

Why Lean Programs Fail

By Jeffrey Liker and Mike Rother

Toyota's success has inspired tens of thousands of organizations to adopt some form of a lean program. The term was introduced in *The Machine That Changed the World* and later in *Lean Thinking* as a new paradigm that was as monumental as the shift from craft-style to mass production. The focus of lean is on the customer and the value stream. You can say it is a pursuit of perfection by constantly eliminating waste through problem solving. Certainly an organization that is truly dedicated to becoming lean is on a path toward excellence.

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Yet a large [survey conducted by Industry Week in 2007](#) found that only 2 percent of companies that have a lean program achieved their anticipated results.¹ More recently, the Shingo Prize committee, which gives awards for excellence in lean manufacturing, went back to past winners and found that many had not sustained their progress after winning the award. The award criteria were subsequently changed.² Why is the pursuit of excellence through lean so difficult?

Where Does Improvement Come From?

When we look at a Toyota plant, we see many good ideas, and it appears that the company has a department of Toyota Production System (TPS) geniuses who design and implement all these lean innovations. We might ask whether these ideas are standardized and implemented in all Toyota plants in the exact same way. Are the TPS experts telling the plants what to do and auditing them to see if they are following the best practices?

The reality is that very little that you see at a Toyota site is the result of one person with a big idea that got standardized across plants. More often, what you see is today's condition, which is the result of many small steps, some of which were discarded and others embraced. It was the result of many cycles of plan-do-check-act (PDCA), and it is different throughout Toyota because different organizations are on different learning cycles.

¹ [Everybody's Jumping on the Lean Bandwagon, but Many are Being Taken for a Ride](#). Industry Week, May 1, 2008.

² [Robert Miller](#), Executive Director of the Shingo Prize, interviewed on [radiolean.com](#), July, 2010. *"About 3 years ago we felt we needed deep reflection. After 19 or 20 years we went back and did a significant study of the organizations that had received the Shingo Prize to determine which ones had sustained the level of excellence that they demonstrated at the time they were evaluated and which ones had not... We were quite surprised, even disappointed that a large percentage of those organizations that had been recognized had not been able to keep up and not been able to move forward and in fact lost ground ... We studied those companies and found that a very large percentage of those we had evaluated were experts at implementing tools of lean but had not deeply embedded them into their culture."*

Mike Rother, who has spent years researching how Toyota does what it does and how to better teach companies that are on a quest for excellence, summarizes what he found in the concept of the *improvement kata*, which he suggests underlies striving to meet challenges at Toyota. A *kata* is a well-rehearsed routine that eventually becomes second nature. In this case, the routine is the process for making improvements.

We have both concluded from our different journeys and experiences with companies that people have had a fundamental misunderstanding of what the Toyota Production System is in practice. We mistook lean solutions for the process that leads to what we see in a Toyota plant. We need to look more deeply at the human thinking and processes that underlie specific practices that we observe.

For example, early in our understanding of TPS we thought of heijunka as a powerful tool to level the workload and reduce inventory. But what we found from our experiences with companies was that establishing the heijunka pattern itself changes little in most cases. What is more important is the behavior generated by viewing the heijunka pattern as a target condition and following the improvement kata in striving to achieve it. It's the systematic, iterative working through the obstacles, step-by-step, that actually improves processes, and it takes practice to acquire the skills and mindset for how to do that.

Similarly, the *overt* purpose of kanban is to provide a way of regulating production between two processes, so that the supplying process produces only what is needed when it is needed. The *invisible* purpose of kanban, which we missed, is to provide a target condition. Kanban is a predetermined pattern between a supplier and customer process that, with the right leadership and culture, is used to generate behavior to work through the obstacles to achieve that target condition.

The difference between the visible and invisible purposes of heijunka, kanban and other lean tools is the difference between attempts at implementation of tools, and using the tools as part of deliberately practicing a routine for continuous improvement.

Learning a New Way of Thinking and Acting

Recent findings in neuropsychology demonstrate that people develop well-worn neural pathways that make it comfortable to do things the same way again and again. While

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humans derive a lot of their sense of security and confidence from this, the *content* of what we do will in fact be changing, whether intentionally or not, because conditions are always changing. An antidote to this dilemma of resistance to change is to develop strong mental circuits not for solutions, but for how to *develop* solutions.

The management task, then, is to have the organization's members practice a behavior pattern, like the improvement kata, that achieves this. We need a routine not just for doing the work, but for continually improving the work. That routine is missing in organizations that use top-down management objectives, so managers have no choice but to blindly start

cutting things.

The improvement kata is a way we can break down an abstract vision into a series of descriptive target conditions, and through striving to achieve them both develop and utilize

THE FIVE QUESTIONS

1. **What is your target condition here?**
2. **What is the actual condition now?**
3. **What obstacles are now preventing you from reaching the target condition? Which one are you addressing now?**
4. **What is your next step?**
(start of the next PDCA cycle)
5. **When can we go and see what we have learned from taking that step?**

Teaching the improvement kata involves asking these questions every day.

the creative powers of people. It involves teaching people a standardized, conscious means of grasping the essence of situations and responding scientifically by working iteratively. The improvement kata is a routine to teach and learn that mobilizes people's capability to achieve desired conditions. The improvement kata is a way to achieve things that you don't know how you are going to achieve.

Toyota's improvement kata has been taught implicitly in some parts of Toyota for

decades. The TPS mentor would do this by giving the student a challenge, such as to make a breakthrough in performance in a process (e.g., combine these two production cells into one mixed model cell that operates on two shifts with four people and can respond to changes in customer demand). Even if the mentor has a notion of how the challenge might be achieved, he does not share it with the student. His task is to lead the student into developing good habits for working through problems, via intensive questioning-based coaching on *this* problem.

We missed this underlying skill and mindset development focus of TPS. For example, in an organization Professor Liker observed the COO decided to hold plant managers accountable for running a certain number kaizen events to achieve a certain level of productivity improvement. It became slash-and-burn lean with no sustainability and no continuous improvement, i.e., old school, outcome focused, carrot and stick motivation.

These days there is more structure to Toyota's coaching process, but the relationship between mentor and student is at the core of how Toyota gets improvement to be a deeply embedded routine. To have enough coaches they are often the direct managers of the students, but the managers can always use training too and should themselves have a coach from inside or outside the organization.

There seems to be a strong belief in Western business that you select people with good innate work/management characteristics (habits), and then you give them outcome targets. In contrast, Toyota selects people for their openness to learning, and then develops the

desired work/management characteristics (habits) through practice after they hire in. Neuroscience is showing us that the adult human brain is more plastic than we believed, and that's what Toyota is taking advantage of in order to develop a deliberate culture.

Challenge Demands Learning

Research has repeatedly shown that when a task is relatively easy -- i.e., when the path to the target condition is pretty clear -- then managing by results and with extrinsic motivators can work well enough. The task is basically to *get it done*, and the organization's leaders need not overly concern themselves with ensuring that people are employing a systematic, scientific approach to achieving the target condition.

On the other hand, if the task is a challenge -- i.e., the path to the target condition is unclear and has to be discovered via iterative learning -- then managing by results and extrinsic carrot and stick motivators does not compete so well. In that case, *how* people go about striving for their target conditions becomes important, and, in competitive markets, *is* something with which leaders will need to concern themselves.

When we look at lean in this way it is not only a set of techniques for eliminating waste, but a process by which managers as leaders develop people so that desired results can be achieved, again and again. That means coaching people in practicing an improvement kata every day.

What is your company's improvement kata?

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For More Information:

- [“Toyota Kata: Mobilizing our ingenuity through good management”](#) - Mike Rother’s Learning Session at the 2011 Lean Transformation Summit will give you insights and ideas that will influence how you view your job as a lean manager and leader.
- In his e-letter [“Glad That I Asked You.”](#) John Shook describes the improvement kata in the context of people and organizational capability development.
- [Toyota Kata Homepage](#) - Learn more about what an improvement kata is, download presentations, key definitions, and much more.
- [Jeffrey Liker’s Homepage](#) - Read excerpts and get downloads from *The Toyota Way*. Become a fan of the book’s [Facebook page](#).

About the Authors



Jeffrey Liker, Ph.D., is professor of [Industrial and Operations Engineering](#) at the University of Michigan and principal of [Optiprise, Inc.](#) Dr. Liker has authored or co-authored over 70 articles and book chapters and eight books. He is author of the international best-seller, *The Toyota Way: 14 Management Principles from the World’s Greatest Manufacturer*, which speaks to the

underlying philosophy and principles that drive Toyota's quality and efficiency-obsessed culture. The companion (with David Meier) [*Toyota Way Fieldbook*](#), details how companies can learn from the Toyota Way principles.



Mike Rother is a researcher, an engineer, and a teacher on the subjects of management, leadership, improvement, adaptiveness, and change. He is co-author of *Learning to See*, *Creating Continuous Flow* and the *Training to See* kit. His latest book, [*Toyota Kata*](#), is based on six years of research into Toyota's management practices.