jobs and health plans, while paying claims to a constantly mutating network of health-care providers. Mr. Wiggins, a technology enthusiast, decided new systems were to be custom-built in-house to accommodate all the flexible options that the company offered to its membership.

The variety that had delighted customers taxed designers of the computer systems to the limit. To make matters worse, Oxford opted for the aptly named "big bang" conversion process. It transferred the bulk of the database to the new systems all at once, and disaster was at hand. The messy data from the old fault-tolerant systems could not be processed in the new, demanding environment, and the entire conversion process broke down as the new systems rejected thousands of records.

The failure of Oxford's computer systems, like the failure of the infamous "O" rings on the space shuttle *Challenger*'s solid rocket boosters, was the immediate cause of its downfall. But it was only the last link in a

complex chain of cause and effect. In the *Challenger* case, there were people in the system who knew there was a real risk to launching the shuttle on that cold January morning in 1986. Unfortunately, that knowledge was swept away by NASA's need to "perform," and could not be brought to senior management awareness in time.

In the case of Oxford's downfall, there were warning signs for months beforehand, but senior management was insensitive to the feedback. Shareholders learned that state regulators had been pressuring Oxford management for some time to supply detailed information to support its earnings estimates. And the superintendent of the New York State Insurance Department had been due to see the board on October 28, 1997, the day after the company's shocking announcement. Indeed, one investment analyst had picked up clues as early as mid-1994 that not all was well in Oxford's administration. When she voiced her concerns, however, Oxford management told her that her interpretation was "incorrect," and she was excluded from the corporation's inner circle of analysts.

How did things get so bad? As is true in all human systems, a tangled mix of physical, developmental, and psychological factors was at work. Mr. Wiggins was a charismatic leader and entrepreneur with a flair for marketing. He had assembled around him an enthusiastic and loyal but inexperienced team, whose apparent success would make members' self-confidence grow to an almost cult-like belief in their ability to overcome adversity. The emphasis was on innovation, marketing, and growth, apparently to the exclusion of concern for basic routines. Not only was there no powerful voice within the organization to make the argument for the basics, but when things began to go wrong, Oxford had no static control position to return to so that it could check itself. Furthermore, through its continual use of cross-functional teams, the functional accountabilities had become blurred.

Looked at through a systems lens, Oxford's experience illustrates many of the most important features of complex adaptive systems, all of which are familiar to every golfer.

At the Edge of Chaos

Complex systems consist of many specialized agents. These agents interact with each other in many different ways and across several dimensions, none of which can be ignored. In business organizations, people are the most obvious examples of such agents. They are usually aggregated to form the functionally specialized organs of the corporate body, such as marketing, accounting, and manufacturing. They can also come together in project- or process-based task forces, so-called horizontal organizations. Fast-moving firms like Oxford that come to rely exclusively on cross-functional teams, however, always run the risk of dangerously weakening their basic setup skills. Every golfer is familiar with this dilemma as he walks the ragged edge between sound mechanics and integration into a seamless whole. On the one hand, too much stress on the parts can easily lead to a breakdown in their integration. On the other hand, too much emphasis on integration can easily lead to sloppy execution of the individual functions. It's not a question of either the parts or the whole, but of *both* the parts *and* the whole.

Complex systems adapt at "the edge of chaos," on the boundary where their internal operations meet their external worlds. Organizations such as monopolies and government agencies stay away from the edge but tend not to learn very much. Many of Oxford's innovative ideas were developed at the edge of its system, where the company met customers and suppliers. The edge of chaos is, however, a challenging place to live, and, as Oxford found to the cost of its shareholders, it's easy to fall off. Golfers, too, live on the edge of chaos, never knowing when their most dependable skills might desert them, although they often push themselves over the edge by trying to pull off shots that exceed their skills. Even the finest professionals, however, are vulnerable to sudden, mysterious losses of competence.

Hierarchy is essential to the development and stability of complex systems. These are not hierarchies of command-and-control, where subordinate parts are told what to do. Conscious attention is far too limited for such a top-down instructional model to work. Rather, successful complex systems are built in modular fashion, layered in space and ordered in time. The result is a multiplicity of

Make complex problems modular. Breaking "big bang" efforts into smaller segments is like a golfer playing three shots, not two, to a long par 5.

tangled hierarchies of control-through-constraint. Typically the earlier, more primitive layers of a system set boundaries or limits within which later, more sophisticated functions must operate. Thus in golf the setup creates the context for — in essence it constrains — the backswing. The backswing, in turn, constrains the downswing. Small errors at the beginning of the process can have large negative consequences at the end of it.

Stability in complex systems comes from larger, slower variables governing smaller, faster ones. Sudden change takes place when agents at one level escape the constraints usually exercised by agents in another part of the system. The policies, procedures, systems, and routines that characterize large complex organizations have usually developed over long periods of time. Typically they change relatively infrequently, incrementally, and only after considerable experimentation and testing.

Freedom Without Discipline

At its peril, Oxford's management eschewed such traditional corporate policies and consistency in favor of free-wheeling deal-making with its health-care providers and customers. The small, fast executive decision-making processes were unconstrained, and the exercise of freedom without discipline led inevitably to disaster. In the golf swing, the big, slow muscles of the legs, hips, and trunk must govern through constraint the smaller, faster elements such as the shoulders, arms, and hands. Another way of saying this is that the center of gravity of the golf swing should be as low as possible, ideally at the base of the spine just behind the hips, say the pros. Many amateur golfers believe that the center of gravity of their swing is much higher, in their chests or shoulders. Without the automatic routines in their legs and hips they are forced to compensate consciously using smaller, rapid variables, the right hand in most golfers. This is a recipe for instability in complex systems.

Control of complex systems is highly dispersed. Therefore, cause-and-effect relationships are hard to identify, and efforts to change them can often have perverse outcomes. Oxford's attempts to enhance its data-processing systems ended up severely damaging the business, because management was unable to anticipate the systemic consequences of what it was doing. Pinpointing the precise reasons for such a failure can be difficult, if not impossible. Like the causes of a bad golf shot, complicated webs of cause-and-effect exist at many levels: Causes may be separated in space and time from their effects, errors may offset each other, and correct moves at the wrong time may have disastrous consequences. As all golfers know, a lesson from the pro often has a contradictory effect, degrading performance before (sometimes) improving it.

History matters in established complex systems. Clean-sheet designs cannot be implemented easily. Oxford could not escape the facts of its past and the impact of the astonishing growth that had fueled its success. Redesigning data-processing systems from scratch and implementing them using big-bang approaches is fraught with risk — witness the number of otherwise competent organizations that have had trouble implementing enterprise resource planning systems. In fact, the decision to do a big-bang conversion required a large part of the process to be a completely ballistic move and made it needlessly risky. Making such projects modular — breaking them up into smaller segments — keeps the ballistic portions relatively short, and allows feedback to take place between them. It's exactly like a golfer playing three shots to a long

par 5, instead of risking going for it in two. Without extensive practice — thorough testing of the conversion routines — the disaster at Oxford was inevitable.

Management's Sweet Spot

As noted, differences in level and scale between golf and management do not affect the systemic similarities between the two activities. Indeed, systems thinking is needed every time golfers or organizations try to learn from the experience of experts in their own field.

Only factors that are invariant across systems can be transferred; everything else is idiosyncratic to that golfer or that organization. Yet to be reminded of some of the systemic truths about a golfer's performance and an organization's performance can help in addressing these challenges:

- Organizations rely on self-regulating feedback-dependent processes of which managers are only peripherally aware. As we saw in Oxford, it is only when an organization is stressed that the importance of these processes becomes apparent.
- Processes are a form of organizational knowledge that is neither taught to people nor retained in their heads. It is accumulated in the organization, its technology, and its artifacts through the encoding of the experience of individuals as they work. These processes are often discovered and developed through trial-and-error learning but, once embedded, they become difficult to access and change.
- Management attention is a flexible instrument, allowing organizations to change their focus from one task to another, but real-time reflection is limited. Short management attention span is the systemic counterpart to the limits of conscious awareness in individuals.

Golf is a search for the sweet spot in space and time; it is a miniature replica of the systemic way in which we may exercise control over the trajectories of our own lives as well as those of our organizations. Indeed, golf can help us understand how to use our time. It teaches us to stay in the moment, using goals and feedback to keep us there.

Many of us in management spend too much time in the future, seeing the present only as a means to a future end. We scramble after objectives we never seem to reach, for the future, as such, never comes.

Perhaps, as Harvard Business School professor Fritz Roethlisberger suggested many years ago, we would do better if we thought of the future as a means and the present as an end. After all, learning and growth can take place only in the present. There are thus two very different ways of using goals: One way devalues the present, the other does not. We can create a target just to shoot at it and make ourselves miserable every time we fail to hit it. Or we can create the target to perfect our shooting here and now. This arouses our sense of adventure and exploration and encourages learning. In this frame of reference, achieving our purpose isn't an end in itself; the objective merely becomes a means for correcting the source of error here and now.

Approaching the game of golf or a management challenge using goals in this way gives us a glimpse of the excitement and camaraderie that can exist in complex human systems when we use the future as a catalyst to nurture growth, learning, and performance in the present.

Imaginative dreams of the future and bold strategies to reach them are necessary, but not sufficient. Only through timely, specific feedback and practice can essential routines be drilled into habit. Only then will we embody the disciplines that can set us free. +

Reprint No. 00404

Resources

Percy Boomer, *On Learning Golf*, Alfred A. Knopf, 1997

David K. Hurst, *Crisis & Renewal: Meeting the Challenge of Organizational Change*, Harvard Business School Press, 1995

David Leadbetter with John Huggan, *The Golf Swing*, The Stephen Greene Press, 1990

Fritz Roethlisberger, "The Secret of Success," in *Man-in-Organization: Essays of F.J. Roethlisberger*, The Belknap Press, 1968

Adam Bryant, "Duffers Need Not Apply," *The New York Times*, May 31, 1998

John Steinbreder, "Handicapping America's CEOs," *Golf Digest*, June 1998

For more discussion on business strategy, visit the **strategy+business** Idea Exchange at www.strategy-business.com/ideaexchange/

strategy+business magazine
is published by Booz & Company Inc.
To subscribe, visit www.strategy-business.com
or call 1-877-829-9108.

For more information about Booz & Company,
visit www.booz.com

Originally published as "Learning from the Links:
What Systems Thinking Teaches About Golf and
Management" by David K. Hurst.

booz&co.

© 2000 Booz & Company Inc.