



**TOCPA**

MEDIUM

Theory of Constraints  
Practitioners Alliance



# **Eli Goldratt's Legacy in the World**

**46<sup>th</sup> TOCPA International Online Conference**

**18-19 March 2021**

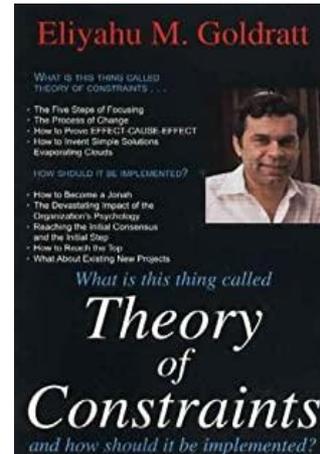
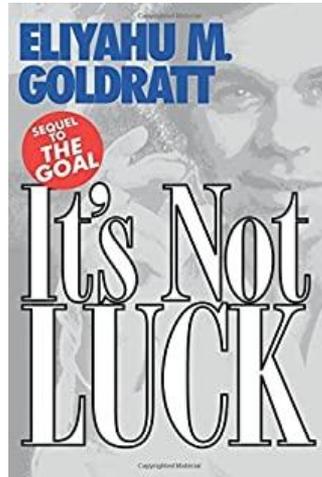
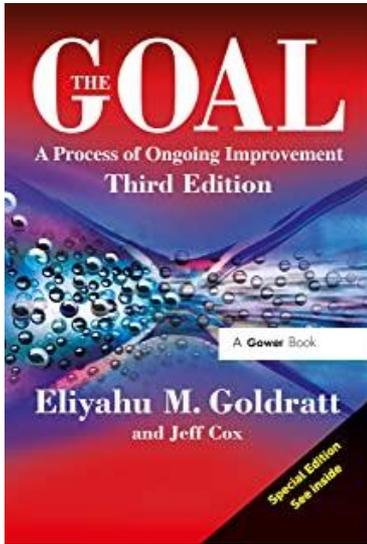
**Roy Stratton**

**UK, Nottingham Trent University, [NTU.ac.uk](http://NTU.ac.uk)**

# Eli's legacy in the world

- Personal background

- 1979 Mech Eng Rolls Royce
- **1986 NTU Engineering - The Race, OPT, simulator**
- **1988 Rediscovered through the TP - EDM Oded**
- 1989 Jonah
- 1991 Jonah-Jonah
- TOC led curriculum
- TOC centred consultancy and research
  - Ropeweaver developed with Andy Watt
- TOC research - Mondragon students, Basque , Spain
- 1996 MSW
- **1999 Goldratt Satellite – academic interest? – New research direction**
  
- 2003 Nottingham Business School
- 2005 - Goldratt Schools
- **2006 -14 MSc TOC (Health and Social Care Management)**
- **2008 Host Eli and Odyssey at NTU**
- **2016 New OM curriculum – positioning TOC, academic interest!**
- 2019 TOCICO Board

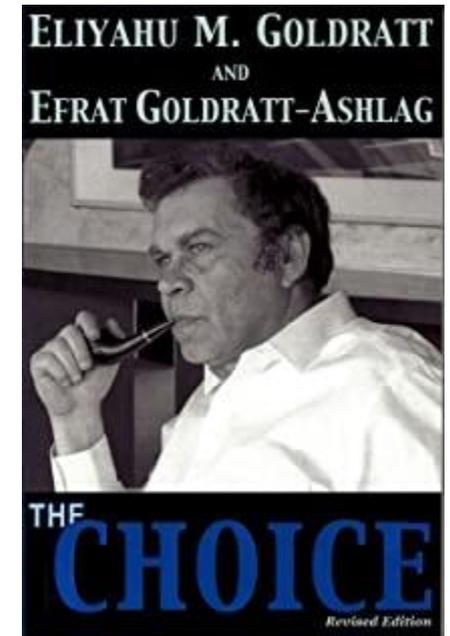
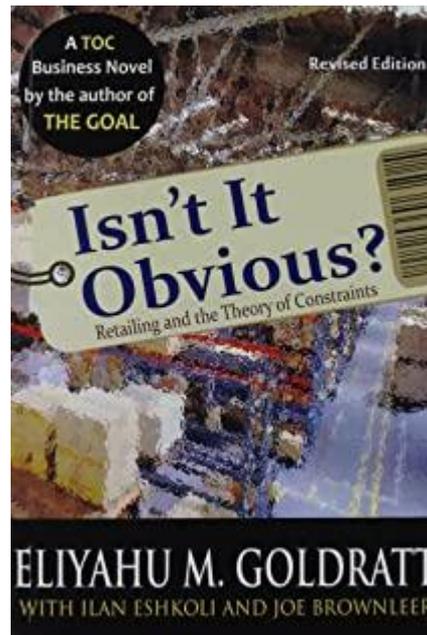
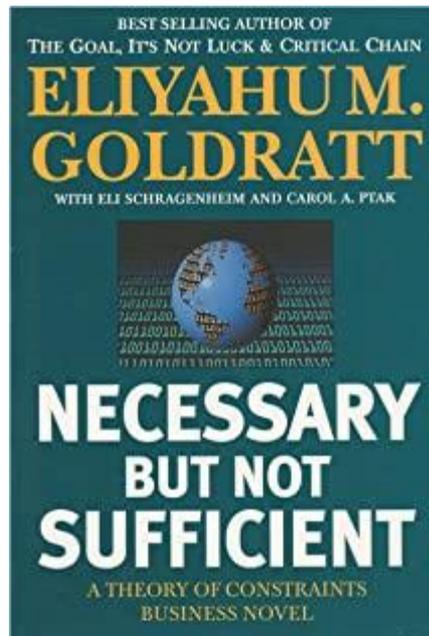
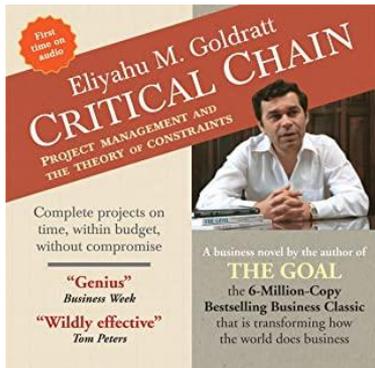


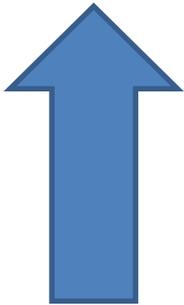
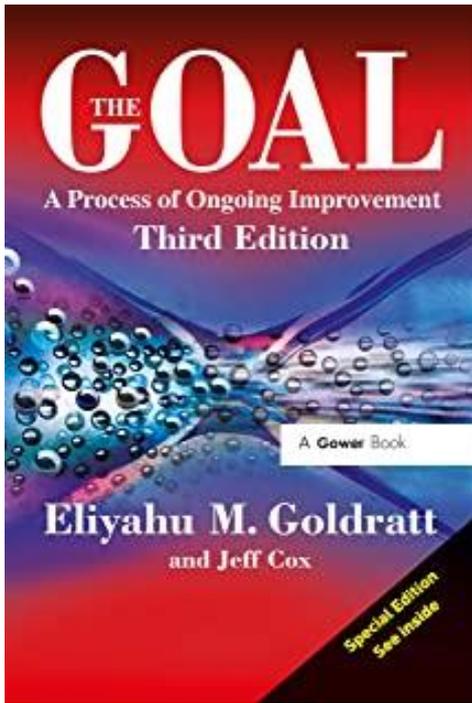
ELIYAHU M. GOLDRATT

SIFTING  
INFORMATION  
OUT OF  
THE  
DATA  
OCEAN

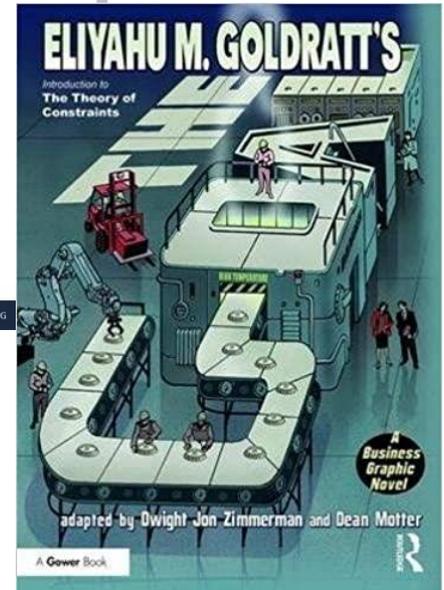


THE  
HAYSTACK  
SYNDROME





Plus SOTSOG  
And the 4 concepts of flow

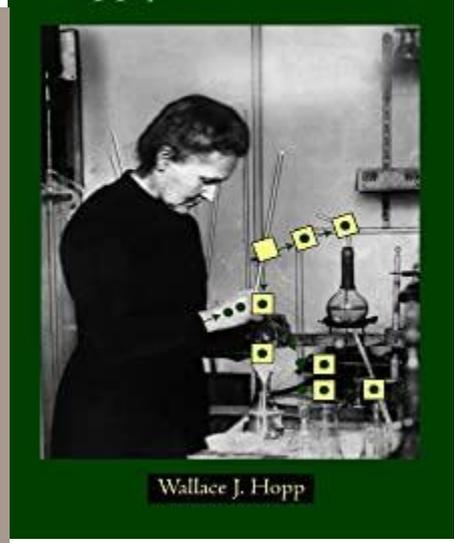
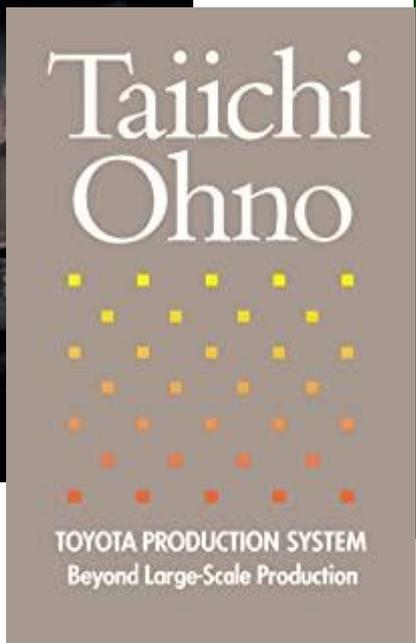
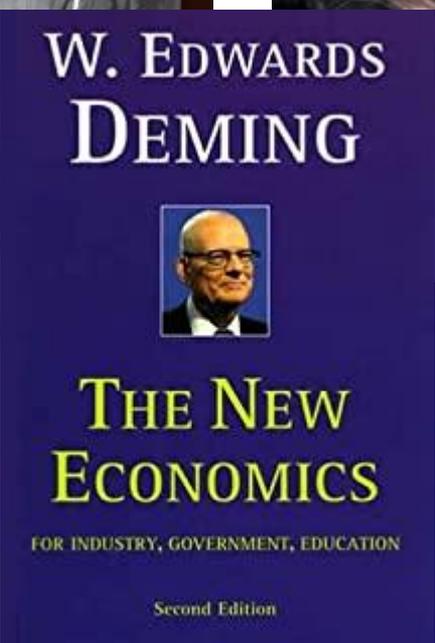
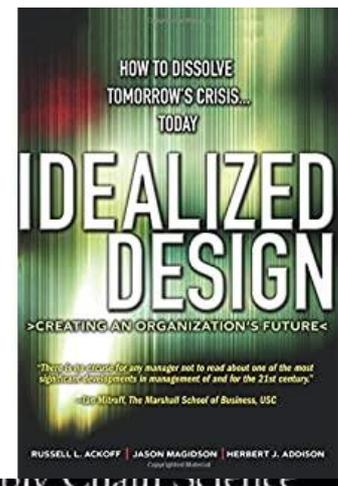
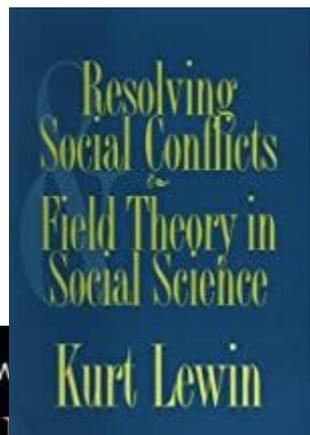
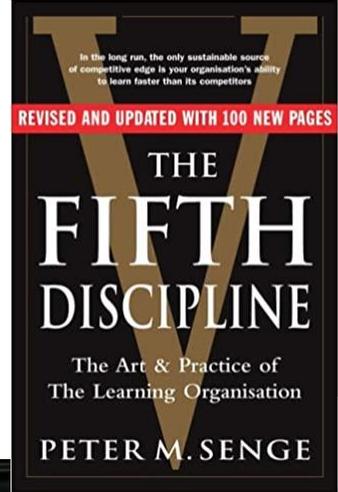
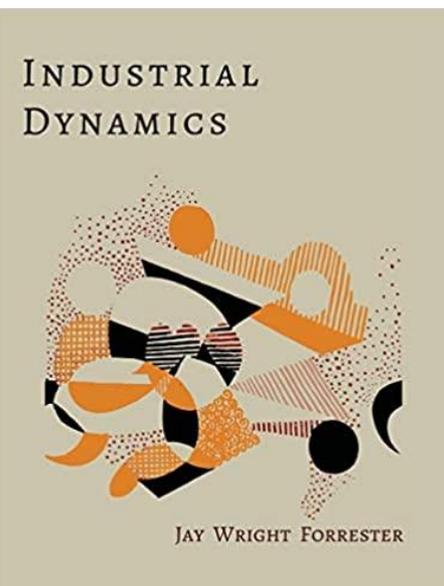


# Common principles to overcome a common, if sacred, cow

“Almost everyone who has worked in a plant is at least uneasy about the use of **cost accounting efficiencies to control our actions**. Yet few have **challenged this sacred cow directly**. Progress in understanding requires that we challenge basic assumptions about how the world is and why it is that way. If we can better understand our world and the **principles that govern it**, I suspect all our lives will be better.”

*Dr. Eliyahu Goldratt 1984*

*Preface to The Goal*



# Common governing principles?

- TOC is not the only paradigm shifting systems approach
  - Flow lines (Ford, 1926)
  - Manufacturing strategy (Skinner, 1969)
  - Quality management (Shewhart, 1939; Deming, 1986)
  - TPS (Ohno, 1988)
  - TOC (Goldratt, 1990)
  - *SCM (Forrester, 1958; Stevens, 1989)*
- They similarly challenge the influence of 'cost accounting efficiencies' - But only indirectly!
- Is there opportunity to see these developments as part of a whole by identifying the underlying **'principles that govern'**?

# Academic Theory in Operations

(Boer, et al., 2015)

- Queuing (line) Theory (Erlang 1909)
- Swift and Even Flow Theory (Schmenner and Swink, 1998)
- Performance Frontiers Theory (Schmenner and Swink, 1998)
- Cumulative Capability Theory (Ferdows and De Meyer, 1990)
- TOC (1984) A theory, which was publicised by an unusual method – a novel, *The Goal*, is the “theory of constraints” (Goldratt and Cox, 1984).  
The theory states that every process has a single constraint (bottleneck) that stands in the way of achieving the goal of improving profit.  
Management should focus on systematically improving that constraint until it is no longer the limiting factor as only improvements to the constraint will further the goal. The theory of constraints defines the steps that managers can use to manage constraints, thereby increasing profits.

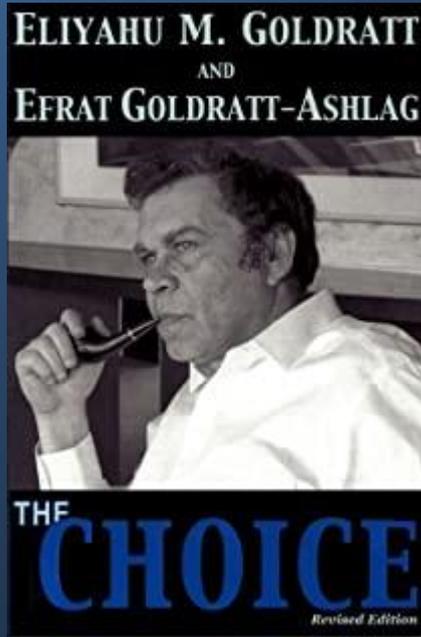
# How TOC is viewed by academics

- *'Most significant contributor to OM'*
- *'Milking his one good idea'*
- Little appreciation of the key concept of buffer management
- Ohno (1978) understood buffering
  - *'The greater the fluctuations in quantity picked up, the more excess capacity is required by the earlier processes... Ideally, levelling should result in zero fluctuations in the final assembly line.'* (:36-37)

## 4 Concepts of flow (Goldratt, 2009)

- **1. Improving flow**
- **2. Prevent overproduction**
- **3. Abolish local efficiencies**
- **4. Focus activity to balance flow**

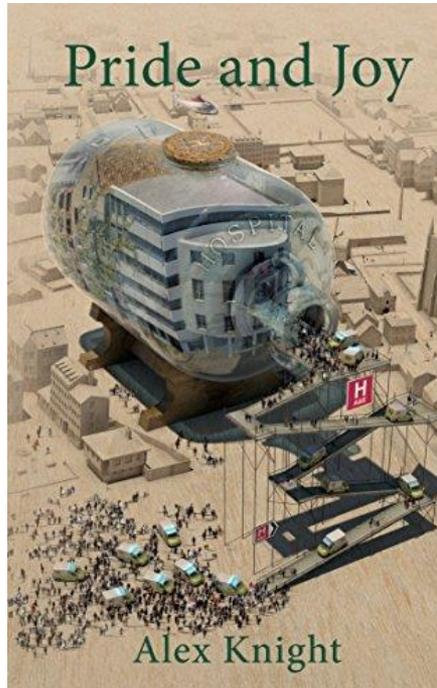
No mention of 'constraints' but providing a framework that more readily embraced the work of others



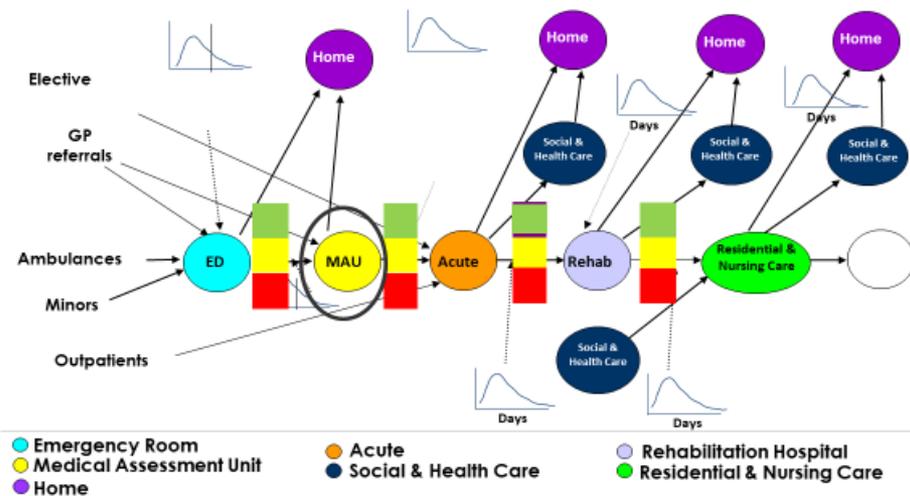
## 4 TOC pillars (assumptions)

- **Inherent Simplicity:** systems (for instance, organizations) are inherently simple, despite their apparent complexity. In other words: a few or even one point (Constraint) controls the performance of the whole system, and a few or even one cause (Core Problem) generates the vast majority of the problems.
- **Inherent Consistency:** There are no conflicts (or inconsistencies) in reality. All conflicts (or inconsistencies) exist only in our minds. One or more invalid assumptions produce any perceived conflict (or inconsistency).
- **Inherent Goodness:** People are good. The reasons for anything that goes wrong do not come from people's nature (good or bad) but from their assumptions and circumstances.
- **Inherent Potential:** Never say "I Know." The more solid the base, the higher the jump. Any situation can be substantially improved. Thinking otherwise will almost guarantee it won't.

# Patient flow in health and social care



“inherent simplicity.” It states that the more complex a system is to describe, the simpler it is to manage.

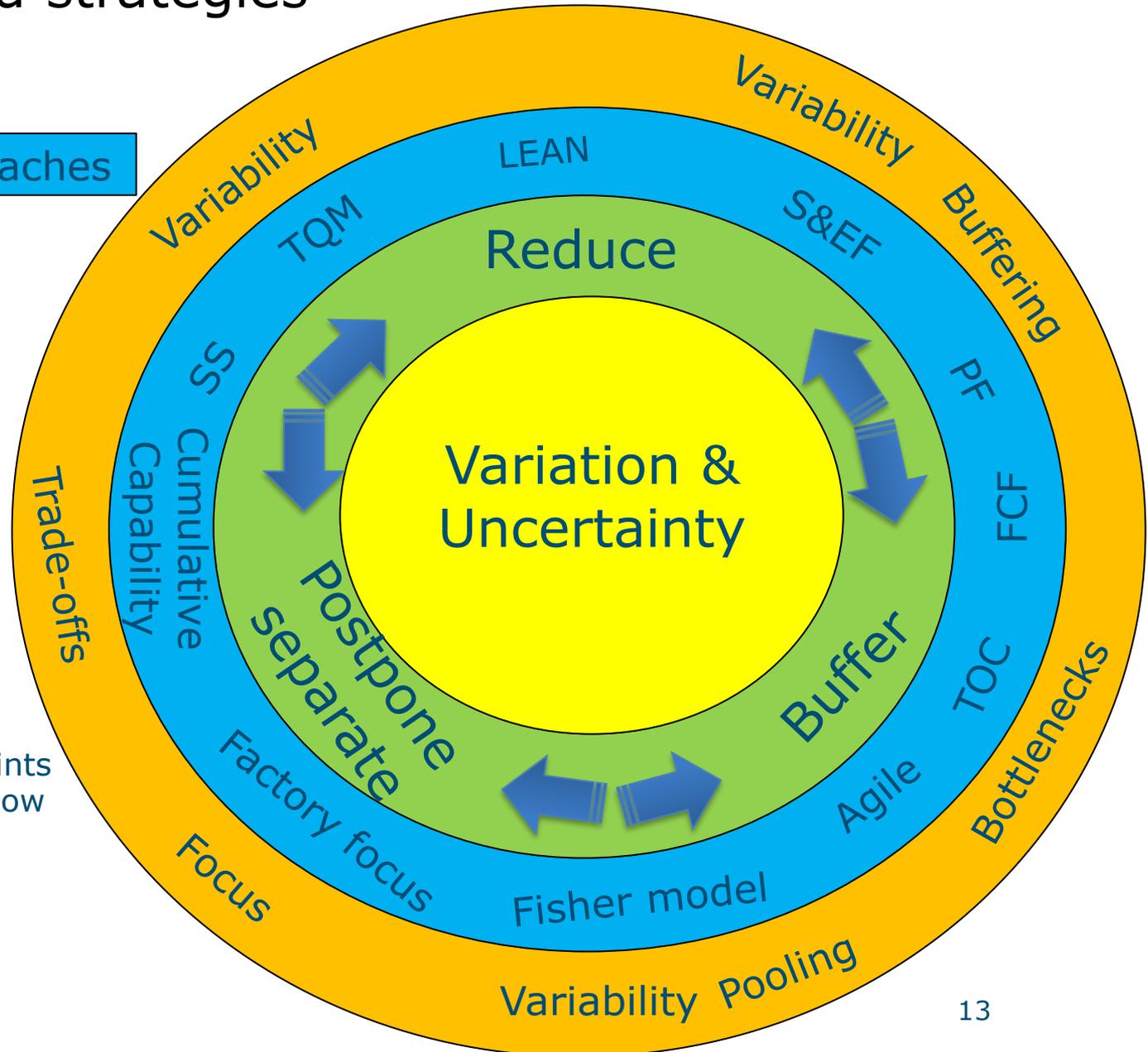


# Linking operations laws to theories / approaches and coordinated strategies

Laws

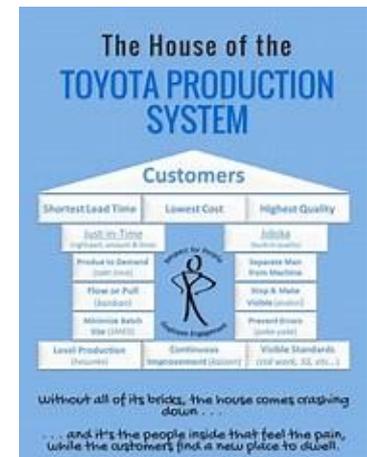
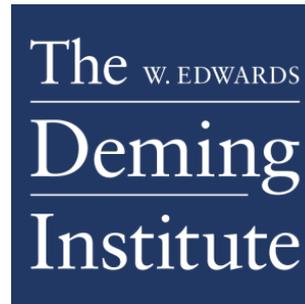
Theories / Approaches

Coordinated Strategies



SS: six sigma  
 TQM: total quality management  
 S&EF: theory of swift and even flow  
 PF: performance frontiers  
 TOC: theory of constraints  
 FCF: four concepts of flow

# The lasting legacy is much deeper than the associated societies, institutions organisations and alliances



**THEORY OF CONSTRAINTS**  
INTERNATIONAL CERTIFICATION ORGANIZATION

# Conclusion

- He was a great thinker that provided means of explain the work of others – theoretical framework.
- He extended his thinking to a wide range of production environments within the framework.
- Underlying this genius was the desire to enable others to think at the personal as well as organisational level.
- The breadth of his applications and philosophy requires a passion that many choose not to embrace.
- His later works (4 concepts of flow and 4 pillars) are a culmination of his contribution to operations practice and philosophy that **provides a bridge** that hopefully will provide a gateway in.