

Distributing Leadership Practices for Lean Transformation¹

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Many organizations have achieved impressive results in various aspects of their business through lean transformation. Few firms, however, sustain those initial results, and many struggle to bring the results down to a bottom-line impact. This article links research literature on change management with lean case studies and presents a form of distributed leadership that facilitates lean transformation. Distributing leadership practices is one of five capabilities identified for successful lean enterprise change (see Table 1). A working paper that discusses all five capabilities in depth can be obtained by request from reflections@solonline.org.

Understanding what leaders do in successful enterprise change requires a consideration of the scope of that change. Daniel Jones, coauthor of numerous books on lean production and chair of the Lean Enterprise Academy, observes an important relationship between leaders and change. The transition to lean enterprise requires *kaikaku* – a shift in the fundamental logic and layout of organizations – along with *kaizen* – activities aimed at continually improving operations and eliminating waste. Although companies make *kaikaku* changes and promote *kaizen*, “if the logic in the heads of management has not changed along with the physical operations then things will easily slide backwards” (Jones, 2005). The *kaikaku* redesign of the core value-creating processes, Jones notes, is too important for leaders to delegate. Leaders cannot delegate their lean involvement because their engagement is what enables them to examine and change the logic in their heads. That change or transformation in the leaders’ logic is essential to the transformation of the enterprise.

The history of the term *lean* helps clear up the confusion that often surrounds what it means to *be lean*. *Lean* was coined as a term to describe what was best represented by the Toyota Production System –

factories producing a vast variety of automobiles with half the human effort, half the manufacturing space, half the investment in tooling, half the engineering hours, and half the new product development time of mass production factories (Womack, Jones, and Roos, 1990). The term *lean* is based on the view of a whole system; it is much more than the set of practices broadly implemented by many managers who then identify their company as lean.

Lean is not a program or an outcome, nor does it reside at an executive level or within the workforce. Lean is a way of operating that spans from executive strategy setting for developing people and managing business growth to the commitment of the workforce to continuous improvement. Although lean has come to be defined primarily by the use of highly visible tools, they are only the surface artifacts of a deeper culture. Many companies today make use of lean tools; however, leaders should not mistake those artifacts with the deeper changes that lean implies. Spear and Bowen (1999) have noted that despite extensive study, companies are unable to replicate the success of Toyota because they confuse the tools and practices with the system itself.

The management challenge for successfully becom-

ing lean goes beyond the extensive use of lean methods to the transformation of a business system. It is much easier to add on to existing ways of working and thinking than it is to make fundamental changes. Top leaders, excited by the lean results that they have seen, often add a layer of lean tools to their organization's existing practices. These efforts become, at best, a partial implementation that produces only limited improvements. Successful lean transformation always involves changes in organizational structure and in an organization's culture, which relies on changing people's assumptions. Schein's (1992) definition of organizational culture links people's underlying assumptions with their expressed values and beliefs, and with the visible artifacts of an organization. The culture of an organization emanates from beliefs that its leaders promote and the historical challenges that they have faced.

Differences in enterprise design are a function of managers' fundamental assumptions about their environment and their organization's people. To lean practitioners, the word *enterprise* has a specific meaning: It is the collection of organizations that make up a product or service value stream. Leaders in lean enterprises seek cooperative relationships between their organization and its environment, looking for opportunities to communicate and develop relationships. Managers in mass production organizations, in contrast, see environmental factors and stakeholders as largely external and immutable, and therefore tend to hold them at arm's length. It is the differing assumptions of leaders and their design choices that create these contrasting forms.

The challenge for leaders in lean transformation involves the *magnitude*, *wholeness*, and *depth* of changes needed. The magnitude of change encompasses the many differences in the characteristics of mass production organizations and lean enterprises. The wholeness of the change has to do with switching between configurations, in moving from one organizational logic, archetype, or gestalt to another (MacDuffie, 1995). The depth of the change deals with the basic assumptions that are the root of organizational culture. Each dimension of change on its

Table 1: Five Capabilities for Lean Enterprise Change

1. Rethinking organizational boundaries

- View own organization as a part of a contiguous value stream

extend the domain to environmental relationships

2. Installing innovation sets

- Build upon complementarities of practices

extend the scope to include sets of changes as coherent programs

3. Pushing and pulling change

- Set in place structures and processes that enable virtuous learning

extend the methods to integrate the two change approaches

4. Seeking growth opportunities

- Project a positive vision for continual renewal

extend the strategy to growth and development

5. Distributing leadership practices

- Recognize interdependent roles in a system of leadership

extend leadership to all levels of the enterprise

own implies a significant shift. Taken together, the set of changes points to an enormous abyss over which leaders must guide their organizations. Successful leaders realize the expanse of this gulf and know that small steps will not allow the organization to cross that chasm. Doing so requires a great leap.

Organizational Effectiveness and Occupational Communities

As leaders guide their organizations through changes in structure and culture, they also need to support the many small steps of continuous improvement efforts. The ways in which firms improve their operations are embedded in their organizational structure. Managers within different functions have developed improvement methods that are largely unique to their areas.

There are three broad courses of action for

improving organizational effectiveness – accessing external resources, bettering internal systems, and adopting efficient technologies (see Table 2). External resource improvement approaches include strategic planning, financial engineering, marketing, lobbying, and developing partnerships or strategic relationships with other firms or external stakeholders. Technical approaches seek to improve service and quality or reduce defects and costs through the use of analytic methods or information technologies. Reengineering, Six Sigma quality, and industrial engineering are examples of technical approaches. Internal systems improvement approaches include team building, high-performance work systems, conflict management, and other organizational development initiatives. Internal systems efforts aim to improve the motivation and well-being of people to advance the overall organizational performance (Jones, 1997).

Each of these organizational effectiveness approaches is associated with specific positions, job functions, roles, and ultimately professions. Given that specialization, people in different areas and functions base their improvement efforts on what

are largely their own, independently developed and uniquely practiced principles, tools, and methods. Executive leadership, which includes the organization’s top managers and their staff, works strategically to improve access to resources and markets. Line leadership, which includes senior and middle managers responsible for divisions, plants, offices and programs, has operational responsibility for the creation and delivery of products and services. Line leadership’s improvement methods include efforts that result in greater coordination and collaboration at their level. Finally, technical approaches, which are carried out by people with specific expertise, include the use of technologies and analytic methods to improve operational functioning and efficiencies.

The generic names of improvement tools and methods associated with organizational effectiveness approaches are listed in Table 3. Many of these tools are developed and used just within the set of people in the roles listed in the table. Strategic marketing is largely an approach that executives use, for example, whereas team-building efforts involve customer service groups, and Six Sigma quality efforts are carried

Table 2: Approaches to Improving Organizational Effectiveness (adapted from Jones, 1997, p.28)

Approach	Description	Goals to Set to Measure Effectiveness
External Resource	Evaluates the organization’s ability to secure, manage, and control scarce and valued skills and resources	<ul style="list-style-type: none"> • Lower costs of inputs • Obtain high-quality inputs of raw materials and employees • Increase market share • Increase stock price • Gain support of stakeholders such as government or environmentalists
Internal Systems	Evaluates the organization’s ability to be innovative and function quickly and responsively	<ul style="list-style-type: none"> • Cut decision-making time • Increase rate of product innovation • Increase coordination and motivation of employees • Reduce conflict • Reduce time to market
Technical	Evaluates the organization’s ability to convert skills and good resources into goods and services efficiently	<ul style="list-style-type: none"> • Increase product quality • Reduce number of defects • Reduce production costs • Improve customer service • Reduce delivery time to customer



out by industrial engineers. Each occupation has its preferred tools – engineering students learn operations research and design experiments, while management students learn strength-weakness-opportunity-threat (SWOT) analysis and leadership skills. What people learn in universities extends to professional associations and on-the-job experiences – people in different positions practice approaches specific to their function. That organizational focus on using specialized methods helps to build deep knowledge in functional areas.

But whereas managers may organize their firms into units around tasks for rational or administrative reasons, the people in these units conceive of their work more collegially in “occupational communities.” These communities are made up of “a group of people who consider themselves to be engaged in the same sort of work; whose identity is drawn from the work; who share with one another a set of values, norms and perspectives that apply to but extend

beyond work-related matters; and whose social relationships meld work and leisure” (Van Maanen and Barley, 1984, p. 287).

Occupational communities provide a frame of reference for why people behave as they do in organizations. Because an organization’s formal conceptions of work can overlook what it really takes to get a job done, managers’ efforts to have people adhere to espoused practices can undermine the actual practices that organizational members develop. The actual practices are what enable improvement and determine the success or failure of an organization. Using Lave and Wenger’s (1991) practice-based theory of learning, Brown and Duguid propose “communities of practice” as important structures for learning. To understand performance and learning in organizations, “it is necessary to focus on the formation and change of the communities in which work takes place” (Brown and Duguid, 1991, p. 41).

Barriers to Learning in Organizations

Participation in occupational communities or communities of practice creates social structures that facilitate interaction and learning and help members to develop practical skills. But, because organizations are usually structured by function or department, it can be difficult for them to develop knowledge across units. For example, organizations may utilize very good engineering tools for designing products, or very good accounting tools for capturing costs and allocating expenses. Departments within organizations are often skilled at applying tools, but they frequently do so only within the boundaries of their responsibilities. The shared experience of a functional group or occupational community that cuts across artificial structures can facilitate an organization’s internal learning processes.

Schein (1996) found that organizations had trouble learning and improving because of consistent

failures to communicate across the subcultures of their occupational communities. Organizations as a whole develop unique cultures that arise from their members’ shared experiences; however, the same process operates within different units of large organization, creating variations in the overall culture, or subcultures. Several particular subcultures were so consistent across large organizations that Schein described them as three distinct “cultures of management” (see Table 4). The three subcultures – the culture of engineers, the culture of CEOs, and the culture of operators – exist in all large organizations. They do not understand each other very well, and they often work at cross-purposes. Many organizations fail, or remain only marginally competitive, not because of resistance to change, but because of a fundamental inability to reconcile the differences in subculture assumptions. “Until executives, engineers and operators discover that they use different languages and make different assumptions about what is im-

Table 3: Linkage of Organizational Effectiveness Approaches to Leadership Roles, Occupational Community and Improvement Methods

Approach	Leadership Role & Occupational Community	Improvement Tools & Methods
Accessing External Resources	Executive leadership and staff functions to leadership, chief financial officer, chief operating officer, strategic human resources, legal counsel	<ul style="list-style-type: none"> • Planning (SWOT) • Financial engineering • Legal restructuring • Leadership • Managerial accounting • Strategic marketing • Mergers and alliances
Bettering Internal Systems	Line leadership; geographic, division, and plant management; responsibility for plants and factories	<ul style="list-style-type: none"> • Team building • Cross-training/ multi-skilling • High-performance work systems • Employee involvement • Conflict management, negotiations • Gain sharing • Open book management • Budgeting and control • Supplier management • Kaizen improvement
Adopting Efficient Technologies	Technical leadership, engineering management, internal consultants and experts, black belts	<ul style="list-style-type: none"> • IT systems – MRP, EDI, CRM, etc. • Reengineering • TQM, TPM • Value engineering • Operations research • Activity-based costing • Theory of constraints • Lean producton • Six Sigma Quality • Cellular manufacturing • Design of experiments

portant, and until they learn to treat the other cultures as valid and normal, organizational learning efforts will fail,” according to Schein (1996, p. 18).

Leadership for Learning Across Organizations

Studies of change-associated organizational learning initiatives found that deep cultural changes required an alignment of “leadership roles.” Leadership in

this sense is not confined to a position in the hierarchy, but is seen as a capacity to engage “a human community to shape its future and specifically to sustain the significant process of change required to do so” (Senge et al., 1999, p. 16). By this definition, organizations have many leaders at various organizational levels who play critical roles in initiating and sustaining learning and change. When the three leadership roles important to learning – the executive, local line, and network leaders – are operating

Table 4: The Three Cultures of Management (developed from Schein, 1996)

The Cultures of Management	Operator Subculture	Engineering Subculture	CEO Subculture
Colloquialisms	The line, middle managers, management, or the boss	Experts, geeks, technocrats, or analysts	Executives, top leaders, Mahogany Row, or the big boss
Scope	Local	Global	Global
Orientation	Making the system work, people, local community, based on core technology	Technological elegance of design, abstract and efficient solutions, people are a source of noise	Financial growth and viability, people are a cost to be managed, manage through impersonal systems and routines
Examples of Basic Assumptions	<ul style="list-style-type: none"> • Success of enterprise depends upon people’s knowledge, skills, learning abilities, and commitment • Required knowledge and skills are “local” and based on the organization’s core technology • Operators need to learn and deal with surprises in the production process • Operators must be part of a collaborative team in which communication, openness, mutual trust, and commitment are valued 	<ul style="list-style-type: none"> • We are proactive and optimistic; our ideal is mastering nature • We are stimulated by puzzles and problems • We are pragmatic perfectionists who prefer solutions independent of fickle people • An ideal world is made up of elegant machines and processes that work with precision and do not need human intervention • We are oriented toward safety over design • We prefer linear, simple cause-and-effect, quantitative thinking 	<ul style="list-style-type: none"> • Financial survival and growth must be our focus • We are in a perpetually competitive and hostile environment • We need to appear in control and be indispensable • We must rely on our own judgment because subordinates do not give reliable data • Hierarchy helps to maintain control • We take risks only in ways that maintain control • Large organizations require rules, routines, and rituals • Challenge and achievement, not relationships, define success

together, organizations create a distributed leadership system that enables them to transform themselves.

Perceptive executives do not rely on the power of their position to enforce change because that subtly reinforces the view that management is the source of problems – and solutions. When people in the organization hold the assumption that only executives can cause significant change, they have disempowered themselves. Executives need to hold realistic views of the limits of their powers, realizing that people in large organizations have become cynical about “flavor of the month” management fads (Senge et al., 1999, p. 13). Executives are removed from the organization’s direct value-producing process, and, although accountable for overall corporate performance, they have little ability to directly influence actual work processes. They are, however, vital in setting a vision and creating the environment, support, and resources for learning, improvement, and change. What executives can do is walk their talk, and influence others by their involvement, commitment, credibility, and sincerity.

All corporate change must eventually become local. The programs, resources, encouragement, or orders coming through an organization affect the thinking and behavior of people doing work. Local line leaders, the managers accountable for results with authority to undertake changes, need to be involved in any change that is to be meaningful and sustained. These local line leaders may have responsibility spanning from a department to a large facility or factory. Given their accountability for results, and the history of corporate initiatives, these managers often become skeptical of executive-driven programs. Too often, they have had to take on activities from these programs and still deliver bottom-line results. Local line leaders are knowledgeable on entrenched and vexing problems, and they are vital to transformation because only they can undertake organizational experiments and test the practical impact of new approaches. Without local line leaders’ involvement and commitment, organizations struggle to initiate, and are unable to sustain, change programs.

In these studies, which examined the broad diffu-

sion of learning and change in organizations, there were no examples of success “without the enthusiastic participation of effective internal networkers” (Senge et al., 1999, p. 17). People in the role of “network leader” help to close the gap between vision and implementation. Network leaders pull together the vision, support, and resources of executives to address the needs of local line leaders. Their limitation – a lack of positional or formal authority – is their strength. It is possible for network leadership roles to be played by people with formal authority, but they would not be invoking their authority in that role. Instead, network leaders, who are often from executive staff, business improvement personnel, or corporate training groups, move around the organizational freely and largely unnoticed. They enroll people in improvement efforts because of the strength of their conviction and clarity of their ideas.

American companies often do not value network leadership because it is informal and exists outside official corporate influence mechanisms. In contrast, studies of Japanese management methods show how highly the Japanese depend on informal authority. One of the essential characteristics of lean enterprise is the role of managers as leaders and mentors, using direct but casual methods for diffusing improvements. In Spear’s (2004) account of training at Toyota, he describes a new leader’s process of helping his subordinates achieve their improvement goals, and learning that he should not make the changes that achieve these goals for them. This knowledge can not be simply gained in a classroom; it must be experienced in the workplace.

A System of Distributed Leadership

Organizational transformation offers a paradox: No significant change occurs unless the top drives it, and no significant change occurs if the top drives it. Without top management buy-in, organizations cannot sustain change efforts. Conversely, top management buy-in is a poor substitute for genuine commitment spread throughout the organization.

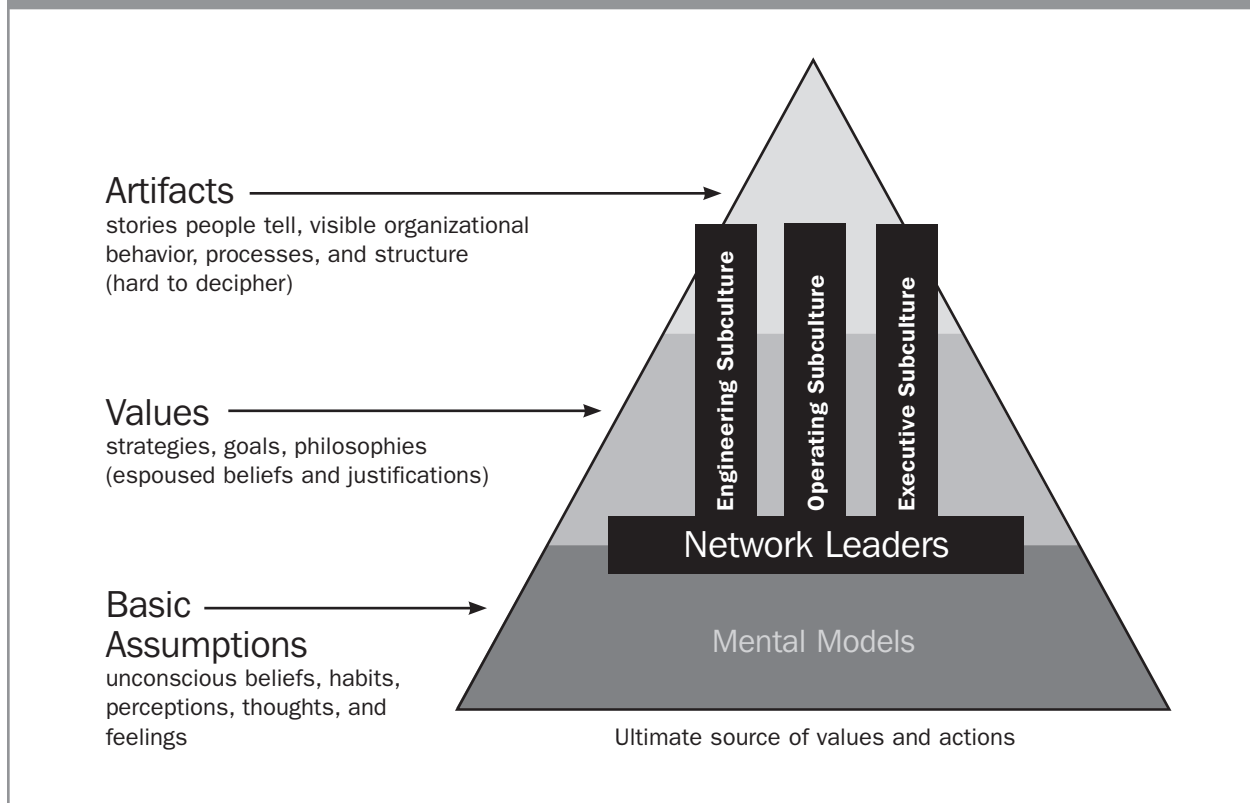
The solution to this paradox of transformation lies in the distinction between commitment and compliance. The hierarchical authority needed to “drive change from the top” favors compliant behaviors, which undermines the commitment and local leadership needed at multiple organizational levels to sustain change. Organizational transformation requires that a variety of roles work together to enable changes: a three-part system of distributed leadership.

The three leadership roles for learning (Senge, 1995; Senge et al., 1999) overlap with the three cultures of management (Schein, 1996). There is a direct link between CEO culture and executive leadership roles and between operator culture and line leadership roles. This overlap is created because the CEO culture, by virtue of position and responsibilities, naturally exhibits the characteristics of executive leadership roles.

The third pairing is not quite so direct. However,

there may be a link between an engineering culture and network leadership roles. Although network leaders might come from engineering cultures, they are effective in their network leadership roles precisely because they function outside other occupational communities and without formal influence. Network leaders bridge occupational communities, and firms cannot effectively sustain organization-wide changes without learning across these communities. Senge (1995) calls network leaders “internal community builders” because of their important role in working outside the organization’s system of formal authority. Network leaders bring together people who are predisposed to experimentation and change, and hold them together through a shared vision for improvement. Studies of learning efforts within organizations found that common values were the glue that binds such groups, noting that they were really “communities of commitment” (Senge and

Figure 1: System of Distributed Leadership



Kofman, 1999). Without the commitment that these groups develop from working together, organizations would be unable to sustain their learning efforts.

The organizational learning and culture research findings provide insights into the leadership needed to sustain lean changes. Learning and change are sustained through a system of distributed leaders in which network leaders bring executive, line, and engineering occupational communities together. The collective efforts of multiple leaders enable learning and improve performance across organizations. One depiction of distributed leadership is the system that is formed by overlaying the three cultures of management, connected by network leadership, on the three levels at which organizational culture is manifested (see Figure 1). In the background are features of the cultures, including artifacts, and values, and underlying basic assumptions. The three cultures of management together make up the organizational culture. The operator subculture, which is locally based, most strongly identifies with and is central to the organization's culture. The executive and engineering subcultures are more global, and are linked to external communities as part of their professional identities.

Organizations will not learn effectively until they recognize and confront the implications of different organizational cultures. "To create alignment among the three cultures, then, is not a case of deciding which one has the right viewpoint, but of creating enough mutual understanding among them to evolve solutions that will be understood and implemented," according to Schein (1996, p. 17). In a system of distributed leadership, leaders in all these roles are aware of each other and their strengths and differences, and they align so that efforts provide cumulative results. When this system of leadership is working, what seems like an incremental change process (often part of a lean, Six Sigma, or continuous improvement program) can become more dramatic as time goes by. Judged over time – one year, two years, five years – the accumulation of many little changes results in a radical transformation.

Distributed Leadership to Bridge Organizational Boundaries

Network leaders draw people together to initiate and maintain continuous improvement efforts, connecting needs and opportunities with available resources. They create bridges across the three cultures of management (see Figure 1) and do so informally, using their passion, power of persuasion, and influence skills. They do not rely on formal power, but work with managers who are predisposed to leading improvement efforts. If network leaders fail to gain the support of, influence, or inspire line managers in their improvement experiments, the use of authority to make local managers do something they do not want to do would sow the seeds of discontent and failure. When local leaders are not themselves motivated and personally committed to changes, the result is unintended consequences, inauthentic behaviors, backsliding, and unrelenting resistance. The foundation for continuous improvement is the motivation and engagement of line leaders – something for which there are no substitutes. If network leaders gain too much power, they will be tempted to use that power at times to coerce or manipulate leaders into efforts whose outcome they are not committed to achieving. Network leaders support other leaders' formal performance responsibilities while appealing to their innate desires to learn and improve.

Cultural boundaries between occupational communities can inhibit the success of improvement activities within organizations. Engaging people by using the relationships within occupational communities can help to overcome organizational boundaries. The linkage between occupational communities can be highly effective in supporting new learning, facilitating the diffusion of new practices, and accelerating changes. For instance, CEOs and other members of the executive culture envision themselves as part of a larger financial community, responsible for the organization's fiscal health and preoccupied with boards, investors, and the stock market. Only people within that occupational community of their organization share their concerns and world views, but

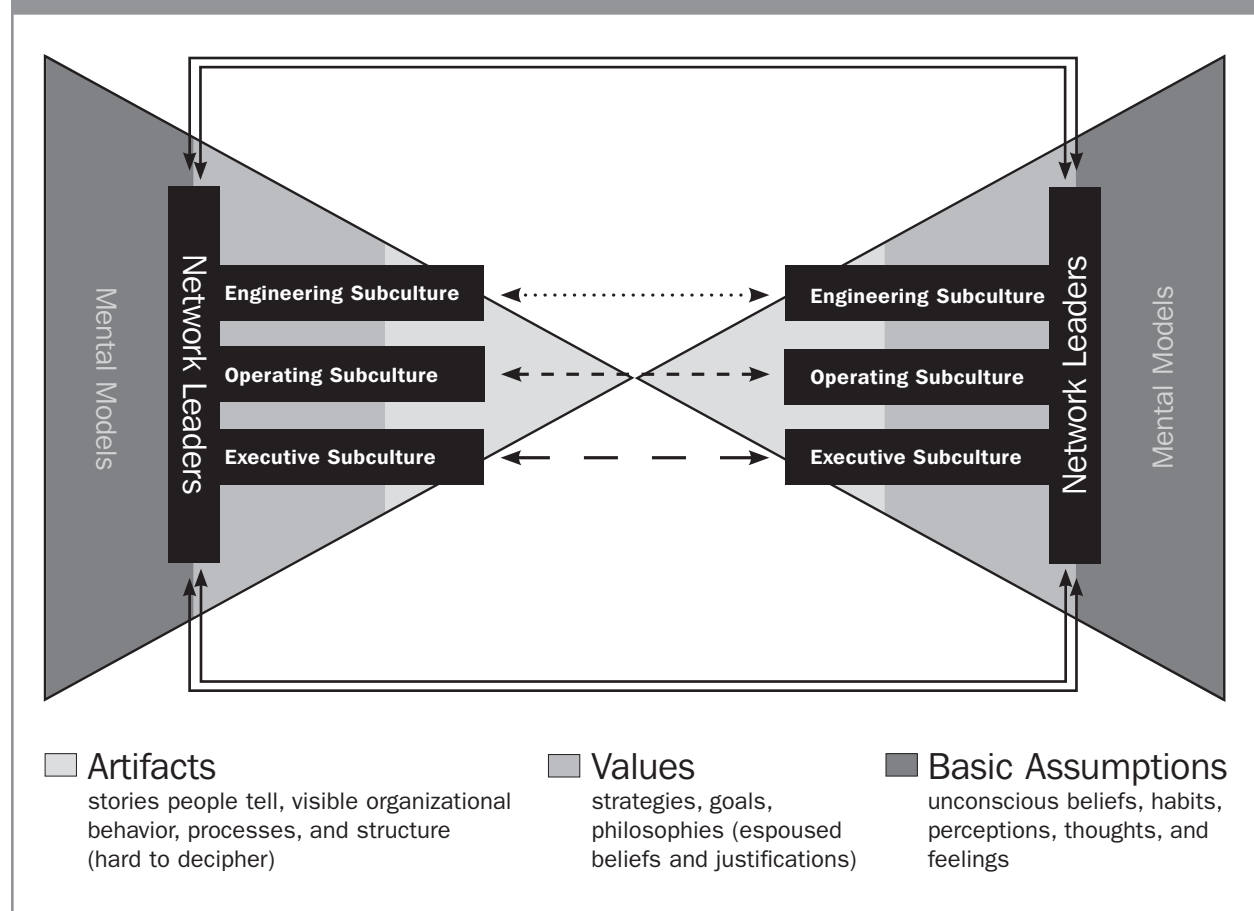
they are similar to the concerns and world views of CEOs in other organizations. Therefore, CEOs from different firms will find that they have much in common, and those commonalities will help them to understand each other. That common world view facilitates their collective learning and change.

Several examples illustrate the power of connections across organizations through the CEO subcultures. Tower Automotive, a fabricator of metal parts, supplied domestic automobile companies. Executives were “accustomed to seeing a Big Three buyer only once every five years” (MacDuffie and Helper, 1999, p. 166). When Honda was interested in working with Tower, the president and members of the board of Honda of America visited the company, making a strong impression. This and subsequent visits led to

new business, supply of tooling, and Honda’s BP team coming to work with and make process improvements at Tower. The business with Honda increased greatly, as did the learning for process improvements that Honda discussed with Tower.

When Boeing realized that it needed to make dramatic and continuing cost cuts, which its suppliers needed to match, Boeing executives held sessions to meet with the executives from its suppliers. Clay Jones, then a vice president and now the CEO of Rockwell Collins, clearly remembers attending one of those sessions. The Boeing executives showed him why Boeing’s survival depended upon immediate cost reductions and the ability to cut its costs 5 percent annually thereafter. Boeing needed its suppliers, including Rockwell Collins, to make similar cuts if

Figure 2: System of Distributed Leadership Linking Two Firms



they wanted to keep Boeing's business. Boeing was using lean production methods to make these improvements, and it was ready to share what it had learned to help Rockwell Collins. This executive-to-executive exchange impressed Clay Jones, and helped him to embrace, conceptualize, and lead Rockwell Collins's lean initiative.

Engineers' subculture also extends beyond their workplace. Having received their education outside the organization, engineers tend to identify themselves on a global basis with others in their discipline. Their outside professional ties are often stronger than their affiliation with the people in their organization. In working across organizations, the connection between engineering cultures, where people are like-minded, facilitates learning and change. When Honda worked with Tower Automotive, its engineers visited multiple times per week, and immersed themselves in Tower's technical problems. For example, they provided steel from Honda's Japanese supplier, proved that it was easy to work with, and worked with Tower's US steel supplier on steel and process improvements (MacDuffie and Helper, 1999).

To function more effectively as enterprises, firms use occupational community linkages to bridge organizational boundaries. Rather than have the lean experts from an industrial engineering subculture in the large company work with executives in supplier organizations, the executives in the large company are more effective in their communication with executives from supplier firms. Executives across firms have similar training and experiences, can better understand one another, and can speak directly to the implications of proposed changes. The nature and substance of communication across subcultures is unique to those communities.

The insight from occupational communities explains the value that firms gain when they bring not just executives and experts, but also middle managers and workers, on benchmarking trips. The middle managers and workers can learn from their counterparts in other organizations, and bring back not only knowledge, but also enthusiasm, for changes that they have seen. People can learn and make

changes more easily across organizations when they link with peers from their occupational community (see Figure 2). The shared experience, common perspective, and similar world views within an occupational community enables a faster exchange of knowledge across organizations.

Network leadership plays an important role in orchestrating connections within occupational communities across organizations. Not only do they work "top down" by working with executives to set context, they also work "bottom up" to share and develop practices and lessons learned. Managers in network leadership roles not only benefit from connecting with peers, but also can work with other network leaders to facilitate the many connections that help to make broad, sweeping changes across the organizations working together in a value stream. At MIT's Lean Aerospace Initiative (LAI) laboratory, managers can readily meet their occupational community peers from other organizations. In these meetings, people do not just learn from their peers and MIT researchers, but also make connections and develop relationships with people in other government and industry organizations. Network leaders use these relationships to help make other connections and facilitate improvement efforts across their enterprises. For instance, the "Lean Now" projects initiated through LAI brought together continuous improvement experts from these programs: Raytheon's R6S, United Technology Corporation's ACE, Lockheed Martin's LM21, Boeing's Lean Offices, Northrop Grumman's Lean, and Rockwell Collins's Lean Electronics. Together, these experts developed a common training curriculum and common lean improvement project methodology. Peers from the various companies worked together to deliver the Lean Now training and project methodology in making process improvements in the Air Force and other government enterprises. The first three projects – improving the F/A-22 test process, the F-16 contract closeout process, and the Global Hawk evolutionary acquisition process – benefited both the government site and the industry peers who worked together. The government sites reported improvements; individual

experts learned methodologies from other organizations and improved their skills (Rebentisch and Jobo, 2004).

Successful Lean Enterprise Change

When performance gets significantly out of step with expectations, leaders shift from ongoing improvement efforts to turnaround or transformation initiatives – the difference between many small steps and one great leap. They identify and resolve problems by mobilizing activities for diagnosis and inquiry, identifying thorny issues, and setting in place new structures and behaviors. They all build upon a sequence of identifying a path to improvement before planning changes. Womack and Jones (1996) propose a specific “roadmap” (see Table 5) for transforming lean enterprises. This framework consists of 24 steps taken over five years to make the “lean

leap.” The framework is consistent with general change approaches, providing detail relative to lean concepts and their deployment.

The challenge for enterprise leaders is to help people see the alignment of their interests with those of their enterprise, which often involves a shift in basic assumptions, and hence perspective. When leaders can establish a system that operates this way, they have achieved a “system [that] actually stimulates workers and managers to engage in the kind of experimentation widely recognized as the cornerstone of a learning organization. That is what distinguishes Toyota from all the other companies” (Bowen and Spear, 1999, p. 99).

Closing the “Knowing-Doing” Gap

Research by Pfeffer and Sutton on why some companies perform much better than others identified a “knowing-doing” gap, or the gap between what an

Table 5: Time Frame for Lean Leap (from Womack and Jones, 1996, p.270)

Phase	Specific Steps	Time Frame
Get started	<ul style="list-style-type: none"> • Find a change agent • Get lean knowledge • Find a lever • Map value streams • Begin kaikaku • Expand your scope 	First six months
Create a new organization	<ul style="list-style-type: none"> • Reorganize by product family • Create a lean function • Devise a policy for excess people • Remove anchor-draggers • Instill a “perfection” mind-set 	Six months through year two
Install business systems	<ul style="list-style-type: none"> • Introduce lean accounting • Relate pay to firm performance • Implement transparency • Initiate policy deployment • Introduce lean learning • Find right-sized tools 	Years three and four
Complete the transformation	<ul style="list-style-type: none"> • Apply these steps to your suppliers/customers • Develop global strategy • Transition from top-down to bottom-up improvement 	By end of year five

organization “knows” and how it acts or behaves. The differences between businesses do not derive from one company having smarter and more capable people, but from the management practices of the firms and their abilities to either “create or reduce the knowing-doing gap” (Pfeffer and Sutton, 2000, p. 6). Other firms may come to study the successful companies’ approach, but fail to be as successful. The authors’ examples – Southwest Airlines, Toyota, and Honda – turn out to be companies that exhibit enterprise structure and behavior. They note that “there are a number of studies within single industries demonstrating superior ways of managing people and organizing work. Yet although these superior management practices are reasonably well known, diffusion proceeds slowly and fitfully, and backsliding is common” (p. 7). Industry examples in apparel manufacturing, automobile assembly, food plants, restaurant chains, and computer and semiconductor manufacturing all illustrate the frustration of successful people, work, and organizational practices not diffusing. Pfeffer and Sutton found ready agreement on these challenges, and the concept of the knowing-doing gap made sense to American managers. When the researchers discussed it with Asian managers, however (both authors teach at Stanford Business School), the concept perplexed them. Asian managers found it “hard to understand how someone could ‘know’ and not ‘do’” (2000, p. 26). The Asian managers operate in systems where they develop knowledge by doing, embedded in their work practices. The authors again used examples from Toyota and Honda, illustrating the importance in those cultures of:

having people actually see quality defects directly . . . and go to another part of the plant . . . [having a] philosophy that when a person sees a quality problem, s/he is more likely to analyze it systemically, to communicate the problem more accurately to others, and to be more motivated to find a preventative remedy (quoted from MacDuffie, 1997, p. 42).

This approach is about more than techniques and practices; it is a philosophy and perspective about people, process, quality, and continuous improvement, as illustrated by another Toyota example:

On the surface, TPS appears simple . . . many plants have put in an andon cord that you can pull to stop the assembly line if there is problem. A 5-year-old can pull the cord. But it takes a lot of effort to drive the right philosophies down to the plant floor. A lot of people don’t want to give the needed authority to the people on the line who deserve it (quoted from Taylor, 1997, p. 102).

Not only are the successful companies the leaders in their industries and good at doing what they know, but they are also capable in helping their partners – from suppliers through customers in their value stream – do what they know too. In working with suppliers,

“some manufacturers ask, ‘How can I club you into submission?’” says Byron Pond, CEO of Arvin Industries . . . “Toyota asks, ‘How can I help you be better?’” To prepare Arvin to be a supplier, two Toyota engineers spent seven months in Arvin’s Indiana plant, improving processes, materials management, and quality in preparation for a Toyota contract – even though the plant was then making parts for a competitor. “Toyota is an amazing company,” says Pond (quoted from Taylor, 1997, p. 102).

Honda’s BP program has resulted in productivity increases that averaged 50 percent at 53 suppliers (MacDuffie and Helper, 1997). To achieve these gains, a team from Honda worked with these suppliers on largely small, simple, commonsensical improvements. “The genius of the Honda system was in its implementation, not in particularly novel or complicated technical ideas,” conclude Pfeffer and Sutton (2000, p. 15).

Conclusion

The gains associated with lean enterprises, such as Honda, have been achieved by practices that are not emphasized in current change management frameworks. These enterprises manage change through the integration of five capabilities – rethinking organizational boundaries, installing innovation sets, pushing and pulling change, seeking growth opportunities, and distributing leadership practices. As a set, these capabilities create a virtuous and self-sustaining improvement system within and across organizations. These five capabilities extend the domain, scope, methods, strategy, and leadership of change efforts from single organizations to multi-organization enterprises. Top leaders' involvement in these changes is particularly important. These leaders are active in the development and distribution of leadership practices within and across organizations, which helps develop the other four enterprise change capabilities.

Successful leaders of lean enterprises are those who recognize their interdependent roles in a system of leadership, and extend leadership to all levels of the enterprise. Change begins by recognizing the different subcultures and occupational communities within the organization and linking together organizational effectiveness approaches and improvement methodologies through leadership roles and occupational communities. In addition to promoting improvement and change in their own organizations, leaders draw upon occupational community affiliations to bridge boundaries across organizations and diffuse improvement and change. Linking leadership roles and occupational communities creates mechanisms to align people's interests throughout affiliated organizations. These links further distribute leadership and facilitate "learning by doing" across the entire enterprise in creating a system of continuous improvement.

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Endnote

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George Roth is a Principal Research Associate at the Sloan School of Management and heads up the Enterprise Change Research Area at MIT's Lean Aerospace Initiative. His co-authored books include: *To the Desert and Back: The Story of one of the Most Dramatic Business Transformations on Record* (Jossey-Bass), *The Dance of Change: The Challenges to Sustain Momentum in Learning Organizations* (Doubleday/Currency), *Car Launch: Managing the Human Side of Change* and *Oil Change: Perspectives on Corporate Transformation* (both with Oxford University Press). He holds a Ph.D. in Organizational Studies, an MBA in marketing and finance, and a BS in Mechanical Engineering. Dr. Roth is a founding member of SoL.

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Commentary

By Bill Bellows



Bill Bellows

The novel concept of distributed leadership, as described by George Roth, offers a badly needed open pathway for progress within the many organizations in pursuit of “lean” practices. For those like me, who have been engaged in similar efforts to improve organizational performance (from TQM to Learning Organizations to Six Sigma Quality), the results are of little surprise – organizations which (to quote the author) “often add a layer of lean tools on top of their organization’s existing practices,” leading to “a partial implementation that produces only limited improvements.”

To paraphrase Dr. Russell Ackoff, what the author finds missing is an awareness of the vital role of a transformation in thinking within these otherwise self-limiting organizations. Lacking such a transformation in the “logic in their heads,” organizations are most certain to miss out on the widespread benefits of lean, as first documented by Womack, Jones, and Roos in their 1990 bestseller, *The Machine that Changed the World*. To follow the herd of lean-seeking organizations and rely on tools alone is to achieve a *reformation* in how work is done, without rethinking it first, also to borrow a concept from Dr. Ackoff.

The insights provided in this article are an invaluable reminder to “change agents” that new tools alone will not propel an organization to achieve the advantages of the few exemplar models of lean. They also serve as a reminder, if not an eye-opening introduction, that transformation leadership can be distributed across the organization. Surely, such a model of team

work will be essential to unlocking the potential of lean.

Moving past the opening paragraphs of this article, the author’s explanations of “barriers to learning in organizations” and “cultures of management” are extremely consistent with what I have witnessed, from first-hand accounts and a seemingly endless stream of anecdotes from “change agent” colleagues around the world over the past 20 years. While our starting points are different, we have arrived at a similar conclusion as the author regarding the dire need for a transformation in thinking, starting with individuals and extended to organizations.

My personal path leading to the obstacles to organizational development followed my introduction to the management theory of Dr. W. Edwards Deming and his frequent castigation of the “prevailing system of management,” which he credited with managing the parts of an organization as if they were both interchangeable and independent. To do so in a school system would be to foster individual and collecting thinking that would attribute the grade on an exam to the student, not to the entire education system, which includes not just the student, but also the teacher, fellow students, and parents, to keep the list brief. To do so within an industrial setting would be to seek out the sole cause of a defect or a cost overrun. In linking back to the need for a transformation in thinking, I have found that organizations which maintain the belief that measurements, such as grades, defects, or cost

overruns, are caused locally by “root causes,” will be the same organizations which follow an implementation plan for lean which is characterized by an emphasis on “tool implementation,” absent the need for seeing the system of causes which result in the measures we collect to manage organizations.

In my efforts to foster a thinking transformation within Pratt & Whitney Rocketdyne, I see a number of striking parallels to the practice

of distributed leadership. Yes, transformation takes longer, but what is the long-term value of investing in the tools of lean without engaging the entire enterprise in the thinking of lean? In the words of Dr. Ackoff, let’s not confuse a *reformation* with a *transformation*.

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Reflections

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