



**Karolinska
Institutet**

Lean Health Care: Promises and Pitfalls

A realist review of the literature on how lean thinking has been applied in health care

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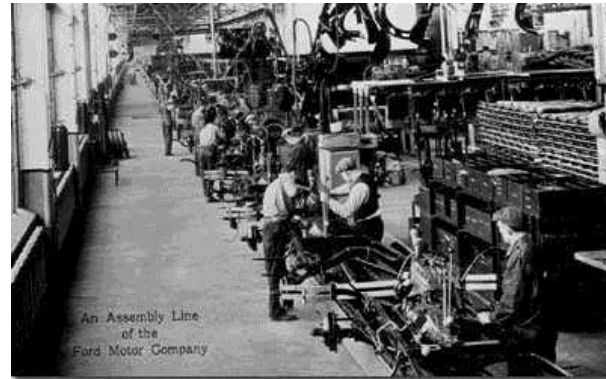
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Håkan Aronsson, Mats Brommels, Carl Savage, Johan Thor

Lean Production: When



Craft production

1900

1950

Lean production



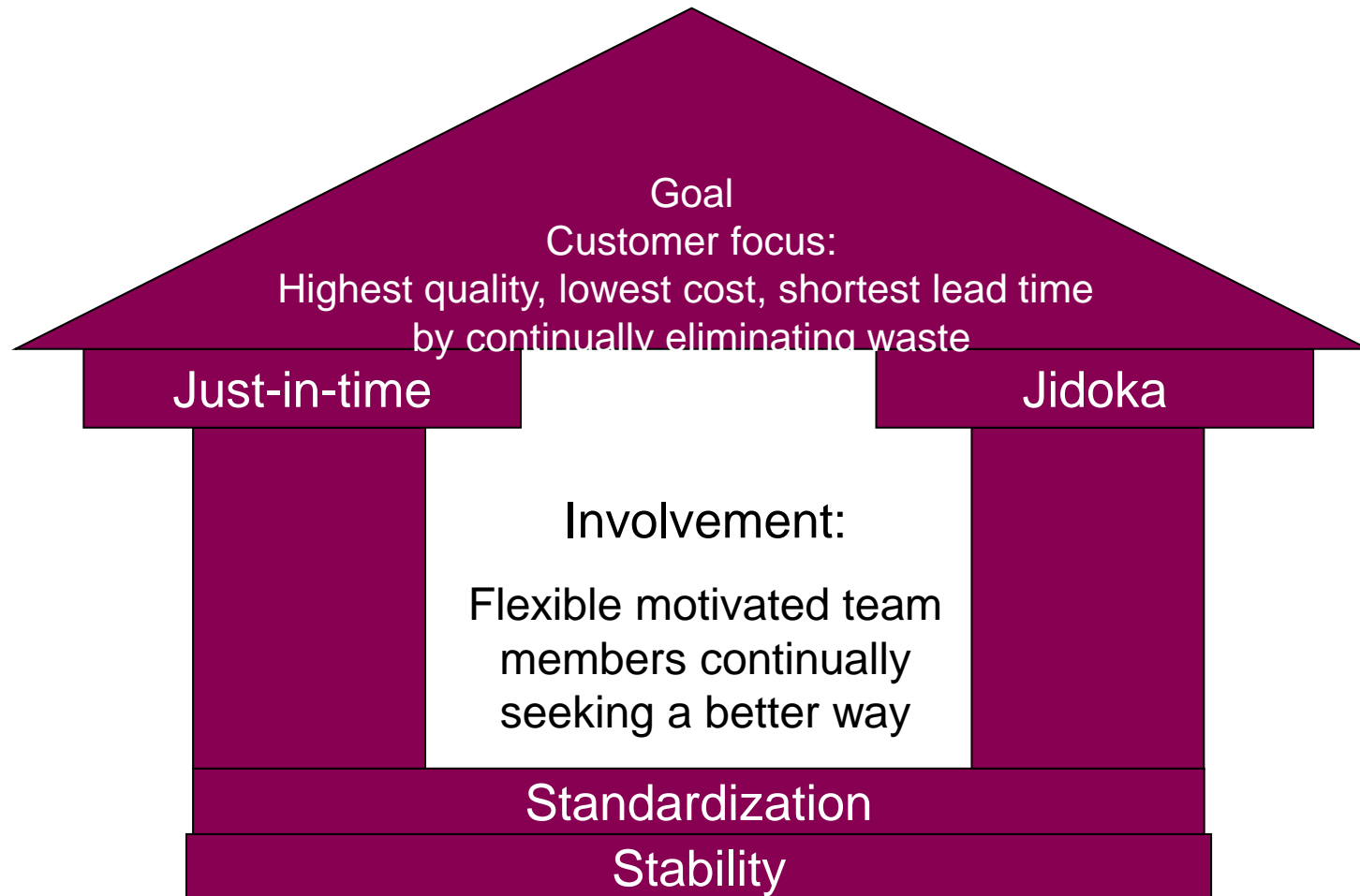
Mass production



Defining Lean Production

- *A production system that is steeped in the philosophy of the complete elimination of all waste and that imbues all aspects of production with this philosophy in pursuit of the most efficient production method (www.toyota.co.jp)*
- *An operations management system to achieve goals of highest quality, lowest cost, shortest lead time via engaging people towards goal based on flow maximisation and waste elimination (Liker, J.K. “The Toyota way : 14 management principles from the world's greatest manufacturer”, 2004:176)*

Lean Thinking



Source: Dennis Pascal "Lean production simplified : a plain language guide to the world's most powerful production system", 2007:19

Lean Health Care Promises

- Emulate Toyota's performance
 - Increase patient safety
 - Improve quality
 - Reduce costs and inefficiencies

Is Lean really something new?

- What is new about Lean?
 - An holistic approach applied to all processes with the aim to create value
 - A set of specific tools and methods
- What is not new about Lean?
 - Incremental and systematic quality improvement approach
 - Process oriented
 - Customer oriented

Aim of the Study and Research Question

- To review applications of lean thinking in health care
 - Compare theoretical propositions against actual practice to increase the understanding of how lean is translated into practice.
- “WHAT is it about lean that works, for WHOM, in WHAT circumstances, in what RESPECTS and WHY”?

Research Method: Realist review

- **The realist approach** (Pawson et al. “Realist review – a new method of systematic review designed for complex policy interventions”,2005)
 - A theory-driven approach that aims at investigating how management and policy interventions work in relation to the underlying mechanisms and contexts

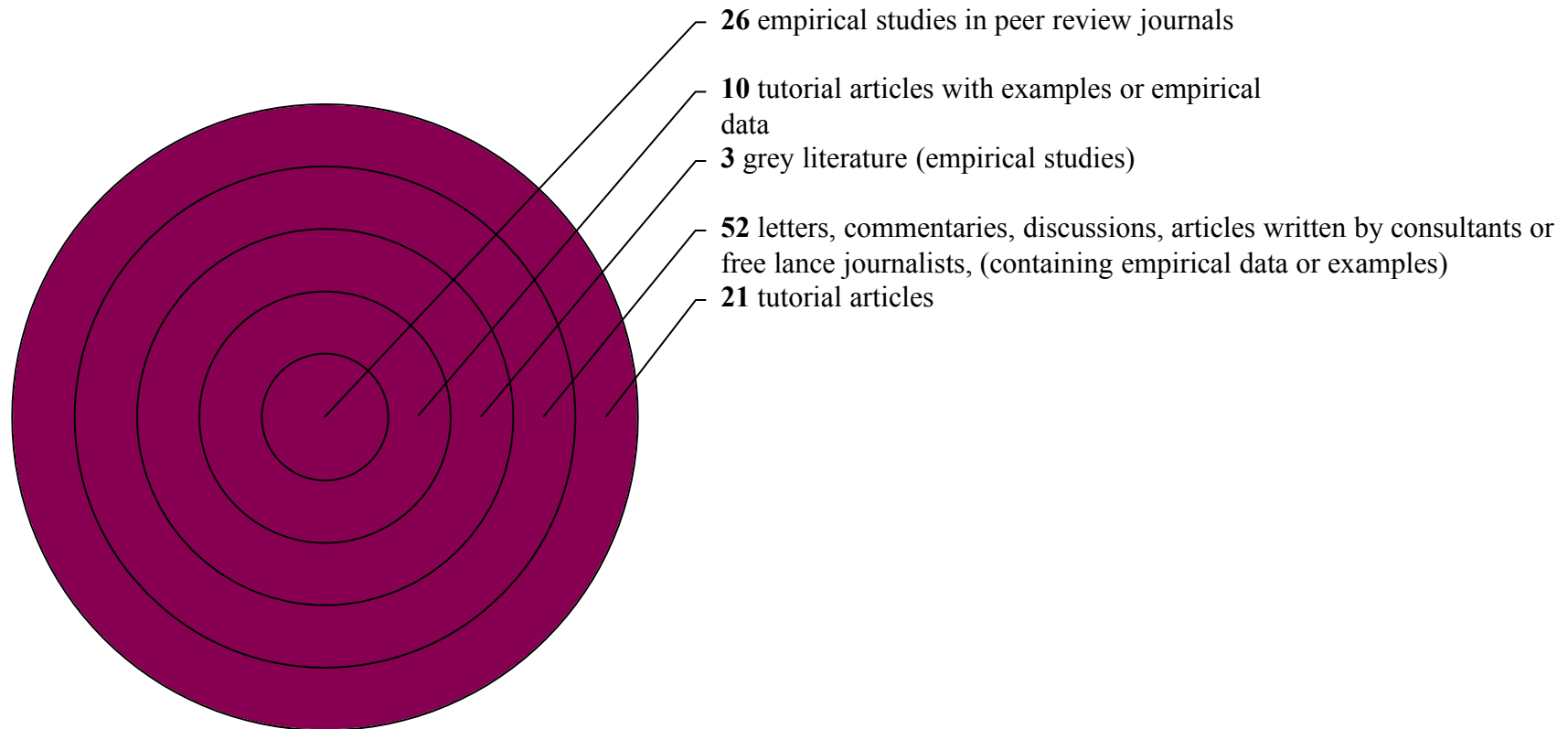
 - Service interventions are theories
 - Redesigning health care delivery systems based on flow maximization and waste elimination will both increase quality and reduce costs

 - Contextualised solutions

Search strategy

- Key words:
 - toyota OR "lean health care" OR "toyota way" OR "lean thinking" OR "lean manufacturing" OR "toyota production system" OR "lean service*" OR "lean process*" OR "lean enterprise" OR "toyota DNA" OR "lean production" OR "lean healthcare" OR "lean method*" OR "lean principle*" | last ten years
- Sources:
 - PubMed, Web of Science, Business Source Premier
 - Others: suggested readings, and articles cited by others.
- Inclusion criteria:
 - Relevance
 - Purposive sampling
 - Rigour

Literature search results



Preliminary Results

- Change process:
 - Top down introduction, bottom up work using groups
- Changes implemented:
 - Incremental quality improvements targeting identified defects and waste
 - Patient flows streaming, pull, visual control, specification and standardisation, kanban cards, layout redesign, etc.
- Tools of analysis:
 - It depends on the targeted process; it usually starts with process mapping to identify waste and defects
 - Value Stream Mapping, 5 Whys, A-3 Problem Solving
- Principles
 - It depends on the references used, but with many similarities

Further results

- Context: applications on a great variety of processes
- Much focus on creating the right process that will produce the right results
 - Less about long term commitment, people development and the creation of a stable culture to continually strive for perfection

Further results

- Facilitating and hindering factors are similar to those affecting other quality improvement methods.
- Scarcity of scientific papers
 - Often weak or unclear in the research design
- Bias risk: no publications about failed attempts to implement lean

Preliminary conclusions

- Does lean health care work? Yes, No, Maybe!
 - Appealing theory and a set of practical tools to improve the delivery of health care
- However, the success of Toyota is “*ultimately based on its ability to cultivate leadership, teams, and culture, to devise strategy, to build relationships, and to maintain a learning organisation*” (Liker, J.K. “The Toyota way : 14 management principles from the world's greatest manufacturer”, 2004)

