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September 2011

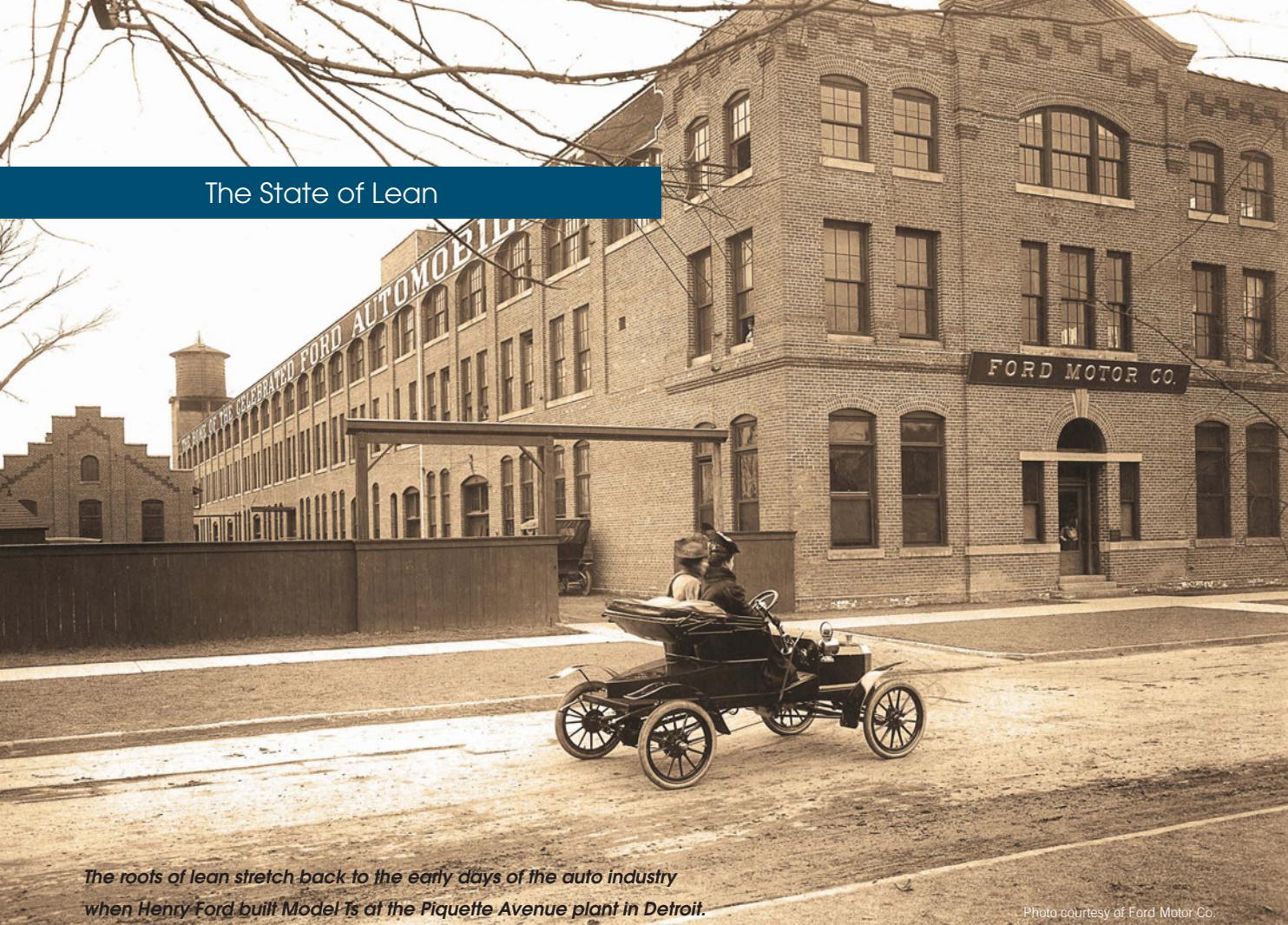
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*The roots of lean stretch back to the early days of the auto industry when Henry Ford built Model Ts at the Piquette Avenue plant in Detroit.*

Photo courtesy of Ford Motor Co.

# Lean in a Changed World

*In the wake of the recession, it takes more than lean tools to get ahead of the pack*

**Dave Hogg, PE**

Director Consortium Development  
High Performance Manufacturing Consortium  
Kitchener, ON, Canada

The world economy began to change in late 2007, eventually taking manufacturing with it. Neither has settled down yet. Nor are they likely to any time soon. Even though lean continues to be underutilized in North America, there is little doubt that it is respected as the best production system on earth.

It continues to be seen as a focusing and waste-eliminating integrator of people, processes, and technology whose combined purpose is to deliver constantly improving results that enable customers to succeed now and in the future. Simply expressed, it's a culture philosophy that embraces respect for people, continuous improvement, sustainability, and customer success.

Lean's principles are based on common sense. Many of those same principles were used by Henry Ford in the early 1900s to manufacture automobiles the common man could afford. And when Toyota was moving toward bankruptcy circa

1950, it was felt the company had no choice but to employ lean thinking if it was to survive.

**Breakthroughs take time and are usually accompanied by a tough “break-with,” a rejection of the past thinking that holds deployment of new thinking back.**

In the pre-recession world, lean created a relatively small number of highly profitable winners while providing smaller but very measurable benefits to far more companies through the use of lean tools. These tools work, they are relatively simple, they generate fast savings and cash flow, and anyone with the will could use them to eliminate waste while bringing some order to the chaos in which they lived. However, after 20 years, less than 10% of the companies that have initiated lean are exploiting it fully. A breakthrough is needed

to explode this percentage and reach the hundreds of thousands of North American organizations that are now only using the tools and ignoring the huge gains that system-wide leverage can bring. The current uncertain turmoil may be preparing us for the launch of a universal lean breakthrough.

The recession and subsequent reset—and our vision of what may be yet to come—has changed our world. It is forcing industry out of its comfort-with-lean-tools mode into the painful job of thinking differently, tackling culture change, and seizing the deeper levels of lean through systems thinking to unlock the possible leverage only a few companies are now enjoying.

There will be a new place for lean, and it will be far bigger and far more demanding than before—if we can only get the thinking right. Now is the time for a fresh look at this globally proven production system that few have taken the time to truly investigate.

**Reassessing a changed world raises such basic questions as:**

- What do our customers really need to succeed?

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- How will we give every person in our organization a sense of ownership and a crystal clear understanding of their role in making the company successful in reaching our vision?

All good questions—and all demand answers which will lead to the right decisions that result in getting the right people, with the right thinking, on our bus and in the right seats.

Our future relies on ourselves and the relationships we surround ourselves with. It will certainly not rely on spinning someone else's debt. This brings us to wealth creation. We know that there are only three ways to generate wealth—make it, grow it, or extract it. And to be successful in each of these ways, an enterprise must harness the three elements mentioned above: people, processes, and technology.

Today's winning organizations see lean as a people system characterized by a no-nonsense respect for people, continuous improvement, sustainability, and learning. Investment in becoming a learning organization is getting good traction during this uncertain time because organizations that have learned how to learn will be able to reconfigure themselves fast enough to survive.

Nicki Schmidt, lean leader at Hotel Dieu Grace Hospital (Windsor, ON, Canada), keeps learning very simple and in her conversations every day. She ties lean and learning together by emphasizing that Lean=Lea(r)n. It is a relationship long preached by John Shook, chairman and CEO of the Lean Enterprise Institute (LEI; Cambridge, MA), Toyota veteran, and the author of the lean best-seller *Managing to Learn* and many more noted works.

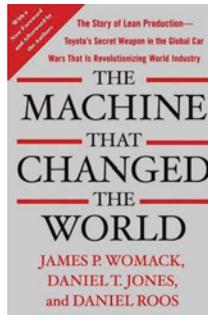
**Breakthroughs Need 'Break-withs' to Work**—We must not fall into the trap of thinking we are on the right road just because it is a well-beaten path. For example, many companies are content just to use lean tools, but leading companies are moving ahead in visioning, human development, and policy deployment (Hoshin Planning). Keep in mind that breakthroughs take time and are usually accompanied by a tough “break-with,” a rejection of the past thinking that holds deployment of new thinking back. To start with, reviewing the differences between

traditional manufacturing and lean presents many break-withs that need to be achieved to clear the path for lean to really work. It is not easy to give up old problems and old thinking.

Lean is still not to be found in the curriculum of many universities and technical schools—and where it does exist, industry has been the driving force. As the post-recession landscape takes shape, industry must renew support of the educational system to help its leaders accelerate the many needed break-withs to move thinking forward to keep pace with new thinking.

Although the impetus toward lean is intensifying, albeit not fast enough, it must be remembered that concept only became well-defined 21 years ago following the release of the findings from the largest investigation of any business sector ever undertaken. The investigation of the auto industry—conducted by an MIT research team, led by

James Womack, with Dan Jones, Dan Roos and others—pro-



**A groundbreaking study of the auto industry at MIT gave birth to the term 'lean.'**

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## The State of Lean

duced a work that has changed the world. The results were compiled in 1990 when the book *The Machine that Changed the World* was published. In it, the notion of competitors able to do more with less was introduced and the term “lean” was born. The book was a designated must-read from the beginning and it remains so today. Early adopters like Danaher, HON, and Jake Brake feasted on the logic that enabled them to become multibillion-dollar entities, but it was not until 1996 that lean really took off when the best-seller *Lean Thinking*, authored by Womack and Jones, appeared in print. Lean then became accessible to everyone.

**Lurking Lean: Mentioned Less—Used More.** Lean’s applicability to any system anywhere has enabled it to explode into every sector. But in 2011 lean may not be referred to as often—but do not be misled. Today its principles and practices are more likely to be found embedded in a company’s vision, operations strategy, and each day’s driving standards. This is exactly where it should be. A quick look at the

production systems at Eaton, Steelcase, Rockwell Automation, and many more reveals production systems—big and small—that are rich in the lean approaches that work best for them. More importantly, lean is integrated with all the other system elements and processes that have made these companies the leaders they are. In other words, they focus on running their business as they build their company’s core wisdom with the best processes and practices. Lean is quietly there.

This was easy to see this year at Rockwell Automation’s employee Share Showcase in Cambridge, ON, Canada, an annual event that allows employees to exhibit their innovations and process improvements. It was fun, tremendously exciting, and packed with employee pride. In speaking with the teams and individuals, it was clear the pride was coming from the improvement contributions they made to the Rockwell Production System and the recognition they were getting for it. Their ownership grew as they proved their achievements to



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## The State of Lean

a top management who were in the moment—and who were just as excited from start to finish.

To paraphrase Tom Peters, improvement guru and co-author of *In Search of Excellence*, “To attract and retain awesome talent, organizations need to offer an awesome workplace where people get paid their dues as they do great things while they add equity to themselves and their organization.” People find more inspiration and are more willing to contribute to their organization’s well-being and growth when they understand the value it can bring.

**Accept it: Lean Brings Culture Change.** There is a truism that holds, “What we think influences what we do, and what we do makes us who we become.” Lean most assuredly leads to culture change. It has been an unwillingness to deal with the culture-change issue that has caused so many attempts at lean to fail. One of the hottest lean books these days, *Toyota Kata*, by LEI’s Mike Roether, explains the simple concept of culture building by establishing a routine that requires a be-

havior that is repeated until it becomes a reflexive response or habit. Kata describes any integrated repetition of sequenced steps until their execution become automatic. The term applies to any endeavor, from martial arts to manufacturing assembly to hospital procedures.

**“What we think influences what we do, and what we do makes us who we become.”**

Another truism is that when change meets culture, culture wins every single time. Companies unsure of how to initiate culture change usually abandon lean in approximately 18 months. This is a tragic shame, for they may have been very close to success. Those experienced in successful lean transformations indicate it requires two to four years to get a culture change in place that sticks. That’s because culture change demands a long-term investment that requires vision,

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education, leadership, coaching, and a genuine respect for people every step of the way. Experienced lean practitioners know that to be successful demands management consistency, leader standard work, and unwavering commitment from the top down.

Over the last three years, informal surveys of top leaders attending international lean conferences indicated that the inability to get change through organizations fast enough is a major problem for their organizations. That illustrates how an existing non-lean culture requires help to break with things that tie people to their past. And the first “break-with” that may need to be dealt with is the belief that anything dealing with culture should be avoided. Dan Jones, however, points out how even the most entrenched cultures are capable of change: “The most surprising and rewarding thing in 2009 was seeing how lean is transforming the patient journeys through what is thought to be the oldest hospital in Europe, founded on the 23rd of June in 1288.” The hospital is the Santa Maria Nuova e Bonifazio Hospital in Florence, Italy, and it still has the slab that Da Vinci used for his dissections. Jones adds, “Now, they are one of the most impressive pioneers of lean healthcare.” Talk about a break-with achievement.

**Many Break-withs Required Here!** Today’s successful lean leaders know lean no longer contains notions of: mean, cost-cutting, downsizing, outsourcing, robbed initiative, or off-shoring. They believe it is about respect for people, trust, productivity, competitiveness, on-/re-shoring, ownership, engagement, cash flow, survival, sustainability, people, and learning. A very simple, yet effective, measurement of a team’s cultural health is to observe if everyone in the organization is making improvements in their work as they solve problems every day now and in the future. Some state categorically: “If people are not engaged and fully involved every single day, then what you are doing is not lean.”

Lean can be described as the con-



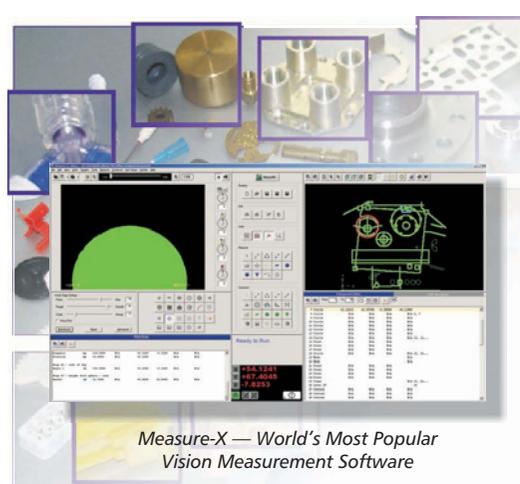
**AGV called ADAM is an example of what can result when innovation, technology, and lean processes are combined.**

tinuous process of developing an organization’s capability—both organizationally and individually—with full corporate dedication to customer success. A simpler definition defines lean as “A people-based, continually improving, sustain-

Photo courtesy of RMT Robotics

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able system that's dedicated to the elimination of all waste everywhere—while adding value for internal and external customers." To test how your company understands lean, ask 10 employees at random for their definition. If they cannot

respond, remind your management team that "If the learner has not learned it is because the teacher has not taught."

**From Systems Thinking to Bikes and Frogs.** A shop floor quote caught my eye that certainly underlined Systems

Thinking. It was from W. Edwards Deming, the father of quality systems, which read: "If you can't describe what you are doing as a process, you don't know what you're doing." It's a good foundation for systems thinking and the standards needed to drive real continuous improvement.

"It is easy to be flippant about words like 'systems thinking,'" observed Gary Stewart as he keynoted an international lean conference in 2008. The recently retired leader of Australia's Toyota Aisin plant is known for his simple and clear communications designed to get everyone on the same page. While "system" denotes a group of interrelated and interdependent elements that form a collective method or process, lean reminds us that changing one component can affect all others. Stewart brings the concept of systems thinking alive by differentiating between Bike Thinkers and Frog Thinkers—groups that are found in every company.

**It was not until 1996 that lean really took off when the best-seller *Lean Thinking* appeared in print. Lean then became accessible to everyone.**

He defines Bike Thinkers as those who use tools and think about interchangeable parts. They know instinctively that should a part on their bike fail, replacing it will put them quickly

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back in the race. However, Stewart cautions that “an organization cannot be world class today if the organization is driven by Bike Thinkers.” Steven Spear, the author of *The DNA of the Toyota Production System*, helps put the issue in perspective by pointing out that someone may be a whiz at fixing their 1966 Mustang, but where on earth do they start to fix a 2011 Mustang? The difference between the two Mustangs lies with the newer car’s multiple technologies and how they are integrated into a very complex system. The 2011 Mustang depends on integrated subsystems that result in a superior car with better gas mileage and performance. But it does it at the cost of leaving few people outside a Ford dealer’s service department able to repair it.

“Today, you need to be a Frog Thinker” states Stewart. “You just cannot take a frog apart and put it back together again as you did your bike ... that is, if you ever expect it to hop and catch flies again.” In other words, he says, “No matter what part of the frog you impact, there will be an impact on all other parts—and such is the same for the organism we call our company.”

Why this is relevant is because of the shift toward systems thinking in our new world. We have recently seen huge layoffs of folks who are experts in dealing with interchangeable parts while at the same time, thousands of jobs are going unfilled for Frog Thinkers. Companies who hire people to do only one job and then inhibit upstream and downstream interaction are constructing a Bike Thinking culture for the future. Is that really what will help the company to compete and win?

**Of Base Camps and Peaks.** To compete in the high-velocity, systems-based world of 2011 and beyond, the need to quickly assess, problem-solve,

and rectify a system abnormality is required—and it must be done right the first time. The skilled application of lean tools will keep a company in the middle of the herd.

However, world-class companies understand that the

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use of lean tools gets you only to, in mountaineering terms, base camp and not to the summit of global competitiveness. Today, those conquering the Competitiveness Mountains are the ones who have parked their bikes at the

base camp and proceed to the summit by orienting themselves to their True North, developing people, and looking at their organization organically with a laser-like vision aimed squarely at their business objectives. Every action,

every step is taken in line with that objective. As a result, the organization becomes a little stronger every day.

Under today's changed circumstances, the practice of lean should not focus on its tools, but on systems thinking and on achieving results through people. There is wisdom in this because lean's people and processes/system elements drive the exploitation of technology. Technology and lean have always been partners.

**Companies unsure of how to initiate culture change usually abandon lean in approximately 18 months.**

### Golden Opportunities for Suppliers

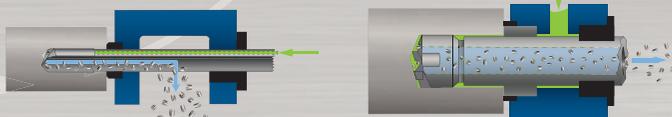
**Ahead.** How do suppliers view lean going forward? Most see it as key to their success—if they have manufacturing facilities of their own and if they are prepared to focus on innovating ways to make their customers more successful. It is a wise customer who listens to the observations of the best suppliers who actively work to help them succeed. Lean-thinking suppliers will never lack for opportunities because of the continuing underutilization of lean. Many customers are faced with making a larger operation competitive. For an enterprising supplier who understands lean, there will be many opportunities to help that customer be more successful.

RMT Robotics is a small company in Grimsby, ON, that saw an opportunity for its customer to avoid the waste of excessive WIP. The customer had

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acquired a large number of assembly stations but had not determined how to move materials to each station in the right quantities, which caused unneeded WIP inventories to accumulate.

Ken Meyers, RMT's director of sales and marketing, spotted an opportunity to automate the links between the automation and to do it so only the right material quantities flowed at just the right rate to each island to ensure customer takt time was met without money-draining WIP accumulating. Meyers' break-with was his old belief that "the customer's business is not my business." In today's market, anything he can do to make his customer successful not only bring sales to RMT, it also helps the customer see RMT as a value-adding supplier, the type customers never want to lose. RMT took the opportunity seriously and designed an easy-to-program smart/intelligent AGV called ADAM (Autonomous Delivery and Manipulation) that could navigate around fixed and moving objects and do it safely free of guide wires, reflectors, or transponders. By making the AGV flexible enough to match each island's needs, the customer saw throughput velocities increase and unneeded inventory quantities drop—both good things from a lean and bottom-line perspective.

Meyers reports that more than 100 of these robots could safely patrol the floors of a single plant delivering the right parts to the right locations in the right quantities and do it without running into people, objects, or other robots. He confirms that lean now dominates at least 60% of his sales discussions, "and that percentage is increasing. That's a huge change from only a few years ago." As the use of lean intensifies in all areas of manufacturing, warehousing, engineering, and supply chains, the overall on-site distance from design-to-ship-to-customer will continue to shrink. And while we are a long way from the dream of Computer Integrated Manufacturing, movement in that direction continues thanks to common sense and lean thinking.

**Lean's Place in a New World.** Lean is maturing and now has a place in every sector of human activity. Applying the right lean tools such as lean walks, value-stream mapping, and plan-do-check-act are great starting points. Those who have employed lean successfully, however, know tools can only do so much. Lean's real power is harder to harness as it is rooted in the discipline of vision-driven customer-focused thinking that marshals all human and physical resources needed to achieve business objectives, while continually increasing results through the people who will be the source of much of the innovation yet to come. This will take time to digest and prepare for.

Going forward in these unstable times means establishing the right vision of our future states and leveraging lean by committing to understand the elements of it you don't see. Current applications include the deployment of self-help consortia springing up throughout North America, all of which use lean as their operational language as they work together to accelerate their journey to compete and win in the global marketplace. **ME**

SME member Dave Hogg, PE, is the founding president of the High Performance Manufacturing Consortium described by the Sloan Management Review as a leveraged learning network which has been implemented across Canada, in the US, and Australia. He can be reached at [dhogg@rogers.com](mailto:dhogg@rogers.com).

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