

# Engineering Change in a product driven company

By  
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*This whitepaper is intended to be a thought starter for engineers and managers at industrial manufacturing firms that wish to change their company from a product or engineering-driven firm to a more customer-centric organization.*



The Thought Leadership Series is a collection of leading edge thinking for members of the Rubber Industry's corporate and manufacturing communities.

## Before We Get Started

In the interest of full disclosure, let me point out immediately that the impetus for this whitepaper came from an article by Roger Dickhout from McKinsey & Co. Roger started life as engineer and eventually crossed over to the dark side...change management.

Unlike most change management authorities, Roger did not come from academia or psychology. He was an engineer. Yeah, an engineer. And, like most engineers, Roger was good at figuring out what made things work. Like me, he read all the books and studied all the theories for managing change in an manufacturing organization. Like me, it left him wondering how change really works. In his article he says:

“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 happen always seemed to me like mechanical engineering, but a lot of the literature reads as if it were written by civil engineers.”

He’s right you know. I too have read a dozen books that each prescribes a step-by-step procedure for making a company stand rather than fall. The problem is companies are not buildings and you can’t just build it and walk away. In the real world, companies are people operating within a very real, and sometimes dysfunctional, corporate culture that is dynamic and ever changing. Static solutions don’t work because they don’t give managers a clue as to what to do when things get out of balance, when momentum falters, and the best-laid plans yield unexpected results. They won’t explain as Roger says, how you get change to go “round and round.”

To help engineering-driven companies develop and implement change management programs that, for example, seek to change a company culture from being product or engineering-driven to one that is customer-driven, Roger has developed several premises, he calls them the natural laws of organizational change. They are:

1. The law of constituent balance
2. The law of leverage,
3. The law of momentum,
4. The law of feedback and adjustment
5. The law of leadership

## **1. 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? To answer that question, Roger dips into mother nature. He reminds us that "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 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 an industrial company, a power struggle often erupts. The gloves come off as engineering, production and sales all push their own agendas with little regard for the most important constituent of all... the customer. The result is the customer punishes the company for its lack of customer focus and centrality by taking their business elsewhere. He goes on to explain that 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 customers are satisfied and management, employees, and shareholders feel adequately rewarded. One last point, if you're smart enough to notice, the evolution of constituent balance during a change provides real clues as to which forces can be harnessed at different times to help drive change forward. Taking note of this will save you untold time and aggravation.

## **2. The Law Of Leverage**

This law recognizes the fact that not all actions taken to implement change are created equal...so the smart companies maximize their return on effort by first changing those things that will produce the greatest results the fastest. This law helps managers 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 and I will move the world, he said. Finding the right levers and pushing them hard enough at just the right time is as critical to change management as it is in mechanics. Like Roger, my experience has been that management often makes more changes than are necessary, without applying enough insight into which ones really matter. As a result, when trying to make a company more customer centric, we often get caught up in the rush to "make something happen" without truly understanding the wants and needs of the customer.


Another interesting observation from Roger's article is that much of the literature on change management implies that a high-performing company needs to do everything remarkably well. Truth is, high-performing companies do many things imperfectly; they just do the important things, or enough of the important things better than the competition. Conversely, underperforming companies often do many things well, but they are either not the right things or they are done with enough intensity to make a difference. Indeed, once we determine which levers should be pulled, extraordinary tenacity will be required to pull them hard enough to drive change. This means you have to examine a company very broadly before determining what really needs to be changed, and what merely needs to be intensified.

Unfortunately, as Roger says, most of us start out blind in one eye. As an engineer, he found isolating the economic drivers of performance pretty easy, but it took time and experience to really grasp the power of changing peoples' beliefs. Some managers have acute antennae for cultural symptoms; others see only business results. To successfully change a company's culture to be customer-centric management needs to see in multiple dimensions, and to integrate what they see into a coherent picture. This is no easy task and there are no roadmaps to point the way.

Success and failure in this endeavor is somewhat of a two-sided coin...you can do a lot of things fairly well and still not achieve the performance you want. But conversely, you can also do a lot of things wrong as long as you get the important things right and drive hard enough in these areas to make up the difference. The best advice ... seek the fewest changes for the greatest result.

### **3. The Law Of Momentum**

The goal of this law is to make sure management provides the energy it takes to drive change. Roger correctly points out that change is work. Work requires energy. So the logical question is 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 (say from light to heat, or pressure to temperature), or from beyond the boundaries of



the closed system. The same is true when implementing major change in a company. Energy can be introduced from outside, such as pressure from shareholders or management; or it can be introduced from the system's own energy. Potential energy is released by raising the aspirations and shaping the beliefs of pivotal members of the organization, and by freeing up the necessary capacity and capability it will take to do the 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.

He adds that 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. What you will often find is that while just focusing on cost reductions and organizational downsizing will indeed minimize the energy required, it will also destroy the spontaneous combustion that can be generated by customer satisfaction initiatives.

Similarly, a skilled change agent will do the same kind of balancing act to get change going. Because major change, like becoming a more customer-centric company, requires new behaviors change agents must give 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 establishing new targets and measures that will focus the company on the desired behaviors.

The bottom line is that change must build sources of energy as well as produce results. Becoming a more customer-centric company will not happen overnight. It can take several years. To succeed, a company must promote activities that build the momentum, shared vision, confidence, leadership capacity, and capabilities that it will take to generate staying power and consistency.

#### **4. The law of feedback and adjustment**

The next thing to keep in mind is you need to learn how your organization responds to change, and adjust the program accordingly. As Roger points out in his article, 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. Quite often what you find is that acting on the bottlenecks to improvement often creates new bottlenecks.

Also remember that the forces driving change will naturally ebb and flow. Competitors may become stronger, customers' expectations may increase dramatically, performance levels could be redefined; disgruntled shareholders may win more control and/or management may gain or lose courage...just to name a few.

Furthermore, change itself can create opportunity. 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, some changes to make a company more customer-centric are bound to work out better than others. Strong leadership needs to be combined with the communication of specific objectives to create an "input." Project structures, targets, and milestones provide a framework for measuring actual "output" 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. Roger contends that you can 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 makes 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.

## 5. 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.

Likewise, dynamic leadership is critical because without it you can have all the pieces parts in place to make you a more customer-centric company—yet nothing will happen because there is no catalyst for change present.

To give your program the best chance of success, establish a small team of two or three senior managers who have internal credibility with both the executive staff and your people on the plant floor to initiate and guide the change. These people must be role models for leaders down the line. They must be able to propel the vision, engage the down-the-line leaders in the change process through targets and objectives, align coalitions and satisfy mutual interests where possible. They must, however, not be afraid to use their power and occasionally wield the proverbial “big stick” when necessary. As Roger points out, “change, like everything else, has a dark side.”

Good leaders will set expectations very high...and when trying to become a more customer-centric company, that is a good thing because it is entirely likely that the organization may not know what a truly customer-centric company actually looks like. Toward this end, management should look for opportunities to create new symbols by celebrating early successes and destroying vestiges of the old culture. You will find these are critical catalyzing activities in the process of change.

No matter how you slice it, transforming a successful, manufacturing operation from a product or engineering-driven organization to a customer-centric company is difficult and hard work. But it can be done. If you’ve never attempted something like this before, getting some help from someone who’s has is probably a good idea. But if you’re committed to doing this yourself, keeping Roger’s “five laws” in mind will greatly enhance your chances of success.

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## Sources

1. ***“All I ever needed to know about change management I learned at Engineering School.”*** An article written for the McKinsey Quarterly, by Roger Dickhout. a principal in McKinsey’s Toronto office.
2. **“The Psychology of Change Management”**, an article written for McKinsey Quarterly, by Emily Lawson and Colin Price. Emily is an associate principal and Colin is a director in McKinsey’s London Office.