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Reflections

The SoL Journal on Knowledge, Learning, and Change



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Divergent Views, Shared Vision: The Scenario Game Board as a Tool for Building Robust Strategy By Michael Sales & Anika Savage

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PUBLISHER'S NOTE 10.3



C. Sherry Immediato

s some of you know, I ended my tenure as SoL's managing director in September, in part so I can return to being a member of SoL and spend more time on the substance of creating and enhancing learning communities. Documenting and dis-

seminating cases of organizational and system learning remains one of my passions and I have offered to continue to serve as the publisher of *Reflections* as a way I can contribute to the community as a SoL member.

In reflecting on the past ten years, my principle observation and confession is that consistent action-learning is rare, and that reflection remains the weak link for most of us. Therefore, I'm particularly pleased to share a number of illustrations in this issue about how people are using lean tools and philosophy, as well as methods from scenario planning to embed learning in our everyday processes. They demonstrate the positive results that come from a focus on bringing out the best in people as standard practice.

How do we make learning what we do every day? The story of integrating lean and organizational learning from Danfoss Socla is a tale of experimentation and persistence. In particular, it raises the question about how our processes build learning "muscle". They describe a series of methods to highlight positive results and opportunities for improvement – by physically displaying tangible examples on the factory floor and in the warehouse. They're hard to miss.

Similarly, DTE Energy in Detroit has redefined what employees see in the field as relevant opportunities for improvement. Imagine an impoverished community that has households surviving without heat and light, or others where illegal natural gas hook-ups have been constructed with bicycle tire inner tubes. Whose "learning opportunity" is that? DTE Energy has embarked on a remarkable journey in seeing themselves as both part of the problem, and in new ways, part of the solution.

How does the larger context affect our learning orientation? Doc Hall, a long time lean scholar and advocate describes his experience of the "vigorous learning enterprise" – systems who are embracing what it means to thrive in a world beyond incessant economic expansion.

For those of us whose work is inherently more abstract, innovations such as the "Scenario Game Board" help expose the less tangible assumptions we are making, their consistency, and implications for strategy. Michael Sales and Anika Savage have created a simple process where a group can use a room as game board and physically display both espoused assumptions and assumptions in use (by having people literally vote with their feet, and observe the resulting distribution on the "board"). The act of then moving to another spot on the game board to understand that perspective is living reflection.

Finally, I hope our new "Executive Digest" will make it easy for you to select the features of interest now, and to file away others for later reference, or to recommend to colleagues. Please do share this issue of *Reflections* with others! It's an easy way to build or reinforce your learning community.

With appreciation,

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C. Sherry Immediato Publisher

EXECUTIVE DIGEST 10.3

The Lean Leap: Lean as a Learning Accelerator

By Michael Ballé, Jacques Chaize, Frédéric Fiancette, and Eric Prévot

When Danfoss Socla, a French valve manufacturer, first implemented lean practices, the initiative failed to produce the desired large-scale transformation. Only when the company integrated lean with the disciplines of organizational learning – and built learning into everyone's jobs, every day – did they achieve dramatic process and performance improvement. In this article, Jacques Chaize, Frédéric Fiancette, and Eric Prévot from the Danfoss Socla executive team, along with consultant Michael Ballé, describe how learning organization theory has much to contribute to the lean field by clarifying the purpose of the lean tools and spelling out for managers what the tools are supposed to achieve: making people before making products.

Reconnecting with Customers: The Detroit Recovery Project

By Mike Homan and Jason Schulist, with Susan McCoy

In a tough economy, how does a company maintain profitability while providing services to people who may not have the resources to pay for them? In this article, Mike Homan, manager of DTE Energy's innovative Detroit Recovery Project, and Jason Schulist, director of continuous improvement for DTE Energy, tell how the company has employed improvement methodologies to meet this challenge. By applying learning tools not only within the company but to the larger community, DTE Energy has made strides toward reestablishing the social compact with its lower-income customers and addressing the root cause of deep, systemic problems in the areas it serves.

The End of Economic Expansion Requires Compression Thinking By Robert W. "Doc" Hall

Global crises are squeezing us from all directions, and with or without our participation, change will occur. To implement the sort of changes that will allow civilization to prevail rather than merely endure requires a resourcefulness and ingenuity beyond any the world has ever employed. In this article, Doc Hall introduces the concept of "Compression" as an invitation to learn more effectively both as individuals and organizations, rethink our perpetual devotion to old ideals, and welcome the shift in thinking that must be our first and immediate step.

Divergent Views, Shared Vision: The Scenario Game Board as a Tool for Building Robust Strategy By Michael Sales and Anika Savage

How can people with strongly held, polarized positions on a complex issue develop a robust strategy for the future without necessarily resolving their differences? In this article, Michael Sales and Anika Savage outline an activity that uses a simple "Scenario Game Board" to prompt team members to listen to each other, explore possibilities, and arrive at decisions together – even if they don't share the same views or values. By "residing in" a scenario that contradicts their inclinations, participants broaden their perceptions and learn to see a range of possible future conditions. Because this process embraces multiple perspectives rather than imposing one view of the future, it fosters mutual respect and leads to better decisions.

FEATURE 10.3

The Lean Leap: Lean as a Learning Accelerator

MICHAEL BALLÉ, JACQUES CHAIZE, FRÉDÉRIC FIANCETTE, AND ERIC PRÉVOT

When Danfoss Socla, a French valve manufacturer, first implemented lean practices, the initiative failed to produce the desired large-scale transformation. Only when the company integrated lean with the disciplines of organizational learning – and built learning into everyone's jobs, every day – did they achieve dramatic process and performance improvement. In this article, Jacques Chaize, Frédéric Fiancette, and Eric Prévot from the Danfoss Socla executive team, along with consultant Michael Ballé, describe how learning organization theory has much to contribute to the lean field by clarifying the purpose of the lean tools and spelling out for managers what the tools are supposed to achieve: making people before making products.



Michael Ballé



Jacques Chaize Frédéric Fiancette



Eric Prévot

s a senior management team, we have always worked hard to create a true learning organization in our firm, Danfoss Socla, a specialized valve manufacturer based in Chalons sur Saône, France.¹ Indeed, we attribute part of our enduring success to our efforts toward continuous learning. In 2002, our parent company asked us to participate in a corporate lean initiative, and we did so with great curiosity. Yet, after initially accomplishing positive results, we became disappointed with the project approach, not seeing how lean could potentially "transform" the firm. The lean tools and initiatives showed promise, but we failed to grasp how they fit with our vision of fostering a learning organization.

As a result, we started a dialogue with one of the authors (Michael), who had academic and practical experience in both the fields of learning organizations and lean transformation. We then decided to "reboot" our lean approach and frame it from a learning perspective, with smaller, more frequent projects involving more people from throughout the company. We also committed to work together more closely to discuss and reflect on the demands of lean implementation and its impact on the company.

The process has been taxing, to say the least, but rewarding both in terms of performance and process improvement. A year after we started, with the onset of the global economic

Danfoss Socla is a worldwide specialized valve manufacturer focused mainly on water applications. The division has 600 employees and EUR 100 million in annual sales. Headquartered in Chalon sur Saône, Burgundy, France, the company is an affiliate of Danfoss A/S, a EUR 3 billion **Danish industrial** group.

TABLE 1 Two Approaches to Lean

A Focus on Lean

In 2003, our parent group started a lean program, with the support of a renowned consulting firm. The initiative involved projects led by staff specialists, each lasting 16 weeks, with an additional 16 weeks of stabilization, during which the specialists worked closely with teams to keep the implementation on track. We conducted 14 projects facilitated by a full-time, four-person continuous improvement team. The main focus was improving productivity. The projects delivered significant gains, which helped us to fight fierce cost competition from low-cost producers. However, although most of the projects were beneficial, we realized that they remained driven by the continuous improvement team and that frontline managers tended to drag their feet to commit to new projects or the upkeep of the lean tools. We concluded that we needed to look for a more transformational approach: rather than fix specific issues, we needed to engage managers in transforming their own processes.

A Focus on Learning

The starting point for the second phase was to get the management team to acknowledge and identify the gaps between our operational proficiency and our business model. The group identified on-time delivery and quality as the company's main operational challenges. In order to face these challenges, we shifted from having continuous improvement specialists lead productivity projects to having frontline managers take responsibility for continuous improvement in their own areas, supported by the specialist coaches. This new approach entails (1) regular visits by top managers to the shop floor to push the implementation of a visual management system, (2) short kaizen events led by the continuous improvement group to teach frontline managers how to run their own monthly events, and (3) the creation of teamwork platforms around the weekly production plan and the monthly industrial plan, involving all functions and both senior and frontline management.

crisis late in 2008, we hit the worst industrial crisis in living memory throughout 2009, and we struggled just as much as our competitors with a sudden 15 percent plunge in demand. Still, we believe that our lean work has helped us steer true in the storm, and as the dust settles, we have not lost too much ground on profitability and have increased our market share.

More surprising has been how much the lean approach has challenged our self-image as a learning organization. We thought we learned, but we were totally unprepared for the steepness of the learning curve involved with lean practice. At first, you think lean implementation is a sprint, and then you realize it is a marathon. Lean practice requires not just learning, but *learning how to learn*. The other surprise from the lean work is how far down the ranks the learning needs to occur. Everyone from the CEO to the janitor, every day, must go up their own learning curve.

In reflecting on these eventful years, we asked ourselves: What distinguished the second lean approach from the first? We now believe that lean has to be understood in terms of creating a learning organization, and vice versa. On the one hand, without a commitment to learning, lean can easily devolve into just another Taylorist project in which specialists "fix" the people. On the other hand, trying to build a learning organization without the rigor of the lean toolset may be hard to do. We now believe that to dramatically improve our business performance, we need both to understand the philosophy of the learning organization and to master lean practices through its principles and tools.

This is the insight we will share in this article. For each of the disciplines of organizational learning – personal mastery, mental models, systems thinking, team learning, and shared vision² – we will show how we have used the lean tools to leverage those disciplines into practical action. None of this work has been easy, and we realize now more than ever that a vast amount remains to be done. However, we are confident that blending both approaches is the key to enduring success.

Personal Mastery

Personal mastery is usually defined as a personal commitment to learning. The overall idea is that a workforce that can learn quicker than its competitors holds a competitive advantage. Two significant challenges exist in generalizing personal mastery throughout an organization. First, you can force people to do many things, but you can't force them to learn. The impulse to learn has to come from inside the individual. Second, most real learning is incidental and occurs serendipitously in the course of one's work rather than in a classroom.

As it turns out, lean practice has three specific ways to generalize a commitment to learning within an organization:

- 1. Select people carefully on the basis of their demonstrated will to learn;
- 2. Create and sustain an environment of creative tension; and
- 3. Build a work environment with specific learning opportunities in the course of day-to-day work.

1. Select people carefully on the basis of their demonstrated will to learn. Selecting people for their personal inclination toward learning is far from common in standard hiring practices. A key challenge is that it is difficult to gauge someone's appetite for learning.

The importance of personal commitment to learning became painfully obvious in the course of our lean work. One of the aspects of lean is to *empower managers by teaching them to solve their own problems and make better day-to-day decisions*. To help them develop these skills, they are expected to complete standardized exercises with their teams (called "kaizen events"), in which they look at issues of ergonomics, quality, productivity, and flow through a set analytical framework and with given targets. The improvement results are nice to have, but they are not the main purpose, which is teaching managers to better understand – and thus better manage – their own processes.

As the rhythm of these exercises got established, it became apparent that some managers were interested in improving and some were not. This latter group was unable to take their teams to the next level of performance; they simply didn't "get it." Over time, this realization led to some reshuffling of the organization. It also shed light on the importance of commitment and ability to learn as the *number one* selection criteria for managerial positions.

2. Create and sustain an environment of creative tension. Even if we become better at selecting people for their ability to learn, there is no disputing that you can't force anyone to learn – it has to come from within. As such, managers often feel that this characteristic is out of their control. Lean, however, has a specific practice for sustaining the



Reveal your mistakes - red tag the bad part.

creative tension that leads to "aha!" moments: the lean "challenge" is about expressing problems in terms of what we *need* to do rather than what we *can* do.

In our case, for instance, we have a catalogue of several thousand products. Every day, external distributors place orders through the sales organi-

We now believe that to dramatically improve our business performance, we need both to understand the philosophy of the learning organization and to master lean practices.

zation; we need to ship the parts as quickly as possible or risk losing the sale. Our business model is built on maintaining a wider product catalogue than our competitors to better serve our customers, but this strategy also creates many operational problems. Whenever an order comes in, either we pull it from stock and ship it, or we need to manufacture it right away. In the second case, we must have all the right component parts in inventory and the time slot to make it during the day.

Both of these conditions pose their own logistical difficulties. In the past, we accepted that our on-time delivery rate fluctuated, and as long as it didn't become catastrophic, no one but the sales director really worried. The lean approach changed that attitude. We all agreed that what we *needed* to do to sustain our business model was no less than 100 percent on-time delivery. We had no idea how we could achieve that performance, but we

You can't force anyone to learn, but you can create an environment in which the gap between where we are and where we need to be is obvious at a glance. agreed that it was a real source of competitive advantage and additional sales.

Several years later, we still haven't achieved our goal, but we have a much better understanding of how the delivery process works and what to do about it. We started tracking on-time delivery, committed to improve it, and refused any backsliding. Any backsliding triggered serious investigation and deep thinking. This single indicator became the source of many management debates about how to solve the problem and where to place resources.

Robert Fritz has long theorized that tension seeks resolution and that the main driver of innovation

Learning to Serve Customers on Time

ur business model revolves around offering customers what they want by keeping a large catalogue of products, while most of our competitors have reduced their offerings to a narrow list of products that they import from Asia. Although our approach is commercially powerful, it has own operational drawback: in one order, a customer may ask for both products that are easily made or in stock and for less common products that require longer lead-times. Yet, to be complete, the order must include all products. Whereas our competitors keep warehouses stocked with a few products and thus can deliver relatively quickly, the less common items can prevent us from completing a full order in a timely manner.

For years, the company accepted this drawback, and only the sales and marketing people complained, rightly arguing that every late delivery led to a lost sale, to the benefit of the competition. Consequently, when we restarted our lean approach, the first challenge we all agreed on was on-time delivery. No one expected how much learning we'd have to do on this issue – or how difficult it would prove to resolve.

The first step to lean – and learning – is acknowledging that you have a problem, or more to the point, that you are the problem: you cause the problem through your own actions, regardless of the other benefits those actions might have. This is an emotionally difficult step to take, as we all assume that the problem comes from the outside.

In lean, this first step is achieved by "cleaning the window" – making the problem visible so that all can agree on the current situation. In this instance, it meant measuring on-time delivery (OTD) daily and separately tracking *shipping OTD* – our ability to pick products in the warehouse and send them to our distributors – from *production OTD* – our ability to produce what is required on time. When it became obvious that we had two different problems wrapped in one, we decided to first solve the shipping OTD issue by conducting a number of improvement workshops with the logistics personnel. As the global recession hit soon after we started, solving this issue took longer than expected, but we finally managed to improve shipping OTD.

The remaining delivery problem was essentially a production issue. Following the lean logic, the second step was to "pacify" the flow of parts. We identified the eight percent of products that represented 50 percent of our production volume. The plant needs to make these products day in and day out. We established a "leveled pull system" on these products, meaning that once a week we set a fixed daily order for these products, and then produce them according to stock-replenishment kanban. (Products are produced when they are consumed, triggered by a "production instruction"

is the perceived gap between a vision and current reality.³ The lean practice of setting challenging targets and tracking progress through simple, handwritten charts on the shop floor is a practical way of reasserting the pull of creative tension on a daily basis. As Atul Gawande has demonstrated in medicine, self-measurement is a significant key to improvement; lean practice systematizes this approach.⁴ You can't force anyone to learn, but you can create an environment in which the gap between where we are and where we need to be is updated real time and obvious at a glance. This system reinforces the urgency to learn. On-time delivery is now visible real time on a large screen in the shipping area.

3. Build a work environment with specific learning opportunities in the course of dayto-day work. Learning is incidental; it occurs in the course of work when a specific event triggers an "aha!" experience as we connect the dots unexpectedly. How can this serendipitous process possibly be organized? This is probably where lean practice differs most widely - and most counterintuitively - from the normal industrial way of doing things. Lean processes are designed to stop when something goes wrong. If a bad part is identified, the process stops. If the requisite work to replenish what has been consumed is finished, the process stops. If an employee does not follow the standard method of doing things, the process stops. It doesn't stay stopped, but it does stop

card – a "kanban" – that represents one box.) Because of the surprisingly small number of products involved, we stopped handling them with a one-size-fits-all computer system. We planned them by hand with an Excel spreadsheet and scheduled them with cardboard kanban cards on the shop floor. By taking these steps, we smoothed the flow of half the daily production volume; on these few items, OTD delivery quickly climbed.

Our original ideal was that the remaining products would be fabricated on demand only, as the orders arrived from customers, with the understanding that we had enough instant capacity to do so for occasional orders. Unfortunately, we discovered that customers sometimes make *large* one-off orders. As these were not for high-demand items, we could not level the demand, and as the orders were quite large, we could not produce them over the course of one day. We established a third system to manage these kinds of orders. We now carry some inventory for certain products. When a one-off order comes in, the products are taken out of inventory, and if more items are needed, the rest are produced the same day. The rule is that whatever has been taken out of inventory has to be quickly rescheduled for production to bring the inventory back to normal.

We then realized that we needed to plan for yet another case: promotional product that needs to be built ahead of time. Whereas in the past we would glut production with orders just ahead of the commercial promotion, we learned to plan ahead and build up the stock without suddenly monopolizing the production facilities. This process required yet a fourth inventory management system. At the time of writing, we have also identified a further OTD problem with a special set of products that require subcontracted parts.

Before we had a mediocre process (one-size-fits-all computer program) delivering mediocre results; we now have a much more detailed understanding of the situation, a more sophisticated process (four different systems), and much better results. We learned by following the usual lean steps of first acknowledging that we were causing the poor OTD through our own practices; second, by identifying the problem in the warehouse and shop floor by visualizing product storage points, paths, and ordering processes; third, by solving the problems that emerged one by one, on an ad hoc basis; fourth, by sharing this knowledge and building it into our management standards on how we plan and schedule products; and fifth, accepting that this issue will never be perfectly solved and that we need to keep challenging ourselves regularly to fight backsliding and keep improving our service to customers. long enough for the worker to confirm what the issue is and immediately make a correction to get back to standard conditions. The next step is to start a root-cause investigation to figure out the source of the problem and fix it.

In a full lean system, team members are expected to pull a cord every time they face an unexpected situation. A team leader then has less than a minute to react and discuss with the team member whether the situation is O.K. or not. If the problem can't be solved in a minute or two, the line will stop; it will only start again with management approval. This practice formalizes incidental learning. Stopping the process when there is a problem creates many learning opportunities every day, some small (quickly corrected by training), some large (a source of process improvement).

As challenges are spelled out clearly and a system is set up to create many learning opportunities each day, the people who do well are those who are happy to learn and teach.

Lean tradition has a large library of such techniques. In our case, we haven't yet figured out how to get operators to stop the process when they see something nonstandard – for one thing, establishing the standards is no easy challenge – but we are working consistently on confirming problems. We've also started creating visual signals to show that the process is out of normal conditions, such as red bins for suspect parts and "marketplaces" – areas in the shop where all defective parts are physically sorted, making visible the shortcomings of our current processes. These techniques develop ownership and spur learning in both operators and frontline managers.

Personal mastery remains an individual trait, but we have discovered from using the lean tools how to encourage it. As challenges are spelled out clearly and a system is set up to create many learning opportunities each day, the people who do well are those who are happy to learn and teach. Watching these employees grow is one of the upsides of the lean journey. Conversely, lean systems also reveal people who show fundamental difficulties in adapting to changing circumstances, emphasizing the aptitude to learn as a key recruitment or promotion criteria. It's management's job to develop environments in which learning is valued and possible. But personal mastery does matter, and so individuals have to be carefully picked.

Mental Models

In learning organization theory, mental models are the deep representations of reality that people hold. These assumptions about how the world works usually express themselves as espoused theories (what people say they believe and intend to follow) and theories-in-use (how people actually behave and their underlying assumptions).⁵ A learning organization seeks to come up with mechanisms to surface these mental models, evaluate them against reality, and change them when necessary.

Lean uses a different vocabulary, but essentially takes the same approach. The first step in the lean process is to clarify the problem you're trying to solve. (Is this the right problem? Do we understand the problem well enough? Do we agree on our description of the problem?) A problem is defined as the gap between a standard (espoused theory) and the current situation (theory-in-use). This gap is then explained as cause-effect relationships. In fact, lean practice is a relentless machine for explicating mental models and reducing the gap between espoused theory and theory-in-use. Habits are challenged. Pet theories are disproved. Deeply held beliefs are questioned routinely.

For instance, in our company, we believed that for people to be satisfied, we had to give them flexibility to deal with their life out of work. Consequently, workers were free to choose their work schedules as long as they completed the requisite number of weekly hours. As we established visual performance and process standards, it became obvious that such flexibility was detrimental to both efficiency and teamwork. Although it was convenient for workers, it did not contribute to their job satisfaction, as they couldn't develop team ownership and solidarity. We repeatedly observed that people would leave problems for somebody else to solve. The absence of teamwork in the company became clear at all levels; it was a painful truth to accept.

The second lesson was no easier. As we decided to tackle this issue, the management team settled on two policy changes. First, to facilitate communication, operational functions would move from their separate areas to one large, open space. Second, we would institute common work hours (start time, end time, and breaks) to create stable teams on the shop floor.

The first move was relatively easy to implement, but it initially failed to produce the expected benefit of more communication: people sat next to each other but didn't actually share more information. The second move, which contradicted an old and profoundly rooted corporate norm, generated strong protests from employees and their representatives. We learned that no problem can be solved by arbitrarily applying across-the-board solutions, particularly when it is not shared by all and when individual implications are not taken into account. We thought we had identified a global problem (which we had) and that we could implement a global solution (which we couldn't).

In the end, we still have the goal of creating stable teams and increasing communication, but we have chosen to compromise and attack the issue area by area, taking different circumstances into consideration. Although the shift is now more incremental, it is happening in a more positive manner than our first efforts. For instance, frontline managers have a target of establishing stable teams with the same work hours; they deal with difficult cases with help from management as needed. On the communication front, we have learned that co-locating people helps but that

Jacques Chaize

y key learning was that lean practice brought what we were missing: a comprehensive and perennial deployment of learning throughout the whole company. By creating small learning opportunities in day-to-day



Jacques Chaize

work, lean enables us to embed into the organization both the objective and the methodology of learning. The objective – implementing effective answers both to new situations and to recurring problems – is served by the obsessive lean process of observation, inquiry, and discovery of reality. The lean methodology, which focuses

on conducting challenging dialogues and activities on site rather that at off-site meetings and presentations, gives real life and practicality to the ideas of double-loop learning, systems thinking, and all the learning disciplines.

we also need to create effective platforms for teamwork.

We prided ourselves on our learning capabilities, but in most cases, we tended to implement simplistic, across-the-board solutions. We learned to slice situations into different cases and treat each slice as unique. For instance, in one of our factories, the first lean challenge was to clean up the yard and get rid of the excess parts stowed there. A related challenge on the procurement side was to remove all parts from an external warehouse and bring them back to our own storage area. To do so, we needed to find space in our in-house racks, which were full. This whole process revealed that we had a larger problem with obsolete parts than we initially thought.

In tackling the problem of obsoletes, we started by stapling a sheet of paper on all crates of parts that hadn't been used in more than a year. We immediately saw that we had a huge number of these containers. We went on to investigate them at a steady rate of a few a week. This exercise led By giving us a way to view the business as a system rather than a set of coexisting parts, systems thinking helps us avoid boom and bust dynamics in our processes.

us to understand the different causes of obsolescence; conditions varied according to the type of parts and where they were sourced.

Previously, our mental model was to have on hand everything we needed to produce all parts on a just-in-time basis. The result was that we occasionally found ourselves with huge stocks of certain parts without a corresponding improvement in on-time delivery to customers. As we delved more deeply into the problem, we realized that different parts behave differently and need to be treated with different systems. In the end, we reduced our inventory by 30 percent without affecting delivery at the production cells. For a company of our size, this reduction has had a significant financial impact.

The key learning here is that we now try to develop more detailed mental models and have learned to be wary of "one-size-fits-all" solutions. Old habits die hard, and old thinking habits die harder, so when time presses, we still believe it's better to do something than do nothing. But we're increasingly aware of how the lean method is making us revise our models of the situation and build more detailed and explicit representations. Ultimately, we're starting to see that the end point for the process is having an ad hoc explanation for everything, but we're not there yet - in many instances, we are aware that our managerial reflex is still to look for global solutions to global problems, rather than experiment locally, repeat, and then deploy. Still, we have found that finer reasoning leads to smarter solutions and better results.

Systems Thinking

Systems thinking is probably the aspect of organizational learning that most clearly parallels lean. In

a nutshell, by giving us a way to view the business as a system rather than a set of coexisting parts, systems thinking helps us avoid boom and bust dynamics in our processes (as well as the Forrester bullwhip effect, in which small variations in customer demand amplify through the supply chain to create huge demand ups and downs for suppliers that are very hard to manage effectively). In taking into account the interrelationships within the system, we can avoid optimizing locally at the expense of global performance. The just-in-time dimension of lean essentially puts systems thinking into practice throughout the supply chain.

Manufacturing companies that do not practice lean tend to use computer-based scheduling systems that tell each production cell what to do when. Lean uses "pull" (you only make what your customer has consumed) to establish customersupplier links throughout the production process. Each production cell becomes responsible for maintaining its own inventory of finished parts and basically reproduces what has been consumed. Although this process requires detailed upstream planning (a lean practice called "leveling"), it stabilizes the production flow and makes relationships between units explicit.

The impact of establishing pull throughout the production process is twofold. First, because the links of cause and effect are clear, managers better understand how logistical decisions taken at the planning stage can affect the entire chain. In practical terms, for instance, we have been able to significantly improve the synergy between sales promotion campaigns and production capacity. The result is that we have enough products to respond to the increased demand created by a promotion without frustrating customers with unfilled orders or bloating our stocks with finished products we then have trouble selling. This was a fundamental shift: promotion campaigns, previously seen as troublesome practices and not as strategic sales tools, are now embedded in our processes.

Second, we have considerably tightened the links between processes. The lean challenge is that no

work-in-progress (WIP) parts should transit through warehouse storage. All WIP is held at the station that produced it as in a supermarket, waiting to be pulled. Making the change to this new system required drastic reduction of batch sizes, but in doing so, we realized how important it is to be flexible if one's business model rests on quick delivery of a wide catalogue of parts.

Lean differs radically from traditional production models inasmuch as it focuses equally on producing parts and on the information that drives the scheduling of producing parts. In fact, lean modes of production rely on clearly separating each link of the chain and organizing the feedback mechanisms between them. In a lean system, four elements are specified in great detail⁶:

- 1. The link's output: how much of what gets sent to whom and when
- 2. The link's pathway: who does what for whom
- 3. The link's connections: what triggers which exchanges



4. The link's method: how the work is done by whom

As our frontline managers learn to specify these four elements in detail and to manage variations, they also acquire a deeper understanding of how different aspects of the system interact: the rela-

Frédéric Fiancette

Since the 1980s, our business model has focused on strong marketing, a spirit of innovation, and a closeto-the-customer sales force. Production was not considered important; the make-or-buy choice regarding whether to produce products internally or outsource them was driven by the questions, "What are the costs, or can we afford the necessary investments?"



Frédéric Fiancette

Today, as our vision is to remain (or to become!) an important valve manufacturer offering a much wider range of produces to our customers with better service and quality than our competitors, production is considered on par with product development and sales and marketing. Managers now regularly visit the shop floor, implementing the "go and see" principle rather than sitting in a nice meeting room and looking at PowerPoint slides.

Having short meetings on the production line is probably my key learning point of our lean experience. Our factories are now the place where we learn to see, share, and address the problems together, one by one, as a team.

When our assembly lines were in China, it was difficult to see and learn how to solve problems. But after we relocated our operations back to France, managers were able to view with their own eyes the issues that existed. For example, one day during a management visit to the production line, as an operator tried to assemble one of our valves, all of the quality and safety issues we had heard about popped up right in front of us: poor tightness of the valve because of a non-fitting seal, wrong assembly tools, and so on. The operator was of course unable to deliver the product right the first time. We started to see what we could not see when the manufacturing was in China. Together we learned how to start solving the problems and improve the product for the customer, as well as for the operator.

tionship between scheduling and production, between maintenance and planning, between quality and sales, etc. Here again, learning does not occur through formal training but through the process of trying to tighten the link and seeing firsthand how the system behaves. With regards to quality, for instance, managers work with operators to spot every bad part in the process and immediately go back to the workshop that produced it and try to solve the problem there. Interestingly, after working through assembly, paint, machining, and purchasing, we're starting to see the implication of design options on the manufacturability of parts.

Team Learning

The lean definition of teamwork is "resolving problems across functions." Because stable teams are the basis of lean organizations, what is known as "team learning" in the organizational learning framework plays an important role in lean. Individual employees develop knowledge more quickly if there are robust mechanisms for sharing knowledge and experiencing learning together. Furthermore, "teamwork" specifically addresses the issues of crossing organizational boundaries and facing difficult problems with an open mind.

One of the hardest truths we've had to confront in following lean precepts is how poor we were at actual teamwork. This revelation came as something of a shock, because we all get along really well in the company, and we thought we were good at working together – which is actually the case. Nonetheless, when lean forced us to try to solve specific issues as a team, we found that we were not better at doing so than anybody else. For instance, as mentioned above, our lean initiative immediately stressed on-time delivery and quality. We were convinced that we had excellent quality, certainly better than our competitors. While generally true, when we started investigating

Eric Prévot

hen we started our first wave of improvement with the Danfoss Productivity Program (DPP), we were following a year-long roadmap, and each workshop was managed by the continuous improvement team. Even though the results were quite good in terms of productivity, we had built a process for experts and not for production managers.



Eric Prévot

In our second phase of lean, we learned a lot from the field and quickly developed a powerful tool: the kaizen event. This pedagogic tool helps teams learn to understand, test, check, and react, without fear of failure. At first, managers were afraid of this drastic change in their local organization, but they quickly adopted the advantages of shorter initiatives that last about a week rather than four months! These activities, decided only two months in advance, fit better with their problems and improvements needs.

In addition, the staff has appreciated the opportunities for learning and practicing new skills. With a clear vision of our business model and the real support of top management, managers have learned to drive monthly kaizens by themselves. Smoothing the flow was

the new goal for each product family. The continuous improvement team's role shifted from leading projects to challenging and coaching the staff. In this way, they pushed the organization without leaving people to fall down.

With the Danfoss Productivity Program, everybody was satisfied with the productivity improvements, but the pace left people exhausted. Each new four-month-long project garnered less support than the previous one. But our lean initiative really started to have a positive effect when we moved it onto the shop floor. We soon started a kanban loop between shipment and production. Through trials, managers gained confidence in producing small batches according to customer demand.

the quality issues more deeply, we were in for a rude awakening. We asked the salespeople to systematically describe what complaints they heard about us from our customers. We learned that sales managers spent much of their time trying to cool off unhappy customers. In a memorable meeting, the sales and marketing vice president read to the entire management team a blistering letter from one of our key account customers. The gist of the letter was that he continued to work with us because our competitors were worse, but that he had taken the time on a Sunday to list all the issues he had with our products and services. This was a wake-up call, not just on the quality front, but on the fact that, as a management team, we had no shared awareness of the extent of the problem.

As all industrialists will tell you, quality problems are difficult to resolve for two main reasons. First, they tend to be non-repeatable, one-off situations that are hard to catch in normal operations; second, they often involve several links in the chain and can't be fixed from one department alone. In this respect, the lean approach taught us to create "platforms" for teamwork; that is, regular working sessions in which members of different functions meet to solve problems together. These gatherings are very different from the usual "status meetings," in which each person reports to the group where they're at and what they're doing (and nobody cares much). In these teamwork platforms, the participants have to repeatedly solve a specific problem, such as creating a stable plan for the week or solving quality problems.

For instance, we established quality "marketplaces" in each production shop. When an operator comes across a bad part (either a supplied part or a mistake he just made), he puts the part into a red container at his station, and he calls the team's coordinator. The coordinator conducts a quick analysis and tries to find the cause of the problem and fix it. She places the defective part in a central "marketplace" area. In this central place, defective parts are regrouped by defect types. A cross-functional management team inspects these groups of Unless we push the questioning process beyond what all parties easily agree on, we are not learning as a team.

defective parts each week and focuses on one quality issue after the next. We're only at the start of the process, but we've already seen spectacular improvements in areas such as paint and assembly – in some instances, reducing defectives by as much as 30 percent annually.

We created a similar platform for teamwork to improve our capability to deliver on time every day. Every week, a planning meeting takes place involving all functions to establish a level plan for the following week and to look at every potential issue that could cause us to divert from the plan. Such issues range from machine problems to supply concerns, such as harbor strikes and suppliers going bust. For each potential issue, frontline managers are expected to figure out effective countermeasures in order to stick to the plan as closely as possible. Once a month, we extend this planning session from the short term to projections for the next quarter. In these turbulent times, the monthly sessions have become key to understanding what our market is doing, and now the entire management team attends them.

The hard lesson for us here was that getting along doesn't guarantee team learning. For team learning to happen, you have to structure specific platforms for teamwork, where groups regularly examine specific cross-functional issues. We are learning that unless we push the questioning process beyond what all parties easily agree on, we are not learning as a team. As a case in point, when we started tagging all the "dead stock" in our warehouse, we discovered that a new product wasn't selling as well as we had hoped. Our commercial people had anticipated that these new products would sell like hotcakes and strong-armed production into creating a large advance stock. The main contribution that lean can make to the field of organizational learning is embeddedness: creating learning opportunities throughout the day-to-day production process.

We were then hit by the 2008 slump, and our customers weren't looking for new offerings. The teamwork planning sessions forced us to face issues we had been working around. First, why isn't the new product selling? Second, why did we order production to make so much stock so far in advance without a clearer understanding of what would really happen? Sales and production don't like getting into these kinds of issues, because they open a Pandora's box of mutual recrimination. The teamwork platforms, however, serve to frame the problem and move people from discussing knowledge they already share to learning about how neighboring functions work and make decisions. The attitude is to be tough on the problem, not the people.

Like with all lean work, such thorny issues are unlikely to be solved overnight, but at least we have started establishing processes for creating and sharing knowledge across organizational functions. Indeed, our lean approach itself is largely built on teamwork during improvement



events and during coaching visits, when the central production, logistics, and continuous improvement management team walks the shop floor to discuss problems across functional boundaries.

Shared Vision

As you've probably gathered by now, lean is never easy, because it forces you to see the practical consequences of your policies and choices. At the executive level, we've shared a clear strategic vision for years. We make money by delivering quality products, on time, to our customers out of a large catalogue. Different from most of our competitors, we have resisted the pressure to reduce the range of products and to delocalize production to Asia. Our responsiveness rests on our ability to quickly deliver a wide range of products, which means doing final assembly close to our customers. Yet as we started exploring our operational processes in greater detail, we realized that in many areas, our business model wasn't supported by our actual practices. Worse, when we tried to persuade our frontline managers that they needed to urgently improve their quality and flexibility, we found that many of them resisted the idea as impractical, unfeasible, or both.

The lean tool for achieving shared vision is called the "North Star": clarifying the key dimensions we need to make progress on, so that we do not improve one dimension at the expense of others. The North Star is about formulating an ideal – such as 100 percent on-time delivery, zero defects, one-by-one production in sequence, 100 percent value-added work, low ergonomic risk, zero accidents, suggestions from every employee, and so forth – as well as the key dimensions we need to focus on to get to this vision.

The value of trying to reach these goals became clearly visible as we hit the 2008 crisis. During a period of total uncertainty and brutal retrenching of markets, we could see when we were being pulled away from our intended course. In many cases, we were unable to resist this momentum in the moment, but we did learn not to lose our focus and then to strive to come back on course. On the desire for on-time delivery, for instance, the necessity to reduce any temporary work because of the free-fall crash of demand also severely affected our capacity to deliver to our distributors within a day. After many internal debates, we decided that our commitment to our customers was more important than short-term cost cutting, and while we maintained a zero temporary staff policy for the rest of the company, we softened our stance for the shipping department and hired the people necessary to continue to deliver. As we tackled these and other issues, we also discovered that our commitment to continuous improvement had a reassuring impact on the staff, who not only saw that management was not panicking but also that they themselves could contribute by continuing to make progress every day.

In defining our North Star, we discovered that our shared vision at the executive level was not shared at the frontline management and operator level.

To take one example, machine operators and supervisors simply did not understand why short production runs are essential to our strategic success, or why a single bad part is such an issue for our sales force. Why should they? We realized that we have never attempted to express our strategic vision in operational terms that would make practical sense at the shop-floor level. The lean approach to shared vision is to express strategic intent in the form of clear problems (such as short production runs in machining, which involve quick tool changes and frequent set-ups, something machining operators are traditionally uneasy with) and to translate that intent on the shop floor by getting people to follow their own indicators and do regular improvement events to learn to fix their own problems. These two basic practices spur endless questions, and we've seen that as progress (or lack of) is discussed, the business vision is progressively shared all the way down to the operating level.

Michael Ballé

n most organizations I've come across, the decision-making process is not that strong or effective. When I first started talking with the Danfoss Socla management team, I was immediately impressed by their decisiveness: they had no hesitancy in making changes, and were convinced that taking actions and seeing how they panned out was the best way to move things forward. As they have by and large excellent relationships within the company,



Michael Ballé

execution also happens fairly seamlessly. I was delighted, thinking that many problems would be solved quickly and that lean implementation would move more rapidly than usual. The reality turned out to be more complex than I first thought. Many of the early decisions backfired to some extent. We all had to relearn the essential lean lesson that the workplace is a great teacher and that we learn through kaizen, not by shoot-from-the-hip policy changes. In fact, lean practice is explicit: (1) visualize processes to reveal problems; (2) react immediately to abnormal situation; (3) solve problems one by one; and finally (4) make policy changes to improve management practice.

The key lesson for me was to reaffirm how much of lean practice is an exploratory form of management, rather than the usual decide-and-execute approach. Learning stems from rigorous adherence to Plan-Do-Check-Act; the learning process doesn't allow for cutting corners. Making faster decisions doesn't help if these decisions are not supported by many kaizen cycles of drawing the right conclusions from local experiments and involving people in inventing new ways of doing things. With hindsight, the true strength of the management team was revealed not so much in its quick decision-making capacity, but in its openness to learn from its mistakes and its true grit in staying with issues even when they resisted quick resolution. The real key to learning is persistence more than brilliance.

The Blind Spot: Embeddedness

We had been using learning organization concepts to structure our management style for many years - so what did working with lean teach us? Why did the steepness of the lean learning curve take us by surprise? What was our blind spot? To us, the main contribution that lean can make to the field of organizational learning is embeddedness: creating learning opportunities throughout the day-to-day production process at all levels.⁷ In our previous interpretation, learning mostly occurred in two ways: first at the management level, where we sought to draw conclusions from what happened in our business environment and how we reacted to it, and second at the staff level, through a high investment in training. What did lean do differently?

Laurent Joly: Team Coordinator in the Inbound Warehouse

ver the last several months, I've been involved in kaizen activities in the preparation area for work orders. For me, this approach has been a great change for two main reasons: the improvement method and the results.

Before, I was sure that we could improve the way we worked, but all we did was complain – with no change. Through kaizen, I've come to deeply understand the problems and easily accept our solutions. At first, I was upset about experimenting in kaizen. I felt that trying things, stepping back, and trying again was a waste of time. I've come to realize that this method, although sometimes frustrating (why can't we get to the right idea right away?), is in fact the best way to learn and share ideas, and to develop solutions that that work for everyone on the team.

Today, we have really improved how we do our daily tasks. Rather than use large containers and move them to the lines with forklifts, we now deliver small boxes by a regular train. The train runs often, so the supply flow is very smooth. No one wants to go back to the way things were before. We have a clear vision of our near future and are on the way to building it. Lean embeds learning in the organization in three fundamental ways:

- Lean forces a high speed of learning: The practice of establishing challenges by drawing a "line in the sand" (what we need to do as opposed to what we can do) considerably accelerates the need to learn. These challenges are expressed as targets on local, self-measured indicators, multiplying the pressure on managers to work with frontline staff to solve issues. The rate of learning is no longer a response to environmental shifts, but a managed, self-imposed progress curve.
- 2. Lean creates many small learning opportunities in day-to-day work: Rather than restricting improvement efforts to large issues needing large solutions, lean designs processes themselves as the source of learning. In the lean ideal, any process should stop by itself when it is out of standard conditions. This is counterintuitive, because stopping the line would seemingly hinder productivity, but in fact, the opposite occurs. Combined with the challenge to improve, stopping the process multiplies the opportunities for learning at the operational level. It takes learning out of the meeting rooms and embeds it right where the value is added.
- 3. Lean links learning at the policy level to learning at the detailed work level: The foundational precept of lean management is "go and see": go into the workplace to see facts at the source. This practice has two broad implications. First, senior managers understand the firm's context better than frontline employees and can therefore recommend specific learning topics (such as reducing the time for changing tools). Second, by frequently going to the workplace (whether the shop floor, customer service department, engineering, etc.), senior managers learn to see the consequences of their own policies and figure out what to focus on next.

These three processes explain how lean can act as a "learning accelerator." On the one hand, we have found that lean provides operational tools for embedding learning into everyday operations, making abstract intentions a day-to-day, hour-by-hour reality. On the other, we have also seen that applying lean techniques without the broader frame of establishing a learning organization is structurally disappointing beyond garnering the early lowhanging fruit. Without a relentless focus on individual and collective learning, lean tools can easily be reduced to traditional productivity methods with limited local success and the possibility of damaging the company's social context.

Conclusion

"Why do organizations fail to *learn how to learn* and therefore remain competitively marginal?" asked Edgar Schein in a seminal article more than 10 years ago.⁸ In the last few years, we have found that learning how to learn has given us a visible *competitive advantage*: We can deliver better products, with better service, while maintaining prices, protecting our margins, and offering people employment close to where they live.

In the process, we have both gained market share and improved our operational effectiveness. The surprise, though, is that we didn't learn how to learn better through tackling problems of internal cultural conflicts, as Schein recommends, but by using lean practice to create down-to-earth, everyday learning processes. We found that learning how to learn means challenging everyone in the organization every day. The conclusion we'd like to share is that the lean toolbox offers a pragmatic – and challenging – way to operationalize the intent of organizational learning. Without a relentless focus on individual and collective learning, lean tools can easily be reduced to traditional productivity methods.

We also learned from our first, less-than-successful attempt to implement lean that using lean practices without infusing them with the spirit of the learning organization delivers disappointing results. We believe this issue is a general challenge, as many companies adopting lean bemoan the fact that they fail to see transformation. Jeffrey Liker, one of lean's most renowned experts, makes the point that these tools were invented within Toyota as a way to explicitly foster learning leadership. "Managers must be teachers" is a core value in the Toyota environment, and the lean tools they pioneered don't make much sense out of this context.9 In this respect, learning organization theory has much to contribute to the lean field by clarifying the purpose of the lean tools and spelling out for managers what the tools are supposed to achieve: making people before making products. Old habits die hard, and maintaining the learning impetus day in and day out is by no means easy. The lean approach regularly forces us to confront our weaknesses, misunderstandings, and misalignments. Still, we believe the results are worth the effort, in terms of creating immediate gains, developing future capabilities, involving people in the company, and growing its human capital. We hope this testimony will encourage more managers to open the same door we did, and think deeply about how to merge the learning organization and lean approaches for sustainable competitive advantage.

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FEATURE 10.3

Reconnecting with Customers: The Detroit Recovery Project

MIKE HOMAN AND JASON SCHULIST, WITH SUSAN MCCOY

In a tough economy, how does a company maintain profitability while providing services to people who may not have the resources to pay for them? In this article, Mike Homan, manager of DTE Energy's innovative Detroit Recovery Project, and Jason Schulist, director of continuous improvement for DTE Energy, tell how the company has employed improvement methodologies to meet this challenge. By applying learning tools not only within the company but to the larger community, DTE Energy has made strides toward reestablishing the social compact with its lower-income customers and addressing the root cause of deep, systemic problems in the areas it serves.



Mike Homan



Susan McCoy



Jason Schulist

Introduction

etroit, Michigan, has been hit hard during the recent economic downturn. Outside DTE Energy's corporate offices, the vacant sidewalks, empty streets, and boarded-up windows on nearby buildings signal troubled financial times. For the company, the costs to supply the city's neighborhoods with gas and electricity are expected to increase, while customers' ability to pay for utility service has fallen precipitously. At the end of 2009, Mich-Con's uncollectible expenses topped \$93 million; at-risk families represented more than two-thirds of that considerable financial challenge. Ninety-five percent of the 76,176 gas customers whose services were terminated in 2009 for non-payment were in Detroit, as were 90 percent of the 24,342 sites disconnected for gas theft.

When a customer does not pay his or her bills, DTE eventually terminates services, as do all utility companies in this circumstance. But in the current economic climate, aggressive collection activity has alienated residents, resulting in a drop in customer satisfaction ratings (Figure 1). Jerry Norcia, the president of MichCon, looks back at the situation as it existed at the end of 2009 and candidly states, "We needed to develop a new relationship with our customers."

DTE Energy is one of the nation's largest diversified energy companies. Headquartered in Detroit, Michigan, DTE Energy is involved in the development and management of energy-related businesses and services nationwide. Its largest operating units are Detroit Edison, an electric utility serving 2.1 million customers in southeastern Michigan, and MichCon, a natural gas utility serving 1.2 million customers in Michigan. The DTE Energy portfolio also includes non-utility energy businesses operating in 26 states, which focus on power and industrial projects, coal and gas midstream, unconventional gas production, and energy trading.

reflections.solonline.org

FIGURE 1 Background

The Detroit Market	Presents Challenges	That Impact Our Business
 > 25% Poverty level drives "Either/ Or" customer decision High vacancy rate and increasing number of renters > 40% Illiteracy rate makes it difficult to commu- nicate effectively 	 Our product is Neither affordable Nor discretionary Customers can move and name switch (often with landlord help) DTE technology and communication channels assume that customers are literate 	 95% of all arrears are in Detroit 90% of all energy theft is in Detroit Resulting collection activity drives Low customer satisfaction High level of MPSC complaints
To meet this challenge, we are testing a new business model:		

Detroit Recovery Program (DRP)

Slides prepared by Mike Homan, DRP Project Manager, and Anita Ashford, Community Outreach Coordinator – February 23, 2010.

> In response to these challenges, in 2009, DTE Energy launched the Detroit Recovery Project (DRP). DRP was assigned two major goals: improve cash flow and improve customer satisfaction. The initiative is based on the premise that by engaging customers and developing a systematic approach for understanding specific communities, the company can reduce uncollectible expenses more effectively than by an aggressive collections policy. Throughout the past year, DRP has worked to determine what questions need to be asked and who needs to be involved, and to keep the discussion fact-based.

The Detroit Recovery Project is an experiment in returning to a time when DTE Energy employees

The Detroit Recovery Project is an experiment in returning to a time when DTE Energy employees knew their customers and worked with them to create a better lifestyle. knew their customers and worked with them to create a better lifestyle. As such, it is an example of balancing financial, environmental, and social responsibility to achieve a true triple bottom line. At the same time, this project can serve as an example to any organization seeking to understand why a particular part of its business or market is underperforming, and how to begin to address that challenge through targeted pilot programs.

Downward Spiral in Detroit

For poor people in Detroit, energy is neither affordable nor discretionary. When renters cannot pay their utility bills, they leave their residence to avoid collection activity. The current high vacancy rate allows people to move to new homes and establish utility service using different names. The resulting breakdown in community increases the financial risk for DTE Energy and negatively affects the social compact between the company and its Detroit customers. Bob Richard, senior vice president of gas operations, has questioned what it means to be a utility provider in a city where a typical resident cannot even afford to buy a new appliance.

Adding to this disconnect, all customer communication from DTE Energy assumes that customers are literate, putting us at arm's length from the roughly 40 percent of Detroit residents who can't read and write. This high illiteracy rate makes seeking energy assistance complicated: How can a person fill out an application for aid when he or she can't read? Similarly, technological advancements have not always taken into account the needs of all customers; for instance, accessing a website for help doesn't work if the customer does not own a computer.

Expanding the Scope of Continuous Improvement

JASON SCHULIST

Once a few key leaders recognized the patterns of customer and company behavior that were influencing our ability to do business effectively and relate to customers, we began a dialogue within the company about the social issues unique to the

Detroit community. The dialogue led to a set of rapid, low-cost experiments in 2008 and 2009 that intertwined continuous improvement and organizational learning concepts. These efforts were led by members of my continuous improvement (CI) team. For example, we teamed with the Detroit Public Schools to understand how the school could be a center of community transformation. We partnered with a local urban farmer to develop a community-supported agriculture business model that produced local food for DTE Energy employees and income for local residents. We also converted DTE Energy substation property into arable land for volunteers to farm and provide vegetables to support local food banks, which reduced our maintenance costs and provided needed local food.

But these initiatives didn't always produce the desired results. Many were small experiments on the fringe of DTE Energy's attention and did not approach the problem in a holistic way around customers' real needs. We knew we could do more. As Bob Richard articulated, it was a moral issue and a matter of principle for the company to help seek financial remedies for customers who

"We have customers who can't pay their bills.... If you are standing in a rainstorm with an umbrella, people will gather underneath."

couldn't afford energy. "We have customers who can't pay their bills," he said. "Many of them qualify for assistance, but they don't ask for help. If you are standing in a rainstorm with an umbrella, people will gather underneath."

In response to this community and corporate need, Richard and others knowledgeable in continuous improvement launched the Detroit Recovery Project (DRP). It was intended to be an "umbrella" and an example of applying continuous improvement learning not only within the company but within community. As a first step, we defined the DRP pilot program as a small, integrated, profit-andloss-driven business that draws resources from all over DTE Energy. This initial phase focused on providing an improved level of service to residents in one section of Detroit. Mike Homan transferred



from DTE Energy's finance division to manage the project. His role was to assemble and motivate a team of DTE employees from different functional areas to work proactively with at-risk families to match their consumption of electricity and natural gas with available state aid.

We designed DRP as an alternative business model in response to the question: What is the most efficient way to provide heat and light to low-income families?

An Alternative Business Model

MIKE HOMAN

As MichCon's manager of budget and forecast, I was involved in setting up the initial budget and internal controls for DRP. On the finance side, it was obvious that we needed to improve the Detroit market to make MichCon a stronger company. As I learned about the DRP effort, I saw the potential to address a challenging business problem that was critical to MichCon, DTE, and Detroit. Bob Richard's passion around the low-income issue and our need to build a better business model were simply irresistible. I joined a cross-functional team that included field operations supervisor



Robert Crudder along with a supervisor of customer operations, a financial analyst, two case managers, an office administrator, a billing specialist, two theft investigators, a planning specialist, a distribution crew member, three field service technicians, and a continuous improvement expert.

We designed DRP as an alternative business model in response to the question: What is the most efficient way to provide heat and light to low-income families? From the initial experiments of the continuous improvement group, we learned that we couldn't tackle the entire city of Detroit at once. Instead, we decided to concentrate positive efforts in a small region, with the ultimate objective of kick-starting a functioning economy and developing a sense of community by encouraging people to stay in one place. We chose the Osborn neighborhood as the site for an experimental pilot program. For one thing, our product is not affordable for more than a quarter of the Osborn residents. Fifty-two percent of the families qualify for state aid (\$27,465 or less for the average family of three); outside of Detroit, the rate is closer to 25 percent. Another factor is that 88 percent of Osborn homes were built before 1960, when weatherization technologies were not as efficient as they are today. The result is that residents pay more to heat and cool these homes and apartments than may be the case for people who live in newer homes (see Figure 2).

Another reason our team selected the Osborn community is that it is home to more than 14,000 children. Children are put in danger by energy theft; they suffer when the utilities are turned off because of non-payment. By finding ways to reduce families' utility costs, we hoped to keep children in their homes and avoid the disruption caused by frequent moves. Our hypothesis was that one positive result of the DRP intervention would be that children might stay in the same school for longer and have more continuity in their education, which could increase their academic success. Helping Osborn's children also indirectly builds DTE's future customers.

The Theft Division in Action

Utside the Osborn experiment, energy theft continues to be a problem. On a typical morning DTE Energy Theft Division field manager, Joe Musallam canvasses Detroit streets with his field team to learn together in the neighborhood where the work takes place; he holds street-side meetings in the middle of a severely run-down neighborhood in front of a purported crack house, with his flipchart and his crew. On this particular day, Joe documents team member's comments to use in a procedure's manual for safely disconnecting service.

As he explains the work, his phone beeps; his scout reports a potentially dangerous illegal utility hook-up. Once at the location, as he makes



his way up to the house, he sidestepping toddler toys. Two young men are maneuvering a used washing machine to the side door.

"DTE," Joe identifies himself in a friendly tone. "I need to check the meter."

At the back of the house, a gaping hole in the window opens to the outside elements. The back entrance is haphazardly covered with plywood; the door that once covered the entry lies on the ground. Residents who are illegally using gas and electricity likely feel no stake in conserving energy.

Joe pinpoints where the meter was; in its place, two door hinges are jammed into the box. Attached to these brass conduits are two heavy-duty grips, similar to jumper cable clamps. From each junction in the power box, thick wires are twisted in place; they run from the door hinges swinging low across the backyard to run freely up the electric pole. Someone – obviously not a DTE Energy employee – had to shin up the pole to attach these wires.

On the side of the house, Joe directs his attention to the gas hook-up – a bicycle inner tube, one end stuck over the pipe protruding from the ground, with black tape wrapped tightly over the seam. From the ground, the rubber hose curves up, with the other end jammed on the pipeline entering the house. While a person was rigging this up, Joe explains, gas fumes would have spewed into the air. The pilot light in this house is probably eight inches tall; this set-up is a bomb waiting to explode. Joe makes clear that, "We can't walk away from this; this is not safe." His team dismantles the illegal utility hook-ups and caps the gas pipe.

How DRP handles Theft in Osborn

When theft is discovered in Osborn, the team makes the site safe and invites the residents to work honestly with DTE Energy, with the intention of creating engaged and responsible consumers. If a customer agrees to work with DRP to find a solution, the company will not disconnect their energy.

Field crews continue to learn how to approach and listen to residents; a decision made in a conference room without hearing from the residents is not acceptable. This strategy changes the mode of operation from disconnecting energy to working with families to find ways to legitimately pay their bills. A case worker educates consumers on how they can manage their account without resorting to energy theft.



Finally, we also chose Osborn because it has a functioning community framework, including block clubs, churches, and schools. This infrastructure, with its existing networks, could be tapped to improve the way we supported our customers.

In our first initiative in the Osborn community, called Osborn Energy Savers, we teamed with the Skillman Foundation, an organization devoted solely to helping children in Detroit. We offered 250 energy-efficient appliances at no cost to residents in an attempt to lower their energy bills. To our surprise, it was difficult to find people to accept this gift. The failed experiment was eyeopening. Customer trust had eroded to the point that residents were reluctant to accept free appliances from us. We realized that we did not have a good understanding of the community that we were attempting to serve.

Mapping Osborn for Understanding

To learn more about the Osborn community, we first developed a hypothesis: DTE Energy can lower arrears and avoid theft by leveraging case management, weatherization, and conservation to better match residents' consumption to available state aid (see Figure 2).

Step one was to gather information to create a profile of the typical Osborn customer, identify where energy theft was taking place, find what governmental energy assistance was available, and research methods to make the homes in that area more energy efficient. In a unique public-private partnership with the city of Detroit and several nonprofits, we mapped the community house by house. We used Environmental Systems Research Institute, Inc., a GIS mapping company, to visually represent the characteristics that interested us, such as active arrears, leaks, open theft events, vacant lots, and non-active services. We then used the pictures to help make decisions about where to concentrate our efforts first.

Mapping proved that some areas in Osborn had fewer problems than others. Theft, vacancies, and arrears were concentrated in particularly run-down parts of the neighborhood. "Poor" families in wellkept areas also had high active arrears. We found that "higher" low-income families effectively navigate the aid system while the poorest families fail and are subject to repeated collection efforts. From our findings, we considered that there might be different solutions for different types of customers.

Based on the lean principle of gemba, we used and we continue to use - a "go and see" approach, in which we go and observe the real condition in the real context with the intention of solving the real problem. After assessing the results of the fact-finding mission in Osborn, our team came to understand that the current company communication was passive and ineffective at reaching residents there. DTE Energy relies heavily on bill inserts and an internet website, with little television and radio advertising. The most economically disadvantaged families often don't have a way to access the company's web-based customer support. Several business office service centers in the city had been closed. If residents phoned customer service, they encountered pre-packaged options that generally did not meet their needs. Using bill inserts to communicate with customers did not work because people tended to ignore them and throw them away with the shut-off notice. All of these facts confirmed that a high-touch solution was needed in Osborn.

DRP's Pilot Project: A High-Touch Approach

As we designed our pilot project, we understood that improving communication would be key to accomplishing the DRP's pilot project's three main priorities:

- 1. Assess every site by completing a neighborhood sweep.
- 2. Put in place one-on-one case manager help to assist our customers through the aid application process.
- Complete a "one hundred home" effort to install \$3,500 of weatherization in 100 homes, saving customers an average of \$650 per year in energy use – a 27 percent reduction on an average annual bill of \$2,450.

Our next steps were to assess every site, ensure 100-percent metered usage by Osborn residents,

and minimize arrears. Anita Ashford, Community Outreach Coordinator, made connections with block club leaders and church groups to introduce them to the idea that DTE Energy wanted to help residents. Field crews then went into neighborhoods to reestablish customer relationships, help families with account management, check homes for proper gas maintenance, and investigate possible energy theft.

With the program in place, our team now screens customers to identify low-income families in need of support and connects qualified residents with a DRP case worker. The case worker visits consumers' homes to review what type of energy aid is available to them and explain how energy conservation can decrease their bills. The DRP team offers to assist residents in qualifying for energy aid programs. With customers' permission, our field crew weatherizes their homes free of charge – an initiative that can immediately lower utility costs by conserving energy.

We have found that 80 percent of families in arrears are eligible for aid. Transportation, limited literacy, a cash-based lifestyle, and physical disabilities are common reasons for households failing to get the aid for which customers are eligible.

During this process, our field staff back-bills theft and works out payment plans for accounts that are in arrears. The method engages and develops responsible consumers by actively helping them manage their accounts and guiding them through the bureaucracy to get energy aid.

In the recent past, a DTE Energy representative on a resident's porch meant energy shut-off. No one in that circumstance wanted to talk to DTE Energy. But now, the DRP team will halt the collection process and take the time to address the situation in a way that will help residents, if the residents wish to partner with us in that way. We have found that 80 percent of families in arrears are eligible for aid yet often have not applied or have not applied correctly. Transportation, limited literacy, a cash-based lifestyle, and physical disabilities are common reasons for households failing to get the aid for which customers are eligible.

Because DTE Energy's rate structure passes uncollectible expenses to all ratepayers, an aid delivery structure that engages our most at-risk customers helps all stakeholders. At-risk families can maintain a working relationship with DTE that avoids service interruptions and theft, and ratepayers see a potential reduction in rates. By leveraging available aid, conservation, and weatherization, customers are able to afford their bills, and DTE Energy can move their accounts from "Uncollectible Expense" to "Revenue" (see Figure 3).

Progress to Date

As a numbers guy, I expect measurable success. We established several leading indicators were established in support of our overall goals of improving cash flow and improving customer satisfaction:

• Reduce uncollectible expense by 80 percent from the 2010 budget



- Reduce lost gas expense by 80 percent from the 2010 budget
- Reduce operations and maintenance expense by 20 percent from the 2010 budget
- Reduce Michigan Public Service Commission complaints by 25 percent for field service and theft investigation

We will evaluate our progress against these goals at the end of 2010 and set new targets for 2011. In addition, our team has clearly expressed that we need to allow the unique characteristics of the Osborn consumer to emerge within the DRP experiment. The Detroit market is different from the balance of our service territory. Median household income in the city is only \$28,000 (making about half eligible for utility aid); 40 percent of the population is illiterate; citizens are transient; and many households face social and economic problems such as substance abuse and unemployment. Utility arrears are just one problem a resident may be juggling. Thus, our first milestone was for the team to personally contact the 2,200 households in the Osborn neighborhood that we identified as eligible for aid and walk these residents through the social assistance maze. As of November 2010, we have engaged 1,045 families. Of these, 347 completed applications for assistance. We have been able to help them receive \$862,000 in utility assistance.

In a presentation of six-month data and analysis, I was able to report to the Detroit Recovery Project board of directors that we have achieved favorable financial performance. The 10-percent increased margin is a direct result of improved energy aid retrieved for customers plus savings derived through weatherization efforts. In addition, one of the take-aways from the DRP pilot is that an integrated DTE team plus strategic partnerships equal an improved business model.

Customer satisfaction has been harder to influence (see Figure 4). Although complaints are down 50 percent over this time last year, we have not been able to distinguish a higher level of satisfaction than that experienced by the rest of Detroit. Our

FIGURE 4 Customer Satisfaction

Purpose: Measure and report customer satisfaction in Osborn relative to our benchmark territory (Wayne County excluding Detroit).



Comments: Sample size is significant => identifies need for DRP (DTE) to work with families that are current or only slightly in arrears.



Comments: Osborn still sitting in same position relative to Detroit as it did in 2009. Will run a 5% Ll Pilot in 4th qtr to demonstrate ability to provide an "affordable" product.



fourth-quarter initiative, "One Stop Shop," focuses on helping customers navigate the application process for state financial aid. In these shops located in the neighborhood, representatives from the Department of Human Services, The Heat And Warmth Fund, the WARM Training Center, and DTE Energy will all be available to see customers in one place and at one time.

We have had some disappointments. Positive engagement needs to improve with Osborn

Summary: Osborn is in the same position as 2009 => team is creating an affordable product, a comprehensive marketing campaign, and a vibrant retail presence.

Help Save Energy

Overall Satisfaction



Comments: MSI found only 5 of the 943 customers that DRP engaged => again most are still in arrears. Points to need for a truly creative solution for these families that gets them out of arrears => DTE Energy Center.



Comments: Customer Research has exhausted all samples in the Osborn area and did not run a survey in August. Investigation showed only 200 Detroit responses overall and zero in 48234 or 48205. Will use focus groups + entry / exit surveys in LI Pilot.

families whose services have been shut off due to non-payment or theft. Going forward, DRP will work to establish helpful interactions with new customers and with families that are early in the arrears process, in the hope of creating positive, long-term relationships. Our intent is to connect them with third parties that can help them.

Another area of concern is that Osborn residents only completed 34 percent of the recommended energy aid assistance applications. The average

Caring & Trustworthy





aid award of \$2,400 pays for nearly an entire season of energy usage. Our goal is that by investing more effort in following applications to completion, DRP will increase the number of families that successfully navigate the aid process. We are interested in understanding why a family that qualifies does not pursue obtainable aid, even when a case manager is available to help them. By creating "One Stop Shops" in the community, we hope to discover and overcome the reasons for this resistance. We want to redefine the aid delivery system and complete applications for 100 percent of eligible families.

We are interested in understanding why a family that qualifies does not pursue obtainable aid, even when a case manager is available to help them.

Even with these concerns, we have noticed with interest that 145 families moved into Osborn since August of 2009 – a net increase – while the balance of the Detroit housing market is stagnant at best. The team of case managers, field service workers, technicians, and meter readers will maintain a continuous presence in Osborn. Over the long term, we envision satisfied Osborn customers with fewer complaints. Establishing a partnership with residents will help the community build a base of people willing to take action to support a vision of a viable Detroit. On the financial side, DTE Energy will have a reliable cash flow (see Figure 5).

DRP Next Steps

DRP is leveraging the project management expertise of DTE Energy's Major Enterprise Projects group (they also build billion-dollar wind farms and coal scrubbers) to complete the "one hundred home" weatherization pilot mentioned above. Launched in May 2010, this pilot-within-a-pilot provides a consistent level of whole-home weatherization technology to a contiguous group of mixed-income homes. The pilot will measure uptake, home condition, and estimated energy savings versus actual energy savings over the next heating season.

Another positive development was the addition of several full-time field service personnel who were assigned to DRP to work in Osborn in May 2010. We want to engage at-risk families during turn-on restore events and engage qualified families in the aid process before they begin to consume gas again.

The next steps include leveraging CI problemsolving methods, such as the "Swarm Event." This practice usually consists of several small, rapid experiments or countermeasures to address a set of problems or abnormalities in a process. A group of stakeholders will work together to solve a specific issue using a scientific approach to problem solving. For us, the Swarm Event will involve designing a process that eliminates the communication barriers between DTE Energy and our partners that prevent the delivery of aid. Also, we will test a low-income utility rate to create an affordable price point for qualifying customers, something we have not offered to date.

In addition, I am partnering with the DTE Energy revenue management and protection team to

develop a procedure to proactively manage longterm case relationships. The goal is to achieve zero theft or unresolved leaks. We're also looking to partner with the city of Detroit government to identify abandoned homes and cut the energy infrastructure to all uninhabitable buildings.

Throughout this project, DTE Energy as a whole has tapped into the unrealized potential of our field operations employees by giving them an opportunity to use their leadership skills. Senior leaders have observed an increase in pride and a sense of ownership in the work being done. Supervisors, field personnel, and technicians are proactively saying, "Hey, I think we've got a problem here. Could someone look at this?"

One Customer at a Time

MIKE AND JASON REFLECT

Our company is in a strong position to innovate social change. We are literally tied to our community via wires and pipes; our services are intrinsic to modern life. DRP has indeed taken a step toward change. Here is what the transformation looks like from the street in Osborn. Field operations supervisor Robert Crudder arrives at a location where a meter is scheduled for disconnect. On the block where his crew is working, every other house is boarded up or abandoned. In the driveway, a dog runs loose, barking at the utility truck. After determining that the dog is not aggressive, case manager Latricia Cranford knocks on the door. A minute or two passes with no response. The team decides to remove the meter.

Our company is in a strong position to innovate social change. We are literally tied to our community via wires and pipes.

While the DTE Energy field operations workers are discussing their next appointment, an elderly woman opens the door. Another woman in her early twenties is with her. They beckon to Latricia, who gathers some energy-efficient lightbulbs and a brochure. She meets them on the porch with a warm smile and asks, "Is there something DTE Energy can do to help?" After some discussion,



DRP is an example of taking our continuous improvement approaches into unfamiliar territory – solving deep, systemic problems within the community that DTE Energy serves.

Cranford enters the house. Inside, she assesses the need, checks other information, and 15 minutes later, goes back outside to make the necessary phone calls. She recommends reconnecting the meter. The utility worker who just spent half an hour disconnecting it hesitates. Latricia hands him the phone; the utility worker listens. Within an hour, the removed meter is reconnected.

DRP is making a promise to residents: If you commit to work with us, we'll make sure that, when we leave your home, you are legitimately and safely connected. This is innovation by people doing the work; this is caring on a deep level – something that Bob Richard contends, "Is on the right side of history." Enacting positive change within the culture of poverty is indeed complex. But Detroit Recovery Project field workers did alter the reality for one elderly woman in Osborn, and we are determined to help others – one customer at a time.

Lessons for Solving Deep, Systemic Problems

The DRP initiative is an example of taking our continuous improvement approaches into unfamiliar territory - solving deep, systemic problems within the community that DTE Energy serves. The further we dig into the issues and understand the system as a whole, the closer we get to the root cause of the problem. This work allows our leaders to ask fundamental questions: "How does the corporation address social issues that are symbiotically related to DTE Energy's own health? How do we as stewards in the community work on a broad, systemic level in ways that engage our employees and redefine our role in customer satisfaction?" As we learn from these experiences and questions, we see ourselves on the forefront of a type of thinking that will lead corporations in general to reflect upon their roles in our greater society.

ABOUT THE AUTHORS

Michael Homan was selected to lead DTE's Detroit Recovery Project in July 2009. Since 2007, Mr. Homan had served as Finance Manager (Budget & Analysis), supporting the Michigan Consolidated Gas Company. Mike joined DTE in 2005 as a member of its Advanced Degree Development Program, where he served in progressive finance functions supporting the Detroit Edison Company.

Jason Schulist currently serves as Director of Continuous Improvement at DTE Energy, where he oversees the deployment of DTE's Lean Six Sigma continuous improvement methods. Jason helps guide DTE's executives and over 90 full-time continuous improvement personnel in capturing bottom-line savings and improving safety, customer satisfaction, and quality performance.

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FEATURE 10.3

The End of Economic Expansion Requires Compression Thinking

ROBERT W. "DOC" HALL

Global crises are squeezing us from all directions, and with or without our participation, change will occur. To implement the sort of changes that will allow civilization to prevail rather than merely endure requires a resourcefulness and ingenuity beyond any the world has ever employed. In this article, Doc Hall introduces the concept of "Compression" as an invitation to learn more effectively both as individuals and organizations, rethink our perpetual devotion to old ideals, and welcome the shift in thinking that must be our first and immediate step.



Robert W. Hall

he term "Compression" refers to the end of economic expansion as we currently know it, that is, ongoing growth enabled by the practices of the Industrial Revolution and powered mostly by fossil fuels. High-consumption industrial societies created many benefits we'd like to keep, but also huge problems that we cannot put off dealing with. To respond effectively to the "squeeze" we've put on the Earth's resources and ecological viability, we also need to "compress" our work processes and products to make them less wasteful of human and natural resources. To meet these challenges, our organizations will need to engage in high rates of learning and achieve unprecedented

levels of performance. The key to this major revolution is within each of us.

Our 21st-Century Challenges

In an age of Compression, all of these forces act at once. To get our minds around the enormity of this fact, not only do we need systems thinking, we need a *system* for systems thinking. This kind of thinking is not normal in today's organizations. We have to learn it, and to learn it, we have to practice it.

FIGURE 1 Our 21st Century Challenges

The figure shows an arbitrary classification of our 21st-century challenges: Finite Resources, Precarious Environment, Excessive Consumption, Pushback from the Have-Nots, the inability to address the foregoing complex challenges without Self-Learning Work Organizations, and Complexity. These challenges are all interconnected. Each covers more sub-categories than anyone can fathom.

The circle at the center represents self-learning organizations, needed to cope with the big global challenges imperiling us and arbitrarily categorized in the other four circles. Black – Impending global shortages of petroleum, water, rare earths, phosphorus, maybe even arable soil. Green – An environment made precarious by a long list of threats from coral reef bleaching to endocrine disruptors; climate change is only one aspect. Yellow – An economic system in industrial societies that fosters excess consumption of resources. Red – Pushback from people displaced or left out of the current system for using global resources (resource wars, crowded third world slums, etc.).



Without taking a systems approach, well-intentioned, intelligent people grab for magic solutions to our environmental messes, such as seeding the oceans with iron to sequester carbon, creating sulfuric clouds in the sky to reflect solar heat, or pumping CO₂ into the ground for storage. Because they have faith in technology, they jump on these ideas, seemingly unaware that the unintended consequences of such actions could be catastrophic. But it's easy to see how each of these actions could backfire. Most of our messes today are the unintended consequences of past "solutions."

Global Objective in Compression

To begin to approach this confluence of issues more systemically, we propose setting a measurable baseline objective:

GLOBAL OBJECTIVE IN COMPRESSION

By the year 2040, create a quality of life around the globe that is equivalent to that of today's industrial societies while consuming less than half the energy and less than half the virgin raw materials as were consumed in the year 2000, with near-zero toxic releases.



By the year 2040, create a quality of life around the globe that is equivalent to that of today's industrial societies while consuming less than half the energy and less than half the virgin raw materials as were consumed in the year 2000, with near-zero toxic releases.

To achieve this objective, people in both advanced and less-advanced economies must learn to make much better use (and reuse) of resources. The truth is, though, that these standards can't be uniformly applied to every part of the world. Those barely surviving can hardly consume less than they currently do. Because industrial economies consume significantly more materials and energy than other economies, the cuts in those regions need to be deeper. Fortunately, they also have more innovative technological research with which to meet this tough goal. These kinds of initiatives are starting to become reality, not vague hope. For example, two years ago, the British Parliament enacted the Climate Change Act of 2008, setting timetables toward an 80 percent reduction of greenhouse gas emissions by 2050.

Of course, to achieve these goals, we need to go beyond basics like reduce, reuse, recycle. We currently have too few inventive, innovative organizations with business models that allow them to be viable while processing less material and energy, not more. A transformation is unlikely to occur by gradually raising performance bars through regulation, with governments coercing the reluctant to meet minimum standards. Instead, we need to create what I call "Vigorous Learning Enterprises."

Vigorous Learning Enterprises

What is a Vigorous Learning Enterprise? *Vigorous* implies that an organization "does" something. It's not strictly academic or social. Those most critical are in mining, agriculture, food processing, manufacturing, utilities, healthcare, police, fire, justice, and so on. They either process large amounts of energy and material (and are thus gatekeepers of our consumption), or they provide services that are crucial to the quality of life. A rough estimate is

that 30-40 percent of the American workforce is engaged in such work – a high percentage, but not everyone.

Learning is the act, process, or experience of gaining knowledge or skill. In an organizational setting, it includes process learning, innovation, and organizational learning.

Enterprise is used in many senses, but the intent here is analogous to the supply chain: several tiers of customer organizations going out and several tiers of suppliers feeding in, plus feeder educational institutions, consultants, advisors, banks, auditors, and the like.

Here are some principles and practices for Vigorous Learning Enterprises (see Figure 2):

1. They are mission-driven. Serving a social need or mission has to trump all other objectives, including growth, profit maximization, job creation, and personal aggrandizement. The turning point for leaders is realizing that their organization must support nature; nature does not exist to support or enrich them. That shift changes the emphasis from what we *get* to what we *do*. The actions by BP and other companies involved in the Gulf oil blowout illustrate why this change in focus is important. Attempting to limit liability – the basis of corporate charters – is a dysfunctional way of dealing with such problems.

2. They look at their physical processes. When we move away from focusing on what we get, we can more objectively look at physical processes: how our customers act, what our workers do, and how our business models operate. When we identify our primary customers' real needs, we recognize that anything else is waste. Lean thinking identifies waste as what a customer will not pay for. In Compression Thinking, we go a step further and identify waste as any unnecessary use or destruction of resources, things that nature should not have to "pay for."

FIGURE 2 A Vigorous Learning Enterprise



"Culture" must be reinforced every day

Vigorous Learning Enterprise features are an amalgam of best practices seen in real organizations over a 20-year period.

- Meta-Vision, or keen, broad system insight, especially by leaders.
- Common mission and goals related to Compression, that unifies effort.
- Systems and structure for rigorous learning built into regular work for everyone, not for just a few people.
- Behavior for learning; ability to subdue personal infighting to concentrate on problems and issues.
- Servant leadership, putting the mission, organization, and development of it people before personal gain or ego.

All this is possible, but so contrary to instinct that this culture needs a built-in mechanism that reinforces behavior almost daily.

3. They expand their cognition (meta-vision).

By expanding our view, we can both improve local processes and anticipate effects far removed in time and distance.

4. They extend the concept of "waste." The concepts of eliminating waste that are a part of lean today are typically confined to a few elements of operations and never applied to full life cycles. By expanding the definition of "waste" to include materials, energy, space, and unproductive behaviors, we can define elimination of waste as doing whatever is necessary by the lowest energy process we can devise. Low energy use is usually associated with low use of all resources.

5. They value quality over quantity. This new kind of organization values quality over quantity; provides service, not promotions to buy more "stuff"; does it right the first time; and emphasizes prevention over remediation. As Yogi Berra might say it, "Fix it before it happens."

6. They avoid "model myopia." We need to learn to look at what really goes on in our organizations without the prejudice of model blinders, including all the financial ones. We've hitched our guidance systems to obsolete measurement models. Even customer-centered lean operations typically conflict with accounting models. Physical measurements of what we do are far from perfect, but they beat self-referencing measures based only on human valuations, which is what market-derived dollar measures have been.

7. They develop rigorous structures for learning. Systems structured on the basics of the quality movement are a good start, but few manage to spread throughout the entire organization. Also, sustaining the behavior is challenging, especially when issues are "wicked," meaning that people perceive them from different tunnel visions or conflicting spheres of interest. To make a new culture "stick," the organization needs codes of conduct with daily reinforcement built in, or human nature will take over and undermine the system. In this sense, we're really trying to elevate our level of civility, at least in our work settings.

8. They create "tribal cohesion." We must create a sense of cohesion – trust and confidence – across work enterprises, including suppliers and customers, while minimizing "tribal rivalries." These arise from more than ethnic and religious differences. They include functional silos, intellectual property divides, and races for reward and recognition. Rivalry and competition are instinctive, but cohesion is vital for true information sharing to occur. Everyone has to be confident that all share a common allegiance to a universal mission. No working organization today functions at the level of a vigorous learning enterprise, but some of our best organizations have mastered big chunks of the skills and culture required. These rigorous organizational cultures demand the highest levels of professionalism. Is this impossible? No. Is it difficult? Yes.

New Business Model

One of the most counterintuitive aspects of coping with Compression is the need to rethink the business model so that an organization can be viable without focusing on selling more, more, more. DTE Energy (Detroit) is one of the more aggressive utilities in helping customers reduce their energy usage. By doing so, the company reduces costs for its clients, many of whom are struggling financially, and eliminates the need to expand its energy capacity. An overview of how DTE helps customers save energy is available at http://www. dteenergy.com/businessCustomers/saveEnergy. PortionPac Chemical in Chicago also has a business model that foreshadows those of the future. PortionPac primarily produces cleaning chemicals, but it sells few of these products directly. Instead, it provides service contracts, so customers pay for clean buildings, not cleaning products per se. After signing on a customer, PortionPac trains the client's cleaning personnel in methods that are designed to minimize the use of detergents and other chemicals. (Excess cleaning chemicals are a major source of problems for sewage plants and of pollution in waterways.) Over six months or so, a new client's use of cleaning chemicals usually drops by 40-50 percent. The less product Portion-Pac ships, the higher the margin it earns on the service contract.

This approach makes conventional business sense, but PortionPac is also on a mission to increase the respect given to cleaning personnel, who are usually poorly paid and whose role in an organization is often ignored. The goal is for cleaning personnel to contribute to reducing or eliminating the pollution a company generates, and thereby reducing the pollution of whole cities or regions. Cleaners see what others don't, so PortionPac can help clients examine their waste streams to see ways to reduce waste of materials and toxic releases. DTE Energy and PortionPac are on the way to becoming Vigorous Learning Enterprises. By placing a strong emphasis on developing people and, in turn, expecting extraordinary performance, these organizations clash with current assumptions both for business and government.

Mission First

Think of the organization's primary purpose as performance to mission, not maximizing profit, soaking up employment, serving as an owner's personal fiefdom, or other ulterior motives. Making this shift is obviously the big hurdle. However, transforming working organizations, as wild as that idea may seem, has more promise than trying to shift public policy. Working organizations are not democracies, with everyone doing as they please. For good or bad, companies, nonprofit hospitals, and military units are disciplined organizations.

People's behavior changes when the environment in which they function changes. If companies change what they do and how they do it, the working culture slowly changes with it. No other avenue of social change seems to offer this possibility.

But to spearhead such a change, leaders of a working organization must absorb the thinking and work on a sequence of change that moves the company in a direction that can deal with Compression. Leaders start with themselves, becoming role models of the discipline and behavior they expect from others. That's servant leadership, not status-based leadership. Probably the most succinct description of servant leadership comes from the military: Mission first. Troops second. Me third.

Leaders become teachers, mentors, and role models – rather than central decision makers who stand in the way of learning – to create a top-performance organization.

Sometimes control-oriented leaders of no-nonsense organizations regard concepts and methods for open dialogue and self-initiative as "permissive management." But a Vigorous Learning Enterprise is the opposite. Leaders demand that all employees develop themselves, individually and collectively, into the very best of what they are capable. Leaders become teachers, mentors, and role models – rather than central decision makers who stand in the way of learning – to create a top-performance organization.

The human challenge – rapidly changing ourselves and our organizations – is the greatest one we face, but it's the key to meeting all other challenges. Compression compels us to have same spirit of the race to put a man on the moon, but with a lot more of us actively participating in this common mission. This time, the stakes are even higher.

ABOUT THE AUTHOR

Robert W. "Doc" Hall is the author of *Compression: Meeting the Challenges of Sustainability Through Vigorous Learning Enterprises* (Productivity Press, 2010), Professor Emeritus, Indiana University, and one of the founding members of the Association for Manufacturing Excellence. To learn more about Compression, visit www.compression.org.

FEATURE 10.3

Divergent Views, Shared Vision: The Scenario Game Board as a Tool for Building Robust Strategy

MICHAEL SALES AND ANIKA SAVAGE

How can people with strongly held, polarized positions on a complex issue develop a robust strategy for the future without necessarily resolving their differences? In this article, Michael Sales and Anika Savage outline an activity that uses a simple "Scenario Game Board" to prompt team members to listen to each other, explore possibilities, and arrive at decisions together – even if they don't share the same views or values. By "residing in" a scenario that contradicts their inclinations, participants broaden their perceptions and learn to see a range of possible future conditions. Because this process embraces multiple perspectives rather than imposing one view of the future, it fosters mutual respect and leads to better decisions.



Michael Sales



Anika Savage

n Monday morning, as ABChem's executive team gathered for its weekly meeting, Robert Townsend, SVP of Finance, expressed his annoyance that his daughter's high school was requiring students to watch An Inconvenient Truth. "Why should she be subjected to political propaganda in school?" he asked. Perturbed by the comment, Paula Lyons, VP of Human Resources, asserted, "Environmentalism isn't up for debate by most of our employees, particularly the younger ones. If they heard you describing climate change as political propaganda, they'd be appalled." Soon, all seven executives were weighing in on the matter. The fractious, impromptu conversation upset everyone.

Climate change is one of many "big-picture" issues around which intelligent, well-informed people polarize. Whether these topics are hotly debated or swept under the carpet, antagonisms are likely to grow. People cling to their own wellestablished positions, seldom allowing themselves to consider other points of view. Organizational learning suffers.

Shared vision, as described in The Fifth Discipline Fieldbook, is grounded in the idea

that an organization has its own unique purpose and destiny. A vision statement articulates that purpose and provides a beacon of clarity for strategic action. However, a shared vision is frequently built on top of unexplored, unarticulated assumptions about the present and the future. If members of an organization can't agree on current reality, how can they move toward a desired future?

Structural Dynamics and Organizational Resilience

When discussions of highly critical, highly uncertain issues such as climate change take place among people who agree with each other, their view of the future tends to be myopic. In one company we've worked with, the staff easily came to consensus on a vision of a bright new world just around the corner – one that, in reality, keeps receding into the distance. When based on a single image of the future, organizational strategy is vulnerable to unanticipated occurrences. The vision may be compelling, but it doesn't mean much if the reality turns out to be a complete surprise.

A shared vision that comes from an exploration of multiple, divergent views of the future is much more robust than one based on little thought, a discomfort with ambiguity, and/or a desire to reach closure. The organization that anticipates a range of possibilities can move forward with confidence while its competitors are confused and anxious when events seem to come out of nowhere. To develop a truly strategic shared vision, people need to listen to each other, explore possibilities, and arrive at decisions together - even if (or maybe especially if) they don't share the same views or values. We use a method with organizations that we call "Structural Dynamics," in which members explore big, thorny issues by sharing their thoughts, feelings, and impressions in a structured discussion around four archetypal scenarios. By legitimating a range of possibilities, this approach encourages vigorous conversations and deep listening regarding the facts and causal connections associated with the matter. Because the process embraces multiple perspectives rather than imposing any one view of the future, it fosters insight and mutual respect, and leads to better, more resilient decisions.

What follows is a description of a tool called the "Scenario Game Board" as it is used in a workshop setting. We then provide a high-level description of our approach to strategy development and implementation. The Scenario Game Board is the heart of the Structural Dynamics process.

The Scenario Game Board

To focus the discussion regarding a complex issue, we start by looking at the most critical and the most uncertain variables. In the case of climate change, the impact of rising levels of atmospheric carbon dioxide is a "critical uncertainty." It is *critical* because its impact could be enormous. And, while few would disagree that CO₂ is accumulating in the atmosphere at unprecedented levels, this variable is *uncertain* because people vociferously disagree about the implications and how any impact might be experienced.

The Scenario Game Board is designed to indicate the dynamic interplay possible between the archetypal scenarios. In a workshop that introduces the game board and the Structural Dynamics process, we place a critical uncertainty in the center. Participants position themselves on the game board according to their beliefs regarding two dimensions of change:

FIGURE 1 Scenario Game Board



- Vertical axis: "Will the impact be abrupt or gradual?" Some may believe that parts of New York City will suddenly be under water as the melting of the polar ice caps accelerates. Others may contend that ocean temperatures will only rise slightly over the course of a century, causing no reason for concern.
- Horizontal axis: "Will the impact elicit reactive or creative actions?" Some may expect people to respond to the threat of rising levels of CO₂ with paralyzing, divisive fear, while others may see this as an opportunity for engaged, collaborative action leading to much-needed change.

The dimensions create a two-by-two matrix that aligns with four archetypal scenarios – images of the future identified by Jim Dator and his associates at the University of Hawaii's Center for Future Studies that transcend the specifics of history and culture. Briefly stated, these scenarios are:

- 1. **Discipline:** Investing in the future by making disciplined choices
- 2. **Status Quo:** Attempting to preserve established values and lifestyles
- 3. *New Reality:* Breakthrough to a dramatically new set of conditions
- Collapse: Breakdown of social, economic, and/or political systems

Based on where they position themselves along the dimensions, participants find themselves aligned with one of these archetypes or straddling a couple of them. We ask the people associated with each scenario to briefly describe their positions. They then move to the diagonally opposite quadrant, the scenario diametrically opposed to their current view. Imagining themselves in that future, participants spend some time creating as vivid an image of life in that setting as possible.

Divergent Views, Shared Vision

The descriptions of the scenario worlds are nearly always multilayered, surprising, and provocative. Our experience indicates that when people "reside" in a scenario that contradicts their inclinations, even for a brief time, they inevitably broaden their perceptions. Learning to see and accept a range of possible future conditions is a powerful step forward in the analysis of strategic options and the design of effective actions.

The future is not predictable, and expectations are frequently way off the mark. Understanding why there are so many legitimate views of the future helps organizations develop plans that work well in a broad spectrum of conditions. They are able to develop robust strategies that are effective across the scenarios and contingent strategies that work in one or several scenarios. In one case, an organization found that the strategy they had planned to implement didn't work in any of the futures they envisioned.

The Structural Dynamics Strategic Leadership Process

The Scenario Game Board is an integral part of the Structural Dynamics strategic leadership process. Executives at the company introduced at the beginning of this article, ABChem, applied Structural Dynamics to help them articulate a shared vision of reducing their company's greenhouse gas emissions in its products and operations. One robust strategy that the group identified was enabling its employees to work remotely.

- In *Discipline*, remote work encourages the development and application of new non-polluting technologies by accelerating the demand for videoconferencing, voice recognition, language translation software, holographic imagery, touch screen technology, and other means of improving distance collaboration and productivity.
- In Status Quo, remote work connects dispersed workers, improves communication, and reduces conflict.

- In *New Reality*, the very nature of work and workplace shifts to become integral with other aspects of life and leisure.
- In *Collapse*, the ability to work from a large number of locations enables operations to continue, even in the event of a catastrophe in one region.

The participants identified the installation of solar panels on the roofs of their facilities as a contingent strategy. It works well in most scenarios, but might be a poor investment in New Reality and even in Discipline, as manufacturing processes and work styles change.

ABChem learned that it is not necessary to agree on global warming or climate change to care about the natural environment. Group members strongly supported improving water, air, and soil quality. And they identified actions they could take as a company that would make a positive contribution, regardless of how the future plays out.

The type of organization applying Structural Dynamics doesn't matter. We've worked with Fortune-500 multinationals, healthcare systems, university think tanks, municipalities, government agencies, and nonprofits. What does matter is that people are confronting complex, missioncritical issues that are subject to forces beyond their control.

In the full Structural Dynamics process, strategic thinkers from all parts and levels of their organization participate in eight sessions spaced over a period of several weeks or months. Together, the team members:

- **Explore** the critical uncertainties that affect the issues under consideration, their patterns, and their structures;
- Discover future possibilities using the Scenario Game Board and create a shared vision;
- **Embody** the vision throughout the organization;

FIGURE 2 The Structural Dynamics Process



Sustain the organizational learning derived from the process by monitoring signposts, indicators, and warnings; deepening the analysis; and remaining ready to change course as needed.

Back to the Future

As with climate change, many big-picture issues (for example, off-shoring jobs, tax policy, healthcare, women's rights, international trade agreements, and arms control) arouse intensely polarizing emotions and strategic paralysis. Thinking of the future as a single trajectory is a sure way to drive disagreement underground and generate powerful resistance to any action. The approach we have described stimulates dialogue about the nature and implications of present reality and offers a way forward that respects all viewpoints. We have found that thoughtful, heartfelt consideration of a broad range of possibilities can form the basis of a profound shared vision, built on the knowledge that the future is much more dynamic, intricate, and complex than any single image can portray.

RESOURCES

The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization (Currency/Doubleday, 1994), sections on shared vision and scenario planning

Life-Sustaining Organizations: A Design Guide by Michael Sales and Anika Ellison Savage (CreateSpace, 2011) Art of the Future website *http://www.artofthefuture.com*

Climate Interactive website *http://www.climateinteractive.org*

Sustainability by Design website http://www.johnehrenfeld.com

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