

# ALL I EVER NEEDED TO KNOW ABOUT CHANGE MANAGEMENT I LEARNED AT ENGINEERING SCHOOL

**Roger  
Dickhout**

You don't just  
"build" the  
organization,  
you make it "go  
round and round"

"Give me a lever,"  
he said, "and I will  
move the world"

Is your change  
exothermic or  
endothermic?

I HAVE ALWAYS BEEN FASCINATED by how things work. As a child, I would follow my father around the yard, helping him with various projects. How, I wondered, did the load in the wheelbarrow always balance? Why could I move a big rock with a crowbar, but not without? How does cement dry underwater?

It is hardly surprising that when I came of age, I followed in my father's footsteps once more, this time to engineering school. Here I learned the precise formulae that govern the forces of nature. Boring to some, for me these axioms held a special magic, because understanding them conferred great power – the power to harness the forces of nature for the works of man.

I have strayed from my professional roots. Over the past decade at McKinsey, I have helped clients design and execute major change programs, and led research projects on frontline change, operational improvement, and company-wide transformation. I have borrowed many good ideas from the literature on personal and organizational change. Often, however, it has left me wondering how change really works.

I am a mechanical engineer. We mechanical engineers tease our civil engineering colleagues that they only have to figure out how to make things stand up or fall down. Mechanical engineers have to figure out how to make things go round and round – a skill of a higher order. Making change always seemed to me like mechanical engineering, but a lot of the literature reads as if it were written by civil engineers.

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*Roger Dickhout is a principal in McKinsey's Toronto office. Copyright © 1997 McKinsey & Company. All rights reserved.*

You can read books on the four, five, or six things you have to do to make a great company stand rather than fall, as though the corporation were a civil structure that you could make stand up, and leave it at that. These static, normative models are admittedly helpful, presenting as they do a vision of what “good” looks like, and identifying some of the changes that can bring it about. But they do not really capture the dynamic characteristics of change. They will not bring to life what happens when a dynamic system gets out of balance, when momentum falters, when the best-laid plans yield unexpected results. They won’t explain, in other words, how you get change to go round and round.

My colleagues and others tell me that business leaders like the static, normative way of thinking. This article, then, may not be for everyone. But there may be a few other poor souls who, like me, got hooked early on understanding the basic laws that govern action. So I decided to write down the five basic premises I consider as I help clients design their change programs – ideas I think of as natural laws of organizational change.

These laws are inspired by the power of scientific thinking. Unlike scientific laws, however, they have not been conclusively proven through controlled experiments. They represent a personal perspective developed through reading and research, as well as through trial and observation in the daily routine of client service. They are: the law of constituent balance, the law of leverage, the law of momentum, the law of feedback and adjustment, and the law of leadership.

### The law of constituent balance

The need for major change is often driven by an imbalance between a company’s constituent stakeholders: shareholders, employees, customers, communities, and management. This basic law answers the question “Why change?”

Nature consists of ecosystems in balance – structures in which different species live interdependently. When an ecosystem is knocked out of balance for whatever reason, a period of often violent flux follows, during which scarce resources are dynamically redistributed and the system arrives at a new balance that better reflects the new environment. Similarly, when constituent interests are out of balance in a large corporation, a power struggle erupts. The gloves come off as shareholder groups rebel against complacent management, or customers punish a company for poor quality. The mentality of scarcity is at play.

Where possible, this imbalance should be exploited to create the conditions for change. However, if a winning formula, once found, is to be sustained, the system must eventually be brought back into balance. High performance

can be maintained only when a mentality of surplus has been restored: when customers are satisfied, talent and investment flow in, and management, employees, and shareholders feel adequately rewarded. The evolution of constituent balance during the change provides clues as to which forces can be harnessed at different times to drive the change forward.

Early capitalist models emphasized the claims of owners and customers. More recently, democratic pluralist societies have substituted shareholders for owners and added employees and communities to create the four-stakeholder model that many modern corporations have in their credo. What always gets left out of the model, but should not be forgotten, is that a fifth group, management, weighs heavily in the balance of power. What value has an analysis of Iraq that does not consider Saddam Hussein?

### The law of leverage

Maximize the return on effort by changing the things that will produce the greatest results. This law helps me understand what to change.

Archimedes deduced over 2,000 years ago that force could be multiplied by applying it to a lever at a particular distance from a fulcrum. “Give me a lever,” he said, “and I will move the world.” Finding the right levers – and pushing them hard enough – is as critical in change management as it is in mechanics.

My experience has been that our instinct is to make more changes than are necessary, without applying enough insight into which changes really matter. Too often, we are simply anxious to make something happen. How can we identify the important changes, and resist acting on secondary problems?

Much of the literature on change implies that a high-performing company needs to do everything remarkably well – and, in recommending across-the-board reengineering, seems to take for granted that low-performing companies must be doing everything badly. In fact, high-performing companies do many things imperfectly; they just do the important things – or enough of the important things – well. Meanwhile, underperforming companies often do many important things fairly well, but not with enough intensity.

Indeed, once analysis has confirmed which levers should be pulled, extraordinary tenacity will be required to pull them hard enough to drive changes uncompromisingly over the 60 percent threshold. Doing something 60 percent of the way is often enough; doing something 40 percent of the way, on the other hand, is often no better than doing nothing at all. That 20 percent swing makes all the difference. All of this means you have to examine a company very broadly before determining what really needs changing, and

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what merely needs intensifying. Your eventual path of action will be narrow, but to exploit the law of leverage you must begin with a wide field of vision.

Unfortunately, most of us start out blind in at least one eye. As an engineer, I found isolating the economic drivers of performance straightforward, but it was not until I worked alongside a firm specializing in cultural change that I came to understand the power of changing people's beliefs. Some CEOs have acute antennae for cultural symptoms; others see only business results. You need to learn to see in a number of dimensions, and to integrate what you see into a coherent picture.

Tools can help, but few tools offer a complete paradigm. Recently, I have found that looking carefully at three types of levers has sharpened my vision. First, take aim at the direct economic levers: driving down costs and increasing revenues. Then, understand how levers that focus the organization – structures, processes, targets – affect performance indirectly. Finally, examine the performance context: levers such as vision, values, and power base.\*

Acting on a path narrower than your field of vision calls for self-control and detachment – a detachment that must paradoxically be combined with an intense performance orientation and an impatience for results. As we have seen, you can do a lot of things fairly well and still not achieve the performance you aspire to; fortunately, you can also do a lot of things wrong as long as you get the important things right and drive hard enough on these to make the difference. Seek the fewest changes for the greatest result.

### The law of momentum

Liberate the energy to drive the change.

“We have to get this place in gear.” “The challenge now is to keep moving forward.” “We are running out of steam. How do we get restarted?” Experienced change leaders struggle with these basic problems. Change is work. Work requires energy. Where is the energy to come from?

The first law of thermodynamics states that energy can be neither created nor destroyed. Consequently, the energy required to change a system from one state to another must come either from within a closed system as energy changes its form (from light to heat, say, or pressure to temperature), or from beyond the boundaries of the closed system.

So too with major change. Energy can be introduced from outside – as with pressure from shareholders or new management – or the system's own

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\* See Roger Dickhout, Michael Denham, and Norman Blackwell, “Designing change programs that won't cost you your job,” *The McKinsey Quarterly*, 1995 Number 4, pp. 100–116, for more on this.

potential energy can be transformed into kinetic energy. Potential energy is released by raising the aspirations and shaping the beliefs of pivotal members of the organization, and by liberating available capacity and capability to work on the change.

As with mechanical engineering, the horsepower of the engine must be matched to the task, or the task scaled to the horsepower of the engine. Consequently, the law of leverage, which focuses energy on the key changes, is especially critical during takeoff, when energy may be scarce.

Energy limits can also be managed by offsetting endothermic, energy-consuming change initiatives with exothermic, energy-liberating ones. A frontline focus on customer satisfaction, directly exposing a company to the demands of its customers, will unleash a massive surge of energy across the whole organization. On the other hand, cost reduction, while it may be a critical ingredient of a change program, often consumes energy by arousing fear at the same time as it removes capacity. Focusing sharply and quickly on cost opportunities and avoiding enervating rounds of organizational downsizing can minimize the energy required, but the sort of spontaneous combustion that can be generated by customer satisfaction efforts is unlikely to materialize.

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Similar to the exothermic/endothermic balance is the balance between push and pull that a skilled change agent will exploit to get change going. Major change will inevitably call for new behaviors. The change agent instinctively gives the system a push by building new tools to enable these behaviors. Simultaneously, he or she must create a pull, or demand for these tools, by putting in place new targets and measures that will focus the organization on the desired behaviors, in turn causing it to reach for these tools.

If it is to drive continuing change, a change effort must build sources of energy as well as producing results. Accomplishing a transformation from low to high performance can take several episodes over a number of years. To power these episodes, a company must discover a pattern of change that builds momentum within an episode and that promotes the shared vision, confidence, leadership capacity, and capabilities that will make the next episode possible.

The particular strategy will vary with the situation. Eliminating a layer of change-resistant management and reorganizing into segment-focused business units can liberate the energy needed to engage new management in the task of improving performance. When this kind of approach reaches

its limitations, however, new blood may be required before the next episode can be launched. But the general law remains: you must achieve results and build energy for more change. If you do not go forward, you will slip back.

### The law of feedback and adjustment

Learn how your organization responds to change, and adjust the program accordingly.

The laws of leverage and momentum offer insight into harnessing the underlying physics of your business system. But there are limits to the predictability of change. Acting on the bottlenecks to improvement will create new bottlenecks. Moreover, the forces driving the change will ebb and flow. Competitors may become stronger, raising customers' expectations and redefining perfor-

mance levels; shareholders may win more control; management may gain or lose courage. Change may itself create opportunity.

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In mechanical engineering, control theory dictates that a closed-loop control system is required to monitor a transformation process

when response characteristics are sensitive to environmental conditions. In a closed-loop system, transducers measure the input and output of the system and compare the actual output to the expected output. Then the input can be iteratively adjusted until the desired result is achieved.

In the same way, however complete the field of vision in a major change situation, or however sophisticated the strategies to generate momentum, some changes are bound to work out less well than others. In change efforts, leadership actions combine with the communication of the aspiration for change and its specific objectives to create an "input." Project structures, targets, and milestones provide a framework for measuring actual against expected "output" so that leadership actions can be modified accordingly. Thus early actions, while producing results and increasing energy, also serve as a dynamic diagnostic. You will learn at least as much by watching your organization's response to change as by analyzing its current state.

Change leaders also establish other, less formal networks and processes to gauge progress and reset priorities for action. These make it possible to identify when an organization is running out of steam, or, conversely, when it has the confidence to take on a bigger challenge. Being dynamically responsive to change as it progresses also allows you to take advantage of timing. An obvious need to restructure work practices, for example, may be impossible to address in a tight market with an entrenched union leadership. If prices fall and union leadership changes, however, an opportunity may arise to broaden the change program in mid-stream.

## The law of leadership

Leadership is the catalyst of change.

In chemistry, small amounts of catalyst intensify and accelerate reactions in much larger masses. Indeed, in many chemical reactions, all the ingredients may be in place, but if the catalyst is absent, nothing will happen. Similarly, the four basic mechanisms of change – exploiting the imbalance between constituents, focusing on the high-leverage opportunities, generating momentum by liberating energy, feeding back and adjusting – are always intensified and accelerated by the personal example of a change leader. Without it, the change may be stillborn. Ultimately, leadership is the scarce resource.

The aspirations and preferences of the primary protagonist have a big impact on the way change unfolds. Notwithstanding the need for a broad field of vision, leaders do come with approaches they are most comfortable with. There is no such thing as a perfect leader. If change is to have credibility within an organization, it must be congruent with the actions of its leader.

Establish a small team at the top – think two to three, not one, not ten – to initiate and guide the change. These people must be role models for leaders down the line. Propel the vision, engaging the down-the-line leaders in the process of change through targets and objectives. Align coalitions: satisfy mutual interests where possible, but don't be afraid to use your power if you have to (change, like everything else, has a dark side). Set expectations very high; the organization may not know what excellent performance looks like. Create new symbols by celebrating success and destroying vestiges of the old culture. These are the critical catalyzing activities in the process of change.



Well, for me, that's how things work. There are obviously many specifics that need to be considered in any change process – industry dynamics, functional knowledge, the characteristics of the organization in question – and particular strategies must be devised to exploit them. But I find that no matter whether it is a resource or a consumer business, an Indian or a Canadian company, a total organizational change or a plant turnaround, these basic laws seem to hold. It's easy to get lost in the nuts and bolts of performance imperatives, personalities, and processes. By stepping back to first principles, you can rise above minutiae to identify the crucial actions it will take to transform your company. Q