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LEAN THOUGHTS

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The Unspoken Rules of Toyota

	Rule	Implied Hypotheses	Problem Signals	Responses
How People Work	Specifications document all work processes and include content, sequence, timing and outcome.	►The person or machine can perform the work as specified ►If the work is done as specified, the product is defect-free.	►The work procedure varies from specification ►Defective Products	►Improve training ►Improve Process Capability ►Modify the work specification
How Work Connects	Connections with clear YES/NO signals directly link every customer and supplier.	►Customer requests have a known, specific volume and mix. ►The supplier can respond to requests.	►Responses do not keep pace with requests. ►Supplier is idle waiting for requests.	►Determine true mix and demand. ►Determine true supplier capability. ►Retrain/improve/modify.
The Physical Arrangement	Every product and service travels a single, simple and direct flow path.	►Every supplier in the flow path is required and suppliers not on the flow path are not required	►A person or machine is not needed. ►Unspecified supplier performs work.	►Determine why supplier was unnecessary; redesign flow. ►Determine reason for unspecified supplier; redesign flow.
How To Improve	Workers at the lowest feasible level, guided by a teacher (Sensei), improve their own work processes.	►A specific change causes a specific, predictable improvement in productivity, quality or other parameter.	►Actual result varies from expected result.	►Determine why the actual result differed from the prediction. ►Redesign the change.
Problem Alarms	Integrated failure tests automatically signal deviations for every activity, connection & flow path.	►Automatic alarms prevent defects or sub-standard performance.	►Defects are passed through to the next operation. ►Sub-Standard Performance.	►Analyze and institute new or improved alarms.

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Where "Lean Thoughts" Become Reality

Decoding The DNA of The Toyota Production System

Corporate Culture In Lean Manufacturing

The Essence of Lean Manufacturing

Many manufacturers imitate the **Toyota Production System** or its variant, **Lean Manufacturing**. Most improve their operations but **few approach the efficiency and quality achieved at Toyota**.

The usual list of **elements** and **techniques** such as kanban, workcells and SPC **do not capture the essence**. Such lists, including our own, are manifestations of an underlying approach and attitude, part of Toyota's **Corporate Culture**.

In an article for the **Harvard Business Review,** Steven Spear and H. Kent Bowen identify aspects of Toyota's Corporate Culture that help Toyota renew, adapt and prosper year after year.

The authors contend that **one central tenet** of this corporate culture is responsible for JIT and Toyota's continuing success. That tenet is:

> ***ALL* work processes are controlled, scientific experiments, constantly modified and improved by the people who do the work.**

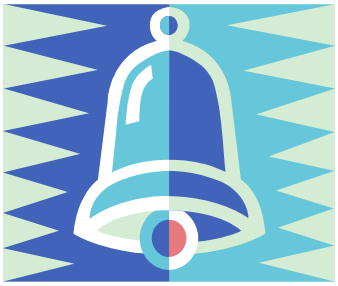
This unspoken, unrecognized belief gives rise to unspoken, unrecognized **rules for work processes and behavior.** Spear and Bowen identified four such rules. They also identified an over-arching rule, included here as rule # 5.

Each rule derives from hypotheses about the production process. If the hypotheses are correct, there are no problems. When problems arise, as shown by the indicators, the operation is fixed according to the responses.

The rules imply two distinct, simultaneous but interconnected processes:

- **A production process that makes product.**
- **An improvement process that makes the production process better and better (Continuous Improvement).**

The rules are not absolute dictums but, guides, and ideals. Even Toyota has not implemented them for every case. Moreover, these are rules for Toyota's business and may not apply directly to others.



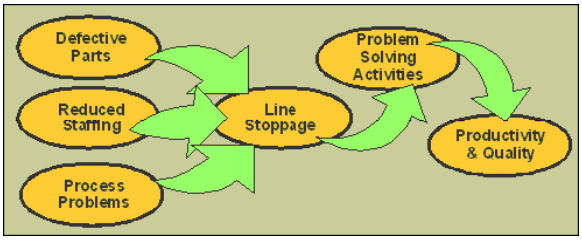
Jidoka(Line Stoppage Variation)

Jidoka (literally translated) means "Automation". Through shop usage at Toyota the word has taken on other connotations. **One meaning refers to the stopping of a manual assembly or production line when something goes amiss.**

At Toyota, every worker has the authority *and* the responsibility to stop an entire line when a problem arises. **The purpose is to bring attention to the problem, regardless of how small, and focus efforts on it.** This forces a permanent solution.

It has been an article of faith in automotive plants that an assembly line must never stop. **When Taiichi Ohno first told supervisors to stop the lines when trouble developed, they were incredulous.**

Ohno tells of two supervisors: one who followed orders and stopped the line immediately when trouble developed and another who was reluctant to stop the line.
At first, the line that stopped frequently had lower output. After several months, however, the situation reversed. The line that rarely stopped still had the same problems. These problems stalled productivity improvements and created rework that lowered efficiency. The line that initially saw frequent stoppages found that the stoppages had been reduced and overall efficiency improved.



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OHNO, TAIICHI, Toyota Production System- Beyond Large Scale Production, Productivity Press, 1988.

A Cautionary Note
Jidoka only works when the supervisors and operators have the skills and experience to fix the problems.

Consortium Event Schedule

Tour **W**orkshop **C**onference

January	February	March	April	May	June
T **Wednesday 24** **Eaton Electrical,** contact Joe Fisher, JoeRFisher@eaton.com **W** **La-Z-Boy Corporate Monroe MI** **February 14 & 15** **Enterprise Value Stream Mapping** **How to use the VSM tools to map admin processes.** Contact Richard Kunst for info. Richard.kunst@la-z-boy.com Register at www.ame.org	**T** **Wednesday 14,** **CFN Precision,** contact Paul Kaulback, pkaulback@cfn-inc.com	**T** **Wednesday 21,** **Nestle Waters,** contact Mariela Castano mcastano@perriergroup.com	**T** **Wednesday 18,** **CTS Corp.,** contact Bob Garces, Bob.Garces@ac.ctscorp.com **C** **Lean Design & Development Conference** **Wed 18 to Fri 20** Chicago Contact www.iirusa.com/lean	**T** **Wednesday 16,** **Stackpole CSD,** contact Don Barber Don.Barber@stackpole.ca **Consortium Shareshowcase** **Saturday 05** **CGL Guelph.** Contact Cindy Grolleman Grolleman@canada.com or Dave Deskur daved@cglmfg.com	**T** **Wednesday 20,** **Morrison LaMothe,** contact Tony Vita tvita@morrisonlamthe.com **C** **AME Regional Conference** **Mon 18 to Thur 21** Edmonton, Alberta Contact www.measureupforsuccess.com
July	**August**	**September**	**October**	**November**	**December**
		T **Wednesday 26,** **Kraft Foods,** contact Hanif Jivraj hjivraj@Kraft.com	**T** **Wednesday 10,** **CGL Manufacturing** contact Dave Deskur daved@cglmfg.com **C** **AME National Conference** **Mon 29 to Friday Nov 2** Chicago Contact www.ame.org	**T** **Wednesday 14,** **Messier-Dowty,** contact Mike Smith Mike.Smith@Messier-dowty.on.ca	**T** **Wednesday 12,** **Orenda,** contact Brenda McIntosh brendamcintosh@orenda.com