Chet Marchwinski: Hello, everyone. Welcome to The Lean Enterprise Institute's Webinar, *Forward to Fundamentals*, with thought leaders John Shook and Jim Womack. I'm Chet Marchwinski, LEI Communications Director. There are about 5,000 of you registered for today's session so no matter what time zone you're in, welcome. We're glad you're here.

Before we begin, let's go over a few tips to make sure you get the most out of today's session and can participate in the Q&A that follows. Use the volume controls on your computer to adjust the sound. Use the button beneath the slides on your display console to enlarge slides. To ask a question, click the "Ask a Question" button on the left side of the screen, type your question in the pop-up box, and hit submit. We'll save time at the end of the presentations to answer as many questions as we can. You can submit questions at any time during the webinar.

Later in the webinar, a survey form will pop up on your screen. Please take a moment to give us your feedback so we can keep improving these webinars. Now let's meet today's guests. Jim Womack is Founder and Chairman of the Lean Enterprise Institute, a nonprofit training, publishing, conference, and research organization founded in 1997 to help companies create value and eliminate waste. Jim is co-author of *The Machine That Changed The World, Lean Thinking, Seeing the Whole*, and *Lean Solutions*. 
Jim Womack:

Thank you, Chet. I think it's fair to say that for most of us involved in this webinar today, these are the most difficult economic conditions we've encountered. Now a few, like me, are old and can remember the energy crisis of '73/'75 and the double dip recession of 1979/82. But there is no question this has been a pretty horrific time and has I think caused a lot of us to waver in our attention and to get off focus on the long term and perhaps to take short term measures that may hurt us. And yet it is a fact, there is precedent it turns out in the history of the Lean Movement for dealing with difficult times. And indeed, the precedent that's most relevant is Toyota's crisis of 1950 which was the moment of decision when the company as an organization decided to go ahead with the hard, lean path rather than to temporize in a time when actually they went bankrupt. And so there is precedent from the lean past on what to do with this crisis.

And I've asked John Shook today in this webinar to revert -- to review what happened at what we call the birth of lean and to talk a bit about how the fundamentals that were worked out then, the fundamental lean principles, concepts, techniques, that worked out at that time, can lead the way out of this crisis. Okay, John, why don't you take it from there?

John Shook:

Okay. Thanks, Jim. And actually the word revert to the birth of lean might not be a bad way to say it instead of just review. I think maybe that's what we should do. Hello, everyone, and thanks again for joining today's webinar. As Jim said, I'll explore just a few lessons from lean history and think about how they might pertain to today's global economic downturn. And I'll begin with a quick look at Toyota's early crisis in and around the year 1950 as Jim said. This is all well known. There are numerous sources to which you can turn for plenty more, a lot more detail.

But here was Toyota's high level situation in 1950. Japan's economy was in total shambles. Toyota was making about 1,000 units per month, and to put that in perspective, that's about what any one of the big three would have been making on even just one assembly line at the same time. So the volume was much, much smaller than what was present in the global car companies. And Toyota's size was roughly the same, just a little smaller than Nissan's. Probably their situation was a little more fragile. Nissan had a little bit of a head start on Toyota back in the 30s and around 1950 they were a little bit ahead and getting into passenger vehicles, not just trucks.

So that's the situation that Toyota had. In addition, they had no money. And the banks at that point refused to loan the company, loan Toyota any more money because they were intent upon making cars and weren't very good at selling them. Some months they would make about three times as many cars as they, vehicles as they might be able to sell. And you know, if you recall also, the country had no natural resources to speak of. The only thing really on the plus side was they had a pretty good educated workforce. And what's significant to us now is this was a crisis and it was in the face of this crisis that the founder of the company, Kiichiro Toyoda, issued this edict to Eiji Todoya, his nephew, who was later chairman of the company, and to Taiichi Ohno who was the developer of TPS, and to the other leaders of the company. He said catch up with Detroit in three
years. Catch up with Detroit in three years in the face of this huge crisis that they were facing at that time.

Even though I've read about and heard about this story many, many times over the years, it still astounds me to think of pursuing something so ambitious in those very tough times. And although I mention that Toyota had a very good, educated workforce, a lot of times we have the mistaken idea outside of Japan that everything with labor management relations in Japan has always been rosy. But actually, this photograph is from Toyota back in 1949/1950 during a strike at the Company. As it turned out, since the Company had no money, one of the things they couldn't do was they couldn't meet payroll, they couldn't pay people. And naturally the workforce was very unhappy with that situation. And in addition to being unhappy with that situation, they started going out on strike and the company then found itself forced, due to the market conditions and having no money, to simply ask the workforce for some downsizing. About 2,000 workers were either fired or resigned or were asked to resign. And that was about a little less than a third of the workforce at that time. And what happened is the company at that time went from downsizing to kind of shared destiny. Because in addition to 2,000 workers, the senior management team also resigned to take responsibility for the situation even the founder of the company, Kiichiro Toyoda.

So times were not good for Toyota back in those early days. So what Ohno's response to that, in fact Toyota's overall response, was a system for success in a down market. And this is the story I thought was important for us today when we've seen our markets downsizing so much in the last six months. And as Toyota folks said at the time, as Ohno said, he wanted to create a system for success in a down market and it's easy to make money when everyone is making money. The key is to be able to make money when times are bad. This I think is what set Toyota on a road that was different from other companies. And more specifically, he needed to make money with low volumes and relatively high variety.

This is a specific quote from Ohno at that time. And you'll notice up in the right-hand corner there's a cover of a book called *The Birth of Lean*. This is a new product that LEI has available and we'll talk about it a little more later. But this book introduces the words of the founders of the company, of the Toyota Production System, in their own words going back to the times when they were struggling with the issues that they faced when they created Toyota System.

As he said at that time, "An increase in production volume shouldn't necessarily mean a decline in unit costs any more than a decline in volumes should mean an increase in unit costs. Those sorts of things happen as a result of arranging things poorly". Now that is actually I think even today, a radical thought. What -- his environment at that time, to repeat, wasn't a lower volume environment. It's that blind pursuit of economies of scale just wasn't an option for him unlike the situation for the big three in Detroit at that time. Very different situation and it called for very different measures.

So Toyota folks have long thought deeply about that most basic of business problems of matching capacity with demand. This chart is borrowed from my friend [Kaz Mikado] and represents the thinking and discussion that I heard taking place repeatedly during my years with Toyota. And it illustrates this basic dilemma. Demand changes. And demand you see represented by the white line there. It goes up and it goes down. And you see it tailing off the end of this chart here, you see it tailing downward. That's kind of where we are today except it would be even further down.

Capacity or capability then is represented by that red line and in most cases, to some degree, capacity has to be installed ahead of time, before the actual sale. MURA is the
Japanese word for instability or fluctuation and this recognizes that markets will always have a measure of volatility. Management role is to be able to know that, be able to manage that. So I call that MURA management. Management needs to know the demand as well as possible, to know your true capability, your true capacity as much as possible, and then create flexibility to get them to match. A company that can do that is a company that can survive and even thrive in any market.

Which leads us to this concept of overproduction which I will kind of argue here today has been long misunderstood and even forgotten in recent years. I'll suggest that management's job is to provide customers what they want when they need it, that means don't short the customer, but to do that while preventing overproduction. And I'll suggest that in the rush to meet demand of all these boom periods of the past 10 or 15 years, first we had the dot.com boom, we've had the China phenomena, we've have the more recent bad loan/easy money area. Overproduction became forgotten. Now if you were around this Lean Movement some years ago, you know that most of us began with the concern for overproduction which is the same concern that Ohno taught us about.

In fact let's explore this just a little bit more. As one example of some of the basics that I think have been forgotten in recent years, I think most of you who are listening today know the seven wastes. Listed here as correction, overproduction, motion, material handling, waiting, inventory, processing. The famous seven ways of Ohno, the famous seven ways of Toyota. And I've known a lot of companies that have added an eighth or even a ninth. Sometimes people refer to an eighth as human potential or human talent. Some refer to an eight or ninth waste as time. Others environment.

I have a story. I encountered one company along the way that as it learned about Lean and it learned that Lean is doing less with more, it decided that it could eliminate waste from the seven wastes and decided rather than seven, we can get by with six, that we would be better. So they decided to kaizen the seven wastes. And that's okay I guess, but what's interesting is the one that they chose. And it says here at the bottom of the slide, which do you think they chose? You could ask yourself instead, which would you choose? If you were to decide to eliminate one of the seven wastes.

The punch line of course is that they chose overproduction. But as we all know, Ohno taught that overproduction was the worst form of waste. Actually there was never anything magical about the number seven. Ohno said that there are actually many more kinds of waste, they're virtually infinite. His point was that even if you eliminate all waste from your system, you will surely still have some residue of those seven wastes still left. And to thoroughly eliminate those seven, you would surely have to thoroughly change your production system. Further, to keep building a system that will thoroughly eliminate the sources of all waste is to eliminate overproduction.

Now this is very interesting I think. Also note about overproduction, something that's unique about it, is it's the one of those seven that's actually purely volitional. It's based on your decision rather than just result of other decisions. This then is a reproduction of a slide from the other new publication called Kaizen Express which, again, we'll talk a little bit more later. But this is an example of some of the training materials that are in this book. And it strives to illustrate visually what overproduction is all about. As you can see in the beginning, you see a machine that's cranking out as many as it can of a given product and it's being hauled away by someone who is sweating, to take it to another machine where it goes through more processing. Then it's stacked up by someone else and taken to a warehouse. And then finally you see the folks at the end, as it comes out of the warehouse, they can't get what they need, or as Ohno said, when you have more than what you need, no doubt you'll be able to find everything but the thing that you need at a given time. The customer in the meantime knows exactly what they need and we're
not able to provide it even though we're making too many of all the different items that we make.

What we need to understand is, about overproduction, is that all the tools around Lean, all the specific tools like kanban and heijunka, the specific -- the management tools of Hoshin Kanri, Standard Work, A3 and Value Stream Mapping, are tools to align around the objective of preventing overproduction. Because if you don't short or starve the customer, which is an intuitive thing to not want to starve the customer, and at the same time never overproduce, which means not only making too many of the item, but making it too fast, making it too soon. If you do those things, you'll have the shortest possible lead time. That will create flexibility and generate cash. And cash is certainly what we need now.

This then will provide both value for customers and prosperity for customers, excuse me, prosperity for the companies we work for. So what do leaders need to do now to take it around to where we all, each are today? I think we have to recognize that a large enough tsunami will sink any boat, even a boat that was going as strongly and as smoothly, as well as Toyota. This -- times such as this are when the sea will separate the lean wheat from the chafe.

In my view then, for most companies, that means this is the time for back to basics. And I'm convinced that this is the time when lean companies will take advantage of the turbulence to strengthen their market position. Because this is precisely when market shares and industry positions will realign. We can aggressively go after that realignment to take advantage of it by using lean principals and lean basics.

First of all in considering this, a little more of a lean history. This can clearly be seen in Toyota's history. If tough times separate the truly lean from the fashionably lean, which history shows us, now we can see that Toyota is struggling mightily. But I don't think hardly anyone who analyzes the industry doubts that Toyota is going to come out of this in a stronger, competitive position than when it went into it. That's what has happened every time in the past. If you go back to the 1950 crisis we discussed earlier, or if you look at different periods when the company struggled, it came out of it in an even more competitive position than it went into it.

And if you look and if we think about the situation that we have today as far as different mistakes that I think we can point to that Toyota is making, it reminds me of a time about 15 years ago when I still worked for Toyota and I had a sensei at that time who was teaching me a tremendous amount. And as I would occasionally challenge him on things I would see that Toyota was doing that really didn't seem to reflect some of the things I was being taught by him about TPS, I would challenge him and say, well I just saw Toyota doing this over in the plant and that doesn't reflect at all what we've been talking about. And he said this to me, which I think was very profound. He said, don't confuse, never confuse the Toyota Production System with Toyota's production system. What that means is the Toyota Production System is kind of an ideal I think. It's something we strive for. And even Toyota doesn't always reach -- it probably fails as often as it actually succeeds in reaching its own ideals.

And I think that's natural when you think about it. But as we try to understand what's happening and think about our own path forward, this is an important point to keep in mind. But again, to get back more specifically to what we need to do, if a large tsunami will sink any boat, and this is the time of turbulence that we need to take advantage of, that's precisely when your own lean transformation, transformation in our own companies, comes in and takes precedence in terms of what we need to think about and prepare for going forward.
This is a scale that I've come -- a balanced scale as you can see, where I'm taking a look at lean transformations on both social and technical dimensions. Now social/technical system theory, or STS, has been around since around the mid 1960s I believe. And what it says that any organization is a combination of social aspects and technical aspects. And I think we can use that insight as we think about our lean transformations. And I've always thought of the Toyota Production System, or the Toyota way, as basically a social/technical system on steroids.

I've also come to believe, something I've learned over seeing many lean transformations now over the past years, I began my learning with Toyota over 25 years ago. First visited companies in Japan over 30 years ago. And I've been working with a lot of companies now since I left Toyota 15 years ago and here's something I've learned which is that an effective lean system will be equally parts both social and technical. And by the social system, or the people system, what we mean there is that all the people, the thinking, the organizational and cultural aspects of how your organization engages and aligns its people to accomplish its purposes. That's the social aspect.

The technical side, it means all the process, technical, mechanical, and ways that work to design and deliver value to the customer and accomplish its purpose. Management's role then is to align everything to achieve the purpose of the organization. I think that's the job really of everyone who's listening in here today.

But if we think in terms of balance, here's some questions if we go back to that scale we looked at a moment ago. We have the social dimension and we have the technical dimension. Where do you start? If you're just starting your journey for your company today, where do you start? And what do you emphasize? The social side or the technical side? I don't know that there's a right or wrong answer, but what I can say is that every single company I can see, except Toyota on a good day, Toyota is not always perfect by any means as we know now and they never have been, but when they're working well, they get this balance really good. But in every other company I see, there's this imbalance. Either we emphasize the social side very much or the technical side. How many times have we seen companies that ram the lean tools down the throats of the plants or the different departments of the company? You see kanban in place or andon and no one even knows what they mean.

On the other hand, I also see companies that go overboard on the other side, on the social dimension, so that we have a lot of teams in place and we have a lot of politeness in the company under the name of empowerment, and yet the company is not actually doing anything to achieve the benefits and to move itself forward and become more competitive.

At LEI we've come to think of analyzing or understanding companies according to these three Ps if you will. Purpose, process, and people. For purpose what we mean is providing value to customers cost effectively in order to prosper or whatever purpose your company, your organization may choose. But first of all, what is its purpose? Secondly, how do you think about your processes? We'd like to think in terms of value streams that design, make and use products and services.

And then finally people which means how can we engage employees who touch the value streams, including the support value streams not just the primary ones, to sustain and improve them. Further, we think that aligning purpose with process and people is a central task of management.

So back to our scales there, if we take that social/technical model where I had the S and...
the T on the scale and convert that into the LEI model of people and process, we have people on one side and process on the other. That has to of course be balanced by management. And if I look at companies, I rarely see this kind of balance but I think this is the thing that we need to aim for, the balance of the social side, the people side, and the technical or the process side.

But then we can ask, even if management recognizes that they have that goal, that objective, on what basis can they do that? On what sense of the organizational purpose can they rely that can enable them to actually balance the people with the process? If an organization has as its purpose only short term profits, I think very often what we'll see is an imbalance over on the process side. We're thinking, how can we maximize ROI this quarter? On the other hand, I know companies as well that go very far in the other direction and they think their purpose is in fact just to provide employment for their employees. I think what we'll see in those cases in an imbalance in the other direction.

It's how we can recognize what our purpose is and then management relying on that to balance people and process I think that is going to be the real key for us. There are examples of companies I think working in that direction, and too it is still my model, when they get it right for success in that regard.

I think a final point we can make regarding what leaders, everyone here today, needs to do is we recognize going back to that early chart we looked at showing demand fluctuating up and down, that it's possible for a tsunami to sink any boat. This is in fact a time when we'll be able to determine, companies that were just going after lean because it was fashionable, it was a fad, versus those who wanted to truly transform themselves. And while there are I think arguments to be made for aggressively attacking the market from any angle, I think for most of us that's going to mean a time to get back to the basics and that's where the lean companies will really separate themselves. The only thing that's going to make that happen is going to be your leadership and I think it's balancing the social part, the people part, with the process and technical part, that's going to be the key to any company being able to develop the most successful lean transformation.

And today I wanted to keep our comments fairly short so we could get as many questions as possible from you. And with that, I'll turn things back over to Jim. Jim, are you there?

Jim Womack: Wait a second, John, are we okay? Yes, we're okay. Sorry. I put my elbow on the cord. You should not do that, John, you should not put your elbow on the cord, write that down,

John Shook: Was that a technical problem or a social problem?

Jim Womack: Well, that's the question, John, isn't it? In my case, most people around here think it is a social problem or possibly a personal problem. I will try to do better.

John Shook: Well you know, most technical problems at their core, when you do 5 whys or 10 whys, you find at the bottom there, the last why is there's a social or people issue at its core. And maybe that's what's happening here.

Jim Womack: Well, I'm sure you're trying to be generous.

John Shook: I am.

Jim Womack: Let me say that I did ask John some time ago, what do we not know about lean? Where it came from, what the basics are that people would benefit out in our community from
knowing about? And of course I don't speak Japanese, and indeed I have spent very little
time in Japan. John speaks and writes the language, spent a lot of time, and quite familiar
with a group of friends who have actually devoted a good bit of their lives to trying to
understand how we got where we are. And those are people like Tak Fujimoto at the
University of Tokyo and Kuji Shimakawa who is now retired as a professor who I've
known for many, many years. But we have not had the time to really work out the details
of the past.

So this seemed like a good time to go back and take a look at where things came from.
So I asked John to do this. John has done this, I think has done a wonderful job, and I
wonder, John, if you could just tell us a little bit about what it is that you have
discovered.

John Shook:

Okay. Well it's interesting. These two books actually reflect precisely what we've been
talking about for the last half hour. We've been looking at the social/people side and
management piece of what lean transformation is and also the technical process side. So
with The Birth of Lean, this is a look inside the minds of the people who developed the
Toyota Production System at the time they developed it, back about a half century ago
now. This is a collection of conversations between, Jim, your old friend Professor
Fujimoto and Professor Shimikawa, two prominent researchers in Japan of Toyota's
system, probably the leading academic researchers in Japan, on lean, lean thinking and
lean production.

They went and talked with these old folks a few years ago and compiled the
conversations into a book in Japanese called, The Origins of Lean. And I became a quick
fan of that book as soon as it came out because they didn't try to rewrite things. This was
just -- it was casual conversation. It's -- they captured their words as they were spoken.
And in essence, I really think it gives us deep insight into what people were thinking
about as they developed their solutions, their countermeasures to the situation they faced
back in the 50s and 60s and 70s when they were developing Toyota's system.

So we all know Taiichi Ohno and the first chapter is a conversation with him in his own
words. Also Eiji Toyota is fairly well known amongst us as well, the former chairman of
Toyota, and probably the person who's most responsible for the overall development of
Toyota's management system. Because honestly the Toyota Way and Toyota's way of
working isn't only the production system in the plants. It's also the product development
system, it's the human resource system, it's the sales and marketing system as well. And
Eiji is the person who pulled all that together.

So we have his words there and also others that I think people will really find sometimes
surprising and insightful. Mr. Nemoto who developed Toyota's quality system is
represented there. Suzumura who was Ohno's right-hand man in the factory, was actually
implementing all the things that Ohno wanted to see done. He was the guy on the plant
floor and the gemba who actually put in the pull system, the kanban and all the other
things in place. We hear also from Mr. Kusunoki who was the head of Toyota's
production engineering which played an important role in all of this as well. And one of
my favorite chapters which is by an executive at Daihatsu who describes his experience
of being coached by Ohno while he was actually working at Daihatsu. Ohno would come
and provide coaching for him. And for those of us who are working as coaches or change
agents in our companies, that's a very insightful chapter I think.

But this book I think represents again a way to get inside the minds of these people. And
we recognize that they didn't really have a grand plan at the beginning. They were
responding to problems, they were responding to issues. And as they responded to those,
they developed systematic countermeasures. They put in processes and systems that
actually worked which developed into both the Toyota Production System and the overall Toyota management system and the Toyota way.

So seeing as how they evolved as responses to specific problems they had I think will be eye opening to a lot of people. And I'd like to thank the main translator, Brian Miller, for letting me just help with the translation. I took, I translated one of the chapters and helped with some of the others and I was privileged to be able to do so. Brian did a tremendous job of putting their words into kind of common English vernacular so it doesn't sound quite so foreign. We can really hear what they were thinking during those days.

*Kaizen Express* then was -- the lead author is Toshiko Narusawa who is I'd say, I think I can say, the top female sensei, lean sensei in Japan. She began as a kaizen leader with NEC and she's learned about TPS outside Toyota. She worked as a sensei in Japan and throughout Asia and other places implementing TPS in non-Toyota environments. And through that role she began writing a series of articles for a Japanese factory management magazine a few years ago and then asked me to help her compile those into a book.

So what we have here in this case is kind of a throwback to an earlier age of lean discovery. What you have are not discussion of management and those kinds of, and thinking and those kinds of principles. What we have is a straightforward look at the tools and techniques of what lean is. This is really the way I think most of us were introduced to lean 15, 20, 25 years ago.

So the one example I showed earlier was an example of the training materials that are in the book. They're highly visual, they're very practical, they are things that people can use on the plant floor right now to give a try to try to improve their situation. So together, these are I hope a nice and helpful set, a pair. We have kind of the management side covered by *The Birth of Lean*, and then we have more of the technical process side covered by *Kaizen Express*. Both of them really kind of going back and looking at the basic fundamentals as many of us started learning about them years ago.

So there's a quick introduction, Jim, to the two new books as I see them. And with this, I think what we can do is turn things over to Chet who will lead us through a dialogue with all our listeners. Chet, are you there?

Chet Marchwinski: Yes, thanks a lot, John. A lot of questions coming in. There's a lot of people from manufacturing and service industries, too. So maybe we can broaden the perspective and the lessons in these books. A couple of questions about overproduction and capacity. One is, how do you change capacity, isn't capacity bought upfront?

John Shook: Well the answer to that is, of course it is. And that is part of the point that you have to start thinking about this upfront to get the maximum benefit out of it. Capacity is brought in early on and so that chart I was showing showed larger increments of capacity brought in upfront. And if you notice at the end of that chart tailing off at the end, you saw demand going down. And you saw an attempt by that company then to now try to match those, that reduction in demand in the market with smaller increments of capacity. Now it doesn't mean that we can't start working today with the capacity that we have installed. But it also means that we need to start thinking as we put capacity in place, what constitutes capacity. It's equipment, it's people. How can we start, when we put that in place, how can we read the market as far as where we think it's going to go? But then put capacity in place in small, increments that are as small as possible.

And as we put it in place, try to make it as flexible as possible. I actually talked about some of those techniques that Toyota uses in one of my columns on Lean.org that maybe
people could take a look at. But it means finding ways to flexibly use equipment to put it in place in smaller increments, to use it flexibly, and also to use our people flexibly as well. And it's that kind of thinking that leads us to a lot of the lean tools and techniques that we've all learned about.

Chet Marchwinski: Okay. I know that you've recently seen some healthcare facilities, so a number of people from service organizations in general asked about overproduction. Could you define or give an example of overproduction in a service industry? Someone asked that in an insurance company, someone else asked about healthcare, and someone is asking about, the same question, but for government. Any thoughts or examples that come to mind?

John Shook: Yes. Let's back up again. I think when I suggested today that overproduction is forgotten, I think we can see a lot of evidence of that. I also suggested it was really probably always misunderstood. And honestly I think the word itself is difficult. Overproduction. The nuance of that is that you don't do too much of something, provide too much of a service or make too much of a product. And that's an easy concept. But it really means more than just too much. It means too much defined when. And it means defined like right now. So it also means not doing anything, not working ahead, not doing anything ahead of time. When you do something ahead of time, you build product or provide a service, you don't know if it's going to actually be needed later or not.

So the word I think trips us up. And honestly I think it took me years to come to terms with what it really meant. And it means aligning the capacity throughout a value stream for what's needed by the following process right now. So if you -- many listeners I'm sure have learned about or seen Toyota's TPS house. And you know that one of the pillars of that is Just In Time, the Just In Time pillar. And Just In Time means the right part at the right time in the right amount.

Well if you turn that around, you can put that in terms of any service, whether it's in a hospital or a government process. It means the right service at the right time in the right amount, for the right person you could say, as opposed to doing it ahead of time. And then within what we call, within that definition of Just In Time, we add different tools and techniques we can use which are one, to try to create continuous flow so that any product or service flows from one value creating step to the next. Second, it's based on pull so that each process is producing only what the next process needs when it needs it. Or each activity, each individual, is providing the service for the next process only when it needs it, not ahead of time.

So it means aligning the timing of service being provided throughout the value stream. So if you start thinking in terms of those kinds of terms, then I think the concept of overproduction starts to apply in anything we do.

Chet Marchwinski: Okay, someone was asking for a clarification about Toyota's initial response to its crisis in the 1950s. Did you say one third of the workforce was let go and the chairman resigned? Was that before lifetime employment?

John Shook: Oh, yes, one of the things about Toyota, they never have made the claim of providing lifetime employment. They always said from the very beginning, again, I joined them in Japan in 1983, and they always said, we make no promise for lifetime employment. Because you can't. Because any organization knows that the bottom can drop out of their market at any time just like what we've seen happen recently. A large enough tsunami will sink any boat. Toyota has always known that.

But what we can say to our workforce is, the last thing I want to do is to lose you. And so what we want to do is work together, management and labor, company and employee,
to provide and insure our own job security. So it's really a compact that was made. So when you go back to what happened in 1950, it was a huge crisis and close to a third of the workforce was laid off. And again, the management resigned to take responsibility.

At that time, the company went to the workforce and said, from now on, we're going to do everything we can to never do this again. But to do this, we're going to have to have your cooperation. We're going to have to have your cooperation in doing kaizen and making improvements in your work, and through working together, we can jointly, mutually, insure that we don't have to do this again.

Because remember, it wasn't only employees or workers that were laid off, the management also lost their jobs. No one wants to see that repeated. But having said that, the company never would guarantee lifetime employment. But what they do guarantee is they'll do everything they can to always provide job security.

Chet Marchwinski: Okay. What would you put into the technical side of lean? I heard a lot about the social aspects. [brief technical sound interruption]

John Shook: Okay, good to have a technical question, we just had a technical problem. I think what I meant by that were basically all the tools and techniques in the lean toolkit. Whether that's kanban or andon or poka-yoke or any of those kinds of things is what I meant by the technical side. And whether it's looking at a lean transformation at micro level -- for example going into the plant and saying, okay, how can we improve this production area right here? Or if it's a matter of looking at a company overall. I always find you need to have both of those in mind. Technically, what kind of changes do we want to have? We want to relay out the line, okay? We want to take some of the capacity out. We want to somehow find ways to get more flexible capacity. That's the technical solution.

Then the social solution needs to be in harmony with that. And what's really powerful about all those lean tools is the way they engage the people who use those tools. For example, kanban. So kanban -- a lot of people misunderstand that kanban is just a matter of an inventory, a means or tool to lower inventory or to control inventory. It's actually much more than that. It actually gives the control of how -- the control of ordering parts and materials. The responsibility to be able to see how much is in the system right there in the hands of the people who do the work.

The same way with an andon system where you have the big lighted signboard that tells wherever trouble is being developed on the plant floor. So on an assembly line, a worker pulls a rope and when they pull the rope, the light will light up. And when the line gets to a certain point, the line -- a certain point, then the line will stop. So that's a technical system, but it's in balance and harmony with the social system because it's workers who actually control that. It's the workers who actually reach up and pull the rope, who then has that control. So it's not a matter of having the social side as an add on. It's not a quality control circle that we say let's all meet after work and talk about where we'd like to move the coke machines or how we'd like to have a better cafeteria. It's a matter of getting control for how work proceeds to the workers themselves.

So the technical side then is how the actual system works. You pull the rope, the line moves to a certain point and you have the light that goes on and then the line will stop after it gets to that point. That's the technical part. The social part is how you engage the people, the workers and their team leader, in that to actually make it work. So those two things working together is what really makes a lean system to be powerful.

Chet Marchwinski: There was a question about is the social part of the equation a matter of internal communication? But I think as you just said, it's much more than that. It's responsibility
and participation. So I think --

John Shook: Most -- yes, and I want to emphasize that again because most people do see the social part as a matter of communication and as a human resource sort of a matter. But actually you want to have your social system built into the actual work design. And it's when those things are out of balance is when we see lean transformations not sustaining and not bringing about the change that we all know the potential is there. That's where we see things wrong is when we don't have those things in balance.

Chet Marchwinski: Jim, I'd like to direct this question to you because I know you've addressed it in some of your presentations. And a couple of people are asking about the relationship between TPM, Six Sigma, and even between TPS and lean. Which is obviously not correct, but could you talk about that a little bit? About the relationship between these various elements?

Jim Womack: Sure. The way I look at it is this. That in all organizations we, talking for the people who are working in those organizations, are trying to put in place a perfect process if you will. One that takes the least time and the least effort and the least resource and makes the least mistakes with the greatest flexibility including flexibility on capacity in order to solve the customer's problem. Get the customer whatever the customer might want. So therefore, whenever I look at a process in an organization, a value creating process, and that could be secondary or primary, I'm always saying, by the way I call that a value stream, I'm always looking at all the steps there and I'm saying, how can we make each step capable? Which means that we get a good result every time. And how can we make each step available?

Now wait a second, that capable, that's where Sig Sigma started from, how to introduce capability. Now it does much more than that, but that was the starting point. How can we make each step available, it will work when we need it to work. That's what TPM, total productive maintenance, and now is called total whatever it is, progressive management or something. But nevertheless, the starting point of TPM was how to get things to work. Often in a factory or some kind of operation like a hospital, speaking of operations, you will see equipment that if it would work would produce a good result but it won't work because the software is not right or the power supply is not right or something is broken. So therefore, when looking at a process we're asking about each step, is it capable? That's where we started with Six Sigma. Is it available? That's where we started with TPS. Is it flexible? And that really is a key Toyota contribution to try to build in flexibility and other aspects of that process.

So that you have to be able to do all of these things. So I try to say, and try to convince people, it's a little hard work sometimes with this great competition of the isms. And people who have gained their expertise from a different entry point, I try to say we're all doing the same thing. We are trying together to create the perfect process. And it takes a lot of tools and it takes a lot of skills and it takes a lot of viewpoints. But it works better when we keep our mind on the fact, our attention on the fact that it's the process that we're looking at. And we're trying to make it perfect using the tools that are appropriate for the problems we're encountering.

Chet Marchwinski: By the way, I see several questions have come in about if this webinar is going to be available afterwards. And the answer is yes, it usually takes us a week, but we get the audio, the slides, and a transcript. So give us about a week and we'll send you a note when everything is up.

John, here's a question about modern day Toyota. Where did it stumble, in your opinion, to get into the current situation?
John Shook: Well, it's a good question. I think -- I've been surprised by some of the decisions that Toyota has been making the last ten years or so in terms of putting -- probably installing capacity that wasn't very flexible and for products whose salability was unproven. I think honestly what made Toyota, the Toyota we know, if you go back to that early history lesson around 1950, was the way they constantly pursued challenge after challenge. Having worked in the company as well, that's the overriding feeling that one has in working inside the company is that there's always a challenge. If you're a line worker, your challenging how to do this better, how to get your cycle time to match your takt times. How to eliminate some waste, how to deal with a problem, how to deal with any kind of problem to reduce costs or to get more capacity out of the current -- capability out of the currently installed capacity. Things like that. There's always a challenge to be working towards.

At a high level, the challenge that Kiichiro issued in 1950 to Eiji and the others basically is the challenge that carried the company forward for about 50 years. The challenge was to catch up with the Big Three in three years. I think it took them about 50 years. But honestly, by the mid 90s, they really had caught up. Now they probably technically officially caught up with GM in terms of production volume numbers last year or something. But in terms of organizational strength, they really caught up by the mid 90s. And I think the company kind of floundered a bit and it had a bit of a malaise. And instead of deciding, instead of trying to be the best company they could be after they had caught up really with the Big Three, it made the mistake of deciding to become the biggest it could be. And that's when it started chasing probably too much capacity insulation in North America and maybe other places. In my view, anyway. This is just my opinion. I can't speak for them.

But I think that's when they kind of started to possibly lose their way a bit. And the newly appointed president of the company is another Toyoda family member again, Akio Toyoda. He in fact has said that he wants to get back to the basics. He thinks the company had lost its way a bit and he's going to try to go back, or forward to the fundamentals, as we're referring to this webinar.

So I think you could see some of the signs starting at least ten years or so ago. And so it was set up for failure when the market collapsed as it has in the last six months. As I said earlier, as long as markets are rising and everyone is doing well, then everyone can do well. You can keep installing capacity as long as you want and you can do well. It's when markets start to go down is when you see the really strong companies and really lean companies will continue to do well. And as I mentioned that is what had always happened with Toyota in the past. There have been various economic crises in Japan over the years. Back in the 70s, late 80s, in the 90s. In every case, Toyota would stumble a bit, but certainly never have red ink, whereas other Japanese companies were going bankrupt by the thousands. Or go back even to the mid 90s, Nissan, its great competitor from 1950 that I mentioned, Nissan, went bankrupt ten years ago. They were saved really by banks and then they found a buyer in the form of the French company. But they basically had failed and this was, during these years, Toyota was setting record profits. During even those bad and very hard times.

But what we see now is what's happened is times are bad, but that's exposed the fact that the company has maybe lost its way. At least that would be my view, Chet.

Chet Marchwinski: Okay. John, you talked a lot about companies implementing lean that are currently on the journey. What about companies starting now? Is this a good time or a bad time? And where -- and there's also some questions about this -- where would you start? Is there a game plan for this? Do you start with the 5S for instance?
John Shook: Boy, I'm never, I'm not much a fan myself of starting with 5S only because I like to start with something that's a real problem for the company. 5S is usually an enabler for something else. So what is it that's keeping us from achieving certain goals or objectives we have and identifying that and from that building our strategy and our tactics accordingly. But I think a lot of companies worry a little bit too much about exactly where to start. You can start anywhere. What's important, since this is based upon Deming's Plan-Do-Check-Act management wheel where you develop a plan based on some hypothesis. You put in -- then you do it. You give it a try. And from giving it a try, then you check. You do deep reflection where you ask what you've learned and then you put that into the act cycle where you adjust, standardize and keep going around the wheel.

What that means is in the beginning when you come up with your plan, your hypothesis, you can do anything really. You can go on the plant floor and work upstream, downstream, anywhere you want. What's important is once you've started you can't walk away from it. You can never do plan-do-check-abandon. So your first move is free. You can do anything that first move. Just like a chess game. I can decide to move pawn to queen four or king four. I can do anything I want the first move, but after that I'm no longer free because in a chess game it's going to be my opponent or in business it's going to be my gemba. It's going to be what the operations will speak to me, there will be some response. It might be positive, it might be negative. Whatever that is, is going to decide what my next move needs to be. It's going to be important that I establish credibility with the workforce, with the organization, to actually stick to my plan, to actually stick to the initiative to say I'm going to sincerely make an effort to make this work.

So anywhere you start I think is okay. I think when you do it you need to have both the process side and the people side in mind. And I think most people would really today say that the people side is the more important and to work on that piece of it. I don't exactly totally disagree with that. I want to say that what I see now is people ignoring the process side, the tool side. It actually matters. What we want to have is our philosophy of how we want people to work in our system. We want that embodied in the tools we put in place.

So where you start, I would implore you to think about both the people and process side at the same time and try to have those working in harmony.

Chet Marchwinski: At Toyota, was lean used in internal support areas? IT? Offices? Or was it primarily on the shop floor and not used elsewhere?

John Shook: Well I think -- so Toyota Production System, as we think of that, that was born on the plant floor and that's what it is. But Lean Thinking, which is to approach a continuous improvement, always doing Kaizen, thinking of the customer, those things are present elsewhere, anywhere in the company as well. And there's another, for example, book we came out with last year called Managing To Learn that introduces the A3 process. And that's one tool that actually is in use throughout Toyota anywhere. A good friend and researcher at Montana State University, Durward Sobek, who's also written a great book about the A3 process noticed in his research that that's the one tool that you can see through, use throughout Toyota. And the A3 allows us to see the thinking of the individual who's creating the A3, a one page plan format. And it allows us to see that the person is working through the PDCA cycle. So PDCA is what you want to see in place everywhere. Not necessarily kanban or each individual TPS tool, but Lean Thinking embodied as PDCA.

Chet Marchwinski: And John, and Jim, maybe you'd like to comment on it, too, but there was a question
about can A3 be used as the foundation of a lean transformation? And I think what you're saying is that it's the thinking that's important and not the -- not exercising a tool

John Shook: Well I would, and Jim, you can definitely please join in, but I would say it is a thinking of tool, but I think the A3 can be used as the foundation for a transformation. And I think it's a fine place to begin. It allows you to see the thinking of the organization, of individuals and the organization itself, as they're putting in place their different implementation of both lean tools but also going about their transformation by the very fact it embodies PDCA in the format of the A3 itself.

Jim Womack: I'd just add to that, John, that we have observed that those folks who do approach A3 as a mechanical tool, and I just saw a nice example this week when I was out looking at something, where they had, as a corporation, had determined that an A3 shall be done in a nine box format and it shall have the following features and so forth. It's amazing to me how quickly things become disconnected from their original purpose. And the whole point of A3 was to do experiments on processes and then it had a secondary purpose which was actually to train the next generation of managers, the younger managers, to be able to run experiments on processes. And if you've got A3 working right, the form is going to vary with the issue that you're dealing with. But what you are going to be doing is really sticking rigorously to PDCA. What is the issue here and what's the background condition and what's the specific root cause and what are the alternatives to do about it and what's the best alternative and who has to do what when to make that alternative happen? And how do you know you've actually addressed the problem? It's that part of A3 that is simply an embodiment, it's a way to put PDCA in an organizational context with a boss who we even sometimes call the sensei, and the pupil or the direct report we sometimes call the dashi. But it is that process of solving problems that is what gives the power as at the same time you create a new generation of people who are really good at solving problems. And I think one of the things I've observed, John, looking at folks like you who've been at this for a very long time, is that you don't master A3 or PDCA doing it once. You master it, if indeed there is such a thing as mastery, by doing it 1,000 times. And indeed that is the core work of management is to continually tackle problems through a scientific PDCA approach. And as soon as you get one solved, you start on the next one and it goes on forever.

Chet Marchwinski: Unfortunately we're out of time. I'd like to thank Jim and John and to everyone who's been listening. In a few days we'll send everyone a link to an archive of the webinar. The slides, audio and text so you can refer to it or share it with colleagues. So thanks again on behalf of John Shook, Jim Womack, and everyone here at LEI. We wish you continued success in making the lean leap.