



THE UNIVERSITY OF
BUCKINGHAM

TWI Kata: Reflections and Opportunities

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Reflections and Opportunities

- Here we are near the Arsenale :
- A Breakthrough!
- Is TWI and Kata another Breakthrough?



- **TWI and Kata is a marriage made in heaven....**
- **BUT**
- **Like all marriages adjustments are needed.**
- **..and opportunities realized**

TWI and Kata : Mutual Gains



Kata:
Adapting
Direction:
Learning and
Coaching

Kata

JI

JM

JR

JS

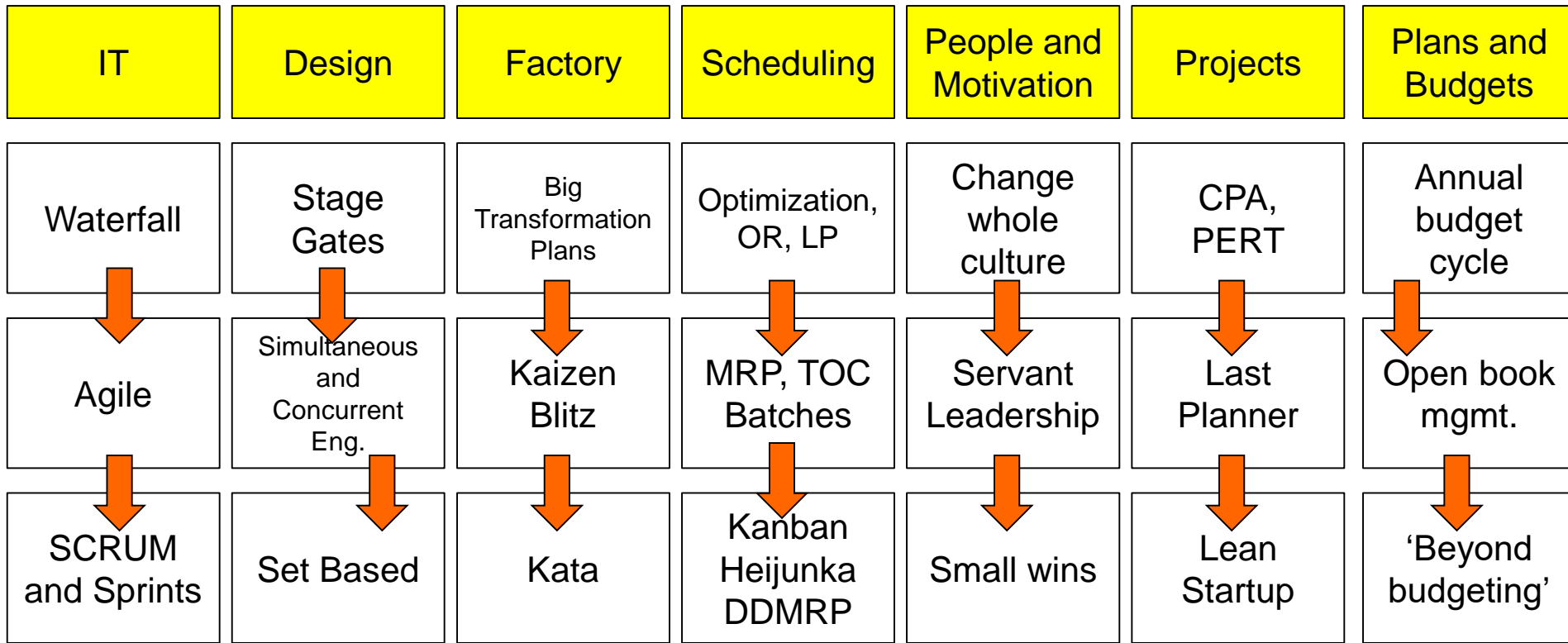
Both:
Small Wins,
PDCA,
Direct Observation,
Respect

TWI:
Establishing the
Foundation
and 'Holding the
Gains'

TWI and Kata together

- **Kata to**
 - Set the direction or purpose
 - Experiment
 - Identify next Obstacles
- **TWI to**
 - Remove Obstacles (JI, JR)
 - Clarify obstacles (JM)
 - Revealing the Current Condition (JM, JS)
 - Confirm (key points)
- **Both (the big one!)**
 - Not Training then Doing, but Training and Doing together
 - Learning through ‘Small Wins’; ‘Short Cycle’

Converging Themes?



“Laying out a road map in advance”, has often proved fatal

See Mike Rother
Kata Practice Guide, page 126

The Problem with Big Change Projects

- Threatening!
- **The ultimate goal or purpose may not change, but the objectives change as the problem is ‘solved’**
- A big change usually takes time to plan and execute, during which time
 - Technology may change
 - Managers may change
 - Competition may change
 - The Economy, Laws, Government may change

“Everybody has a plan until they get punched in the face”.



Small Wins

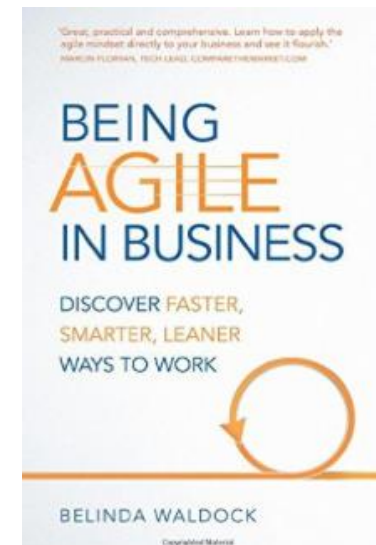
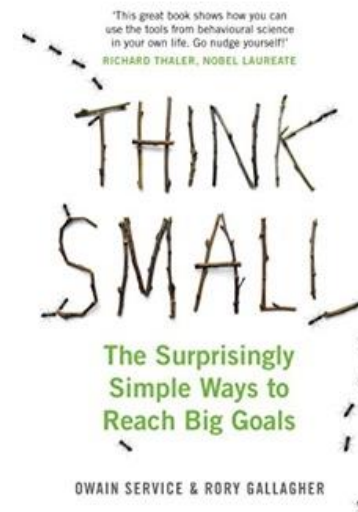
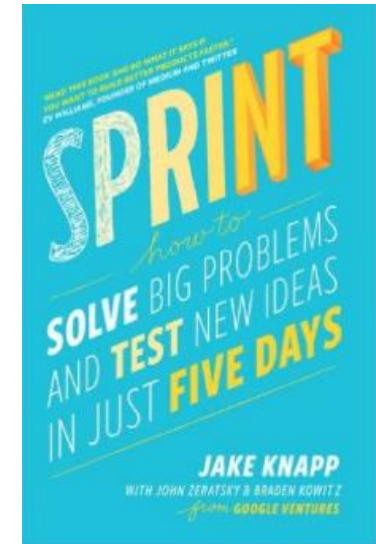
‘By itself, one small win may seem unimportant. A series of small wins at small but significant tasks, however, reveals a pattern that may attract allies, deter opponents, and lower resistance to subsequent proposals. Small wins are controllable opportunities that produce visible results. Once a small win has been accomplished, forces are set in motion that favour another small win. When a solution is put in place, the next solvable problem often becomes more visible. This occurs because new allies bring new solutions with them and old opponents change their habits.’ Karl Weick “Small Wins: Redefining the Scale of Social Problems,” *American Psychologist*, January 1984.

**Flexibility, Less threatening, Simplicity,
Learning and feedback**

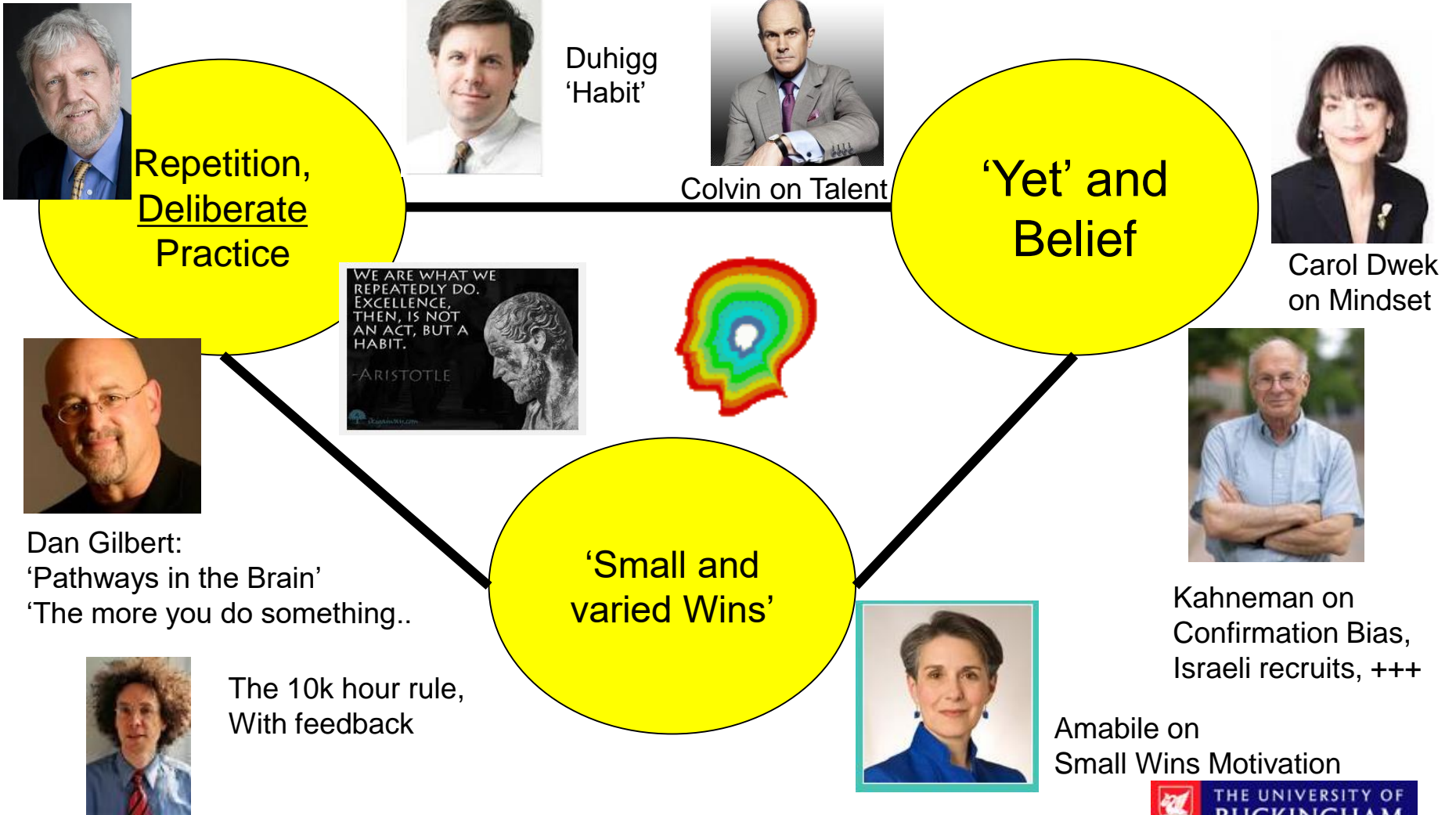


Small Wins / Short Cycle becoming accepted

- Lean Startup
 - Build, Measure, Learn
 - Minimum viable product
- Sprints vs... Waterfall
- UK Government Behavioural Insights Team:
 - Choose the right goals
 - Focus on a single goal; set a clear target and deadline
 - Break the goal down into manageable steps
- Others
 - Charles Lindblom 'The Science of Muddling Through' (1959)
 - Herbert Simon's 'Satisficing'



Small Wins : Some References (outside of Lean)



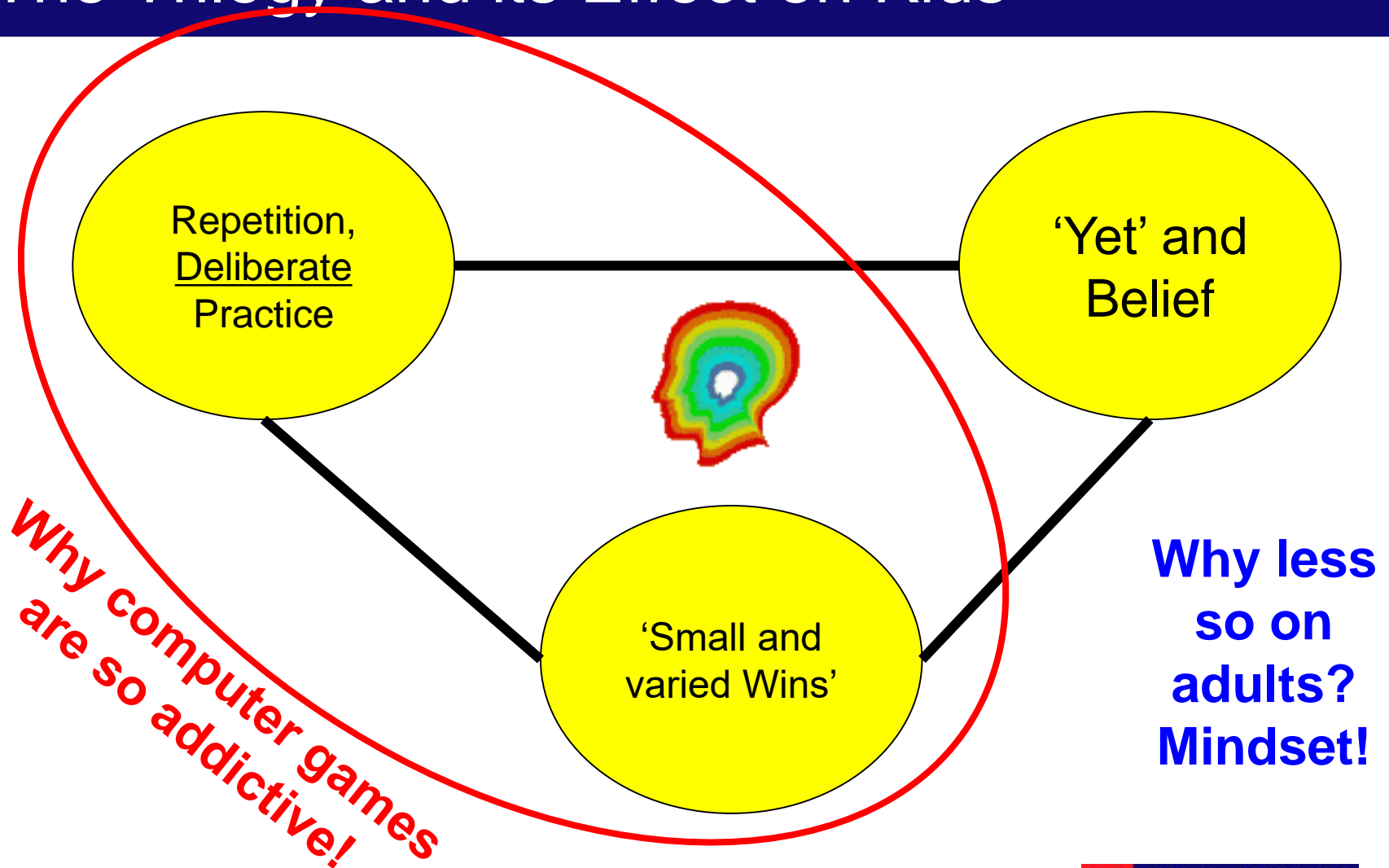
Knowledge and Skill



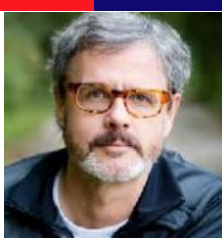
- ‘The theme of the *Top Gun* approach to training, whether it is for shooting down enemy planes or interpreting mammograms, is the emphasis on doing. The bottom line is what you are able to do, not what you *know*....’
- ‘The distinction between knowledge and skills lies at the heart of the difference between traditional paths toward expertise and the deliberate-practice approach. Traditionally, the focus is nearly always on knowledge. Even when the ultimate outcome is being able to do something – solve a particular math problem or write a good essay – the traditional approach has been to provide information about the right way to proceed and then mostly rely on the student to apply that knowledge. Deliberate practice, by contrast, focuses solely on performance and how to improve it.’

From Anders Ericsson, *Peak*, Bodley Head, 2016
Chapter 5.

The Trilogy and its Effect on Kids



Some References (Lean, TWI Kata)



Rother

Repetition
Deliberate
Practice



Glenday
'Economics of Repetition'



Graupp
On JI

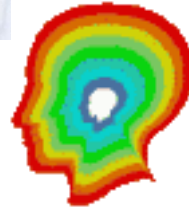


TWI
(JR)

'Yet' and
Belief



NUMMI and
Workforce
transformation



Mann on
Leader
Standard
Work



'Small and
varied Wins'



Spear on Experiments
& Jack Smith



Ohno on
Thinking People



Koenigsaecker
On repeated kaizens

Maurer on
'Kaizen: One Small Step...'



Two Cases

- Two packaging sites and Kingman
- Hospitals and Beds

Improvement at two similar sites

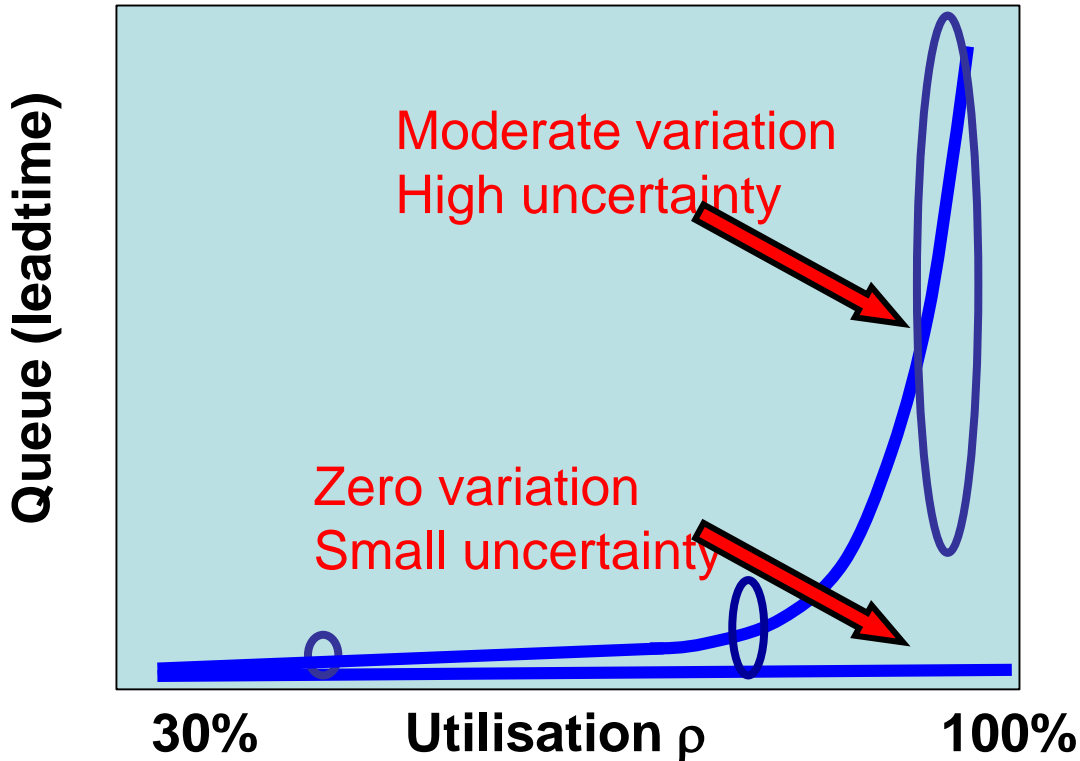
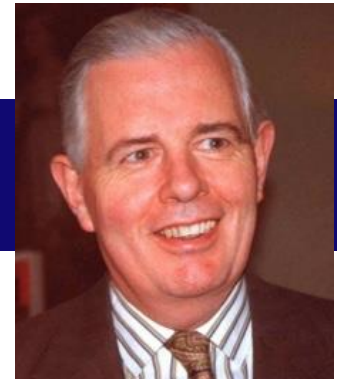
Site A
Standard Work
Six Sigma
TWI
Early Kata

Site B
Some Standard
Work
Little Six Sigma
No TWI
No Kata

But many KPI's
(Delivery,
Inventory Turns,
Lead time) better

WHY?

Ignored? Kingman's Equation

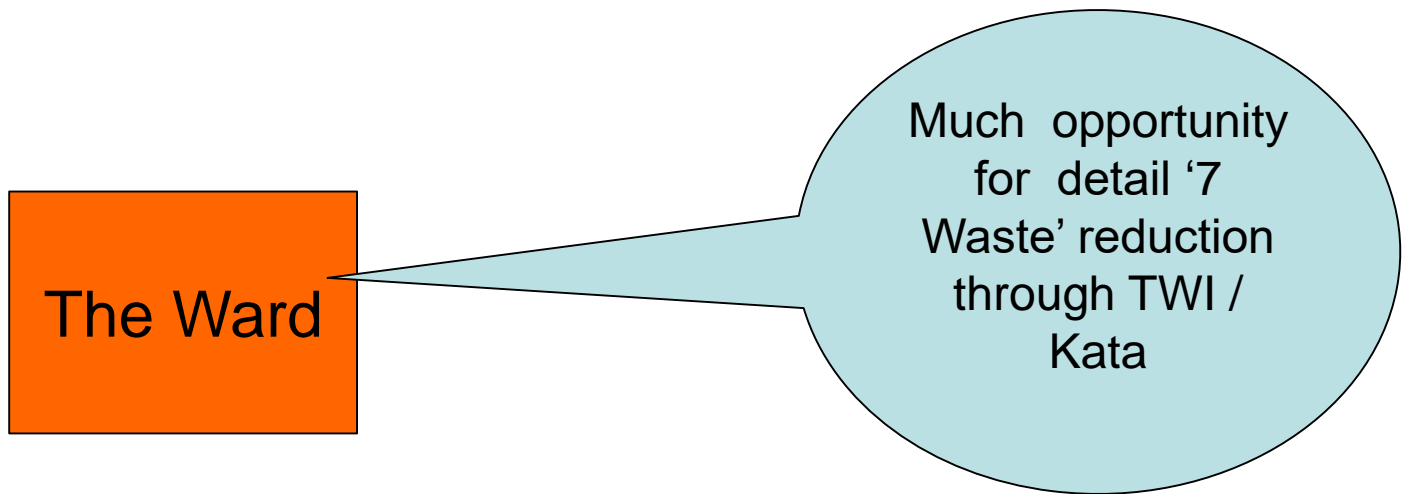


Site A completely ignored Arrival Variation !

But focused on internal improvement

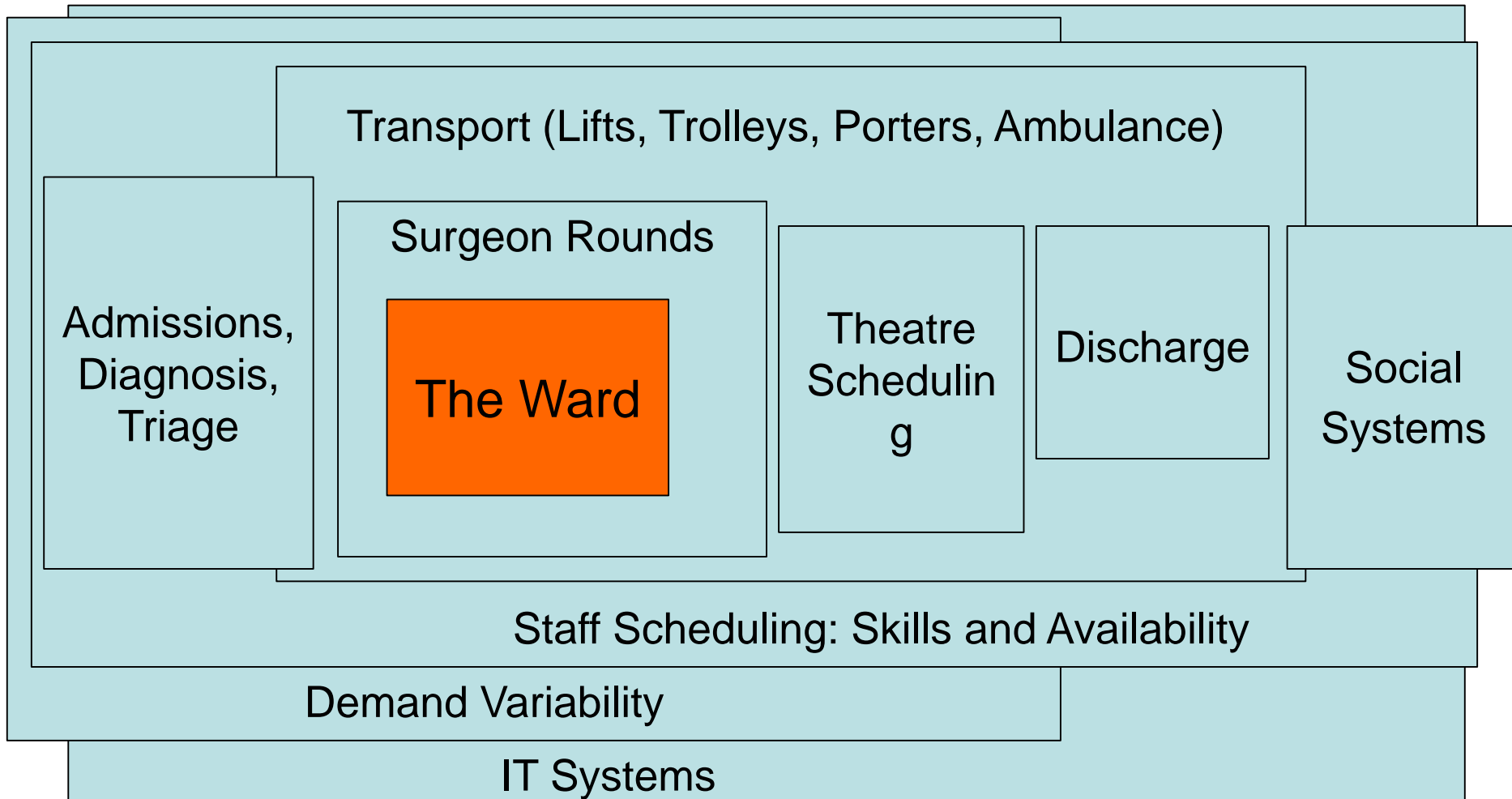
$$Q = \underbrace{(C_a^2 + C_e^2)/2}_{\text{Mura}} \times \underbrace{(\rho / (1 - \rho))}_{\text{Muri}} \times t_e + t_e$$

Hospital Bed Utilization

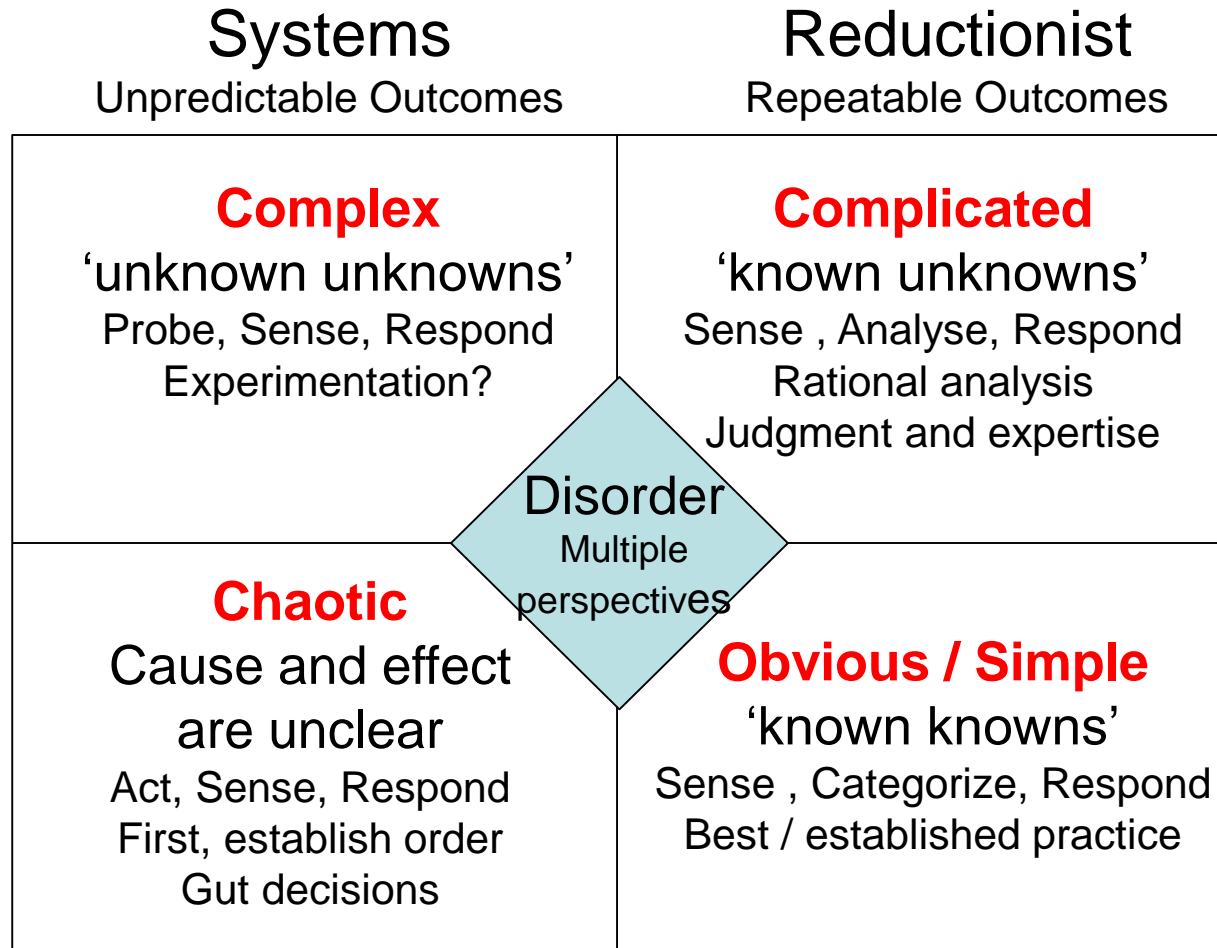


But...

But Many Processes affect Bed Utilization!



...and Requests for Randomised Trials ?

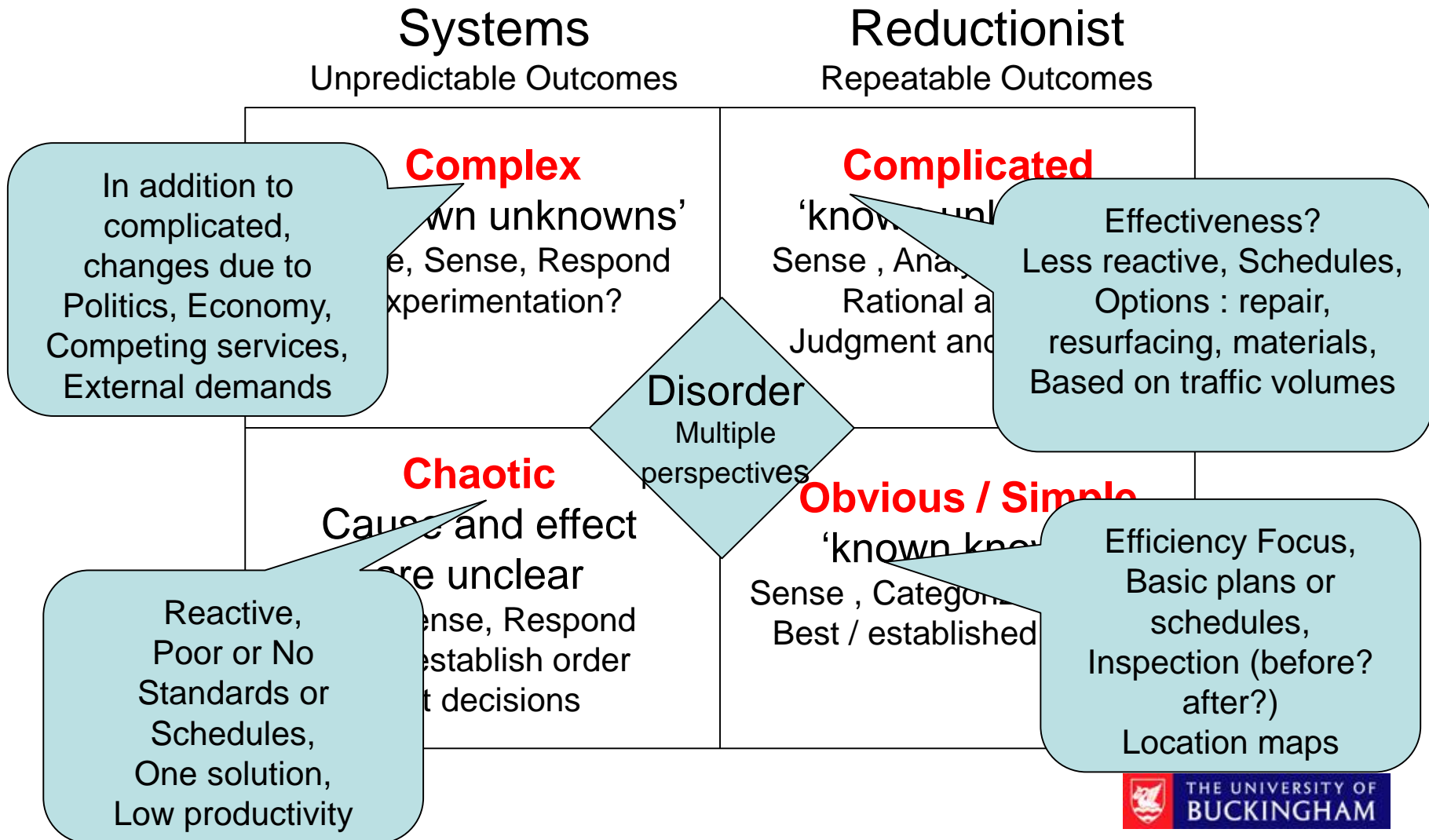


from David Snowden & Mary Boone

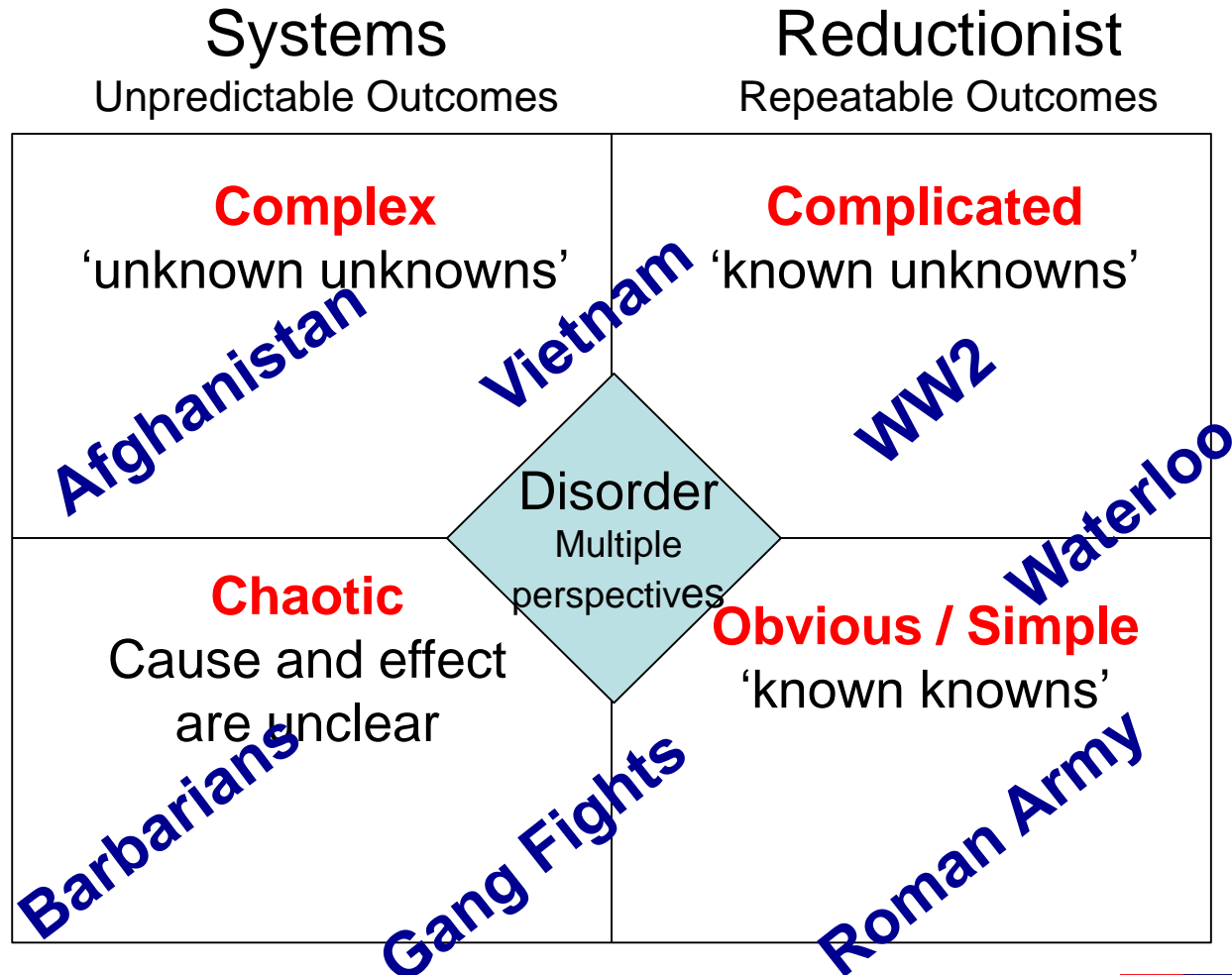
'A Leaders Framework for Decision Making', Harvard Business Review, Nov 2007

(See also Thomas Wedell-Wedellsborg 'Are You Solving the Right Problem' HBR, Jan/ Feb 2017)

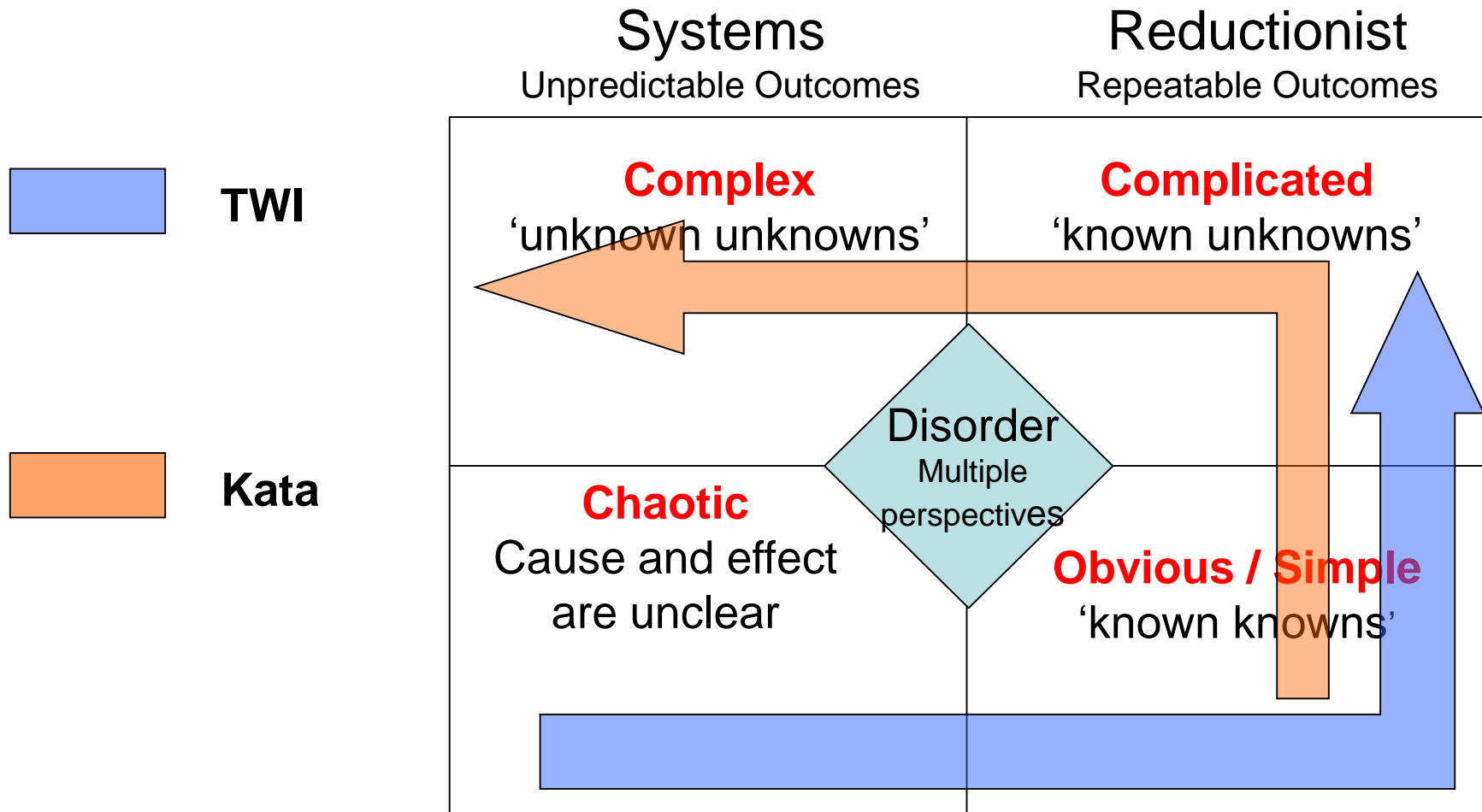
Cynefin and Road Potholes



Cynefin and Wars

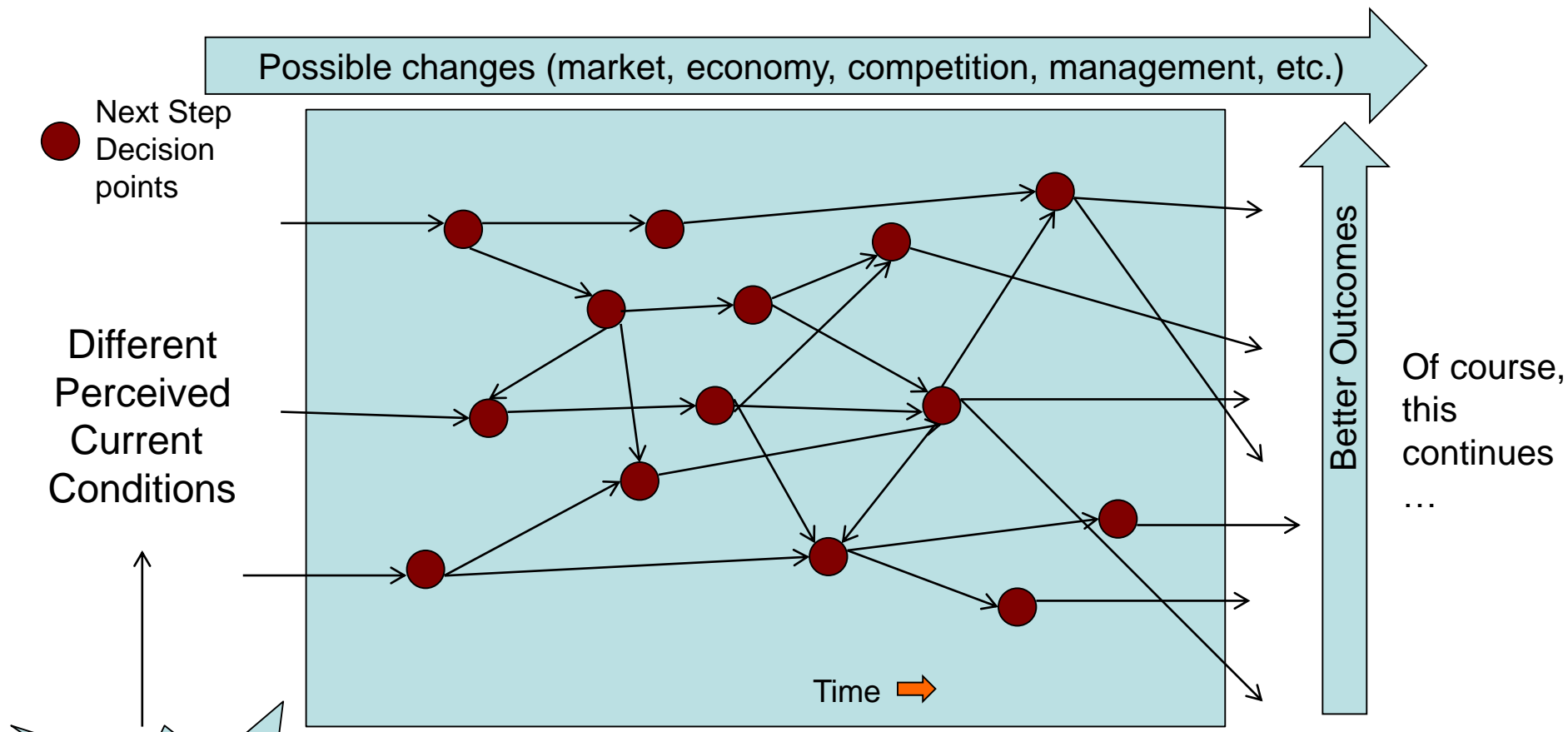


Cynefin and Kata / TWI : Speculation!



Rother's Single Non-linear Kata Corridor is excellent but..

Kata Sequence in a Dynamic Environment



Understand the Direction

The sequence of experiments, Learning, and establishing the next Target Condition ("No verbs – like 'maximize' - in a target condition" (Rother))

Perspectives on Target Conditions

TWI Kata needs to face up to:

- Biases
- Developing appropriate experiments
- System Possibilities
- Social Dynamics

But Note:

Process Analysis is not Problem Solving, but seeking to understand

3 Types of experiment

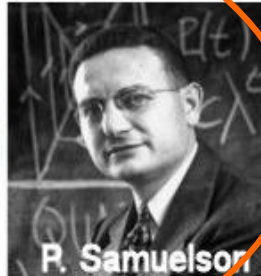
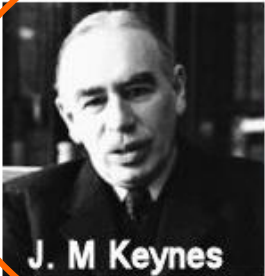
- Go See
- Insight through probing
- Hypothesis Testing

Bias: Yet to learn PDCA?

- Kahneman has shown that humans have a tendency to prize personal experiences and extrapolate truths from them about the wider world. This may have been a boon during our early evolution but is completely contrary to the scientific method, whose essence is to take hypotheses and observations and test them endlessly to ensure they are true, not hunches.
- Some Types:
 - Confirmation
 - Attribution
 - Halo Effect



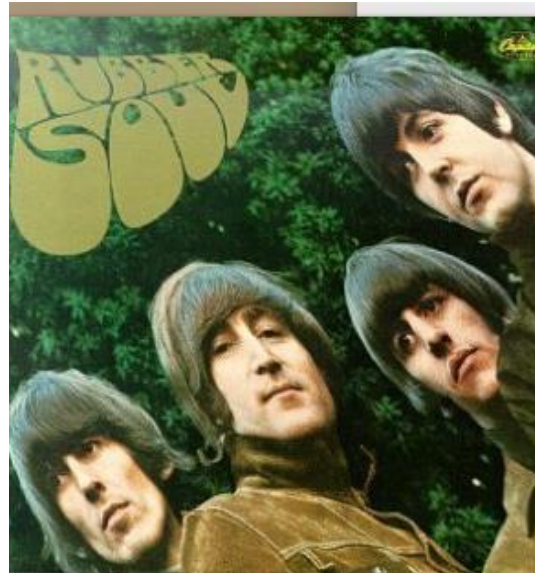
Bias?



Nowhere Man
Please listen..
You don't know what you're missin'
...
He's as blind as he can be
Just sees what he wants to see..

Isn't he a bit like like you and me..

“When the facts
change I change my
mind. What do you do,
Sir?”



Bias and the Coaching Kata

- Rother says that the Coaching Kata has two main purposes:
 - Reinforcing the pattern of the Improvement Kata (Target condition, Actual condition (Last step: What did you plan, expect, actually happened, learn), Obstacles, Next step?, What learned?)
 - Revealing how the learner is thinking. (His or her biases)
- But, of course, the Coach also has biases!
- Second Coach? Mentor?

Developing AARs

- F4 Phantom used in Vietnam by US Navy and USAF
- Train then combat fly
- Poor kill ratio
- US Navy Top Gun with learners flying against the best – immediate review with the facts
- USAF remained with train then fly
- Dramatic differences between Navy and air force
- AARs then slowly migrated to US Army



AAR's as Countermeasures & Experiments

- AAR Characteristics: Kata? TWI?

- Done Routinely
- Immediacy
- Objective data
- Participation
- Leaders admit mistakes
- No personal criticism
- 4 Questions and time

- What did we set out to do? } 25%
- What actually happened? }
- Why did it happen? (25%)
- What are we going to do next time? (50%)

- Failure Modes

- The above but
- Willingness of officers to listen and admit they got it wrong



“Not Training leading to Doing, but Doing and Training Together”
(Rother, ‘The Toyota Kata Practice Guide’)

It's not all about Continuous Improvement...

- Dick Fosbury (Gold Medal at Mexico City Olympics, 1968) developed the 'Fosbury Flop' reversing the process of straddle jumping - running at speed, taking off on the other foot, twisting in mid air, and flopping over head first with back facing the pit.
- You can continuously improve the Western Roll, but improvement will slow and will never again be competitive.



Experimenting through TRIZ ?

Some TRIZ concepts

- 40 Principles (e.g. 'Do it the other way around')
- Ideality ('Free Perfect Now') (e.g. Lawn Mower or Slow growing grass)
- Trends (e.g. Electronics, Surfaces)
- Resources (e.g. Saving Titanic passengers by using an Iceberg)
- Functionality (As e.g. through Value Engineering)
- Contradictions (Both 'and' and not 'or')

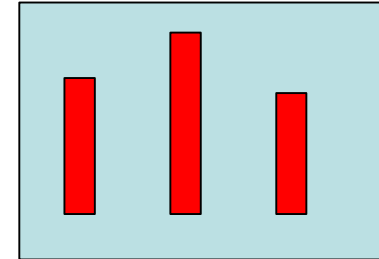
Systems possibilities?

- ‘Efficiency remains important, but the ability to adapt to complexity and continual change has become an imperative.’
 - Gen Stanley McChrystal, *Team of Teams*, Penguin, 2015
- Learning from Nelson and Trafalgar
 - Not the battle plan itself, but the preparation of Captain’s independent thought, fostered for many years prior to the battle
- Avoiding the Perry Principle
 - The more visible something is, or the easier it is to communicate, the greater the temptation to control.



Social Dynamics

- Solomon Ash (1951)
- Group Think
 - Go along to get along
 - One dissenter breaks the effect
 - Deliberate methodology
 - Kennedy's lessons Bay of Pigs and Cuban Missile Crisis

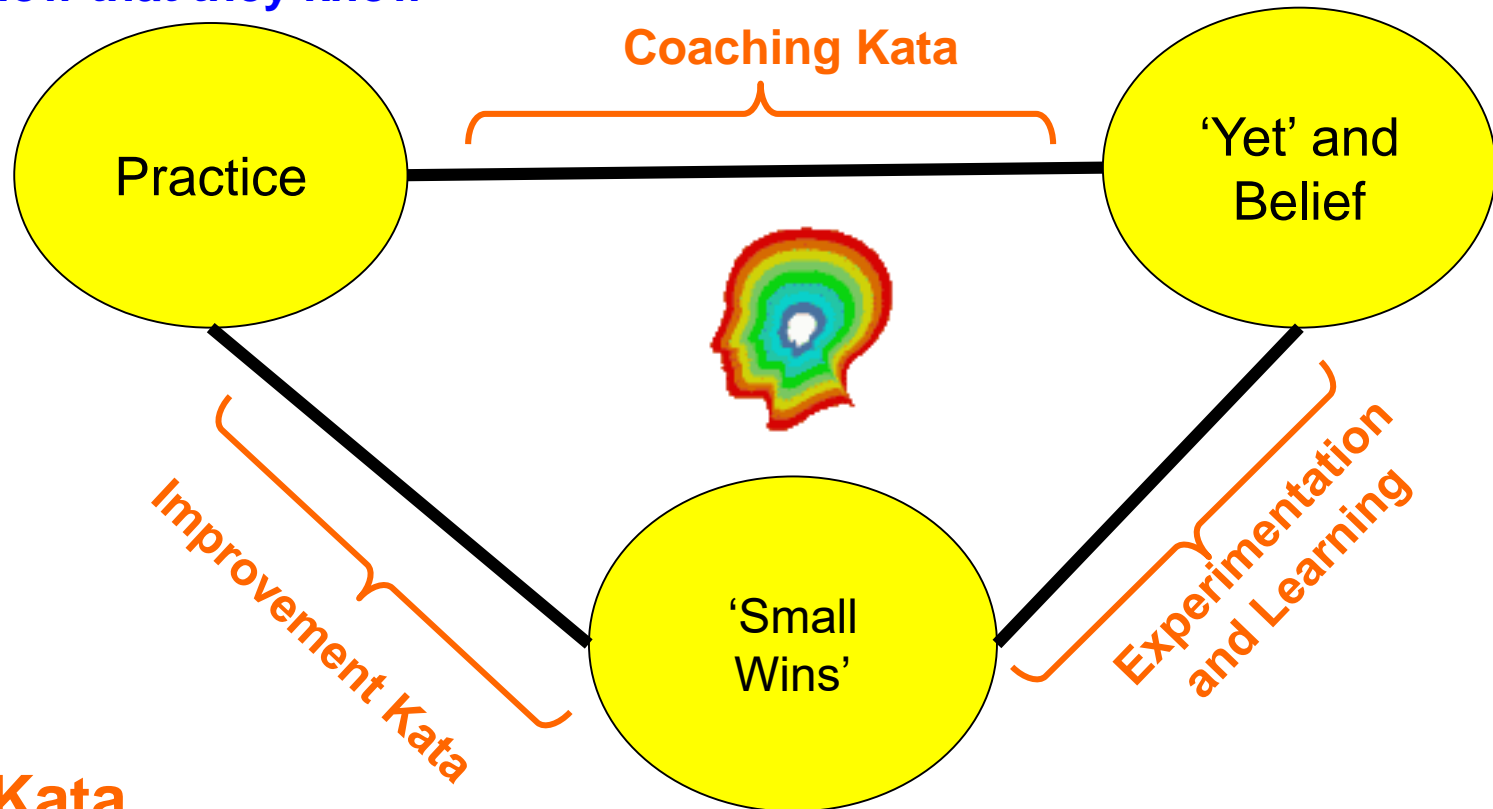


Which is longest?

Linking Motivation with Kata and TWI

'Continue until you know that they know'

'If the worker hasn't learned the instructor hasn't taught'



Kata
TWI

'Question every detail'

Conclusions

- Combining TWI and Kata seems to be the one of, if not THE, most powerful improvement approaches in years
- But
- Beware the shortfalls of Next Steps and Obstacles that can lead down inappropriate paths
- Combining with other approaches offers even greater potential

Another
Breakthrough
Developing?





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