

The following is the result of a "Lean Challenge" contest sponsored by the Lean Blog. Blog readers submitted challenges that they face in their own lean work and this challenge was selected as the prize-winning entry. If you would like to comment on this challenge, visit the Lean Blog website at www.leanblog.org.

<http://kanban.blogspot.com/2006/12/lean-blog-challenge-contest-winner.html>

The Challenge:

Mark and Lean Blog Readers,

I am currently a lean leader for a 4 Billion dollar corporation. My background is as an operations and plant manager, and I am currently working with a division that manufactures sealing products for various motion control industries and markets. We are a growing business that is doing well financially. The corporation credits our lean efforts for driving growth and margin, and has a somewhat comprehensive lean system based on TPS. The greatest lean challenge I am coming up against in this business is common but very difficult to break through: A culture of urgency, or what Stephen Covey calls "urgency addiction." This urgency addiction often results in a breakdown of lean tools and systems, cultural barriers to leader standard work, and a failure to fully complete lean transformations.

A culture of urgency (and the resulting reverence for heroics non-conventional solutions) makes the sustainment of lean tools nearly impossible. For example, we have worked hard to implement finished goods stores and kan ban in many of our facilities. Unfortunately, these systems are often ignored or pillaged when urgent demands interfere. What better way to overdrive monthly results than open up our shipping window and empty the finished goods stores? I'm driven to reduce inventory for that end of month snapshot anyway! And why would I build products to "go on the shelf" when I have urgent customer expedites?

Urgency addiction is also a major barrier to the implementation of standard work, especially for our leaders. The implementation of standard work for operations leaders has been met with disinterest at best and outright hostility at worst. Who has time to work through a checklist of items that have me auditing and checking areas that are running well? Why would a 5S audit or quality check take precedence over a customer quality crisis? Who has time for these daily accountability huddles?

Finally, the culture of urgency stands in the way of fully completing lean transformations. I am currently involved in a project to reduce raw material inventory, and we are approaching the problem through the use of kanban and the reduction of supplier minimum lot sizes. Yet it is a battle not to have this project seen as an "inventory exercise" that could also involve calling off receipts until next month and manipulation of

the data. Why do we need kanban when I can just use MRP? Who has time to review demand and kan ban levels anyway? Suppliers will make me pay more for smaller, more frequent shipments anyway. As soon as the process is brought back into control through focused, heroic efforts the team will likely move on to the next crisis without establishing a system to prevent future recurrences.

I am currently attempting to battle this culture of urgency through leader standard work, visual factory tools, regular accountability reviews and audits (a factory "cadence"), and training on effective problem solving techniques. Yet last week I had a senior member of the staff come and ask me why his team had to waste time on these things when they were "hitting all their numbers." So I continue to conduct training, coach our supervisors, and lead lean events knowing that many of our employees will nod their heads and think "that's a nice concept..." and then return to their work seeking pats on the back for their heroic efforts and process workarounds.

In appreciation for any wisdom and advice,
Rich

David Meier's Response

There are really several questions and issues here. One of the problems with lean or TPS is that no issue really stands alone. These issues are all intertwined into your overall lean system, which is what makes implementation such a challenge, and of course so interesting! If it were an easy task everyone would do it, and there would be no need for highly capable lean leaders! I like how Rich concluded his question— he goes on teaching and coaching in spite of the numerous challenges. These are just a few of the many challenges! We must continue on in spite of the challenges.

I will break the questions down into three main themes:

1. The issue of urgency.
2. The use of systems and standards and the need to deviate from them.
3. Creating effective standardized work and audits for leaders.

Theme #1

Regarding the issue of urgency- perhaps there is a misunderstanding of this issue. The implementation of lean will certainly prompt the need for more urgent action. We say that TPS drives urgency. The definition of urgency is "the need for prompt action." With interconnected processes all depending on each other the need for prompt action when a problem arises is crucial to survival. Everyone must have a sense of urgency to take prompt action when necessary- both after a problem is detected, and on the preventive

side before problems arise. There must also be urgency to maintain lean systems (kanban, visual awareness, 5S's, TPM, etc.) so that things work smoothly.

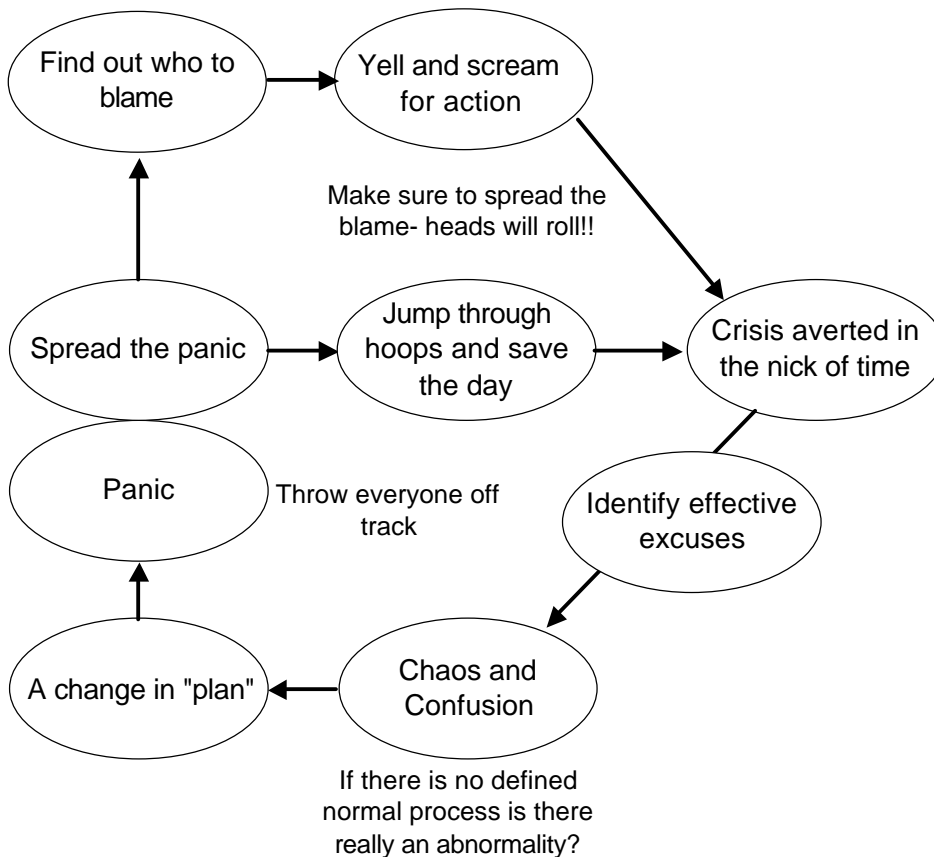
The lean tools and process are intended to benefit your operation and improve your ability to service your customers. It would never be permissible to sacrifice the good of the customer simply to follow the process we have established as “lean.” The lean process is optional—servicing the customer is not, so in a way if management makes decisions to deviate from the plan to meet the needs of the customer they are doing the right thing—in the *short-term*.

Maybe what Rich is really talking about here is a short-term crisis/reactionary mode of handling issues that arise. The “handling” of issues typically involves abandoning any defined method (or never establishing one in the first place) and reverting to “heroic” efforts as mentioned. This can certainly be an addictive behavior as we all tend to enjoy the adrenaline rush when necessary to “save the day.”

The trouble is that it tends to be chaotic and random and does not lead to long-term improvement. Some people can be very good at crisis management, and others quite bad. It is not very consistent overall, and one of the primary goals of the lean process is to improve consistency of performance and develop greater stability. The heroics method is much too random and unpredictable. Certainly not a method that I would want to bet on regularly.

Toyota leaders would often refer to the “clouds” present within an operation. They were referring to the fuzziness of a random and chaotic operation with variation present. One problem with the heroic model is that it is not based on a standard, so there is no point of comparison— no reference point to determine whether improvement is being made. If improvement is made to a process that is random and not predictable, what was improved? Did you get improved randomness and better chaos? The tricky thing is that clouds also tend to provide a hiding place for poor performance. TPS is really about exposing weakness so that it can be strengthened, but you must also provide an environment where weakness is accepted (it is ok to have a process weakness initially, but the nature of TPS will constantly stress the weakness and eventually improvement must be made), and support is provided to improve.

Here is a model (a little tongue-in-cheek, but all too familiar I am afraid) of what I imagine Rich is referring to. It is a never ending loop because the primary component is missing- a defined standard and point of reference.

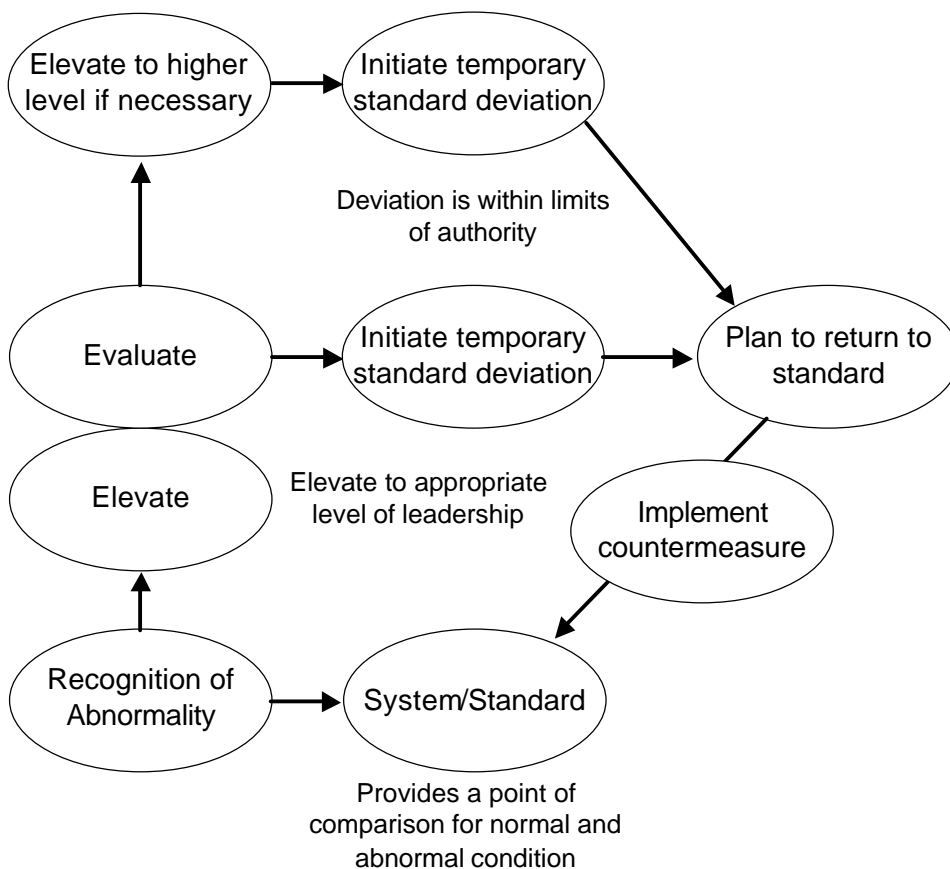


Why is this model so common (Rich you are not alone on this one!)? I think one of the reasons (beyond the addiction to the crisis) is that the identification of a standard comes with implications—it is implied that if we define a standard we will then be obliged to follow it, and that given the reality of the world it will not be possible to follow the standard at all times, so therefore; (are you following this logic?) we can not create a standard. Besides, things are always different. How can we possibly identify a standard? (We will also touch on this later with issue 3.)

For some reason people tend to see things as either black or white—all or nothing. They view lean the same way. The perception is that if it is not possible to completely follow the regimen, it is not possible to be “lean.” If they can’t do it 100% what is the point? They view less than 100% as “failure.” This is erroneous thinking. It is more likely that we will not be at 100% than it is we will. Continuous improvement means that we are all on a constant journey of improvement. This journey requires us to identify our weakness and to work diligently on improving. This is a tough lesson for us to learn.

Theme #2

Issues 1 and 2 are really tied to the same causes- either lack of systems and standards, or lack of the ability to follow them and the need to deviate from the plan. Here is a model similar to one introduced in the Toyota Way Fieldbook (pg. 179). Note that the starting point is always the same—there must be a defined method (standard) that will serve as the point of comparison. With a defined method we can all easily understand if we are able to follow the method and how well. This provides a point to measure performance and thus our ability to continuously improve. This is absolutely crucial!



Rich mentions establishing finished goods stores (better to call it a “supermarket,” maybe semantics, but “stores” implies that you intend to store items there. We do not want to “store” items as that implies no movement. A supermarket is used to service the customer, absorb variation in customer demand, buffer inefficiencies of inflexible operations (which should always be improved), and also to provide information to the producing operation. Essentially if you have set up this process you have created a “system” (a system is a combination of various elements— we usually refer to “kanban

system” or “pull system” or even Toyota Production System). The kanban system includes material and information flow and a defined, dedicated, and controlled procedure which includes clear understanding of the relationship between supplier operation and customer operation, and a control mechanism (kanban and visual controls). This system defines the standard method used to supply the customer operation.

Ok, so if you have a standard you are able to measure your performance to the standard. With a kanban system there are really multiple purposes—It is used to provide information to the supplier regarding the needs of the customer (a scheduling method), it is used as a means to supply material to the customer, AND it provides information flow that is VISUAL CONTROL of the performance level of the supplier operation. The true purpose of a kanban system is to improve performance (Toyota says the kanban is a tool for continuous improvement, as is standardized work). So, we need to know what the performance expectation is for the supply process.

The answer for Toyota is always the same; to provide the highest quality product (free of defects), in the shortest possible time (lead time), at the lowest possible cost. The lowest possible cost means to provide what is needed, when it is needed, in just the amount needed (just in time), but some operations are not capable of single piece production (currently) such as; stamping, molding, volume machining, or shared resources (multiple parts and customers). For these operations especially, some type of supermarket is a beneficial (it is hard to believe that inventory is beneficial!) way of supporting the customer AND helping the flexibility of the operation. (Remember that the *intentional* use of inventory to create better overall results may be the best option for now).

So we begin to measure the supply processes ability to meet the needs of the customer. It is easy. We can determine if the supply process misses the goal—try never to let the customer run out! That is only one-third of the equation— the other parts are to meet the need in the defined amount of time (cost), and with high quality. So, we usually measure delivery and efficiency, and try to get delivery higher and at the same time improve efficiency (cost). Refer to the figure on page 328 of the Fieldbook to understand that there are *always* at least two (and usually three) measurements that are necessary on *every* process, so we need to consider “success” to mean doing all three (quality, delivery and cost).

So now comes the fun part. We have the system all set up and we are running along fine, and then—reality happens. Whatever causes the crisis—machine failure, missing people, untrained people, changes in customer demand, an error in our plan, etc. This is, of course, reality, and it is the same for Toyota— stuff happens there too! The big questions are; do you recognize the discrepancy quickly, elevate the problem (expose it to everyone) to the proper level for decision making, enact a well thought out (pre-planned) standardized deviation plan (yes, even deviation is standardized because deviation WILL be necessary), and work to return to the standard as quickly as possible? When the crisis is over do you evaluate the situation and determine future countermeasures to prevent the

recurrence of the problem? Do you follow the PDCA cycle? See the model above for a graphic view of this cycle.

Remember that adherence to your system is not an absolute- you still have the choice and flexibility to change as needed, but there must be rules established regarding when and who has the authority to designate a temporary change (or permanent if the system is flawed or other factor necessitates a change). For example an operator is not authorized to deviate from the system for any reason. They are empowered to use the information according to the prescribed standard (when to produce, what to produce, the sequence of production, etc.), but they are not allowed to deviate (with kanban they may be allowed to under-produce (not run all of the kanban) provided they fulfill the needs of the customer, but they may NEVER over-produce, or produce without kanban authorization. Over-production may be dictated by a manager with authorization based on coverage for planned down-time or other issue.

If an abnormal condition is detected (a good thing because it means you have a standard), it is elevated as necessary. A supervisor may be authorized to change the production plan (sequence, quantity, etc.), but is not authorized to deviate from the standard without first elevating to the manager.

This is a challenge to explain, but since a kanban system is used for both the benefit of the production operation (can be used to facilitate heijunka or level loading, pattern style production and other strategies to minimize the implications of change-over), AND the customer, the decisions that are intended to benefit the production process can be altered by the production supervisor without elevating to the manager PROVIDED the decisions do not have a negative impact on the customer or the performance of the operation (adding cost). For example, if the operation is using a pattern style production (A followed by B followed by C) because following the pattern improves uptime, it may be necessary to change the sequence to A, C, B because of a need at the customer. The customer need takes precedence over the production process and a change the sequence may be initiated by the supervisor (not the operator) without elevating or the need for countermeasure, but it must be considered as a deviation from the plan and recorded on the “ability to follow the pattern” tracking sheet (ability to follow the standard should be measured).

The decisions related to authority are pre-determined and understood by all levels of the management team. Changes are not willy-nilly. Serious consideration is given to how and when a return to the standard can be achieved. Also if a deviation is necessary to avert a crisis a countermeasure plan must be implemented. This is the discipline side of lean.

These agreements are made in advance by everyone, and if a high-level manager decides to change the rules mid-stream that must be discussed to see if the new rules are aligned with the overall lean vision. (Here we have another tangent that can be a future

discussion—What is the organization’s lean vision? Why are you doing lean? Do we all understand the intent of the lean process?)

Theme #3

This brings us to issue number 3- How do we create effective standardized work and audits for leaders, and how do we get the leadership to follow their own advice? It is ironic that the leaders will stand up and declare that “the workers” must follow standardized work and audit their process, but when it is proposed that they also develop standardized work, or audit the process for their jobs the tune changes. How is it possible to standardize a leaders job when it changes all of the time (there’s that randomness and chaos again)? Who has time for audits? “How am I supposed to get any work done when I have to do these audits all of the time?” Or perhaps the best one of all, “I don’t have time to do that (whatever the request is), I have to do my standardized work (as if having standardized work now means that they are excused from all other responsibilities).

My opinion on this issue is that standardized work for leaders is usually poorly designed, and audits are very cumbersome (also a design issue). The causes are the same for both issues. Leaders are missing two vital points- how to break down their jobs into tasks, and how to identify and focus on the critical things that need to be done. There will be a chapter on these two issues in the upcoming book “Toyota Talent” due in April, 2007 (not specifically related to leadership positions, but for any job), but for now here are the basics.

First the leader needs to understand what is critical for his or her job. Everything may be necessary (well, maybe), and many things are important, but a select few are critical. This may amount to 20% of the total. The wise leader knows that they need to put 80% of their effort on the 20% of items which are critical in nature. Essentially, a critical item is one which if not completed will most likely result in a problem. These are the items which must be checked to ensure that there are no deviations.

Also, for a leader the level of importance is time relevant— there are issues which are critical at the beginning and end of the shift, or at specific times during the day. So to develop leader standard work we first break the day down into specific time periods.

- Prior to the start of the shift (all employees in attendance, all machines operational)
- At the start of the shift (everyone in position, machines operating)
- During the shift (safety, quality, check lean process)
- Before and after breaks and lunch (properly shut down and started back)
- At the end of the shift (end of day status, 5’s, ready for next shift)

Then, each leader should determine the most critical things which must be completed during those times (detail of the daily activities of a group at Toyota can be found in the Fieldbook beginning on page 227.)

As in the example above on standards and deviation, it is possible to deviate from the leaders standard work, but not doing any of the critical items is likely to lead to a problem (or at least a high probability of a problem).

The point of the standard work is to improve process performance so the more it is followed the better the results should be. I often see standard work for leaders that includes too many items (people make the mistake of trying to list everything necessary for the job rather than what is critical) and then are unable to “do it all.”

This is the same problem with audits. First of all I will go on the record as saying that audits are NON-VALUE ADDED! They are like inspection of product AFTER it is completed- it may be necessary, but it does not add value. Therefore; follow the same guidelines as above—identify what is critical (limited number of things) and check them accordingly. Very critical items should be audited multiple times per day, less critical maybe daily or weekly.

Also use a “layered audit” method which takes into consideration what is critical for each level. What do operators need to audit? What do supervisors need to audit? What about managers. Etc.? An operator should audit the critical parameters of his operation that affect safety and quality. Especially critical items may be verified several times per day. For these items the supervisor should check at least once per day to see that the operator is checking properly. Some items are checked by operators one time per day and may be checked once per week by the supervisor (or check a different item every day).

There are no set rules regarding what to check and what the frequency should be. It is important to use your past experience. For example, at Toyota, I was responsible for the Bumper Molding group. The raw material supply was crucial to the operation (ordering, storage, mixing, and transport to the machine). We had regular problems with the ordering system, and consequently ran out of material (a major crisis), or had no storage to unload incoming material (a minor crisis), so a new kanban system was developed and an operator was assigned to check the status every day prior to the start of the shift (in addition to the mixing system and other system status items). The material supply was so critical (and historically problematic) that it was necessary for me to follow up daily after the shift had started and there were no other pressing problems.

After the new method became more reliable (operators never made mistakes) and I understood the status (if I missed a check for two days AND the operator made an error during that time a problem could still be averted), it was possible to miss a day of my audit and still not be a problem. There was some risk—but the risk was minimal. Really

the purpose of audits is to minimize risk of not doing the things that are critical to the success of the operation.

One last thing- often audits are designed in such a way that they will ALWAYS find a discrepancy. In that case what is the auditor to do? After a time they learn to just check the “no” box and ignore the issue (or say that “nobody” pays attention anyway, so why bother). If there is a discrepancy there must be a countermeasure to return to the standard (see the previous model). For example, if when checking the temperature setting of the machine, the auditor finds the temperature out of the defined range, it must be corrected. These are, after all, critical items. Failure to do them correctly will have a very high probability of producing a safety, quality, delivery, or cost related problem. Do not set up audits for items that can be ignored!

Well that is it. These are not simple issues, but they are issues that are shared by nearly everyone who is engaged in lean implementation. It is impossible (I think) to really answer these questions “out of context.” There are always related issues and other things going on, but I have tried to focus on the generic issues that are usually at the heart of the matter. Of course each issue has many tangents and connections and this is why lean is such a challenge and why it is necessary to focus on developing a complete lean system—no cherry picking. It is necessary to develop all 4 of the P’s outlined by Jeff Liker in *The Toyota Way*—Long-term Philosophy, People and Partners, Process, and Problem Solving. Good luck and follow Rich’s advice— keep on teaching and training and continuously improving.

About David Meier:

David Meier learned the true essence of the Toyota Production System (Lean Manufacturing) during his 10 years as a Group Leader for Toyota Motor Manufacturing in Georgetown, Kentucky. David has been assisting companies with their improvement activities since 1992 when he first helped a small bird feeder manufacturer in Ohio to achieve great results. From those early efforts, David learned how to implement Lean Manufacturing using an activity-focused approach, designed to generate substantial results while training experts within the company. In recent years David has worked with some of the largest companies in the world as well as with small privately owned companies. He has successfully applied the Lean principles in both high volume and custom work environments, and in both manufacturing and office work places. David has thousands of hours of training experience and works effectively with members of management as well as hourly employees. His website is www.leanassociates.com.

About the Lean Blog

The Lean Blog was founded in January 2005 by Mark Graban as a website featuring lean news, commentary, and book reviews from a team of bloggers. Also available is a series of audio Podcasts featuring leading lean thinkers and innovators. The Lean Blog can be found at www.leanblog.org.