# About Lean and Systems Thinking

vs

When talking about agile software development it is all too easy to focus on tools and techniques while sometimes forgetting the fundamental philosophy and way of thinking that forms the foundation for agile. In this presentation I will discuss lean and systems thinking and try to show how they contribute to a foundation for agile thinking.

A 20 minute presentation for Agile@Cisco workgroup

Olve Maudal, August 2011

# Manifesto for Agile Software Development

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

**Individuals and interactions** over processes and tools
**Working software** over comprehensive documentation
**Customer collaboration** over contract negotiation
**Responding to change** over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

| | | |
|---|---|---|
| Kent Beck | James Grenning | Robert C. Martin |
| Mike Beedle | Jim Highsmith | Steve Mellor |
| Arie van Bennekum | Andrew Hunt | Ken Schwaber |
| Alistair Cockburn | Ron Jeffries | Jeff Sutherland |
| Ward Cunningham | Jon Kern | Dave Thomas |
| Martin Fowler | Brian Marick | |

(Snowbird, 2001)

# The Dark Ages of Software Development (mid 80's to mid 90')

# The Awakenings (2001-now)

Kanban

Burndown charts

Sprints

Roles

Review meetings

Planning poker

Basecamp

Standup meetings

Retrospectives

Kanban

Rally

CONWIP

Sashimi

Backlogs

Jira

Team

Scrum of Scrums

Scrum

Product owner

DoD

Value Stream Mapping

... and much more

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Then you have a very weak foundation for agile software development
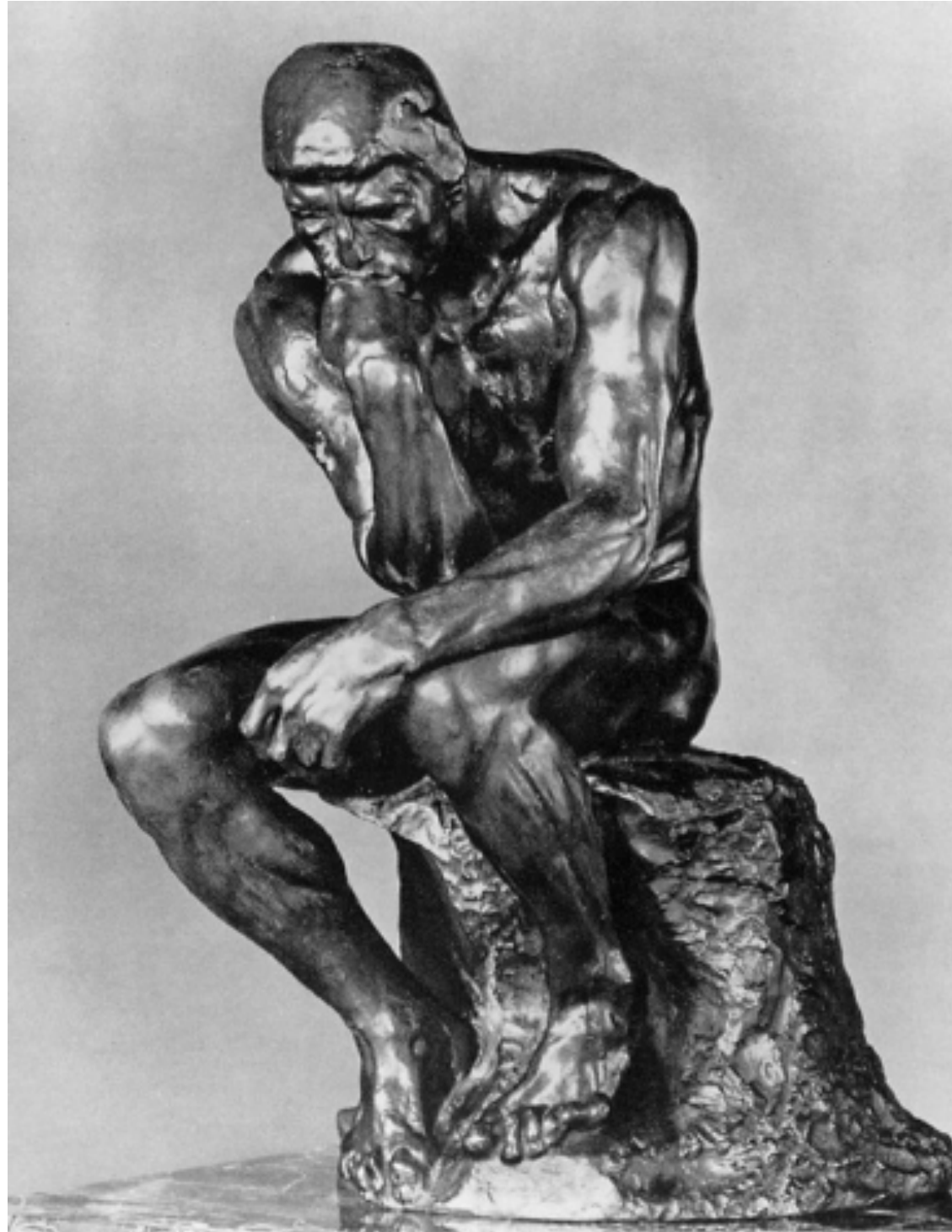
# Systems thinking   vs   Reductionism

## (aka, Demingism vs Taylorism)

**Systems thinking** is the process of understanding how things influence one another within a whole

**Reductionism** is a philosophical position that a complex system is nothing but the sum of its parts, and that an account of it can be reduced to accounts of individual constituents.

# Lean
## Software Development
### An Agile Toolkit

The Agile Software Development Series

Cockburn • Highsmith
Series Editors

- Adapting agile practices to your development organization
- Uncovering and eradicating waste throughout the software development lifecycle
- Practical techniques for every development manager, project manager, and technical leader

Forewords by
**Jim Highsmith**
**and Ken Schwaber**

**Mary Poppendieck**
**Tom Poppendieck**

(Poppendieck 2003)

# The Seven Lean Principles of Software Development

- Eliminate Waste
- Amplify Learning
- Decide as Late as Possible
- Deliver as Fast as Possible
- Empower the Team
- Build Integrity In
- See The Whole

(Poppendieck, 2003)

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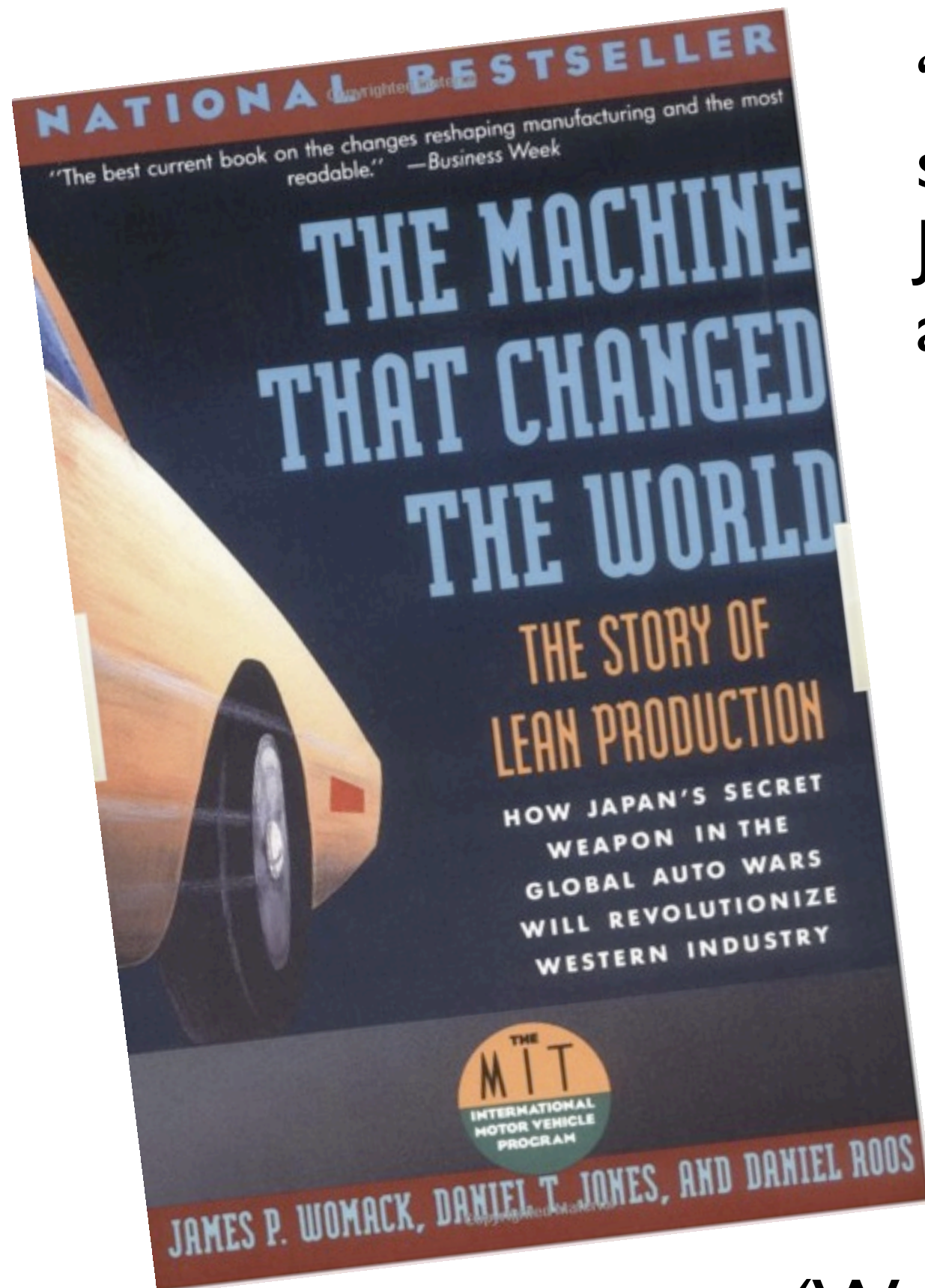# The Seven Lean Principles of Software Development

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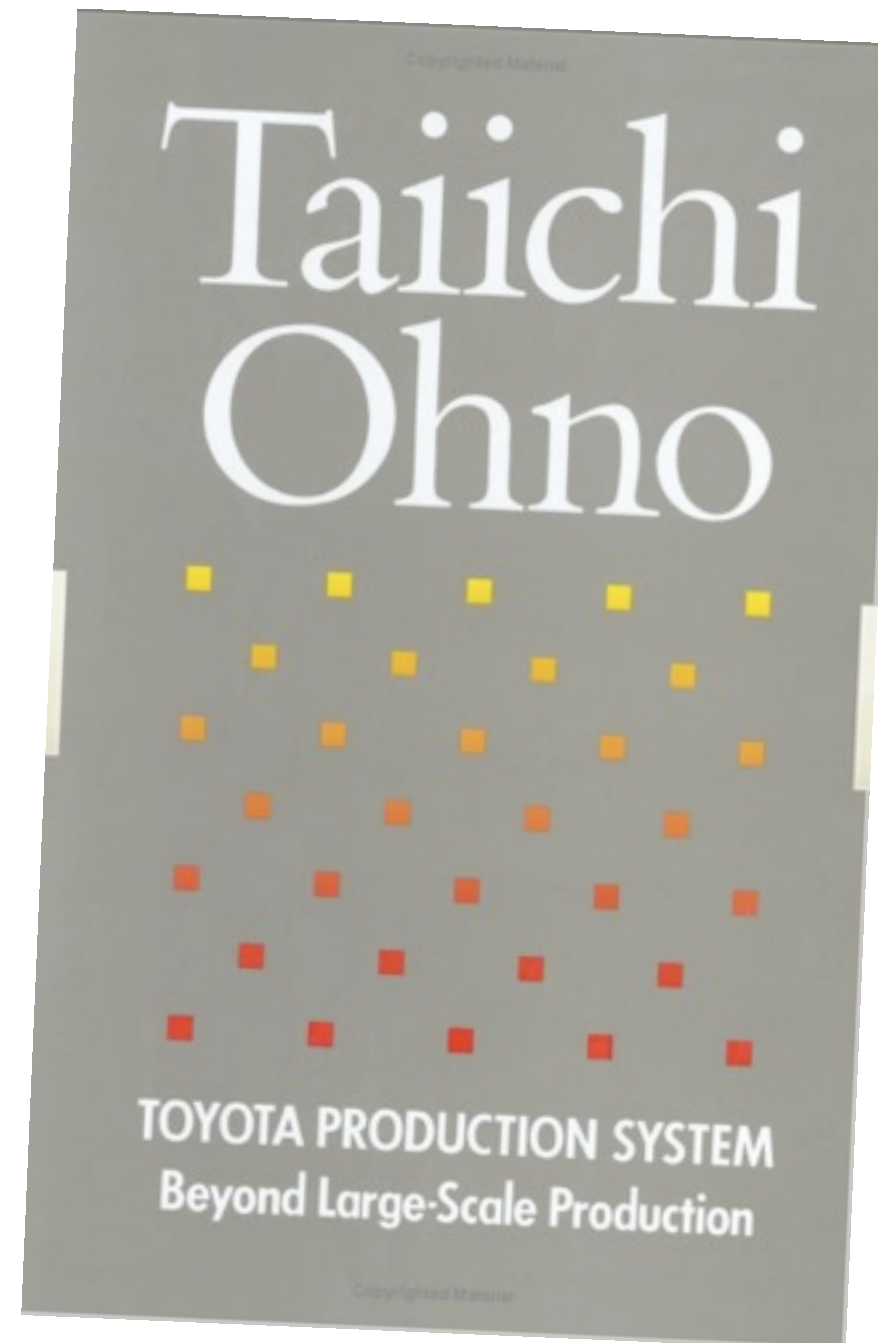- Empower the Team
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(Poppendieck, 2003)

"Japanese companies are sweeping the world, and the Japanese auto industry soars above the competition."

(Womack, Jones, Roos, 1990)

# The Toyota Production System

(W. Edwards Deming 1900-1993)

"The striking thing one first notices in the main lobby [in Toyotas HQ] is larger than life pictures of three individuals. One is of Toyota's founder, another of the same size is of Toyota's current chairman, and a third, much larger picture, is of W. Edwards Deming.

"Dr. Deming: The American Who Taught the Japanese About Quality"
(Aquayo, 1991)

(Demingism)

(Taylorism)

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**Reductionism** is a philosophical position that a complex system is nothing but the sum of its parts, and that an account of it can be reduced to accounts of individual constituents.

# Demings fourteen key principles for management

Create constancy of purpose toward improvement of product and service, with the aim to become competitive and stay in business, and to provide jobs.

Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

**Cease dependence on inspection to achieve quality**. Eliminate the need for massive inspection by building quality into the product in the first place.

End the practice of awarding business on the basis of price tag. Instead, minimize total cost. **Move towards a single supplier** for any one item, on a long-term relationship of loyalty and trust.

**Improve constantly and forever the system of production and service**, to improve quality and productivity, and thus constantly decrease costs.

Institute **training** on the job.

Institute leadership (see Point 12 and Ch. 8 of "Out of the Crisis"). The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

**Drive out fear**, so that everyone may work effectively for the company. (See Ch. 3 of "Out of the Crisis")

Break down barriers between departments. **People in research, design, sales, and production must work as a team**, to foresee problems of production and in use that may be encountered with the product or service.

**Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity**. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.

a. **Eliminate work standards** (quotas) on the factory floor. Substitute leadership.
b. **Eliminate management by objective**. Eliminate management by numbers, numerical goals. Substitute leadership.

a. **Remove barriers that rob the hourly worker of his right to pride of workmanship**. The responsibility of supervisors must be changed from sheer numbers to quality.
b. Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia," abolishment of the annual or merit rating and of management by objective (See Ch. 3 of "Out of the Crisis").

**Institute a vigorous program of education and self-improvement**.

**Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job**.

A subset of Systems Thinking by Demining:

- Cease dependence on inspection to achieve quality
- Move towards single suppliers and establish long-term relationships
- Drive out fear
- Break down barriers between departments
- Eliminate work standards
- Eliminate management by objective
- Remove barriers that rob people their right to pride of workmanship
- Institute a vigorous program of education and self-improvement

# DR. DEMING

### The American Who Taught the Japanese About Quality



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"DEMING'S MANAGEMENT PHILOSOPHIES ARE THE DRIVING FORCE BEHIND JAPAN'S ECONOMIC MIRACLE." —USA TODAY

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OUT OF THE CRISIS