

The Toyota Way—14 Management Principles from the World's Greatest Manufacturer

Jeffrey K. Liker

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Dedication

To Deb, Emma, and Jesse

and Our Amazing Life Journey

Foreword

When I joined Toyota after 18 years in the U.S. automobile business, I didn't know exactly what to expect. But I was hopeful. I knew that I wasn't comfortable with the direction that American automobile manufacturing was taking, and I felt Toyota might be different. In no time at all I noticed a fundamental difference between Toyota and my previous employers. At a Toyota/GM joint venture plant in Fremont, California, called NUMMI (New United Motor Manufacturing), I witnessed the transformation of a workforce from one of the worst in the General Motors system to one of the best in any manufacturing facility in the United States. The difference was the "Toyota Way." In this book, Dr. Liker explains the management systems, thinking, and philosophy that form the foundation of Toyota's success, providing the reader with valuable insights that can be applied to any business or situation. While there are many books that provide insight into the tools and methods of Toyota's Production System (TPS), Professor Liker's book is unique in its explanation of the broader principles at work in the Toyota culture.

The Toyota Way is not the Japanese Way or the American Way or even the Gary Convis Way of managing. It is the fundamental way that Toyota views its world and does business. The Toyota Way, along with the Toyota Production System, make up Toyota's "DNA." This DNA was born with the founders of our company and continues to be developed and nurtured in our current and future leaders.

The Toyota Way can be briefly summarized through the two pillars that support it: "Continuous Improvement" and "Respect for People." Continuous improvement, often called *kaizen*, defines Toyota's basic approach to doing business. Challenge everything. More important than the actual improvements that individuals contribute, the true value of continuous improvement is in creating an atmosphere of continuous *learning* and an environment that not only accepts, but actually *embraces* change. Such an environment can only be created where there is respect for people—hence the second pillar of the Toyota Way. Toyota demonstrates this respect by providing employment security and seeking to engage team members through active participation in improving their jobs. As managers, we must take the responsibility for developing and nurturing mutual trust and understanding among all team members. I believe management has no more critical role than to motivate and engage large numbers of people to work together toward a common goal. Defining and explaining what the goal is, sharing a path to achieving it, motivating people to take the journey with you, and assisting them by removing obstacles—those are management's reasons for being. We must engage the minds of people to support and contribute their ideas to the organization. In my experience, the Toyota Way is the best method for fulfilling this role.

However, readers of this book should understand that each organization must develop its own way of doing business. The Toyota Way is the special product of the people who created Toyota and its unique history. Toyota is one of the most successful companies in the world. I hope this book will give you an understanding of what has made Toyota successful, and some practical ideas that you can use to develop your own approach to business.

—Gary Convis
Managing Officer of Toyota and President,
Toyota Motor Manufacturing, Kentucky

Acknowledgments

This book is the product of 20 years of study of Toyota. Much of that work was done under the auspices of the Japan Technology Management Program at University of Michigan, Ann Arbor, where I am currently Director. This program was started in 1991 with generous funding through the U.S. Air Force Office of Scientific Research (AFOSR), but it really began with the vision of Senator Jeff Bingaman of New Mexico. Senator Bingaman worked behind the scenes to get the funding to support university programs like mine to learn from Japan, send technically oriented students to Japan on internships, and share what we learned with others in the United States. At that time in the late '80s and early '90s, the “learning trade imbalance” was huge—with most of the learning going from the U.S. to Japan and little coming back. There were many reasons for this, but one was that the U.S. did not want to listen. The phenomenal success of companies like Toyota woke us up, and Toyota has contributed greatly to bringing more balance into the exchange of learning.

Toyota has been remarkably open in sharing its source of competitive advantage with the rest of the world. A milestone was Eiji Toyoda's decision in 1982 when, as chairman, he, along with Shoichiro Toyoda, President, approved the agreement with GM to create NUMMI, a joint auto manufacturing venture specifically intended to teach the “Toyota Way” to GM. That meant sharing Toyota's crown jewel, the famous Toyota Production System, with its principal global competitor. Another milestone in opening up TPS to the world was the decision to create the Toyota Supplier Support Center in 1992 for the purpose of teaching the Toyota Production System to U.S. companies by setting up working models in plants across industries. I personally benefited from this remarkable openness.

Unfortunately, I cannot acknowledge all of the individuals at Toyota who graciously agreed to lengthy interviews and reviewed parts of this book for accuracy.

But several were particularly influential in my learning about the Toyota Way. These included (job titles are from the time of the interviews):

- Bruce Brownlee, General Manager, Corporate Planning and External Affairs of the Toyota Technical Center—my key liaison for the book.
- Jim Olson, Senior Vice President, Toyota Motor Manufacturing North America—carefully considered the Toyota Way book and then supported Toyota's full participation to get it right.
- Jim Wiseman, Vice President, Toyota Motor Manufacturing, North America—opened the doors to the Toyota Production System in manufacturing.
- Irv Miller, Group Vice President, Toyota Motor Sales—opened the door to the world of sales and distribution at Toyota.
- Fujio Cho, President of Toyota Motor Company—shared his passion for the Toyota Way.

- Gary Convis, President of Toyota Motor Manufacturing, Kentucky and Managing Officer of Toyota— helped me understand the process of an American learning the depths of the Toyota Way.
- Toshiaki (Tag) Taguchi, President and CEO of Toyota Motor North America—provided insights into the Toyota Way in Sales.
- Jim Press, Executive Vice President and Chief Operating Officer of Toyota Motor Sales, USA—gave me deep insights into the philosophy of the Toyota Way.
- Al Cabito, Group Vice President, Sales Administration, Toyota Motor Sales, USA—provided great insights into Toyota’s emerging build-to-order strategy.
- Tadashi (George) Yamashina, President, Toyota Technical Center, USA—introduced me to *hourensou* and a deeper appreciation of *genchi genbutsu*.
- Kunihiro (Mike) Masaki, former President, Toyota Technical Center—took every opportunity to get me in the door at Toyota to study the Toyota Way.
- Dave Baxter, Vice President, Toyota Technical Center—shared more hours than I had a right to ask for explaining Toyota’s product development system and its underlying philosophy.
- Ed Mantey, Vice President, Toyota Technical Center—Ed is a real engineer who is living proof Toyota can train American engineers who deeply understand the Toyota Way.
- Dennis Cuneo, Senior Vice President, Toyota Motor North America—drew on his wealth of experience at NUMMI and beyond and helped me understand Toyota’s commitment to social responsibility.
- Dick Mallery, Partner, Snell and Wilmer—passionately described how as a lawyer for Toyota he has been transformed by the Toyota Way.
- Don Jackson, Vice President, Manufacturing, Toyota Motor Manufacturing, Kentucky—explained and demonstrated what it means to respect and involve workers on the shop floor.
- Glenn Uminger, Assistant General Manager, Business Management & Logistics Production Control, Toyota Motor Manufacturing, North America, Inc—explained how an accountant at Toyota could develop a TPS support office and then lead logistics for North America—having fun at every step.
- Teruyuki Minoura, former President, Toyota Motor Manufacturing, North America—chilled me with real life stories of learning TPS at the feet of the master Taiichi Ohno.
- Steve Hesselbrock, Vice President Operations, Trim Masters—shared generously of his years of learning to be one of the best Toyota seat suppliers in the world through trial by fire.
- Kiyoshi Imaizumi, President Trim Masters—gave me the real story on what it took to be a Toyota supplier in Japan.
- Ichiro Suzuki, former Chief Engineer, Lexus and Executive Advisory Engineer—showed me what a real super engineer can be.
- Takeshi Uchiyamada, Senior Managing Director and former Chief Engineer, Prius—taught me what it means to lead a revolutionary project (Prius) by working through people.
- Jane Beseda, GM and VP North American Parts Operations—articulated for me the Toyota Way view of information technology and automation in a way that made the light bulbs come on.
- Ken Elliott, Service Parts Center National Manager—shared his story of building the Toyota Way culture in a new parts distribution center.

- Andy Lund, Program Manager, Sienna, Toyota Technical Center—shared insights into the translation of Toyota’s culture in Japan into U.S. operations from the perspective of an American who grew up in Japan.
- Jim Griffith, Vice President, Toyota Technical Center—always with humor corrected misconceptions and challenged my understanding of the Toyota Way.
- Chuck Gulash, Vice President, Toyota Technical Center—on a test-track drive taught me “attention to detail” in vehicle evaluation.
- Ray Tanguay, President, Toyota Motor Manufacturing, Canada—taught me that technological innovation and TPS can go hand in hand.

I owe a special debt to John Shook, the former Toyota manager who helped start up NUMMI, the Toyota Technical Center, and the Toyota Supplier Support Center. John has dedicated his career to understanding the Toyota Way. He brought this passion to the University of Michigan where he joined us for several years as Director of our Japan Technology Management Program and continues to be a leader in the Lean community. John was my mentor on TPS, teaching me first the basics and then, as I developed my understanding, the ever more sophisticated lessons in the philosophy of the Toyota Way.

Most of this book was written in 2003 when I was privileged to spend a very cold East Coast winter in sunny and warm Phoenix visiting my former student and now Professor Tom Choi of Arizona State University. With a nice, private office without windows in the mornings and afternoons of golf, it was the perfect climate for writing. The four-month adventure with my loving wife Deborah and my children Jesse and Emma is a once-in-a-lifetime memory.

This book looks beyond Toyota’s Production System across the company, including parts logistics and supply chain management. My understanding of “lean logistics” has been greatly enhanced by research funded by the Sloan Foundation’s Trucking Industry Program, led by my close friend and colleague Chelsea (Chip) White at Georgia Institute of Technology.

Finally, I had a lot of editing and writing help. When informed by my publisher that my book was twice as long as allowable, in a panic I called my former developmental editor, Gary Peurasaari, to bail me out. He worked his magic on every page in this book, reorganizing content where necessary, but more importantly, and in the true Toyota Way fashion, he eliminated wasted words, bringing value-added words to life. He was more of a partner in writing than an editor. Then Richard Narramore, the editor at McGraw-Hill who asked me to write the book, lead me through a second major rewrite bringing the book to a new level. It is a testimony to the Toyota Way that these two individuals got so engrossed in the book they spent night and day painstakingly helping to craft the right words to describe this precious philosophy of management.

Preface

In 1982 when I first arrived as a new assistant professor at the University of Michigan, Ann Arbor, the automotive industry was in serious turmoil in the midst of a national recession. The situation seemed dire. The Ford Motor company was seriously flirting with bankruptcy. The Big 3 were losing market share fast.

There was a lot of debate at the time over the root cause. The party line among Detroit auto executives was that the cause was the “Japanese invasion.” Japan, Inc. had banded together with industry and government colluding to set up trade barriers to prevent American cars from being sold in Japan and artificially lowering prices of Japanese cars in the United States. Of course, in the minds of U.S. companies, as long as the root cause was unfair business practices, there was no need to seriously change the way they built cars. Instead, political channels would right the wrongs.

Around this time I was fortunate to be invited by David Cole and Robert Cole (two University of Michigan professors who were leading the study of the Japanese quality movement) to work on a U.S.-Japan automotive study. This research was an effort to help U.S. companies learn from the Japanese automakers. My project focused on how automakers worked with their suppliers on new product development in the U.S. and Japan. The numerous studies that made up the overall U.S.-Japan auto study covered many aspects of the industry, and all the studies collectively pointed to a single conclusion. Whatever was going on with Japan’s government and the value of the yen and other macro-economic factors, Japanese auto companies were very good at engineering and building cars. They were not necessarily financial or marketing whizzes. They were not the leaders in advanced manufacturing technology, at least not in complex automation. They “designed in quality” and built in quality at every step of the process, and they did it with remarkably few labor hours. Not only were Japan’s automakers good, their top suppliers were also world class in engineering and manufacturing, and they worked together as a team.

But even in these early stages of my introduction to the auto industry in Japan, there were indications that Toyota was different from the other Japanese automakers. While the basic product development process seemed similar across the three automakers, and the top tier suppliers were all integrally part of the product development process, there was a sense of partnership between Toyota and its suppliers that we did not see as strongly in the *keiretsu* of Mazda and Nissan.

Later, in 1991 John Campbell and I received a grant to create the Japan Technology Management Program at the University of Michigan, Ann Arbor, which I am still directing. The goals of this program are to learn about the practices that have helped the best Japanese companies become strong globally, teach what we learn to our students and industry, and encourage technically oriented students to learn about Japanese language and culture through courses and internships in Japan. This research program allowed me to continue my studies of the Japanese auto industry, and I chose to focus more intensively on Toyota, in particular its product development process and the Toyota Production System. The U.S. government grant focused on transfer of learning so I began studying Toyota’s efforts to transfer its practices to its U.S.-based subsidiaries and American companies’ efforts to learn from Toyota.

By the early 1990s all of the Big 3 auto producers had woken up to the reality of Japanese quality and concluded that Toyota was the company to beat. They were all actively studying Toyota and creating their own versions of Toyota's systems. They benchmarked the company on its production system, product development system, and supplier relationship management. Their great interest in Toyota's systems has given me an opportunity to teach about Toyota's production system and product development process, and get my hands dirty consulting to implement these systems. I have had opportunities to work in America, the United Kingdom, and Mexico in industries including automotive, paint manufacturing, nuclear fuel rod assembly, ship building, ship repair, an engineering professional organization, and lawncare equipment. I have taught lean change agents from over one thousand companies worldwide, and my participation in lean transformation has given me a deeper understanding of what is involved in transforming a culture and learning from Toyota.

My studies of U.S. companies working to implement versions of the Toyota Production System led to a book I edited called *Becoming Lean: Experiences of U.S. Manufacturers* (Liker, 1997), winner of a Shingo Prize (in honor of Shigeo Shingo who helped create the TPS) in 1998. Articles I co-authored on Toyota's product development system and supplier management in *Sloan Management Review* and *Harvard Business Review* also won Shingo Prizes. But it was not until I was invited to write *The Toyota Way* that I had an opportunity to pull together in one volume 20 years of observations of Toyota and companies learning from Toyota.

Reading this book might give you the impression that I am a strong advocate for Toyota. As a professor and social scientist, I work at being objective, but I will admit I am a fan of the Toyota Way. I believe Toyota has raised continuous improvement and employee involvement to a unique level, creating one of the few examples of a genuine learning enterprise in human history—not a small accomplishment.

Much of the research behind this book has come from 20 years of visits to Japan and interviews in Toyota facilities there and in the United States. When I was asked to write this book, I immediately asked Toyota for support through additional interviews specifically focused on the Toyota Way. They graciously agreed. As it turned out, they had just launched their own internal version of the Toyota Way to keep the "Toyota DNA" strong as they globalize and entrust international team members to run subsidiaries. This was the pet project of Fujio Cho, President of Toyota Motor Company, who learned the Toyota Way from one of its inventors, Taiichi Ohno, and he agreed to a rare, personal interview. I asked him what was unique about Toyota's remarkable success. His answer was quite simple.

The key to the Toyota Way and what makes Toyota stand out is not any of the individual elements.... But what is important is having all the elements together as a system. It must be practiced every day in a very consistent manner—not in spurts.

Over a one-year period I was able to interview over 40 Toyota managers and executives from manufacturing, sales, product development, logistics, service parts, and production engineering. I gathered over 120 hours of interviews, all transcribed. Included in these interviews were several former Toyota managers who left to apply what they learned to U.S. Companies and several suppliers to Toyota. I visited many Toyota plants, supplier plants, Toyota's sales offices, a parts distribution center, a

supplied parts cross-dock, the Arizona proving ground, and the Toyota Technical Center.

I have thought about what impact I would like to make on readers of *The Toyota Way*. First, I have had a special opportunity to get inside the culture of a unique and high performing company and wish to share my insights. Second, Toyota is a model to many companies throughout the world so I wish to provide a different look at what makes Toyota so successful. The fundamental insight I have from my studies of Toyota is that its success derives from balancing the role of people in an organizational culture that expects and values their continuous improvements, with a technical system focused on high-value-added “flow.” This leads to my third and more challenging goal: to help other companies learn from Toyota and themselves so they can continuously improve on what they do.

To capture the complexity of the Toyota Way and the Toyota Production System (TPS), I divided the book into three parts. [Part One](#) introduces you to the present success and history of Toyota. It describes how TPS evolved as a new paradigm of manufacturing, transforming businesses across industries. As a way of showing the Toyota Way in action, you will see how the Toyota Way was applied to the development of the Lexus and the Prius. In [Part Two](#) I cover the 14 principles of the Toyota Way that I identified through my research. These key principles drive the techniques and tools of the Toyota Production System and the management of Toyota in general. The 14 principles are divided into four sections:

- *Long-Term **Philosophy***. Toyota is serious about long-term thinking. The focus from the very top of the company is to add value to customers and society. This drives a long-term approach to building a learning organization, one that can adapt to changes in the environment and survive as a productive organization. Without this foundation, none of the investments Toyota makes in continuous improvement and learning would be possible.
- *The Right **Process** Will Produce the Right Results*. Toyota is a process-oriented company. They have learned through experience what processes work, beginning with the ideal of one-piece flow, (see [Chapter 8](#) for details). Flow is the key to achieving best quality at the lowest cost with high safety and morale. At Toyota this process focus is built into the company’s DNA, and managers believe in their hearts that using the right process will lead to the results they desire.
- *Add Value to the Organization by Developing Your **People and Partners***. The Toyota Way includes a set of tools that are designed to support people continuously improving and continuously developing. For example, one-piece flow is a very demanding process that quickly surfaces problems that demand fast solutions—or production will stop. This suits Toyota’s employee development goals perfectly because it gives people the sense of urgency needed to confront business problems. The view of management at Toyota is that they build people, not just cars.
- *Continuously Solving Root **Problems** Drives Organizational Learning*. The highest level of the Toyota Way is organizational learning. Identifying root causes of problems and preventing them from occurring is the focus of Toyota’s continuous learning system. Tough analysis, reflection, and

communication of lessons learned are central to improvement as is the discipline to standardize the best-known practices.

[Part Three](#) of the book discusses how organizations can apply the Toyota Way and what actions they can take to become a lean, learning organization. One chapter focuses specifically on applying Toyota Way principles to service organizations that do not manufacture products.

Understanding Toyota's success and quality improvement systems does not automatically mean you can transform a company with a different culture and circumstances. Toyota can provide inspiration, demonstrate the importance of stability in leadership and values that go beyond short-term profit, and suggest how the right combination of philosophy, process, people, and problem solving can create a learning enterprise. I believe all manufacturing and service companies that want to be successful in the long term must become learning enterprises. Toyota is one of the best models in the world. Though every company must find its own way and learn for itself, understanding the Toyota Way can be one giant step on that journey.

—Jeffrey K. Liker, Ph.D.
University of Michigan, Ann Arbor

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