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Isao "Ike" Kato spent 35 years with Toyota Motor Corporation in a variety of management positions in manufacturing, HR, training and development, and supplier development before retiring in the early 1990's. During part of his career Ike was responsible for coordinating and guiding external consultant Shigeo Shingo around Toyota facilities. Ike also worked extensively developing training material for TPS under the direction of Taiichi Ohno and other executives. Internally at Toyota Mr. Kato is known as the "father of standardized work and kaizen courses". If you have ever taken a training class on either of these two topics odds are you were trained by someone that was trained by Mr. Kato or one of his disciples. He is also a master instructor of TWI material. "You can not separate people development from production system development if you want to succeed in the long run" comments Mr. Kato.

Interview with Mr. Isao Kato

TOPIC: Shigeo Shingo influence on TPS
Updated July 2006

Art:

Thanks for spending time with us to discuss this topic. I did not realize you were so involved with Mr. Shingo at Toyota.

Mr. Kato:

You are welcome. Yes, I had a unique situation where I was responsible for coordinating most of Mr. Shingo's visits and time at Toyota. Originally it was the responsibility of one of my superiors but later the task was assigned to me.

Art:

So when did Mr. Shingo first interact with Toyota

Mr. Kato:

The first visit interaction with Mr. Shingo took place outside the company in late 1955 when one of Toyota's engineers attended an industrial engineering (IE) seminar taught outside of the company. The engineer reported back to Mr. Taiichi Ohno on the contents of Mr. Shingo's seminar and Mr. Ohno suggested that we invite him to present sometime at Toyota. Mr. Shingo started coming regularly to Toyota in 1956. By this time Mr. Ohno had been working on TPS implementation for about ten years since the end of World War II. Much of the basic TPS concepts were established in the machine shops under his control including pacing lines by takt time, basic replenishment pull with supermarkets, visual control concepts, and some initial work with Jidoka including multi-process handling, and some limited error proofing, etc.

Art:

So he actually started visiting Toyota after the main parts of the system were invented although not yet rolled out company wide?

Mr. Kato:

Yes. Technically you can't say that even Mr. Ohno invented most of TPS. Both the concepts of JIT and Jidoka for example were thought of by either Sakichi or Kiichiro Toyoda. Mr. Ohno's task was how to implement improvement in line with these concepts and how to improve efficiency in his machine shops.

Art:

Toyota historically does not use consultants. So why was it necessary to have Mr. Shingo visit the company?

Mr. Kato:

Yes it is quite a rare case especially now. Mr. Ohno was realizing that much of his new production system experiments depended upon the skills of engineers and supervisors to function as he envisioned. This human element could not be ignored if we wanted it to sustain. We initially used some training materials and methods from the U.S. known collectively as the Training Within Industry (TWI) programs such as Job Instruction, Job Relations, and Job Methods. Of those three courses Job Methods was deemed the weakest and Mr. Ohno was always interested in finding something more substantial to teach the manufacturing engineers and some supervisors.

Art:

So Mr. Shingo filled this gap in the company?

Mr. Kato:

Yes, the course that Mr. Shingo taught for us was essentially some of the first industrial engineering material taught in Japan. His teachings initially consisted mainly of process analysis, motion analysis, operation analysis, and time study. All of this helped us to stabilize and improve our production processes. Amazingly Mr. Shingo was just a high school graduate and self taught in many respects. As he comments in his own writings he initially learned from books, personal study, and some experimentation on the job. His content has a lot of its intellectual precedents in the teachings of Taylor, Gilbreth, Osborne, and others.

Art:

How many times did he actually teach and visit Toyota Motor Corporation?

Mr. Kato:

We kept a record of courses in the training department. I think after 20 years or so he was up to 79 courses and trained over several thousand people overall. So on average he taught about four times per year for a couple of weeks in total. Most of his work load was actually with other companies and not with Toyota Motor Corporation. I believe that he also did work with some Toyota suppliers however in the late 1970's and early 1980's.

Art:

Somewhat surprisingly it sounds like most of his interaction were predominantly in a class room environment with Toyota?

Mr. Kato:

Yes much of it was. Each P-course also went to the shop floor for a couple of hours for observations as well. The only other interaction he had with Toyota Motor Corporation were a few other periodic invites to tour facilities and attend improvement workshops on certain problems we were tackling in Mr. Ohno's production facilities. He would provide comment and feedback on the activities we were undertaking.

Art

Who actually invited him to the company?

Mr. Kato:

It was Mr. Ohno's suggestion that we invite Mr. Shingo to visit the company and have him teach his process improvement concepts to our manufacturing engineers. The invite

was extended through my former department the training and development section of human resources. For many years I was Mr. Shingo's point of contact in the company, organized his materials, and I lead him around our training locations and production facilities as needed.

Art:

What type of things did he observe and comment on in the company?

Mr. Kato:

Mostly he helped train engineers in improvement methods in the class room and on the shop floor. When he visited the shop floor he looked at the basic production processes in manufacturing. He never visited product development, production engineering (process planning), production control, quality, or any other functional area for that matter. His interaction with the company was strictly limited to areas of manufacturing.

Art

How useful was his advice?

Mr. Kato:

He was a very good instructor of industrial engineering concepts, process analysis, and improvement. Obviously this influenced our development of kaizen. He taught the basics of process analysis such as recognizing the fundamental components of process work, inspection work, transportation, and delays. Each of those could be broken down and analyzed further of course. He also taught the basics of motion analysis, and importance of time study in observing processes for improvement potential. His teachings helped people learn to see the problem in a variety of different ways.

Art:

What was the biggest area of contribution he made?

Mr. Kato:

By far the biggest area was helping us develop a course that replaced the Job Methods (JM) part of TWI. Together we summarized Mr. Shingo's material into a training course that we called the "P-Course" which stood for production and how to analyze a production process. As I mentioned he trained a couple thousand young engineers and managers over a twenty year period. His influence on these people and their subsequent

ability to see problems and waste was quite large. Eventually however we replaced his course with a standardized work and kaizen course that we created on our own internally.

Art:

So his biggest contribution was not in the area of set up reduction (SMED)?

Mr. Kato:

Actually no. There is a lot of historic misrepresentation and miscommunication of the facts regarding that topic. Toyota was already reducing set up time before he came to the company. Just using time studies and the simple eliminate, combine, rearrange, and simplify (ECRS) framework from our TWI Job Methods training course Toyota had already brought die change times down quite a lot. From the late 1940's it moved down on long changeover machines from four hours to one hour and 40 minutes. Then it moved under one hour. By 1962 average changeover time was 15 minutes and by 1971 it was down to 3 minutes company wide in the stamping department.

Art

But didn't Mr. Shingo famously reduce a 1,000 ton changeover press from over four hours to under 3 minutes or some level in Toyota?

Mr. Kato:

That was an anecdote from a book in 1983 on the concept of SMED. Somehow though the series of events was mistaken and misrepresented over the years. He really only participated in one workshop in 1969 long after the single minute mark was actually broken internally by others. Mr. Shingo's main single minute die exchange accomplishments were conducted later outside of Toyota Motor Corporation in other companies on smaller machines. Internally Toyota had been working on its own to reduce its changeover times since the late 1940's. Mr. Shingo did look at a forging press in 1969 that had a very long changeover time and give us ideas on how to reduce it to under ten minutes. Mr. Shingo studied the problem and shared with us his distinction between internal and external work and the framework. He also contributed some ideas for improvement. It made sense but didn't immediately solve any of the current problems nor was it anything that had not been done before.

Art:

So he didn't actually invent or implement SMED at Toyota?

Mr. Kato:

On that exact machine he gave us some specific suggestions to work on and those ideas plus some others that a team was concurrently working on helped to reduce set up time from one hour and forty minutes initially down to just about forty minutes. That was as far as they were able to reduce the time however during that particular workshop and it was his only real involvement in reducing changeover time internally at Toyota Motor Corporation. As I recall eventually several years later by 1971 the engineers on their own with Mr. Ohno's constant prodding were able to get that specific machines time down under ten minutes but it was without Mr. Shingo's direct help.

He later writes in 1983 that he was thinking about SMED as early as 1950 as a concept. There is no reason to doubt otherwise. However single minute performance was not first established in 1969 as the story goes…the barrier had been broken much earlier than that. Unfortunately the actual sequence of events was incorrectly presented somehow.

Art:

I'm puzzled. The perception in the U.S. is indeed somehow quite different.

Mr. Kato:

The fact is that Mr. Shingo did come up with the insightful difference between internal and external work. And of course he did leave us with a list of ideas but nothing we didn't realize on our own. His main successes with set up reduction came in companies outside of Toyota on much smaller machines. I'm sure he had many under ten minute set up reduction success stories there, but honestly none inside of Toyota Motor Corporation.

Art:

How famous is Mr. Shingo in Japan?

Mr. Kato:

Unfortunately not very much. I think it is somewhat analogous to the situation with Dr. Demming for example. In the U.S. for many years Demming was ignored and yet widely received in Japan. We invented a famous prize for him. In Shingo's case he is not well known in Japan especially compared to Mr. Ohno or the Toyoda family. But I believe that Mr. Shingo is somewhat famous in the U.S. and I heard there is even a prize his name.

Art:

Yes. I am a proud recipient of a Shingo Prize in research for contribution to lean manufacturing knowledge for example.

Mr. Kato:

So why is there no Mr. Ohno prize for TPS achievement?

Art:

I don't know. I guess Mr. Shingo has had better marketing and promotion in this country. I also think he was willing to venture out to the U.S. more and help companies. I don't think that Mr. Ohno did this so much. He stayed more in Japan.

Art:

How then is Mr. Shingo's legacy generally viewed in Japan?

In Japan he is primarily viewed as a the first consultant that taught IE methods, studied TPS and then wrote books about what he observed. His books were the first translated into English and that probably made him famous outside of Japan since that was all the external world had at first to read. He is more famous outside of Japan than inside.

Art:

Interesting. What kind of relationship did Mr. Shingo have with Mr. Ohno at Toyota?

Mr. Kato:

It was quite good in the beginning. Mr. Shingo helped to fill a detailed need that we had with respect to training engineers and some managers. He was a great help in this respect and a good teacher that helped shape our thinking on basic process improvement. Over the years however the relationship did start to weaken for a variety of different reasons.

Art:

Why is that?

Mr. Kato:

The perceived need for his basic "P-course" declined as time went on. The new engineers we were hiring were very bright and from top academic programs. Universities and other places were also now teaching IE methods and people internally were making

improvements in other ways. Partly due to success there just became less of a need for his specific training course over time.

Secondly Mr. Shingo had a tendency to argue somewhat theoretical concepts. He often wanted us to arrange for him to meet Mr. Ohno so he could debate him on the merits of TPS versus Shingo's views on process improvement. Mr. Ohno did not have time for this type of academic debate and was increasingly reluctant to meet him in latter years. When Mr. Ohno was promoted to increasingly higher levels in the company this also just left less time to meet with visitors. The task of handling Mr. Shingo fell others including eventually myself.

Third towards the end there was some resentment in some quarters that Mr. Shingo was taking more out of Toyota including examples and materials than he was contributing to the company. This caused difficulties in the relationship especially when Mr. Shingo started publishing books about TPS without fully informing us beforehand. It felt like he was also asking to visit the production plants very often towards the latter years to look for more ideas to write about.

Anyway eventually these three factors plus Mr. Shingo's age got to a point where it no longer made practical sense to invite him to Toyota any more. We made a "mutual decision" to stop his internal training course and halt any more visits to the plants. For over twenty years however it was overall a good relationship and the company is indebted to his teachings in many ways.

Art:

I can see how this would not go over well with Toyota. In hindsight then how much of TPS did Mr. Shingo really invent or develop in your opinion?

Mr. Kato:

In my opinion it is incorrect to label him as an "inventor" of TPS at all. An outside consultant teaching four times a year could not have invented or implemented the system. You need to understand however he deserves credit for a very different reason. As I stated in the beginning most of the basic principles of TPS were established in some form or other before we associated with Mr. Shingo and before he came to visit the company. JIT, Jidoka, and all the associated concepts that make up those two primary pillars of TPS are uniquely Toyota's and were well underway by 1955.

Of course while Mr. Shingo was at Toyota we would introduced the concepts to him for study, feedback, etc. He often did provide very good ideas but he was commenting usually at the process level on what we were doing and not inventing it himself or leading the activity. He helped us improve implementation of our methods and processes. As I stated earlier his main contribution to Toyota was actually as an instructor of fundamental process improvement methods and developer of several thousand manufacturing

engineers in the company. This influence should be properly recognized as we all learned a great deal from him on how to see problems in production.

Art:

I'm somewhat surprised. You put his main contribution much more on the human development side than the TPS technical development side?

Mr. Kato:

He should receive credit for his long term effort and help in developing many key people in Toyota. Almost every engineer and supervisor was touched by him in some way back then. His views on how to see problems in production especially at the detailed process level were very influential and useful. Also as I stated he did develop his concept of SMED and the importance of separating internal work from external work on his own. And he did help many companies in Japan outside of Toyota Motor Corporation and in Toyota's supply base make improvements especially in the area of work productivity and set up reduction.

Mr. Shingo had a real knack at taking what we were doing internally and stating it in very logical terms. Often we did not have the time to do this work. In this sense he was much less of an inventor and much more of a person that could codify and rationally explain things in clear terms. I think this is why his books and materials were successful overseas.

Art:

This has been very interesting. Thank you for your time.