

## Origin of Toyota's monozukuri and TPS

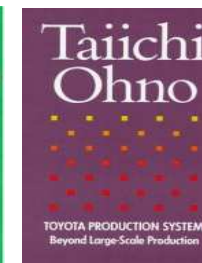
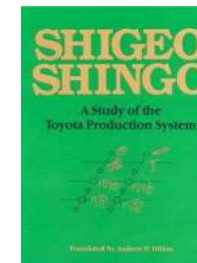
1. Enterprising spirit Always go ahead of the times. (Toyota's platform)
2. Principle of *genchi genbutsu* (Go and see) (Sakichi Toyoda)
3. Total participation "Good products, good thinking" (Toyota's slogan)
4. Making things is making people (Eiji Toyoda)

- (1) Autonomation(自働化) Concept : 1902 (Sakichi Toyoda)
  - Autonomous automation with human touch
- (2) "Just-In-Time" Concept : 1938 (Kiichiro Toyoda)
  - Elimination of *Muda* (Waste)
- (3) Single minutes die change (Shigeo Shingo)
- (4) Kanban method (Taiichi Oono)
  - Pull production - Replenishment by later process



Type-G

Toyoda  
Automatic  
Loom  
(1924)



What is TPS/Lean system

# TPS/Lean manufacturing

19<sup>th</sup> Century

Craft-man Production  
(Hand operation)



Craft -man

First half  
20 Century

Mass Production  
(**Ford system**= Fordism)



Ford system

Latter half  
20 Century

Lean Production  
(**Toyota system**= Toyotism)



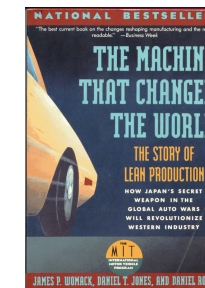
Eiji Toyoda  
Taichi Oono  
Shigeo Shingo

< Benchmarking between GM and Toyota >

Research in 1987

	GM Framingham	Toyota Takaoka	NUMMI Fremont
Assembly hours [Hours/Car]	31	16	19
Defects/100cars	135	45	45
Assembly space/car [sq. ft.]	8.1	4.8	7.0
Average Parts inventory	<b>2 Weeks</b>	<b>2 Hours</b>	2 Days

Lean system  
named by MIT



Source: J.P.Womack, et al.,  
The Machine that Changed  
the World (IMVP Survey)

What is TPS/Lean system

## ***U.S. learned TPS at NUMMI in 1980's***

High-tech (Robotics, CIM, etc. )was defeated by Low-tech based on TPS  
Magazine, "Fortune" report in1986

1982 – GM closed the Fremont, CA Plant

- Lowest Productivity
- Highest Absenteeism

Silicon Valley in U.S.

NUMMI

1984 – Reopened as NUMMI (Toyota & GM)

- Same work force
- White-collar jobs switch **from directing to support.**
- Small work teams trained to design, measure, standardize and optimize their own work.
- If **an operator finds a defective** on the assembly line, **he can stop the line.**



1985 - **Productivity & quality doubled**, exceeded all other GM plants

2010 – End of Toyota-GM joint venture

- Tesla Motor and Toyota announced a partnership to work on EV development.
- Tesla S sedan is built at the plant.

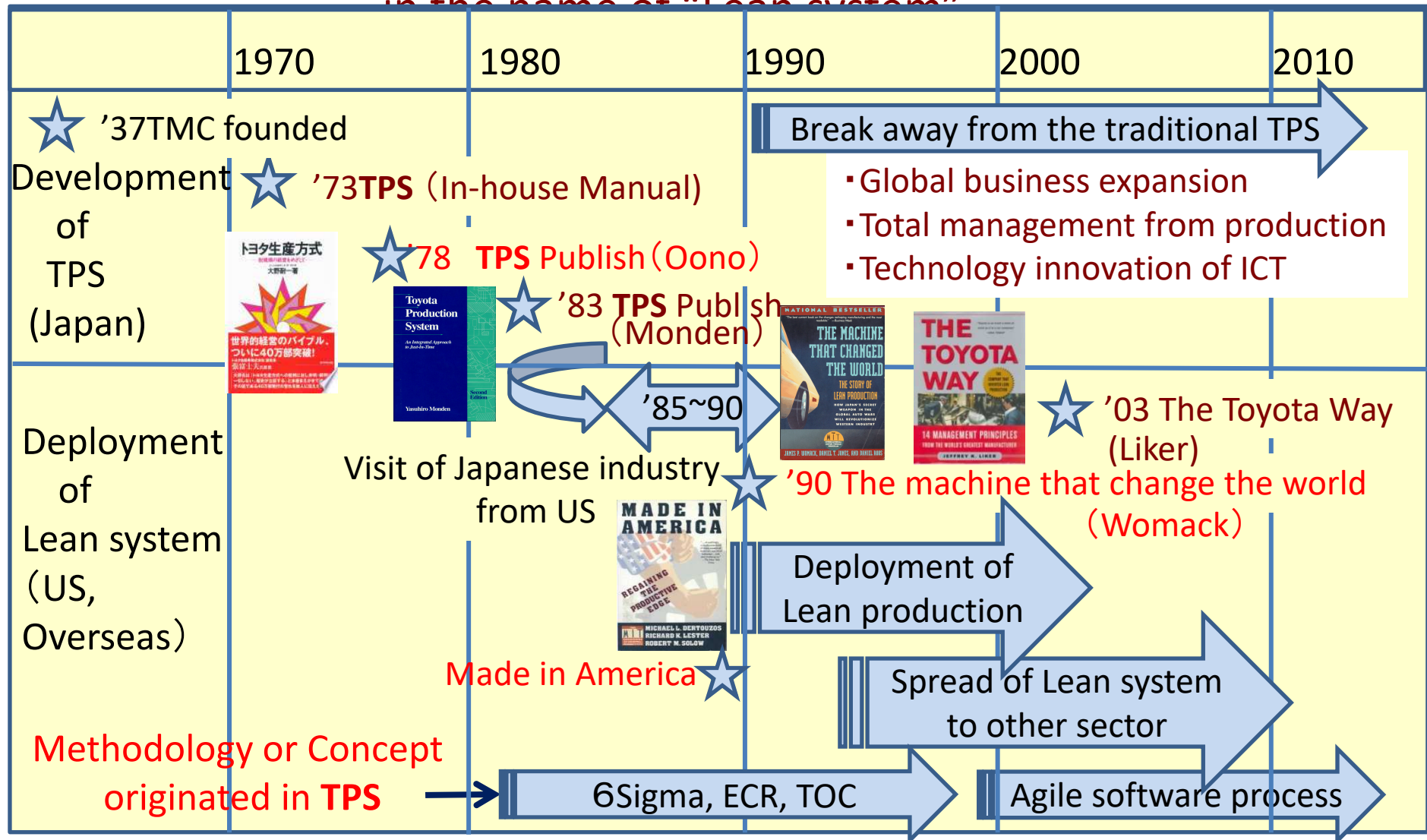
Tesla S sedan  
Flagship car



What is TPS/Lean system

# Toyota Production System(TPS) in manufacturing

TPS has been learned by people around the world  
in the name of "Lean system"



Break away from the traditional TPS

- Global business expansion
- Total management from production
- Technology innovation of ICT

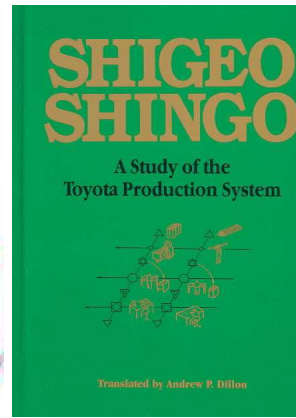
What is TPS/Lean system

# Many books that have spread TPS to the world

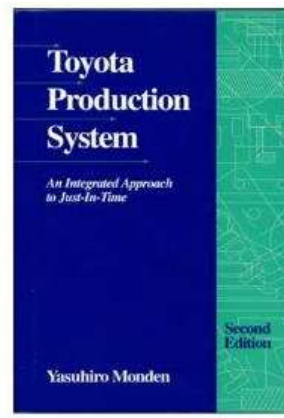
TPS established in 70's ⇒ Expanded to the US in 80's ⇒ Named Lean system around 90



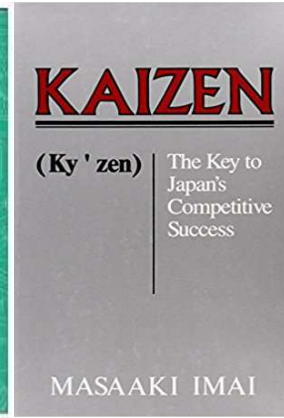
T.Oono  
(1978)



S.Shingo  
(1981)



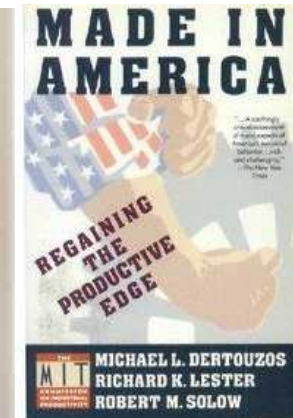
Y. Monden  
(1983)



M.Imai  
(1986)

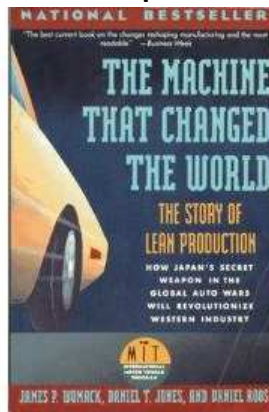


T.Oono  
(1988)

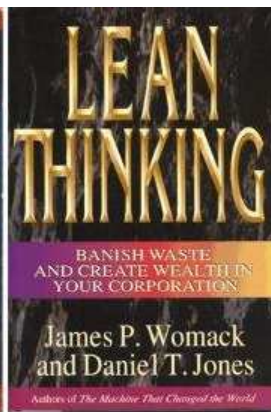


Lester & Solow  
(1989)

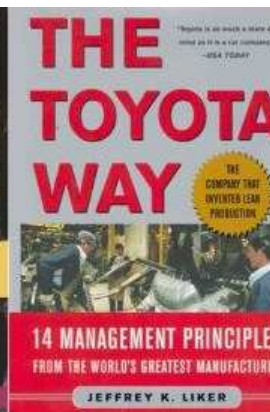
TPS spreads to the world under the name of Lean system(1995 ~)



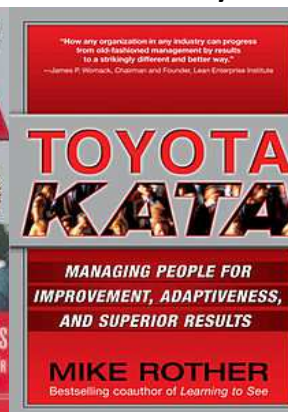
Womack & Daniel Jones  
(1990)



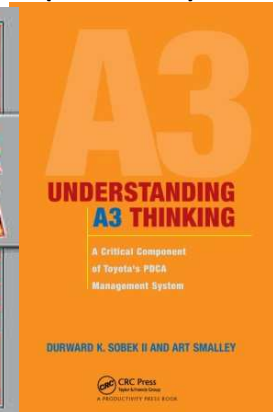
(1996)



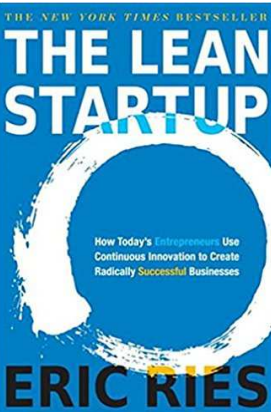
Jeffrey Liker  
(2003)



Mike Rother  
(2009)



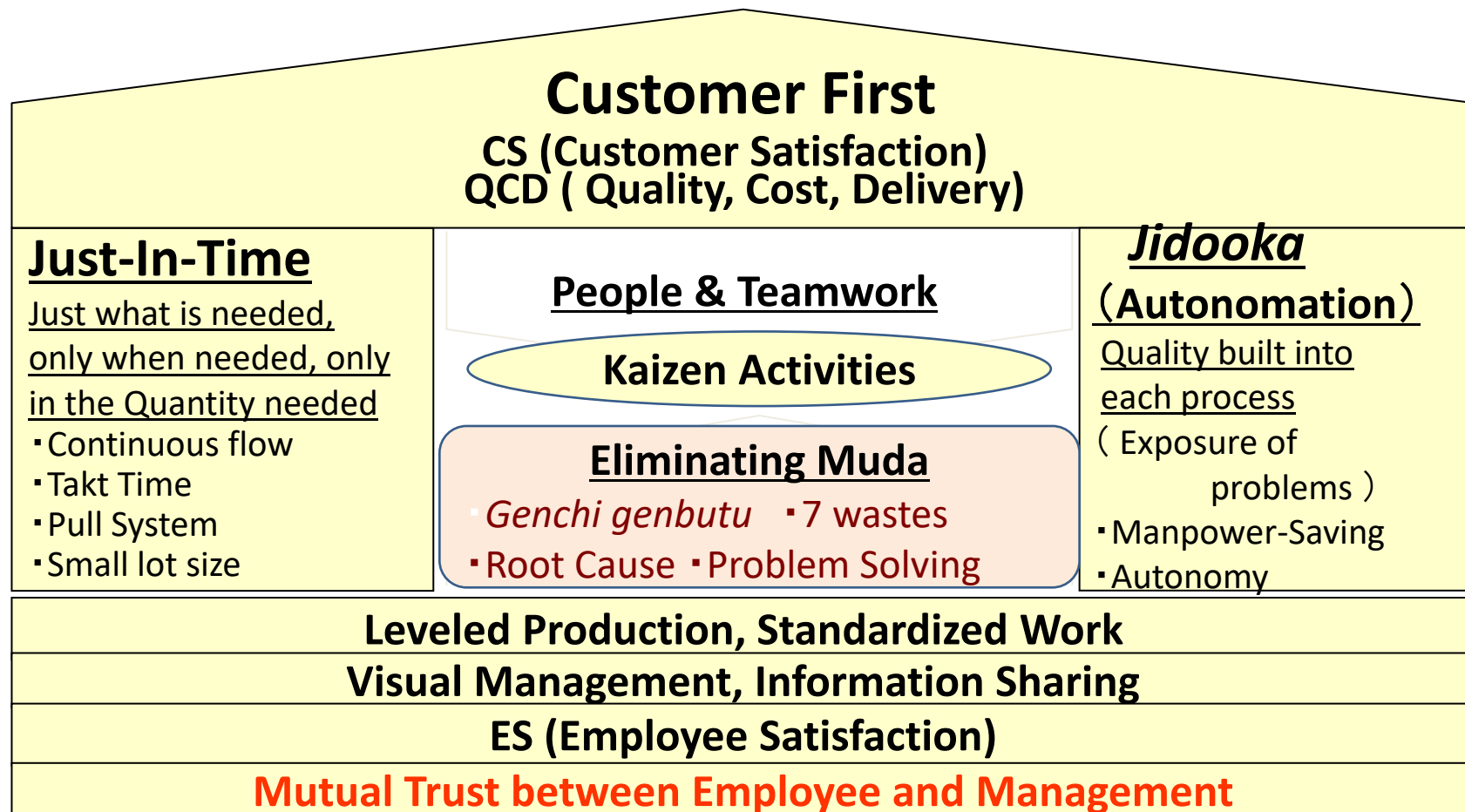
-K. Sobek II.  
(2009)  
Shingo Prize



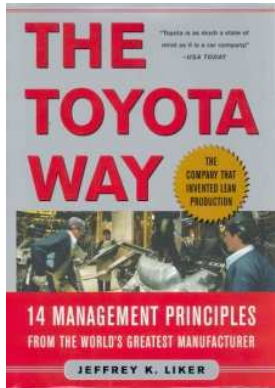
Eric Ries  
(2011)

## Structure of TPS (Toyota Way)

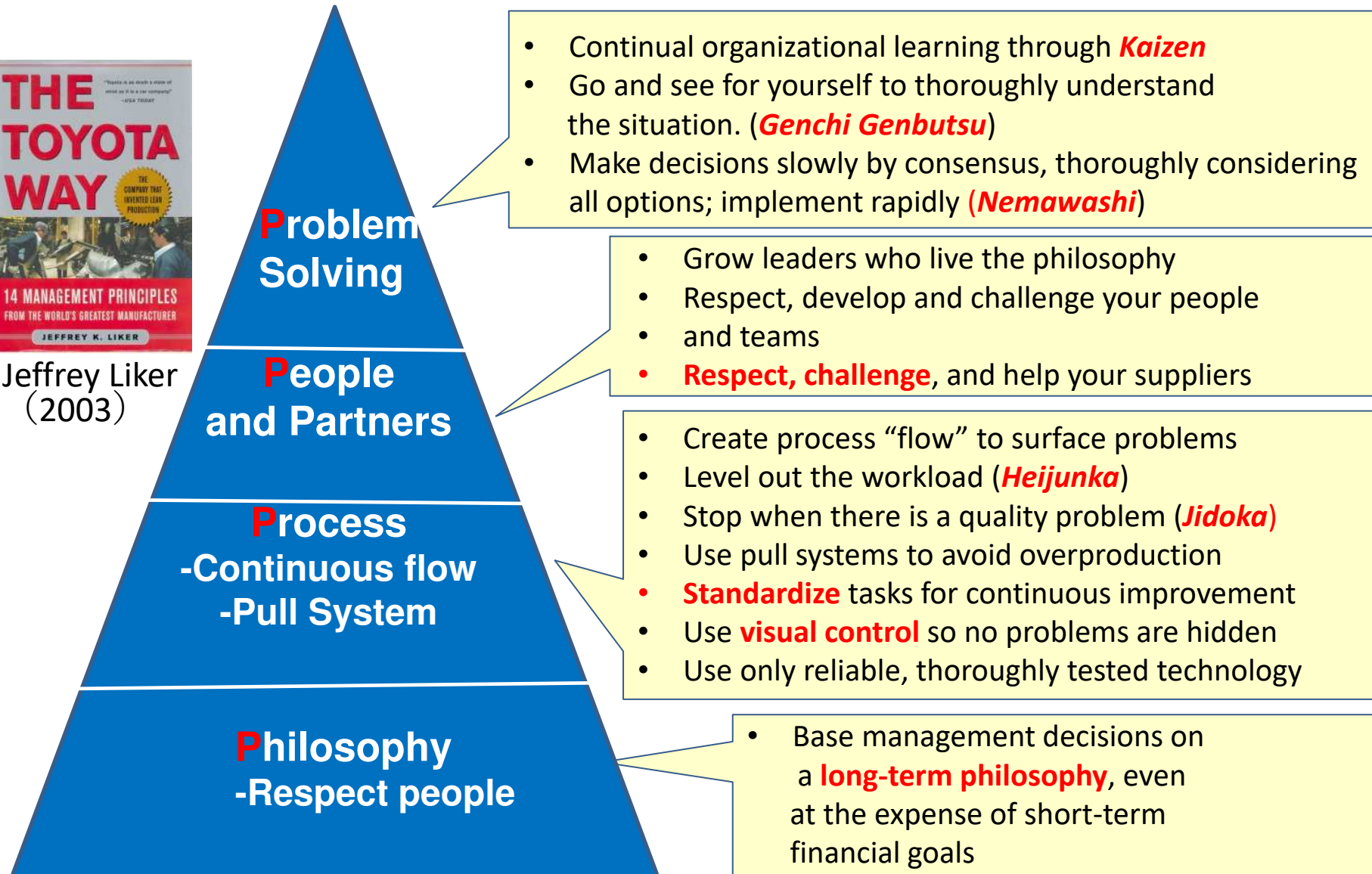
- TPS is a **people centric system**, but not technology or tools.
- Toyota Way consists of 4Ps, which are **Philosophy, People, Process (Lean Production) and Problem Solving (Liker)**



# 4Ps in “Toyota Way” for TPS/Lean practice



Jeffrey Liker  
(2003)



## What is “Toyota Way” and Toyota’s DNA

### 1. Principle of “Customer Orientation”

- The first is Customer, second is Dealer, third is Maker
- Next process is the customer

### 2. *Genchi-genbutu* (Go and see)

### 3. The head office, car development division and production plant are adjacent

- The climate of Toyota’s head office is good Spartan Mikawa.
- The headquarters in Tokyo, are mostly bad

### 4. Focus on human resource development

- Making Things is Making People

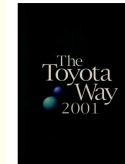
### 5. Strong energy for transformation

Okuda (Former chairman and top of Keidanren) saying ;

"It is wrong not to change"

"Those who oppose change are not silently next to me at least"

### 6. The strength of the sense of crisis



### “Toyota Way”

Published in 2001

6 pages booklet

- ( 1 ) Knowledge and improvement
  - Challenge
  - Kaizen
  - Genchi Genbutsu
- ( 2 ) Respect people
  - Respect
  - Teamwork



## Part 2

-Pause-