"GM Has Lost, and Toyota Has Won! – But Why?"

(A summary of Steven Spear's keynote presentation at the 2005 AME conference)
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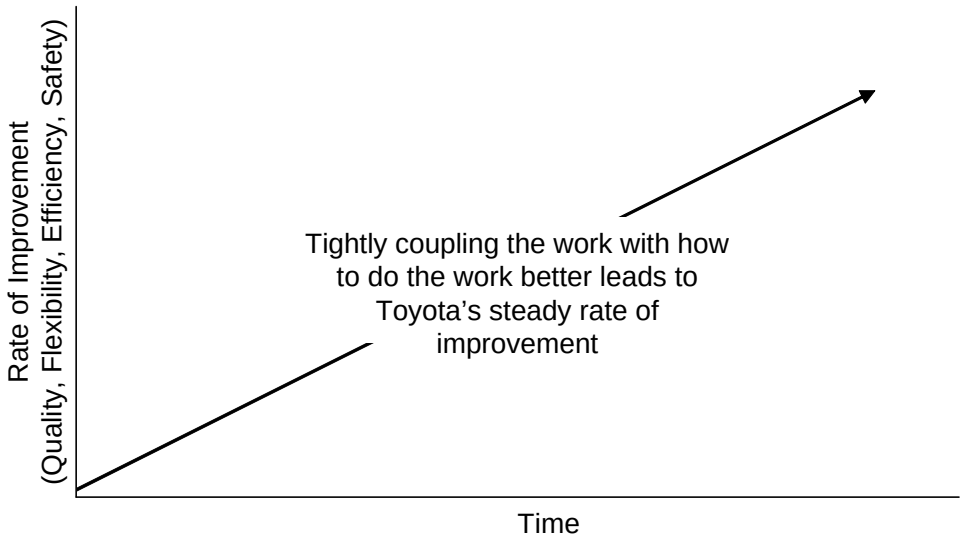
All the major automobile manufacturers have comparable product offerings in most market segments, yet Toyota consistently out-performs the others in quality, reliability, productivity, cost reductions, sales and market-share growth, and market capitalization. So what is it about Toyota that enables superior process and business performance? Did Toyota have a eureka-moment or epiphany that led to the secret ingredient for success? No, Toyota has developed the capability to learn better, faster, cheaper, longer, and more broadly than their competitors (a true learning organization).

One of the underpinnings of the culture that Toyota has developed is their ability to tightly couple the work they do with how to do the work better. Toyota's capacity to do this leads to a steady rate of improvement in the areas of quality, flexibility, efficiency and safety. GM has developed their own Toyota-like production system with all the expected tools (andon systems, kanbans, standardized work, visual controls, etc.) but they have not effectively grown a culture with the capacity and capability to tightly couple the work that they do with how to do the work better.



There are four underlying principles at work in the Toyota culture which enable the tight coupling of doing the work with finding ways to do work better:

- Design the work to reveal problems
- Contain and solve problems immediately
- Share knowledge through collaborative problem solving
- Develop in others – capabilities in process design, improvement, and knowledge sharing

Spear described these four principles in a *Harvard Business Review* article entitled – "Fixing Healthcare From the Inside, Today"; "what sets the operations of such companies (Toyota, Alcoa, Southwest Airlines, and Vanguard) apart is the way they tightly couple the process of doing the work with the process of learning to do it better as it's being done. Operations are expressly designed to reveal problems as they occur. When they arise, no matter how trivial they are, they are addressed quickly. If the solution to a particular problem generates new insights, these are deployed systematically. And managers constantly develop and encourage their subordinates' ability to design, improve, and deploy such improvements."

The popular tools and techniques developed by Toyota (and commonly used by most organizations implementing TPS or Lean) were originally countermeasures to overcome waste or problems revealed through observation of the work and ongoing experimentation. GM and other organizations have latched on to these tools as the solution to their problems. It is this tool fetish at GM that accounts for much of the gap between GM and Toyota – as Spear explains in a *Harvard Business Review* article entitled – "Decoding the DNA of the Toyota Production System"; "Toyota does not consider any of the tools or practices – such as kanbans or andon cords, which so many outsiders have observed and copied – as fundamental to the Toyota Production System. Toyota uses them merely as temporary responses to specific problems that will serve until a better approach is found or conditions change. They're referred to as "countermeasures" rather than "solutions" because that would imply a permanent resolution to a problem."

Designing processes with built-in tests (the first principle) will surface problems with the process (that is the intention of the built-in tests). When problems are identified they must be contained and not allowed to recur (the second principle). This is a very difficult culture to grow, one that insists on getting to the root cause immediately, rather than adding it to a list to be addressed at some later date, or even more commonly working around the problem to keep the process going. Spear addresses this problem of the work-around culture in his HBR article on healthcare; "Like people in many other industries, they tend to work around problems, meeting patients' immediate needs but not resolving the ambiguities (problems) themselves. As a result, people confront the same problem, every day, for years."

Once the problem is contained, Toyota solves the problem collaboratively (the third principle) which leads to a better solution as well as sharing knowledge in the process. One of the four rules of "Decoding the DNA of the Toyota Production System" is "Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization." The leader's role at Toyota is not to arrive with ready-made solutions, but rather to mentor their direct reports through the problem-solving process (more on this when we get to the fourth principle). The collaborative nature of problem solving at Toyota is manifested while the problem is being solved (with each level coaching the next lower level in the process of problem solving and experimentation), and after the problem has been solved and a

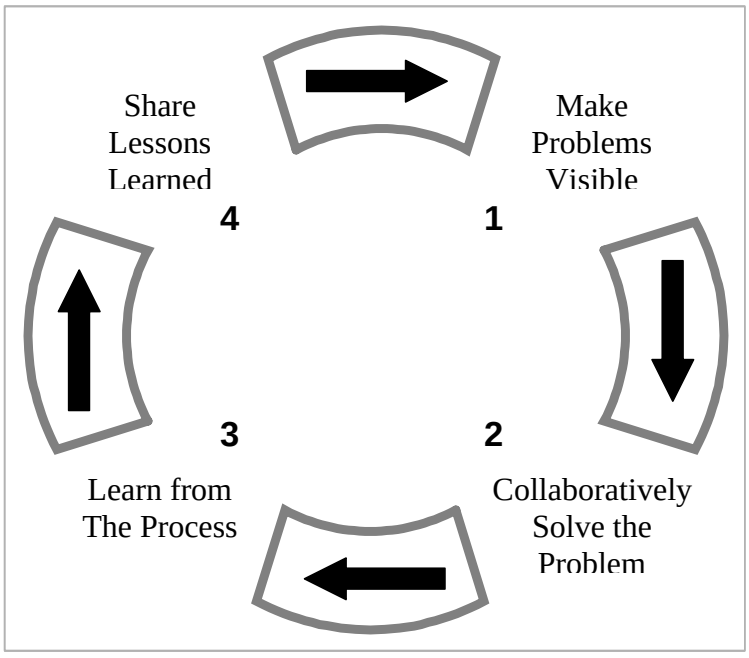
countermeasure has been implemented (by sharing the process and findings with others).

Sharing is not done by memo, intranet, database, etc. Rather, it is a continual process of showing others (on the shop floor – or where the problem occurred):

1. The *problem* that was discovered
2. The *process* that was used to solve the problem
3. The *solution* that was discovered

One of the reasons for going where the problem occurred is to understand the problem "in context". In Spear's healthcare article, he talks about a tragic mistake which cost a woman her life. In describing the problem he says, "In Mrs. Grant's case, the timing of the mistake may have increased its likelihood, as the insulin was administered early in the morning, when the nurse might not have been fully alert, in a room that may have been dimly lit." If those involved in finding the root cause of the problem were working in a conference room (as opposed to where the problem occurred) they might have overlooked these contributing factors.

The process of sharing the problem, process, and solution is not just to solicit other ideas for a better technical fix to the problem, but also to get a deeper insight into the problem, and to build the tacit capacity throughout the organization to tightly couple doing the work with finding ways to do the work better.



An example of how engrained this process is in Toyota's culture is the annual performance review for a plant manager. The review takes place at the plant, on the shop floor, and includes a TPS guru (internal consultant), other plant managers, and the plant manager's boss. The plant manager has to describe an improvement initiative he/she led in the past year, explaining the problem, the process they used to solve the problem, and the solution they discovered. They also have to describe how they shared their new knowledge with others within the organization. This is the most critical part of their review.

The fourth principle (develop in others – capabilities in process design, improvement and knowledge sharing) requires that leaders at Toyota not only practice the first three

principles, but that they also teach others explicitly and by example. The two primary criteria for moving up the ladder at Toyota are your effectiveness as a problem solver and your effectiveness at developing others. If you cannot point to individuals who are successful as a result of your mentoring – you will not be successful as a manager at Toyota.

Spear, in another *Harvard Business Review* article – "Learning to Lead at Toyota", describes the training process that a new upper-level manager at one of Toyota's U.S. plants went through, and how he was initiated into the Toyota Production System. He says, "He came out of his training realizing that improving actual operations was not his job – it was the job of the workers themselves. His role was to help them understand that responsibility and enable them to carry it out. His training taught him how to construct work as experiments, which would yield continuous learning and improvements, and to teach others to do the same." It is this process that embeds the tacit knowledge and capacity to continuously improve in the culture at Toyota.

Comparing the Cultures	
TOYOTA	GM
• Design work (using the TPS tools and techniques) to reveal problems	• Use the TPS tools to design the production system
• Contain and solve problems immediately	• Work around problems to get the job done (firefighting, hero mentality)
• Share knowledge with collaborative problem solving	• Keep solutions local
• Develop in others the capability to design and improve processes and to share knowledge	• Make TPS a project that can be delegated to others

GM has made significant progress in the utilization of Toyota's tools and techniques, converting many of their operations from a batch & queue process to continuous flow, installing mistake-proofing devices and visual controls, implementing 5-S, utilizing supermarkets with pull systems, etc. While these improvements will lead to short-term gains, they will not lead to long-term sustainability and steady improvement in quality, flexibility, efficiency and safety. GM had a very unique opportunity with the GM/Toyota joint venture, New United Motor Manufacturing, Inc (NUMMI). They had an opportunity to become a "new me" (NUMMI pronunciation). However, GM hasn't recognized the tools and techniques as an opportunity to "see" and address problems – they still have a tool fetish and a work-around culture. This is why Toyota has won and GM has lost.