The Problem with 'Tools and Techniques'; Why Becoming a 'Learning Organisation' is Vital to a Successful Lean Transformation.

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Executive Summary

This paper explores underlying reasons why, after many decades of attempted Lean improvement programmes, so few organisations have managed to reach the levels of success exhibited by Toyota.

A review of recent literature suggests that critical elements of the Toyota Production System have been over-looked; the less tangible elements that engage and support the workforce in structured improvement activity (or 'Kata'). This activity is core to Toyota's efforts in becoming a 'Learning Organisation', and this paper details research from outside the 'Lean' environment showing how organisations can enable or inhibit their ability to excel at this.

The paper also explores how 'western' leaders differ in their approach to problem-solving than those in 'eastern' regions. This may be a significant factor in why 'linear thinking' is prevalent in the application of 'Lean', resulting in a greater focus on the 'tools' than on the human elements of the approach.

A survey has been done of leaders and Continuous Improvement professionals from 22 organisations to support the above research. Findings from this survey suggest that very few organisations currently use the 'Kata' approach. Also, there is often very little appetite to support either a 'learning from mistakes' or a 'trial-and-error' approach to problem-solving, both of which form part of the 'Scientific Method' at the core of the 'Kata' improvement process.

The report concludes that there needs to be a much stronger focus given to the promotion of the 'Kata' approach through Lean training and coaching. And that promotion of the 'tools and techniques', developed by Toyota, as potential 'solutions' to other organisation's issues needs to stop. More effort should be spent developing appropriate solutions which move the organisation towards its 'Vision', and these could be very different from recognised Lean tools. This also addresses the need to look at the whole 'system' that makes up an organisation, and challenges some of the 'linear thinking' paradigms that have developed due to the way that Lean has often been implemented.

Introduction

In 2006, H. Thomas Johnson, Shingo Prize and American Society for Quality Deming Medal winner, and Professor of Business Administration at Portland State University asked an important question:

"If businesses everywhere have given enormous attention to Lean management programmes for over a decade, how is it that none succeeds as Toyota has at continuously improving lead time, cost, productivity, quality and – perhaps most importantly – financial performance year after year?" (Johnson, 2006).

Similar observations have been made in other sectors where Lean is being applied. A study by Burgess (2012) on Lean deployment in the Healthcare sector, concluded that there was:

"…no firm evidence that Lean implementation improves performance at an organisational level" (Burgess, 2012, pg.288).

In its 2007 Census of Manufacturers, Industry Week found that only 2 percent of companies surveyed - that had a Lean programme - achieved the anticipated results. In fact, less than a quarter (24%) of all companies reported achieving significant results (Pay, 2008)

With such an under-whelming success rate, it is important to understand more about the fundamental reasons for such poor results from Lean's adoption? This paper investigates the hypothesis that there are two inter-linked reasons for this, which although not exclusively to blame for the perceived under-performance in some organisations, go some way to explaining why it has proved so difficult for firms to emulate Toyota's success.

Lean as a suite of 'tools & techniques'?

The first factor explored in this paper is that, too often, Lean is perceived as a replication of tools and techniques as developed from the Toyota Production System (TPS); whereas is should be considered to be a system of structured 'learning'. This would suggest that tools developed through 50 years of the TPS are only actually optimal solutions for the very specific problems in automotive manufacture. This paper explores the theory that organisations - whilst mindful of how Toyota develops solutions using a structure methodology (known as 'Toyota Kata') – should, in practice, develop rapid improvement cycles of their own, generating their own solutions, and moving towards their own 'Vision'.

Is 'linear thinking' inhibiting the success of Lean?

The second part of the hypothesis is that organisations (especially those in the West), and their leadership in particular, see problems in a 'linear' way. And therefore, apply Lean tools with this filter in place. This paper provides evidence to suggest that this often leads to poor implementation, short-term gains that are soon lost, and a failure to apply Lean to the real strategic and systemic issues affecting business performance.

This study starts with an academic and business literature review into why Lean programmes are perceived to have failed, and then explores how other authors perceive Lean's effectiveness as an approach for 'Systems Thinking'. It then details research that the author has conducted with a number of organisations actively engaged in Continuous Improvement activity, to understand how structure, behavioural and cultural conditions encourage or inhibit both 'Systems Thinking' and the development of a 'Learning Organisation'.

Literature Review

When investigating reasons why companies (those participating in the 2007 Industry Week survey mentioned in the introduction) failed to achieve their anticipated levels of benefit, Pay (2008) suggested the following factor:

'Senior Management is unwilling to accept that cultural change is often required for Lean to be a success'.

Pay (2008) explains that the empowering of teams and the positioning of decision-making at the lowest possible level is a requisite part of a successful Lean programme, and that many management teams are simply unwilling to 'let go of the reins' and allow this culture to grow.

Seddon (2003, pg.139) takes this a step further and lays down a gauntlet for organisational leaders:

"Are you prepared to change your own role? Could you conceptualise your work as 'working on the system'?"

His view is that systemic factors such as structure, policy, procedures, measurement (in particular) and IT etc. are the things that really need to change (Seddon, 2008, pg.120). He argues that 'management's' role needs to change from managing people – to managing the system – understanding and improving how well the work flows, end-to-end, to fulfil the customer's demands.

This review seeks to explore this assertion and take it further. That it is necessary, for a truly transformational Lean programme to be able to succeed, for management to actively foster the principles of a 'Learning Organisation' as described by Peter Senge in his seminal book 'The Fifth Discipline – The Art and Practice of the Learning Organisation' (Senge, 2006). This being where an organisation promotes a culture where the whole system is improved through deep understanding of processes, building a shared vision, development of mental models, personal mastery (and development) and team learning (Senge, 2006, pg.12).

Senge (2006, pg.11), as well as being critical of the practise of benchmarking 'best practices', notes that simple replication of other's (namely, Toyota) techniques and approaches is not sufficient. He cites a senior Toyota manager who having conducted hundreds of tours for visiting executives commented that they "see all the parts and have copied the parts. What they do not see is the way all of the parts work together". Senge also asserts that 'no great organisations have ever been built through trying to emulate another'. That would appear to present a profound challenge to the Lean community, and the traditional linear approach to a Lean deployment programme.

Senge (2006, pg 24 -25) addresses several of the 'cultural' and competing elements, which he calls 'learning disabilities', that prevent management teams from working collectively on the complex issues that might be affecting their organisation. He suggests that people are 'hard-wired' from an early age to never admit they don't know the answer, and that corporations actively reinforce this lesson by rewarding people who most stridently advocate their own views, rather than taking time to inquire into complex problems. Could it be that a Lean programme that is limited to the scope of current understanding, and which doesn't begin to address the large scale and complex threats to an organisation, is already doomed to failure? As Senge (2006, pg.24) puts it, 'the analysis of the most

important problems in a company, the complex issues that cross functional lines, becomes a perilous and non-existent exercise'.

So why is 'linear thinking' so prevalent in the way that problems are tackled, rather than 'systems thinking' - where solutions that look holistically at the total system are developed? Senge (2008, pg.250) explains that:

"because we see the world in simple, obvious terms, we come to believe in simple, obvious solutions. This leads to the frenzied search for simple 'fixes'".

Checkland (1991, pg.154) notes that problems are often recognisable in two forms:

"*structured* problems which can be explicitly stated in a language which implies that a theory concerning their solution is available and *unstructured* problems which are manifest in a feeling of unease, but which cannot be explicitly stated without this appearing to over-simplify the situation".

He explains that structured problems are usually approached by what he terms 'hard' systems thinking, as they conform to an approach where use of a well-defined 'problem-solving' methodology can be used (Checkland, 1991, pg.155).

Checkland (1991) suggests the existence of 'human activity systems', which do not readily conform to structured and predictable definitions of a system. He observes that:

"the contents of such systems are so multivarious, and the influences to which they are subject so numerous that the passage of time always modifies the perception of the problem".

Senge suggests a new term to describe the many situations where cause and effect are subtle, and where effects over time of interventions are not obvious. He calls this 'dynamic complexity' (Senge, 2008, pg.71). An example he uses should be very familiar to anyone who has experience of problem-solving in an organisation; where an action has one set of consequences locally and a very different set of consequences in another part of the system. Senge (2008, pg.72) concurs with the view of Seddon (2003) quoted earlier that:

"The real leverage in most management situations lies in understanding dynamic complexity, not detailed complexity."

So how does Lean, and its implementation across many different industries in the past 40 years, compare to the vision of 'Systems Thinking' espoused by Senge and Checkland?

Pound, Bell and Spearman (2014, pg.8) take a strong view that Lean practitioners have become almost obsessed with replicating the Toyota Production System (TPS):

"Very often, Lean practitioners consider the TPS, with its focus on achieving one-piece flow as the *end,* rather than as a *means* to the ultimate end, which is long-term profitability."

Pound et al (2014, p15) go further and say that a reason why many firms don't make a success of Lean is that Lean actually 'promotes' improvement by imitation.

In an article critiquing the many poorly executed Lean programmes in North American manufacturer's (McCullough, 2011), the Managing Director of Alix Partners, Steve Maurer observes:

"Most continuous improvement initiatives focus too much on implementing a particular 'checklist' of program tools and processes."

The same feature describes the evolution of a Lean approach at Canadian window firm 'All Weather Windows'. Jason Fleming, the CI Manager of 'All Weather Windows' describes how it took six years of attempting to implement Lean tools before they realised that:

"It (the company) had to come up with its own definition of Lean".

He goes on to say:

"It's been a lot of trial and error. We've taken pieces here and there and put together what works for All Weather Windows".

His final statement echoes the criticism of Pound, Bell & Spearman (2014) when Fleming recommends that organisations:

"Adapt lean thinking to the kind of work you do, don't just copy Toyota. And finally, don't make it about targets". (McCullough, 2011)

Johnson (2006) believes that the failure of Lean initiatives is an 'unintended consequence' of the mechanistic way that managers take actions to improve financial performance. He suggests that there is a belief that financial results are a linear product of independent contributions from different parts of the business. He believes that this thinking and behaviour stems from out-dated business philosophies, based on 19th century mechanics and 18th century physics – the paradigms of whole-equals-sum-of-parts and win-lose competitive principles, for example. He proposes that the reason so many Lean initiatives fail to deliver long-term financial results is because of the failure of business practice to adapt to the more systemic, cooperative, win-win principles of 21st century cosmology and life science.

Perhaps more importantly for the successful deployment of Lean, Johnson (2006) proposes the view that managers believe that linear cause-effect connections at the abstract quantitative level apply everywhere in the world. Hence, they proceed to manipulate and control people and things according to linear principles. It is this pervasive view that means that Lean initiatives struggle in non-Toyota environments. Leaders simply do not change their mechanistic thinking to a more systemic one; the approach that Toyota has been using for decades.

Outside of the manufacturing sector, the interpretation of Lean as a 'model', with a framework of tools and approaches that can be lifted 'wholesale' into the service industry sector, has attracted criticism and doubts as to its effectiveness. Arfmann & Barbe (2014) seek to discredit the notion of Lean Service Transformation completely; on the basis that there is little evidence of an emerging 'model' for Lean in service industries; that results are either misinterpreted or not valid, and that the application of Lean principles (such as the

definition of non-value added activity, and the use of 'pull systems') have not been properly developed or do not apply in service organisations. Interestingly, in quoting an earlier study by Burgess (2012), and the perceived failure of Lean in the service sector, they argue that Lean can't be credited for some of the improvements reported, because:

"Attention on particular problems, and the willing(ness) of management to understand the underlying reasons led to actions that helped to improve the business".

And furthermore that:

"It is not the knowledge about lean methods, tools or transformation processes that help organisations to improve their performance. It is knowledge about daily business reality that counts and enables managers to take action to really improve their performance" (Arfmann & Barbe, 2014, pg.20).

It is fascinating to read that these report authors saw the above activity as not being part of 'Lean', whereas the dogmatic application of inappropriate or badly suited tools was.

Another factor in the prevalence of 'linear thinking' could be that there is a desire from business leaders when trying to 'engage' their workforce - or 'influence' their superiors to the benefits of Lean - to oversimplify its approach? Pound et al (2014, pg.69) suggest so, stating that they have found executives and managers are predisposed to favour simple solutions over complex ones. As a counter-point, they quote Albert Einstein, who once said, "A theory should be as simple as possible, but no simpler".

So, does this mechanistic and linear predisposition impact the way in which Lean is applied to organisations (especially those in the West)? Could this be a reason for the poor levels of success for many of the Lean implementations quoted? Perhaps even the measure by which 'success' is rated is flawed, as it is potentially also grounded in the same linear thinking?

In their book, Toyota Culture: The Heart and Soul of the Toyota Way, Liker and Hoseus (2008) draw comparisons to the different ways that 'eastern' and 'western' cultures think about problems. They suggest that westerners tend to believe in 'controllability' more than easterners, and that that westerners are more likely to see logical rules to understand events than easterners. This, they suggest, goes some way to explaining why a 'western' implementation of Lean is akin to the application of a tool kit; one that helps control the work environment to achieve specific measurable objectives. They compare this objectification of the workplace, and the associated seeing of simple cause-and-effect relationships, with the reality of a complex dynamic environment; and the approach that Toyota take in making improvements in such situations (Liker & Hoseus, 2008, pg.24). They argue that Toyota's approach is foremost about getting the team in an area to see the 'waste', and to use clear and rigorous thinking and teamwork to solve problems. They also suggest that Lean leaders at Toyota:

"Realise that most ideas for improvement are simply good guesses and need to be verified through experimentation".

This leads to a desire that there be many experiments being run, by many people working in the process, with associated monitoring and learning in place (Liker & Hoseus, 2008, pg.24).

Denning (2011) provides further insight into this approach:

"The experts don't tell the plants what to do......instead, what you see is the result of many small steps, some of which were discarded, and others embraced.... the result of many cycles of Plan-Do-Check-Act".

He goes on to suggest that, "Continuous Improvement is a way to achieve things that you don't necessarily know how you are going to achieve" (Denning, 2011)

If leaders do grasp the need to inculcate a sense of learning through experimentation in their organisations, what factors might prevent this approach being more widespread? In his best-selling book 'Black Box Thinking: Marginal Gains and the Secrets of High Performance', Syed (2015, pg.13) proposes that it is the human response to failure that inhibits the freedom to learn through experimentation. He argues that a 'deep instinct to find scapegoats' and to apportion blame, inhibits our ability to learn from mistakes. This in turn leads to a 'fear of failure' whereby:

"we don't want to think of ourselves as incompetent or inept. We don't want our credibility to be undermined in the eyes of our colleagues".

Syed (2015, pg.53) draws on the experience of the Virginia-Mason Health System to illustrate the impact of addressing this human behaviour. Syed, in an interview with Gary Kaplan, the Chief Executive of Virginia-Mason, noted that when Kaplan had witnessed the use of the 'andon' system at Toyota, during a study tour to Japan, he adapted this system to the healthcare environment, through the introduction of Patient Safety Alerts. It is interesting to note that Kaplan makes the following caveat:

"If a culture is open and honest about mistakes, the entire system can learn from them. That is the way you gain improvements".

According to Syed (2015, pg.55-57), the success of the Virginia-Mason Health System is not a one-off, it has become a 'method'. In other words, a properly instituted learning culture which has transformed the performance of hospitals around the world. In another example from manufacturing design, Syed (2015, pg.135) describes how biologists made 449 experiments on the design of a nozzle in a part of their process, each one based on learnings, or failures even, from the previous experiment. Each experiment was tested rapidly, resulting in a single outstanding nozzle design.

Syed (2015, pg.58) asserts that there are two components vital for a learning culture to flourish. A system, by which learning opportunities can be identified and captured; and a culture (or mindset), that encourages learning through failure and experimentation towards improvement, even if there are many cycles of this before the ultimate goal is achieved. Syed (2015, pg.276) describes this approach in individuals and companies as a 'Growth Mindset', where a culture was perceived as being more honest, collaborative and the

attitude to errors was far more robust. Typical statements that represented this type of organisation were:

"This company genuinely supports risk-taking and will support me even if I fail".

"When people make mistakes, this company sees the learning that results as 'value added'".

The importance of leadership, in creating and encouraging a culture where people feel able to both admit mistakes and to be given the opportunity to learn from them without fear of reprisal or blame, should not be understated. Just 'telling' people that its acceptable to admit mistakes will not change a culture overnight. Syed (2015, pg.64) quotes Gary Kaplan again:

"You can have the best procedures (for reporting mistakes) in the world, but they won't work unless you change attitudes towards errors".

In his book 'Good to Great: Why Some Companies Make the Leap…and Others Don't', Jim Collins presents clear evidence that leaders, from 11 major US corporations that had consistently out-performed their rivals over a 25-year period, generated a climate where truth is heard, and brutal facts confronted (Collins, 2001, pg.74). Interestingly, one of the recommended practices Collins details is to "Conduct autopsies, without blame", thereby allowing for the 'truth' to emerge, and for the organisation to learn from the mistakes made (Collins, 2001, pg.77). There would appear to be a clear link between the mind-set and behaviour of leaders in an organisation, and the prevailing culture whereby 'learning from mistakes' is embraced.

So how does Toyota provide a 'vehicle' or structure, that allows for rapid 'organisational learning' through trial-and-error, where teams are permitted to experiment (and indeed learn from mistakes)? Spear and Bowen (1999) captured Toyota's use of the 'Scientific Method' as a key component of improvement effort within their businesses. They codified the critical elements of Toyota's success into four 'Rules', the fourth of which highlights that the TPS creates a 'community of scientists'. Rule 4 states:

"Any improvement must be made in accordance with the 'Scientific Method', under the guidance of a teacher, at the lowest possible level of the organisation" (Spear & Bowen, 1999).

Mike Rother's seminal work, "Toyota Kata" seeks to explain this approach in more detail (Rother, 2010). The term 'Kata' – as defined by Rother himself, and borrowed from martial arts terminology – is a series of steps for both an improvement and coaching cycle, that guide individuals through a rapid series of single-step experiments towards a 'Target Condition'. This 'Target Condition' is a predefined series of attributes that move a team or organisation towards an ultimate 'Vision', but which can be expressed as the way something should ideally operate at a specified time in the future. Rother believes that this standardised pattern of behaviour at Toyota, repeated over-and-over at all levels of the organisation, is the key to Toyota's continuing success (Rother, 2010, pg.15).

Furthermore, and in direct challenge to a lot of Lean deployment assumptions, Rother asserts that all of the tools associated with the Toyota Production System (and by obvious inference, Lean), have actually been developed by Toyota as 'Target Conditions' towards a longer-term 'Vision'. Rother gives a detailed example of how the tool of 'kanban' is used at Toyota as a 'Target Condition' towards single-piece flow (Rother, 2010, pg.99). He argues that the implementation of a kanban card system without the associated 'learning' from the team members as to why this is a step towards a longer-term goal misses a vital point:

"It is the striving for target conditions via the routine of the improvement kata that characterises what we have been calling 'Lean Manufacturing'" (Rother, 2010, pg.101).

So where does the Toyota Kata approach fit in terms of a 'Systems Approach' to problem-solving? Checkland (1991, pg.241) describes his own 7-step methodology for system problem-solving as:

"a learning system which aims to increase knowledge in and understanding of a real-world situation regarded……as a problem."

Rother also recognises the dynamic complexity of real-life situations and posits the idea that 'Kata' - with its contingent approach to incremental improvement - allows for dynamic and unpredictable conditions (Rother, 2010, pg.16). The rapid cycles of Plan-Do-Check-Act (PDCA) - through 'Scientific Method' experimentation - that underpin the 'Kata' routine allow for constant course adjustments. As the student learns more about the nature of the problem or reflects that the situation is different than first thought, the next step can be planned or 'Target Condition' redefined (Rother, 2010, pg.136). Checkland's work appears to reinforce the idea that effective problem-solving in a 'Learning Organisation' is actually a journey towards an ultimate 'vision', understanding more about the situation as one progresses., rather than the delivery of a 'quick fix'. He suggests:

"The notion of a 'solution', is inappropriate in a methodology which orchestrates the process of learning which, as a process, is never-ending" (Checkland, 1991, pg.279).

It is Rother's view that these iterations form the basis for Toyota's continued success in tackling systemic and complex problems. Rather than devise large-scale vehicles for solving complex problems, the 'Kata' approach moves gradually towards a vision, removing numerous obstacles along the way, this is far removed from a 'linear thinking' approach. In a statement that profoundly challenges the beliefs of many Toyota Production System (TPS) advocates - and an entire Lean tools & techniques consultancy and training industry - Rother concludes:

"Toyota does not really have any obvious solutions to offer us, but rather a means for us to sense situations and develop appropriate, smart responses" (Rother, 2010, pg. 161)

Although, in practice, the impact of the above statement is somewhat diluted by the fact that much of Rother's Toyota Kata book gives a closely detailed description of the 'how' and 'why' of TPS tools. It would appear that even advocates of the 'Kata' approach are still closely wedded to many of the Lean tool and techniques.

The next part of this assignment is to investigate how well understood the principles of 'Toyota Kata' are in organisations, how well 'Systems Thinking' is adopted, and whether organisational leadership is promoting a culture of a 'Learning Organisation'.

Results and Findings

In order to understand more fully the level to which organisations have started to employ both 'Systems Thinking' and using Lean as an enabler to become a 'Learning Organisation', a research questionnaire was developed by the author to get the views of senior managers and change leaders across a range of organisations. 22 respondents replied. Full details of the responses are provided in Appendix A of this report.

The first questions on the survey, asked participants to confirm which, if any, improvement approaches (or 'brands'), their CI programme was aligned to. Lean was the most dominant 'brand' for CI programmes from the survey (with 28% of respondents). However, 36% of respondents said that their improvement activities weren't aligned to either Lean, Six Sigma, TPS. Half of these respondents preferred the term 'Operational Excellence'. Although somewhat vague in its definition, this term appears to be based around fundamental Lean principles of Flow and Continuous Improvement and may well have developed as an alternative to the Lean 'brand' in sectors where this term might be perceived as too 'manufacturing' oriented (Institute for Operational Excellence, 2016).

The second question asked respondents for supporting comments regarding the 'branding' of their improvement programmes. Respondents used a variety of terms to suggest that they were actually adapting or tailoring elements of Lean (and other improvement methodologies) to meet their organisation's particular circumstances:

"A bespoke approach based on Operational Excellence'

"Encompasses elements of Lean and TPS"

This could be interpreted as a positive step towards some organisations developing their own unique improvement solutions, but further research might be required, as there is also a danger that this might be 'cherry-picking' or 'watering down' certain 'Lean' tools.

Question three sought to understand how respondents' organisations involved people in their improvement efforts. Tellingly, no respondents answered that 'Everybody is involved, at all levels. It's part of our DNA', suggesting that there is still a considerable way to go for most firms in making improvement part of their daily activity. 23% of respondents did agree that 'Most people were involved (in improvement activity), at some point', which shows there are organisations moving toward the 'high bar' of total involvement. The largest category of responses (36%) was that improvement activity is led by 'a team of internal experts, with ad hoc support from other team members'. This at least suggests that organisations have internalised some of the skills required to lead improvement activity, but it's likely that these team members are still using Lean or Six Sigma techniques as opposed to the development of solutions that are adapted to the specific requirements of their

business. 27% of respondents said that their organisation relied on 'external experts, with ad hoc support from internal team members'. Without significant focus on 'knowledge transfer' from the external experts, it's unlikely that there would be much evidence of organisational learning in firms in this category. 14% of respondents said that their organisation had 'no structured approach to problem-solving or improvement' at all. In the supporting comments provided in question four, there appeared to be a theme emerging of reliance on external expertise support:

'Most major improvement projects are consultant led, with mix of contractors & internal support.'

'It's led by a mix of internal and external experts (80% external).'

'Most major projects involve some external specialists - marketing, telephony, Operations Excellence.'

Question five in the survey sought to rate the effectiveness of organisation's ability to solve complex problems. When asked to score their organisation's ability at this competency respondents average score was 4.3 out of 10. The median score (with 6 respondents scoring at this level) was 3 out of 10. Supporting comments included:

'We have trained our people in problem solving techniques, but we haven't yet built the structure to support it.'

'We have built some good structures and approaches but still dependent on a few key personnel.'

'The central team are skilled in PS but the rest of the business not so.'

'Good at pilots not so good at full implementation.'

'A lot of linear thinking in the organisation.'

These comments suggest that often problem-solving skills are not widely adopted outside a group of dedicated staff, and that even then, their efforts might well start to stall when the approach is tried across organisational boundaries. This is someway short of the ideals of total workforce involvement in improvement and kaizen activity as practised at Toyota.

Question six attempts to assess the respondents view on whether their organisation learns well from mistakes. The average score for responses was 3.8 out of 10, with a median score of 3 (5 respondents scoring at this level). Questions later in the survey explore reasons why this low level of confidence might be the case.

When asked, in question seven, what tools or methodologies organisation's use to help structure their problem-solving efforts, over 76% recognised the Plan-Do-Check-Act cycle (PDCA). This was by far the most popular tool, with the Six Sigma continuum of Define-Measure-Analyse-Improve-Control (DMAIC) being the second most recognised (33% of

respondents). A3 based problem-solving was used by 24% of respondents. Only 2 respondents (9.5% of the survey respondents) said specifically that they used the Kata approach.

Supporting commentary to the previous responses is given in question eight. There is a evidence that there has been some local adaptation of these tools (or at least changes to the terminology to better suit the organisation):

'Based around PDCA but given different names internally.'

'We have developed our own 'Way' based utilising a DMAIC approach.'

Question nine explores how well an organisation's culture 'allows' its team members to run controlled 'trial-and-error' experiments, a key part of the 'Scientific Method' which underpins Rother's (2010) Improvement Kata. In our survey respondents scored this at an average of 3.6 out of 10. Two scores, 2 out of 10 and 5 out of 10 were both given by 5 respondents each. The comments provided in support of this question provide a fascinating insight into the range of adoption of this approach. Those showing an organisational capability for this, commented:

'New leaders encourage this.'

'CEO believes in this stuff.'

'We have spent time on developing our best practice, next step is to move more of the organisation to this model.'

'We've had projects where we've been able to run 'trial & error' experiments but these have been localised projects. On a recent wider project across the company, we wanted to take this approach but have hit some barriers.'

Other respondents reported a number of potential operational and cultural barriers in the adoption of this approach:

'Potential negative impact on customer and client SLAs. Time and capability to design.'

'Sensitive environment (healthcare), so highly risk averse.'

'Not really - we don't have enough time generally to allow the thinking time needed.'

Although it is encouraging to see that some organisations are being supportive of this approach, there clearly remains significant cultural barriers to its widespread use.

Question 10 in the survey, attempts to understand what these barriers to adopting a 'learning by mistakes' approach might be. The results are illuminating. Many respondents thought that their organisation was too 'risk averse' to take this approach. Comments included:

'We invest a lot of time, effort and money in a "safety first" culture, taking risks is not something we would readily support - mixed messages.'

'Risk aversion (Banking environment).'

'Healthcare culture is not aligned to test and learn.'

'Risk adverse (sic) / clinical environment.'

What is quite fascinating is that some of these respondents are clearly working in a healthcare environment, the exact area that Syed (2015, pgs.52–58) uses as a case study for an organisation (Virginia-Mason Health System) that has transformed patient safety, through its approach to reporting and fixing medical errors and using Lean practices.

Further respondent comments referred to the challenge that there wasn't sufficient time allowed for such an experimentation-based approach:

'Time, credibility, the need for a quick fix. No one wants to be seen as doing anything suboptimal.'

'Time starved people - understand the concept but often too busy fire-fighting to stand back.'

'Too many fires to fight not allowing time to draw breath.'

It might be possible to argue that organisations that 'don't' invest time in structured problem-solving (irrespective of the method used), will very often become stuck in such a culture of fire-fighting. This situation may also be influenced by a number of other factors, including leadership styles, culture, and performance measurement. Other respondents commented on these factors, as reasons why a 'learning' organisation hasn't been adopted in their locations:

'The CEOs attitude to failure.'

'Blame culture. Concentrate on who rather than why.'

'People don't see it "as their jobs" and there is no performance management system to recognise their efforts.'

'Annual performance incentives do not encourage controlled risk-taking.'

The final three questions (11 – 13) asked respondents to gauge how much improvement effort was spent at different levels of the business. This was to illustrate whether Lean thinking (or other improvement methodologies) was being deployed both tactically (at a local level) and strategically (across whole Value Streams or Organisations). The results

showed a wide range of responses, with many comments saying that valuable improvement time was 'wasted' or was focused outside of the organisation itself:

'No co-ordinated approach to improvements.'

'Having meetings that don't achieve anything.'

'Fire-fighting.'

'With our supplier base.'

Of those whose improvement efforts were focused on internal challenges, an average of 40% of the time made available was spent on local improvement initiatives, 29% on Value Stream or System-wide improvements, and 24% across 2 or more departments. It would appear that most organisations in this survey still focus their improvement activity resources predominantly on local or departmental problems.


Conclusions and Recommendations

The survey results show that there is still a predilection towards a 'tools-based' application of improvement methods, usually led by either internal or external consultants. Lean would seem to be the improvement system of choice, but there is a tendency for it to be applied locally rather than in a transformational way across whole organisations.

There appears to be little appetite amongst leaders from the surveyed organisations to encourage a 'learning from mistakes' approach. Paradoxically, organisations with the highest potential for these mistakes to be the costliest (in both financial and human terms) appear to be the most reluctant to encourage 'organisational learning' from such errors.

Perhaps unsurprisingly, given the results mentioned above, there's very little evidence of the use of the 'Scientific Method' or the 'Toyota Kata' approach. What is more, there seems to be major leadership, cultural and behavioural barriers to such an approach being effectively nurtured. The fact that this approach to improvement has been documented as being a critical enabler for successful implementation of Lean (or a version of the TPS) for 19 years (since the 1999 HBR article by Spear & Bowen), it's extremely disappointing that the 'Kata' approach is still seen as being a 'marginal' activity, rather than core to the very success of organisational improvement.

Liker and Hoseus (2008, pg 39) describe Toyota's culture as being like the intertwined helixes of a DNA molecule, with one strand being the Product Value Stream and the other being the People Value Stream (see Figure 1 below). Clearly promoting a culture where one creates a 'community of scientists' requires as much, if not more, focus and leadership support than deployment of proven tools and methodologies.
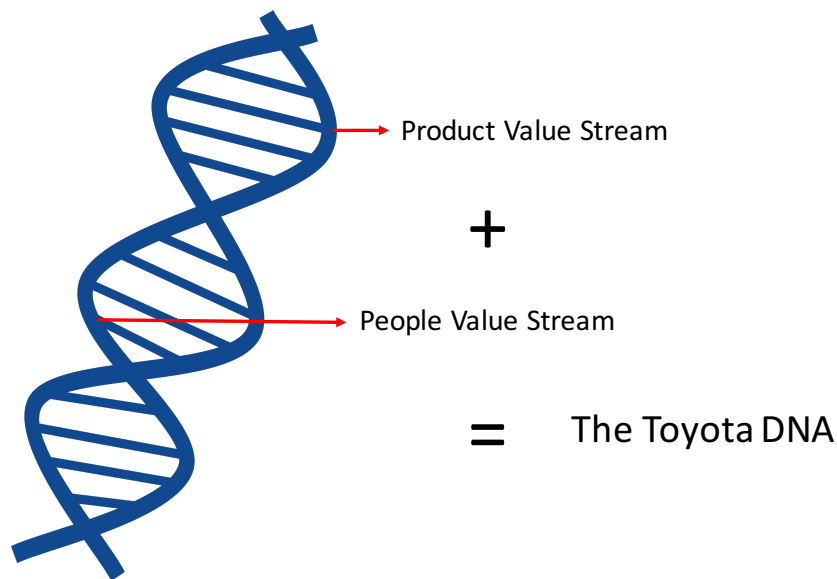
Fig.1: The intertwined Product and People Value Streams
(adapted from 'Toyota Culture: The Heart and Soul of the Toyota Way'. Liker & Hoseus (2008))

For example, a key part of the shift towards a 'Learning Organisation' is the commitment to training and coaching people in improvement using the 'Scientific Method'. Spear and Bowen (1999) articulate this as follows:

"For people to consistently make effective changes, they must know how to change and who is responsible for making changes."

It would seem quite possible that many leaders simply do not have the 'risk appetite' to commit to developing the second strand of the DNA helix. In a recent blog, Bob Emiliani (2016) concluded that the failing of Lean to live up to its potential could be attributed to two assumptions that leading Lean thinkers have made about leaders. These assumptions being:

1) Vastly overestimating the extent to which conservative business leaders might be interested in a progressive system of management, the extent of their curiosity, and the extent of their interest in improving their leadership behaviours and competencies.

2) Overestimating the extent to which people in top leadership positions care about people. If Lean is, as some say, "all about people," then it is clear that most leaders don't care about people, particularly when the distance between them and the shop or office floor, both physically or in rank, is great.

During the literature research for this paper, it has become evident that the association between Lean / TPS and 'Linear' rather than 'Systems' thinking has evolved, not because of the way in which it is successfully deployed at Toyota, but where it has become synonymous with a tools-led, carbon copy approach to Lean or TPS implementation. It may be that there is a link to leadership attitudes to Lean, as described by Emiliani, in that a 'watered down', tools-based approach to Lean, led by consultants, with a local focus, might yield short-term improvement, but that this would not require the investment and coaching of the organisations workforce (who may instead actually become 'victims' of this 'slash-and-burn' approach).

The key recommendation of this report is that - for organisations to truly excel in improvement activity and become a 'Learning Organisation' - they must be prepared to 'bin the tools'. Although a whole consulting and training industry has grown up around tools and methodologies developed at Toyota, these have become an 'end' in themselves, and are not seen by most as the 'means' by which Toyota works towards its Vision. It should be accepted that the TPS is the 'best-known' answer at present for the circumstances that Toyota is in. This should mean that solutions (through many iterations of an improvement cycle, using the Scientific Method) will develop for other organisations that are different than the familiar artefacts of the TPS (and will probably be better suited to that organisation's particular environment). If Lean tools are used, they should be clearly seen as a bridge-head towards a clearly articulated Vision, specific to the organisation. A 'stepping stone' towards the development of more optimal solutions tailored to the needs of the business.

A further recommendation is that the principle of the 'Learning Organisation' needs to be promoted as a founding principle of Lean, rather than a 'nice to have' or something that will develop organically over time, or as an organisation 'matures'. There is very little evidence from this report's survey to suggest that this is happening. Authors referenced in this report such as Syed and Senge, show compelling evidence that this approach works, even when de-coupled from a typical 'Lean journey'. It might be that, in order to overcome leadership's reluctance to fully embrace both the Product and Human elements of a successful Lean improvement programme, more use should be made of 'thought leadership' in the area of 'Learning Organisations'. Leaders who might be 'switched off' by the perception that Lean is a tool-kit to be mechanistically applied could be re-engaged by this wider argument for whole organisational learning.

In terms of developing capability and knowledge in the skills required to generate a 'community of scientists', the 'Kata' method needs to be taught and used more widely. Although there is some activity in this area, non-Toyota 'Lean' coaches are unlikely to have a depth of experience in 'Kata'. Ironically, ex-Toyota coaches – who may well be very capable in coaching and training the 'Kata' approach – often find it difficult not to try and 'impose' a classic TPS tool to a situation. For an organisation to truly learn, they must suppress this natural reaction, and allow the team to develop (through their own cycles of improvement) their own solutions.

Clearly for this greater focus on the 'human' element of improvement to flourish, the role of leaders needs to change too. Maybe also, the perception of what makes a 'good' leader in government, the media and the public too. It is a challenge recognised by Syed (2015, pg.283), who concludes that society has to reframe the definition of 'failure' to enable people and organisations to learn from mistakes.

For all of this to lead to more successful improvement efforts, Leaders need to become 'Systems Thinkers' as described by Checkland (1991) and Seddon (2008) earlier in this paper. This doesn't necessarily mean that they need to tackle complex problems in a 'different' way than described by the 'Kata' approach, but they recognise that they can apply this thinking to iterate towards a Vision, whilst creating conditions where the 'Scientific Method' use is widespread and constant in their organisations.

Finally, measurement of performance need to promote rather than discourage organisational learning. Senge (2006, pg 364) quotes H. Thomas Johnson, the author of 'Relevance Lost: The Rise and Fall of Management Accounting' as making a profoundly important observation about the success of Toyota as a 'Learning Organisation'. He observed that the key to Toyota's ongoing success was not the driving of results through target setting, but actually connecting measurement and targets to an in-depth process knowledge, especially at the front-line. Senge (2006) concludes that Toyota's approach was akin to embodying patterns of nature into its culture, which in turn means that their team members became superior learners.

H. Thomas Johnson himself sums up the challenge:

"The dilemma facing all companies that intend to become Lean is that they can follow a truly systemic path to Lean, or they can continue to use management accounting 'levers of control. They can't do both." (Johnson, 2006)

The author has benefitted greatly from writing this paper. The review of current thinking on 'Learning Organisations' and the psychology that often prevents the admission of error or permits 'learning from mistakes' has been a revelation. The survey that accompanies this paper provided a great level of insight into both how improvement programmes are being deployed in organisations, and just how far removed this is from the intertwined helix DNA model of the TPS. Through this research, I have deepened my knowledge of the 'Toyota Kata' approach to improvement. This will benefit me greatly in my career as a Continuous Improvement practitioner. If Lean is 'seen' as part of a lateral thought process in my client's organisation, then it has probably not been implemented beyond the 'tools and techniques' level. Toyota's forefathers recognised fully the complexity of systems, so rarely appear to attempt 'big bang' change. Instead, they used a 'Kata' approach at all levels and then iterated (rapidly in most cases) towards their Vision, developing a deeper level of understanding along the way. This model is the new challenge for organisations wishing to become 'Learning Organisations'.

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Appendices

Appendix A – Level 3 Assignment Survey Monkey Responses