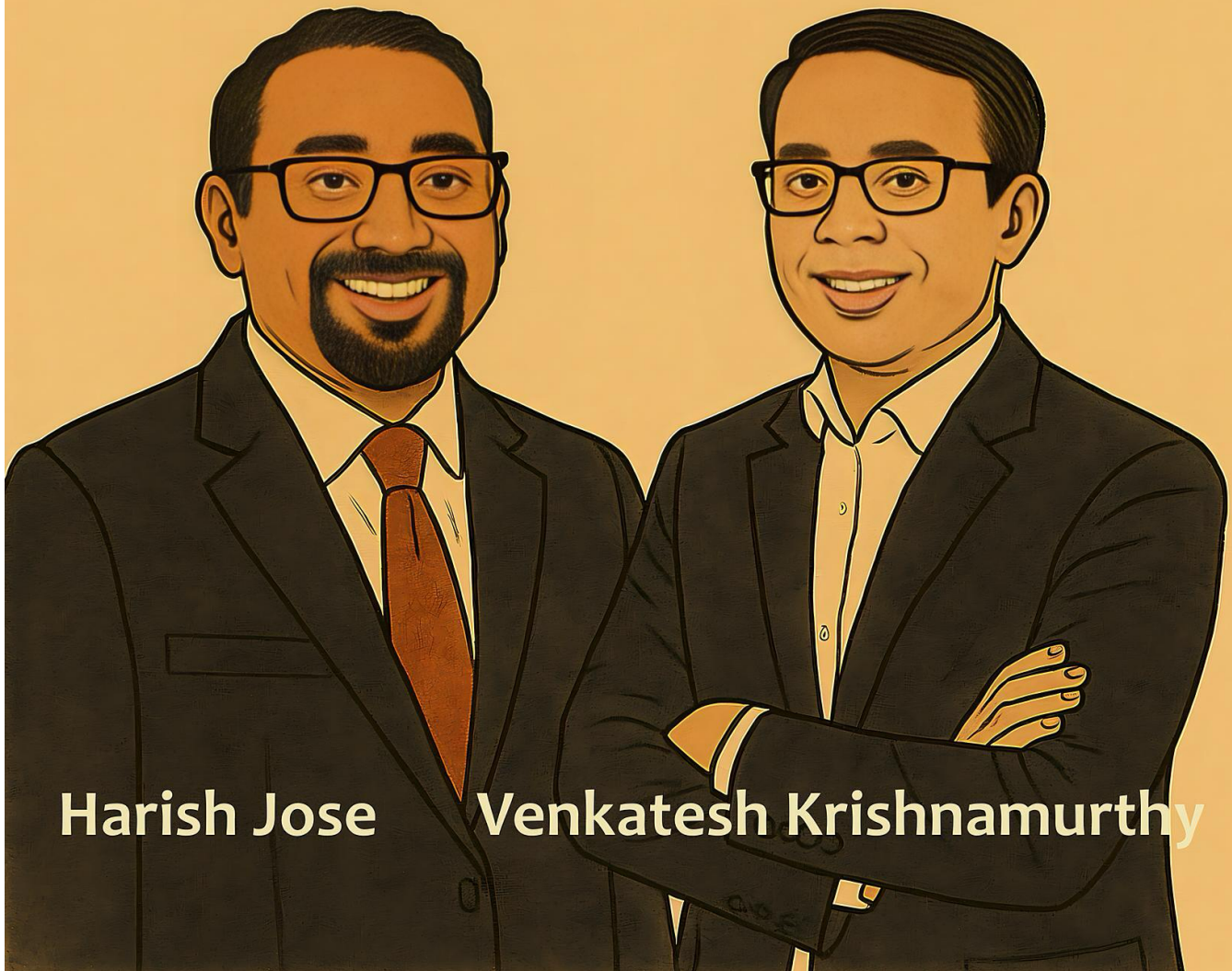
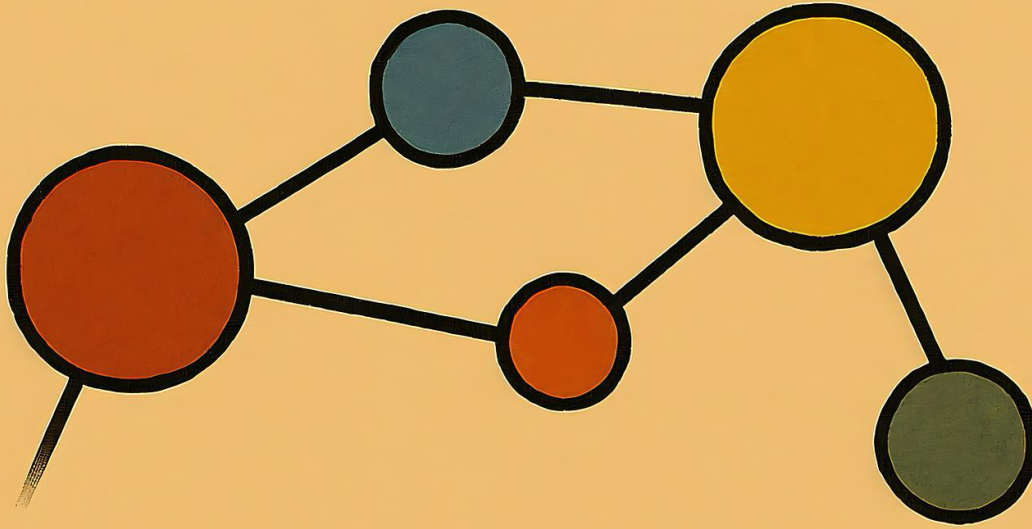


Connecting the Dots...

Reflections on The Toyota Production System



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Foreword

As a lifelong student of the Toyota Production System (TPS), I have spent decades — like many others — trying to understand how a small, little-known automaker became the global benchmark for operational excellence. Too often that story is reduced to a checklist of technical breakthroughs — 5S, kanban, takt time, Andon, standardized work — stripped of the human context that gives those tools meaning. *Connecting the Dots* restores that context, presenting an engaging narrative that is as much about human learning and development as it is about the mind-stretching concepts we associate with TPS.

The authors' historical framing of the “two houses” — one describing what and how we improve, the other explaining why we improve — connects philosophy to practice in a way that demonstrates a truth long understood inside Toyota, but often overlooked elsewhere: TPS is not the creation of a single genius but the cumulative achievement of generations of thinkers and doers: Taiichi Ohno's relentless experimentation on the shop floor, the Toyoda family's entrepreneurial courage, the human-centered motion-study insights of Lillian Gilbreth, the practical knowledge of Shigeo Shingo and Yashihiko Monden, and the pivotal roles played more recently by Fujio Cho and Hajime Ohba in codifying TPS knowledge internally and then sharing it outside of Toyota.

Equally important, this book reminds us that process efficiency must never come at the expense of human development — a principle that feels even more urgent in an age of rapid technological change. People are not merely “resources” to be optimized; they are the creative force behind problem-

solving and innovation. The authors' central thesis — that the ultimate purpose of improvement is to reveal and expand human potential — will resonate with anyone who has worked on a production line, led a kaizen event, or struggled to build a culture of continuous improvement.

TPS endures where Lean often falters not because of its tools, but because of its soul. Kaizen is not merely an improvement event. It's a state of being. *Connecting the Dots* invites us to look beyond efficiency charts and cost curves to see the system as a living community of thinkers and learners. Whether you are a seasoned Lean practitioner or a curious newcomer, this book challenges you to elevate your own practice—linking improvement to respect, and respect to the limitless capability of people.

Bruce Hamilton, Senior Advisor

GBMP Consulting Group

Preface

Connecting the Dots... Reflections on Toyota Production System

This book began with a simple question: Where did the ideas behind the Toyota Production System come from? Many books describe what TPS looks like today, yet few explore the roots of its thinking or the cultural soil in which it grew. We wanted to go back to those origins. Our goal is not just to understand what Toyota did, but why—and to honor the wisdom of the people who shaped this system.

The project started as a conversation between two friends from different continents, different careers, and different perspectives. What began as an exchange of ideas soon became a shared curiosity. Why is TPS so often reduced to a collection of tools? And what would it take to present it in a way that helps people think differently, rather than simply copy what Toyota did?

TPS is widely recognized for its visible elements—kanban cards, andon cords, value stream maps. These are easy to see and even easier to imitate. But TPS is not a checklist of tools. It is a way of thinking. It is a philosophy about how to learn, solve problems, and continuously improve in the face of change.

A note on terminology: throughout this book, we use “TPS” intentionally—not “Lean.” While Lean grew out of interpretations of TPS, our goal is to return to the origin, to understand the thinking of the people who shaped TPS

and to honor their wisdom. Lean, as practiced in many places, often diverged from that intent. This book is about connecting with the source.

This is not a step-by-step manual. It is a collection of reflections on TPS—its origins, its underlying principles, and its cultural roots. We explore connections between Japanese history, philosophy, and the ideas that shaped Toyota’s approach. More importantly, we ask what these ideas can mean for you and your organization today.

Toyota is not perfect. TPS is not perfect either. And that is the point. The goal is not to become Toyota or to solve Toyota’s problems. It is to understand how and why Toyota approached its challenges so that you can apply similar thinking to your own.

The essence of TPS is not imitation. It is curiosity. It is asking “why” before asking “how.” It is about improving frameworks—and improving the way we improve. That means going beyond first-order thinking, which asks “What tool should I use?” to second-order thinking, which asks “Why am I using this tool? What problem am I trying to solve?” This book is an invitation to think in that way.

In the chapters ahead, we explore the two Houses of Toyota and the pillars that support them: Just-in-Time, Jidoka, Respect for People, and Continuous Improvement. We also examine ideas such as Genchi Genbutsu (go and see), cultural influences on TPS, and what it means for leaders to learn from Toyota without becoming Toyota. Finally, we look at the ethical questions that arise when efficiency and job elimination dominate the conversation. These questions feel even more urgent today in the age of AI.

Recognizing similar patterns across different domains can deepen our understanding of the topic at hand. This is what we refer to as *connecting the dots*. When we encounter recurring structures, behaviors, or dynamics elsewhere, they can enhance our grasp of similar ideas within TPS. The Toyota Production

System is not just a set of practices—it is a way of thinking. And like all deep ways of thinking, it resonates with insights that reach far beyond its immediate context.

This book contains many interrelated ideas, and you will notice overlaps across chapters. That is intentional. Systems thinking cannot be reduced to isolated parts, and TPS is no different. We encourage you to read slowly, one chapter at a time, and reflect before moving on. Think of this as a conversation rather than a prescription.

If this book helps you question, connect ideas, and see TPS as a philosophy rather than a toolkit, then it has done its job.

Welcome to this journey of connecting the dots...

Acknowledgments

Many people have played a part in shaping this book, and we are truly grateful for their support.

To our reviewers, thank you for generously giving your time, energy, and perspectives. Your candid feedback pushed us to refine our thinking and improve the clarity of our writing. Each of you came from different backgrounds, and it was exactly that diversity of experience that helped us see the material in new ways. Thanks to James Carpenter, Ipsita Mishra, Peter Harris, Peter Scheffer, Cesario Ramos, Chris Gagné, Frank Cormack, Bastiaan van Hamersveld and Bruce Hamilton.

Our publisher, Laksh Raghavan, supported us in countless ways—by recommending valuable tools, keeping track of timelines, asking thought-provoking questions, podcasting with us, reviewing the manuscript, and ensuring the book remains relevant and meaningful for readers.

Dedication

I dedicate this book to my lovely wife, Rebecca, and my wonderful children, Zac, Audrey and Oscar, who have been supporting me through my journey of learning. And to my brother, who lit the fire in me for reading and learning at a very young age, and to my parents, who were willing to buy me the numerous books that allowed me to amass a hefty library as a child.

More than fifteen years ago, when I first began regularly writing a blog, my focus was almost entirely on the Toyota Production System (TPS). At the time, I was following the blogs of Jon Miller (*Gemba Panta Rei*) and other early voices in the blogging community, and I was fortunate to have several email exchanges with Art Smalley. Their work sparked my interest and deepened my curiosity. I devoured every book I could find, including those from Productivity Press and the Lean Enterprise Institute (LEI), as well as every article I could locate on the origins of TPS. I was always drawn to understanding why and how TPS came to be. Knowing the origins helped me grasp its principles more fully and guided me in applying them. I dedicate this book to the masters such as Taiichi Ohno, Fujio Cho, Shigeo Shingo, and others, and to those who inspired me to become a writer.

I am deeply grateful to Bruce Hamilton, the *Toast Kaizen* teacher, whose generosity and encouragement mean a great deal to me, for taking the time to write the foreword for this book.

Finally, I dedicate this book to Laksh Raghavan, our publisher, and the man behind Cyb3rSyn Labs Community.

- Harish Jose, Missouri, USA (Aug 2025)

I dedicate this book to my wonderful wife, Misha, and my loving son, Sanchit, for giving me the time and space to pursue this journey. To my parents and sisters, who nurtured my curiosity and love for learning, your influence runs deep in these pages.

The initial spark that ignited my interest in the Toyota Production System and Lean Thinking came from Craig Larman, through the experiments we conducted as part of LeSS. But it was Harish Jose who transformed that spark into a blazing fire. His generosity in sharing knowledge, his clarity in teaching, and his relentless commitment to truth elevated my understanding to a level I never imagined. Without Harish, this book would not have been written.

Finally, I'm grateful to Laksh from Cyb3rSyn Labs, who brought everything together and encouraged us to aim high in our vision and goals. This book is a testament to collective wisdom, shared purpose, and the power of continuous improvement.

- Venkatesh Krishnamurthy, Melbourne, Australia (Aug 2025)

Introduction

Why This Book Matters Now

The Toyota Production System (TPS) has influenced industries far beyond automotive manufacturing. It shaped modern thinking about quality, efficiency, and continuous improvement. Yet, decades after its success, many organizations still struggle to understand what makes TPS unique. Too often, the focus falls on visible practices (kanban boards, value stream maps, standardized work etc.) while the deeper principles remain overlooked.

This book takes a different approach. It looks beyond the tools to the thinking that created them. It also explores the origins of these ideas, because understanding where they came from helps us apply them wisely in today's world. The conditions that shaped TPS such as resource constraints, global uncertainty, and rapid change are not so different from what organizations face now. That is why these ideas remain powerful, provided we understand their intent.

Why the Origins Matter

Many of the challenges TPS addressed are resurfacing in new forms. Automation and artificial intelligence promise efficiency, but they also raise questions about jobs, ethics, and what improvement really means. These are not new dilemmas. Taiichi Ohno and his colleagues wrestled with similar trade-offs in post-war Japan. Their solutions were grounded in values, cultural context, and a philosophy of respect for people. By returning to these roots, we can

learn how to navigate today's pressures without losing sight of what matters most.

Why We Use TPS, Not Lean

You will notice that throughout this book, we refer to TPS rather than Lean. This is intentional. Lean emerged as an interpretation of TPS, and over time, it often drifted toward an emphasis on tools and cost reduction. Our goal is to honor the original thinking of Toyota's leaders and the cultural foundations that shaped their system. We believe that understanding TPS at its source offers deeper insight and more ethical guidance than adopting Lean in its current form.

What You Will Find in This Book

The book is organized around the two Houses of Toyota, which represent the structure of the system. Within these houses, we explore the key pillars and supporting concepts:

- **Just-in-Time:** Creating flow, reducing waste, and building responsiveness into the system.
- **Jidoka:** Stopping to fix problems and embedding quality into the process.
- **Respect for People:** Moving beyond slogans to understand what this principle demands in practice.
- **Continuous Improvement (Kaizen):** Why improvement must be ongoing and how it shapes learning.
- **Genchi Genbutsu:** Going to the source and seeing reality for yourself.
- **Thinking about the Thinking Production System:** A deeper reflection on TPS as a way of framing problems.
- **Cultural Foundations:** How Japanese history and philosophy influenced TPS principles.
- **Leadership and Ethics:** Learning from Toyota without becoming Toyota, and addressing the challenges of AI and efficiency-driven thinking.

INTRODUCTION

Although each chapter focuses on a specific theme, the concepts are deeply interconnected. TPS functions as an integrated system rather than a collection of isolated practices, which is why certain ideas deliberately appear across multiple chapters. You'll also notice that chapter lengths vary significantly. While extensive literature already exists on the technical aspects of tools like Just-in-Time and Jidoka, we emphasize the underlying philosophy and spirit of TPS, the principles that give these tools meaning and power. This focus on substance over mechanics is reflected in how we've allocated space throughout the book.

How to Read This Book

This book is not an instruction manual. There are no templates to copy or checklists to complete. It is a collection of reflections designed to help you think differently. We recommend reading slowly, one chapter at a time. Pause, reflect, and consider how the ideas relate to your own context. There is no need to read in sequence. Start where your curiosity takes you.

If this book helps you see TPS as a living philosophy rather than a fixed set of tools, then it will have served its purpose. We invite you to join us in this exploration, not to find ready-made answers, but to ask better questions about systems, improvement, and the role of humanity in both.

1

TPS vs. The Toyota Way vs. Lean



The Toyota Production System was not deliberately designed as a system.
- Paraphrased from many Toyota veterans

Introduction: A Tale of Three Systems

In boardrooms and manufacturing plants across the globe, three terms often appear interchangeable: **TPS**, **The Toyota Way**, and **Lean**. Yet each represents a distinct dimension of performance, philosophy, and purpose.

The **Toyota Production System (TPS)** is rightly celebrated as a gold standard in operational excellence. It emphasizes eliminating waste, creating flow, and enabling just-in-time responsiveness. However, many organizations that implement TPS tools such as Kanban, Jidoka, 5S, and Andon soon hit a wall. Why? Because tools alone do not create transformation. The deeper driver is **The Toyota Way**, Toyota's cultural backbone built on two foundational principles: Respect for People and Continuous Improvement.

***Note:** We use both “Respect for People” and “Respect for Humanity” in this book. While Toyota’s global website primarily uses “Respect for People,” we believe “Respect for Humanity” better captures the underlying spirit.*

The third system, **Lean**, is a global movement inspired by TPS but interpreted and applied in countless variations, often stripped of its original context. This introduction explores how these three systems relate to one another and why leaders must look beyond the surface to build organizations that are not only efficient but also resilient, thoughtful, and human-centered.

Origins: Where Did These Systems Come From?

Toyota Production System (TPS)

- Emerged in post-WWII Japan during a period of severe resource constraints.
- Spearheaded by Taiichi Ohno, with influence from Sakichi Toyoda, Eiji Toyoda, and Kiichiro Toyoda. Ohno was in middle management when he started working on his production system approach.
- Combined ideas from Ford's assembly line, supermarket replenishment, and automation (Jidoka). Toyota could not afford to use additional machines, inventory, or operators to increase capacity, so they had to do more with less.
- Focused on creating flow by eliminating three forms of waste: *muda* (waste), *mura* (unevenness), and *muri* (overburden).

The Toyota Way

- Practiced implicitly for decades before being codified.
- Formally articulated in 2001 under Fujio Cho's leadership as **The Toyota Way 2001**.
- Codified Toyota's cultural DNA: Respect for People and Continuous Improvement
- Represents the mindset and purpose that gives TPS its ethical and strategic depth.

Lean (as adopted globally)

- Term introduced by John Krafcik in his 1988 MIT Sloan Management Review article "*Triumph of the Lean Production System*".
- Popularized globally by the 1990 book *The Machine That Changed the World* (Womack, Jones, and Roos).
- Inspired by TPS principles but adapted into a broader improvement methodology
- Adopted across industries worldwide, often in tool-centric ways that overlook the cultural and human foundations of TPS.

How Lean Emerged from TPS — And What Got Lost in Translation

The global Lean movement traces its roots to the Toyota Production System. Yet, while inspired by TPS, Lean evolved along a different trajectory. The difference began with language.

The Accidental Birth of “Lean”

The term *Lean* was not chosen by Toyota. It was coined by John Krafcik in 1988 during MIT research into global automotive practices. The word fit a compelling narrative: doing more with less. It suggested speed, simplicity, and efficiency. This framing helped Lean gain traction quickly, but it also narrowed the interpretation of Toyota’s system. Where TPS aimed to balance **efficiency with effectiveness**, Lean was widely seen as an efficiency-driven approach.

What Got Lost

TPS is a holistic system grounded in cultural values and human development. Concepts such as **Chie** (wisdom), **Genchi Genbutsu** (go and see), and **Respect for Humanity** shaped its evolution. These ideas were later codified in **The Toyota Way**, providing ethical depth and strategic resilience. By contrast, Lean’s spread often focused on tools—Kanban boards, 5S, value stream maps—rather than philosophy.

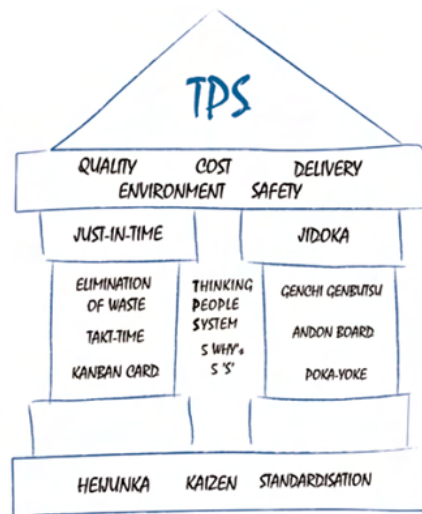
Efforts to correct this imbalance led to concepts like **Lean Thinking**, emphasizing principles over tools. Yet Lean lacks an integrated framework equivalent to Toyota’s two-house structure. The “Lean House” often depicted in literature is an adaptation of the **TPS House**, not an original creation. Furthermore, Lean does not have a cultural anchor or central steward practicing; it is a decentralized movement. As a result, many implementations drift toward what practitioners call “toolbox Lean.”

This is not a critique of Lean’s achievements. The movement has delivered remarkable improvements in quality and efficiency across industries. However, without the cultural backbone that TPS enjoys within Toyota, Lean is vulnerable to superficial adoption.

What Are the Two “Houses” of Toyota?

Toyota’s philosophy rests on two interdependent houses: **The TPS House** and **The Toyota Way House**. Many people confuse one for the other. Understanding their relationship is key.

The TPS House



Taken from the [*Toyota Europe Forklift brochure*](#).

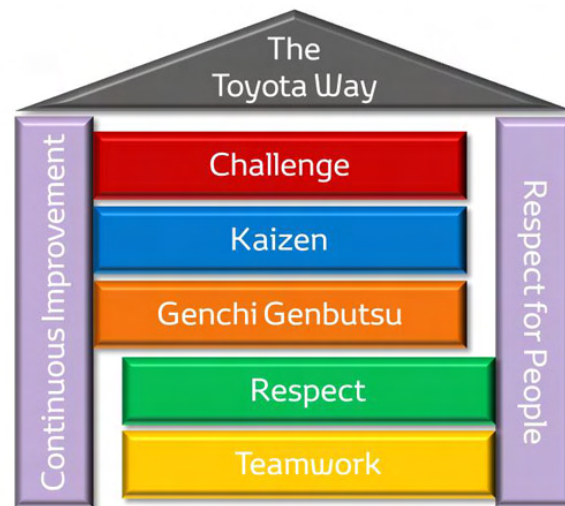
The **Toyota Production System House** is often depicted as a structure supported by two pillars: **Just-in-Time** and **Jidoka**, with a foundation of stability and standardization. Its roof represents the ultimate goal: delivering the highest quality at the lowest cost in the shortest lead time.

The concept of these two pillars first appeared in *The First Book of the Toyota Production System* (1973), an internal document. Taiichi Ohno later explained these ideas in his 1978 book *Toyota Production System: Beyond Large-Scale Production*.

The Toyota Production System (TPS) was developed gradually between the late 1940s and 1970s, primarily under the leadership of Taiichi Ohno and with strong support from Eiji Toyoda. While Ohno pioneered many of the core practices like Just-in-Time and Jidoka, he didn't formalize them into a visual model like the TPS House. Remember, it's creation was driven by necessity rather than by design.

It was not widely implemented until it proved successful. According to Norman Bodek, Ohno hesitated to publish his system early, possibly fearing that American companies would replicate it. The first formal codifications appeared in the 1970s.

The Toyota Way House



Taken from the [Toyota Italy website](#).

The second house, **The Toyota Way**, was introduced in 2001 under Fujio Cho's leadership. Cho had earlier co-authored the 1977 paper "*Toyota Production System and Kanban System: Materialization of Just-in-Time and Respect-for-Human System*," which reveals the philosophical roots of the Toyota Way.

From that paper:

Toyota is planning and running its production system on the following two basic concepts. First of all, the thing that corresponds to the first recognition of putting forth all efforts to attain low cost production is “reduction of cost through elimination of waste”. This involves making up a system that will thoroughly eliminate waste by assuming that anything other than the minimum amount of equipment, materials, parts, and workers (working time) which are absolutely essential to production are merely surplus that only raises the cost. The thing that corresponds to the second recognition of Japanese diligence, high degree of ability, and favored labor environment is “to make full use of the workers’ capabilities”. In short, treat the workers as human beings and with consideration. Build up a system that will allow the workers to display their full capabilities by themselves.

Key Differences

Simon Dorrat, former Manager of Toyota’s Business Intelligence function, summarized the relationship between the two houses:

The Toyota Production System is a practical expression of The Toyota Way — principles that guide everything we do in Toyota, based on Continuous Improvement and Respect for People.

In simple terms:

- **The TPS House represents the “What” and the “How”**
- **The Toyota Way represents the “Why.”**

Think of TPS as Toyota’s body and The Toyota Way as its mind and spirit.

One without the other is like executing a routine without understanding its purpose.

Conclusion - Why This Book Returns to the Source

Lean has achieved global influence, but TPS remains a 'living' system within Toyota, continually evolving. Lean, by contrast, lacks a central figure or organization to steward its philosophy. For this reason, much of what gets copied are the visible tools, not the underlying thinking.

This book returns to the origin. We explore the wisdom of Toyota's pioneers, concepts like **Respect for Humanity** and **Chie**, and the cultural foundations that gave rise to TPS. We are not offering a toolkit. We are inviting you to think deeply about improvement, leadership, and ethics.

References

1. Toyota Production System, Beyond Large Scale Production, Taiichi Ohno (1988)