TPS versus Lean: Additional Perspectives

By Art Smalley, President Art of Lean, Inc.

In a newsletter for Superfactory last year I wrote an article entitled "TPS versus Lean and the Law of Unintended Consequences". In the article I stated my concern that Lean programs - although well intended and in theory grounded in the roots of the Toyota Production System - often go astray *underemphasizing* several important dimensions. One such dimension pertains to Toyota's relentless focus on the profit maximization principle (Price – Cost x Volume = Profit) and the need to practice systematic cost reduction in order to benefit. Lean programs often tend to gloss over this detail and instead become more enamored with the more abstract improvement concepts of "flow" or "pull" for example. The second point of concern was the tendency in many programs to elevate mere tools (standardized work, value stream mapping, visual control, etc.) to an unhealthy status beyond their design intent. The tools are just different ways to see certain types problems but they don't solve them for you or frame every type of problem. The third concern was that Toyota in the early1950's started emphasizing the development of the production manager and supervisor's skills set in guiding natural work teams and not rely upon staff level change agents to drive improvements. My concluding advice was for lean practitioners to reflect upon these points as applicable and make sure to steer an overall approach that targets real opportunities, position tools correctly to solve the main issues at hand (don't just apply tools), and develop a rigorous bias towards problem solving and generating business results. Otherwise I fear that Lean will go the way of other previous less successful change management programs in the U.S.

Over the past two months the article generated a healthy amount of e-mail comments and feedback. The majority of responders commented positively stating that the main points struck a chord with their experiences and concerns as well. A smaller portion argued that

Lean is doing just fine today, and it needs to proceed down a different path from Toyota's historical experiences and my related concerns. A few others worried that the unintended consequence of the article would be to undermine the end to end focus of value stream mapping and put us squarely back in the days of running haphazard kaizen events. Let me assure you that is not my intent, if anything I am looking for an even higher level systematic understanding of TPS and Lean beyond just a mere value stream focus.

Rather than respond to these points or elaborate on the many others that were communicated I though it would be more useful to expand the dialogue to a few other trusted colleagues and seek out their reactions and comments. I communicated at length with three individuals each with very different experiences in Lean/TPS. Their comments are outlined below on the following pages. Two of the gentlemen are retired managers from Toyota in Japan, and one is former executive of the company in the U.S. Each was asked to elaborate their views freely on the main topic of the article, identify what other points they would have expressed, or additionally what specific advice would they suggest to anyone implementing TPS or Lean.

Russ Scaffede

Brief biographical note: Russ Scaffede is a former VP of manufacturing for Toyota Motor Manufacturing in Kentucky and previous to that a twenty year veteran of General Motors. He was also the leader of a successful lean implementation program at Donnelly Corporation. Today he is an executive with Tiarra Yachts and the current chairman of the Board of Governors for the Shingo Prize Institute.

Directionally I think the main points of the article are all valid. In fact they mirror some of my own experiences and concerns since I have left Toyota... By now you think we would have figured out the best way to implement TPS principles in America but many companies are still struggling to get traction and make real progress. For every one company I see that has made significant strides in implementation there are a handful of others that are far less successful. So I suspect it is a good time to stop a moment to reflect and ask the Five Why's. Following are a couple of my insights as to why this situation is occurring and a few initial points of advice. I will mainly stick to a theme of leadership responsibility and several related actions that I view as key.

For reference I left General Motors after nearly twenty years in various levels of production supervision to join Toyota in Georgetown, Kentucky and become head of the engine facility. The culture difference was like night and day. One of the things that was most amazing to me was the level of focus on basic execution and daily coaching that went on during our start up. I was fortunate enough to have a peer from Japan named Bud Sato who was assigned to mentor me and my managerial staff for three years on a regular basis. I was also guided periodically by Fujio Cho the head of the new start up operation who later became President and Chairman of the company world wide. This personal coaching made a huge difference in how I came to view TPS principles, drive improvements, and behave as a leader.

Similarly we had dozens of production trainers that came over from Toyota in Japan to our facility of several hundred people during the first year of start up. The engineers, supervisors, and employees all received first hand coaching from these experts until we could hold our own. I honestly don't know how any one can replicate this amount of "expert" help we received – Toyota is certainly not going to come to all of our aid. But I think it is important to remember that Mr. Ohno did not have all these trainers helping him out in the beginning either. This point makes me think that getting started and obtaining solid traction is first just a responsibility of leadership and not one of tools or change agents.

Most of us can't achieve Toyota levels of performance right away and it would be foolish to even try. So the issue is how to start driving improvements in a sustainable fashion for the long run. My improvement experiences since leaving Toyota all tell me that relying too much upon consultants or even staff level change agents is generally not the best way to go although they each can have a role to play. Instead developing internal capability through implementation efforts is an extremely important part of the improvement journey that we must emphasize and appreciate. I try to develop my staff and instill in them the sense of purpose and operational leadership that Toyota did in me. And I try to make this cascade all the way throughout the company as well. So personally I tend to view this resource development topic as a leadership challenge that we will have to resolve creatively on our own terms using our existing resources as Mr. Ohno did in his day.

Additionally my personal experiences also resonate with the article in that just emphasizing the tools of lean alone are not enough to make improvements occur in the long run. Initially there is often so much waste that any approach or method works in the beginning. Eventually it gets more difficult however and this is where it is critical to remember that tools are merely standard ways to uncover problems. In the end you have to not only solve the problem but on top of that you have to learn the discipline to repeat the improvement pattern over and over. Just using one time kaizen style events won't build a system that will generate ongoing improvements. Although it sounds easy in theory in all too many places I visit companies either misapply the tools or never uncover the fundamental business or operational problem that they should be resolving. Or in other cases they just can't develop the discipline to improve systematically year in and

year out as Toyota does. As a consequence sustainable results do not always follow and the overall program eventually stagnates.

The best advice I can offer from my overall experience is the following. First the executive in charge needs to have a clear picture of what is TPS and a similar improvement vision for their own company. Don't just settle for understanding what is a tool like Standardized Work, Value Stream Mapping, or a Kaizen event. You need to understand what types of problems these tools can and can not surface as all tools have limits. Second we as leaders have to figure out what exactly are the key levers to work on to improve our businesses and direct the right teams to work on those items first. Successful organizations like Toyota's are able to develop the ability in all employees in production and non-production jobs to see waste in every process in the form of defects, rework, delays, or other problems and take initiative. However they also ensure that the right problems are being worked upon and not just trivial topics. Third set aggressive but realistic targets and goals for quality, cost, delivery, and productivity improvements for example, and guide the team with a clear vision. How well the organization follows your direction and improves over time is chiefly a reflection of leadership. I expect that each company will have its own somewhat unique path for improvement but common themes should be around problem solving, profitability, and executing operational improvement in terms of quality, productivity, and other areas that affect cost and customer satisfaction.

Tom Harada

Brief biographical note: Tom Harada worked for many years in engineering, production, and maintenance in the Toyota's Kamigo engine plant where Taiichi Ohno was the founding plant manager. Today he is president of his own small manufacturing and consulting firm in Indonesia.

I have tried in the past to advise a couple of American companies attempting Lean over the past few years. Honestly I was often confused by what passed for "Lean Production" in the U.S. I saw many crazy things done in the name of Lean that we would never do in Toyota especially in terms of priority and sequence. I won't go into detail here due to space constraints. However it does seem to me as an outsider that Lean in general has focused in on a subset of the overall Toyota Production System and it does

overemphasize certain tools and concepts at the expense of others. I guess this occurs because most people writing about TPS are visitors to the company and they write what they see from the short visit or perspective of a brief workshop. It took me many years to understand and appreciate all aspects of TPS and I was fortunate enough when I was younger to work with many of the original developers of the system including Mr. Ohno so perhaps I should not be too critical.

On the positive side I think much good work has been done to develop various tools in America to help understand what is Lean or TPS for example. Oddly I must point out that the quality of these educational materials and publications is far superior to anything that we ever had in Toyota. We were a poor company in the old days and we hand only simple charts, and other basic hand written materials for explanation purposes. This may have been a blessing in disguise for us since the answer to TPS was not something 'out there' to purchase or to find in books or training sessions. Leadership, people, creativity, and a strong desire to improve were our most critical resources – not educational materials. We had to go make improvements on the shop floor and then stand back and critique what we had done and then go and make it better over and over. Repeating this type of implementation method and the Plan-Do-Check-Act cycle was by far the most important thing we did in hindsight. I worry if this blessing of nice education materials in the U.S. may be an accidental hindrance to your improvement efforts in the long run.

I don't like to use culture as an excuse for why TPS is so difficult to replicate but the older I get the more I realize the Mikawa region (current day Aichi Prefecture in Japan where Toyota headquarters is located) did influence the mindset of the company very much. This region has a strong tradition grounded in "mono-zukuri" (making things), farming, and very strong leadership dating back to the Tokugawa Ieyasu era in history. It is a unique area even within Japan. Even today it maintains a strong independent tradition and commitment to self reliance. You can see this in the way the Toyota procures parts, organizes its finances and accounting, builds long term relationships, and thinks about production. Mr. Ohno used to exhort us in Japanese – 'Jibun no shiro wa jibun de mamore!' Translated this means 'Defend your own castle by yourself!' and in essence to take control of your own destiny. The comment is reflective of his mindset and independent streak.

I would feel more comfortable with Lean efforts that I periodically observe if they were not so focused on what I term the "logistical" aspects of TPS. If you look closely at the majority of what passes for Lean in companies today it is things related to flow, kanban, takt time, and pull, etc. In reality these items are all just sub-elements of the JIT part of Toyota's Production System and relatively speaking the easiest to implement. If you want to receive the full benefits of lower cost, higher quality, and shorter lead-times then the focus, scope, and depth of lean efforts needs to improve to cover the rest of the production system. This includes improving equipment efficiency, building in quality 100% of the time, and developing people. In fact in Toyota we had a saying, "Making things is about making people".

As far as advice I would suggest people worry less about tools in general and just do whatever it takes to make actual operational improvements in line with TPS first principles. We invented the tools in TPS during the course of solving problems and not the other way around. There is no secret recipe or one way to do things in TPS, only timeless principles to help guide you. The engine plant I worked in looks and operates quite differently from a final assembly shop in Toyota. One is equipment intensive for example where the value added work is performed by a cutting tool; the other has humans performing the actual work by manual assembly. After many years of experience you learn where to focus and what to do depending upon the situation…If it were any different or a simple recipe existed then everyone would have mastered TPS by now. I suggest you learn to do what ever protects your own respective castle and take control of your own destiny!

Isao Kato

Brief biographical note: Isao Kato is a retired manager of Training and Development for Toyota in Japan. Isao was known internally in Toyota as the primary developer of standardized work, kaizen, and supervisor development training courses and held several other positions in manufacturing and supplier development. Today he manages his own small consulting firm chiefly aiding companies interested in TPS in recent years in the U.S., Japan, China, and Korea.

It does appear to me from a distance that there is some difference in emphasis on various points between Lean and TPS although as mentioned in the article it is probably unintended. The historic starting point for TPS in Toyota is for the specific reason of cost reduction and thus profits. The company nearly went bankrupt around 1950 and had to lay off one third of its employees. Our production system and way of thinking is committed to never experiencing that painful situation again. There are two principle pillars of TPS (JIT and Jidoka) and four specific aims – deliver the highest possible quality and service to the customer, develop employee's potential based upon mutual respect and cooperation, reduce cost through eliminate waste in any given process, and build a flexible production site that can respond to changes in the market. If you can truly accomplish these aims you should be a successful company. Everything you hear about in TPS whether it be kanban, standardized work, SMED, etc. is just a tool to help achieve these aims. Lean expresses many similarities but it does seem to focus mainly

on the simpler waste elimination aspect in manufacturing, and flow techniques in manufacturing. I'm sure that the definition of Lean will expand over time as it continues to grow in the U.S. and other countries.

Regardless of the definition however there are a couple of fundamental starting points that I would like to see more emphasized in Lean/TPS efforts in the U.S. The first area is the topic of recurrence prevention. Much of this focus in TPS stems from the Jidoka pillar and build-in-quality concept of the production system. Sadly this pillar and its set of concepts are much less emphasized in the west than in Toyota than JIT. Tools such as Andon, fixed position stop, production analysis boards, kanban, etc. were all developed to surface problems quickly and cause the responsible person to respond. The key in response of course is to come up with effective countermeasures that will result in recurrence prevention – otherwise the problem and will continue and repeated fire fighting will result. Building this type of culture and rapid response to problems is a prerequisite for TPS success in the long run.

The second area is the topic of supervisor development mentioned in the article. From my experience the parties most responsible for promotion of TPS style activities should be the managers and supervisors of the area in question. Lean activities will not flourish in the long term if the primary drivers are staff level change agents or engineers for example. Managers and supervisors must have specific goals for quality, cost, delivery, productivity, safety, in their area of responsibility and drive improvement toward these targets continuously. Skills development must be executed to aid supervisors and managers in understanding their role and providing some basic capability. Other parties or change agents can help in the short term but they can not lead the change effort if sustainable improvement is the goal. This latter aspect I firmly believe.

Lastly, I remind people that TPS is an overall system and it needs to be applied to more than just manufacturing in order to achieve maximum benefit. It is not an overnight type of change program. Toyota's approach started in manufacturing but did not end there. It reaches out into product development, engineering, procurement, human resources, and other areas as well. All of these areas affect quality, cost, productivity, lead-time, and affect customer satisfaction and need to become the focus of improvement efforts. Focusing on only the manufacturing portion of the entire company will not produce significant results in the long run.

My basic advice would be to keep the following points in mind at all times regarding any Lean or TPS style improvement program. First the improvement approach must eventually concern all relevant aspects of the company, not just one or two areas. In this sense the term Toyota Way is a better and more encompassing name than the original TPS title. Second in the long run success relies upon the development of creative people capable of making structured improvements. Most companies don't spend enough time on human resource development since its return can not easily be measured and it only appears as a cost to the company. Third TPS style improvement efforts ultimately

require extreme attention to detail in the execution of daily management techniques. Having proper awareness of problems and an extremely low tolerance for the current condition is a proper attitude and starting point for any activities in TPS or Lean.

Summary Points

This set of interviews started with my personal concern about inadequate attention paid to three specific things in many Lean programs; cost reduction as a means for profit generation, the proper usage of tools as merely ways to highlight problems, and the proper development of human resources to support TPS style activities in the U.S. Without attempting to put words in the mouths of my colleagues I think there is a basic level of agreement on these points. However their concerns are stated differently and often include other points that are very relevant and more insightful to the discussion. I leave you to draw your own conclusions.

Isao Kato reminds us that the fountainhead of the Toyota Production System was the explicit need for cost reduction over fifty years ago to help avoid bankruptcy and to avoid further reductions in personnel. Even today this emphasis remains a strong focus and commitment of the company. Perhaps since many of companies attempting Lean today are not in as dire financial straights as Toyota was in 1950 this can explain the relative lack of emphasis on this topic in the west. In due time I suspect this emphasis will no doubt emerge due to the unrelenting competitive pressures inherent in our economy.

All three responders commented in one way or another that tools in TPS or Lean are just ways to see problems. As Russ Scaffede points out merely using the tools to see problems should of course not be the purpose of any improvement activity. Surfacing problems via any method whether it be value stream mapping, standardized work or any other technique is only step one of the actual challenge. There are several more critical steps that of course must be completed if you wish to solve the problem and unlock the improvement potential. In other words attempting to just apply all the tools of Lean is akin to trying to use all your clubs on the golf course rather than learning to take fewer shots. A clear takeaway is to avoid using tools for the sake of using tools and make sure that your efforts are clearly linked to obtaining results whether that be in the form of profits, quality, lead-time, or any other item that affects customer satisfaction.

Tom Harada and Isao Kato point out that the west in general seems preoccupied with parts of TPS and not the whole system. For example the primary emphasis in Lean tends to be on analyzing material and information flows (e.g. value stream mapping) and what I characterize as the core elements of JIT production. There is nothing fundamentally wrong with this approach to improvement however in my estimation it probably limits the impact that companies will achieve in the long run. Both men remind practitioners to remember the other parts of TPS (e.g. Jidoka, equipment reliability, etc.) and eventually to expand improvement efforts to other parts of the company as well.

Remarkably true to their Toyota background all three gentlemen expressed concern with the topic of people development and the role of leadership in guiding implementation efforts. Russ Scaffede pointed out in a follow up exchange that fancy tools may be nice but unless people are trained to use them properly and coached on how to solve problems to achieve results the average company will not get very far. He puts the burden of responsibility squarely on leadership to start improvement efforts and not delegate the task away to others in the organization.

Lastly as Isao Kato commented it is critical to put emphasis on the *aims* of the system rather than just the *methods*. In other words concepts like "flow" or "pull", etc. are just a means to and end such as shorter lead-time, and other benefits but the concepts are not the goal itself. Specifically you should aim to deliver the highest possible quality and service to the customer, develop employee's potential based upon mutual respect and cooperation, reduce cost through eliminating waste in any given process, and build a flexible production site that can respond quickly to changes in the market. That message sounds like a world class strategy for any company to me.