Rethinking Lean Service

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Introduction

Ever since Levitt's influential Harvard Business Review article 'Production-Line Approach to Service' was published in 1972, it has been common for services to be treated like production lines in both the academic literature and more widely in management practice. The belief that achieving economies of scale will reduce unit costs is a common feature of management decision-making. As technological advancement has produced ever more sophisticated IT and telephony, it has become increasingly easier for firms to standardise and off-shore services. The development of the 'lean' literature has only helped to emphasise the same underlying management assumptions: by managing cost and workers' activity, organisational performance is expected to improve. This chapter argues that through misinterpretation of the core paradigm 'lean' has become subsumed into the 'business as usual' of conventional service management. As a result, 'lean' has become synonymous with 'process efficiency' and the opportunity for significant performance improvement – as exemplified by Toyota – has been missed.

By revisiting the development of service management and in particular the moves to industrialise service, we articulate a 'core paradigm' for service management to account for what might be described as conventional service management. We then explain how 'lean' emerged and became codified, and as 'lean' extended its reach to service organisations, how the two – 'lean' and conventional service management - share the same (false) assumptions. Building on the literature about the differences between manufacturing and service management, it is argued that services should be treated differently to manufacturing organisations. Going back to the origins of the 'Japanese miracle', it is argued that service organisations must be understood and managed as systems. The inspiration for 'lean production', Taiichi Ohno's Toyota Production System (TPS), was developed through an understanding of counter-intuitive truths, a series of challenges to convention. It is then argued that similar counter-intuitive truths are to be found in services when they are studied as systems, with subsequent redesigns resulting in dramatic performance improvements. A 'systems' service management archetype is developed as an alternative to conventional service management. Finally, it is argued that the means by which such change should be made ought to be experimental, empirically-based and emergent (as change was for Taiichi Ohno) in contrast to 'project managed' or predetermined change.

From Manufacturing to Operations Management

Until the 1980s, the study of business and management was primarily concerned with the manufacturing sector and the marketing, production and management of physical goods (Johnston 2005). The methods of mass production, applying Taylor's (1911) 'scientific management' principles, had led industrial engineers to break work down into simple, standardised tasks, with wasteful motion stripped out and work set to the pace of the production line. Workers at plants that evolved from the Ford Motor Company's mass production approach to manufacturing had narrowly defined, compartmentalised tasks, sometimes of only thirty seconds' duration but performed nearly a thousand times per day (Krafcik 1988). 'Factory management', as these studies collectively became known (Lockyer 1962), was the application of Taylor's philosophy more broadly to operations: the use of method study techniques to areas of capacity management, production planning and control had already begun to spread out of 'pure' manufacturing to include examples from distribution, transportation, hospitals, libraries, and publishers (Johnston 2005). Thus the field of 'factory management' was extended to become 'operations management' in the 1970s, with works by Johnson et al (1972) and Buffa (1976) making at least passing reference to the management of services as well as manufacturing.

Industrialised, Standardised Service

In 1972, Levitt wrote a seminal Harvard Business Review article entitled 'Production-line approach to service'. In it, he encouraged managers to pay the same attention to improving the design and management of services as was paid to manufacturing operations:

> *'In sum, to improve the quality and efficiency of service, companies must apply the kind of technocratic thinking which in other fields has replaced the high-cost and erratic elegance of the artisan with the low-cost, predictable munificence of the manufacturer.' (Levitt 1972 pp43-44)*

Levitt used the example of fast-food production and service in McDonald's as one example of how factory methods could be profitably employed in a service. The method by which McDonald's achieved their market domination was through mastery of a 'system' which is 'engineered and executed according to a tight technological discipline that ensures fast, clean, reliable service in an atmosphere that gives the modestly paid employees a sense of pride and dignity' (p45). Levitt believed that McDonald's had successfully applied 'a manufacturing style of thinking to a people-intensive service situation' (p45). Service organisations were thus encouraged to employ the manufacturing approaches of industrialisation through standardisation.

Perhaps the next seminal building-block in industrialising service was Chase's HBR article which led to the separation of 'front' and 'back' offices in service organisations (Chase 1978). In essence, his argument for 'back-office' service production was that as the back office has no contact with the customer, it offers greater potential to operate at peak efficiency. Chase argued that service systems with high customer contact are more difficult to control and more difficult to rationalise than low contact systems; so decoupling front from back enabled what he saw as the 'technical core' to operate as a factory, decoupled from outside influences, following a resource-orientated schedule and thus optimising efficiency through batch scheduling, forecasting, inventory control and work measurement.

These ideas continue to form the conceptual foundations for the way that services are designed and managed today.

The 'Core Paradigm' of Current Service Management

The 'Core Paradigm' for conventional service management (Seddon 2008) is derived from the philosophy underpinning 'factory thinking'. The three questions that make up the core paradigm are the questions that preoccupy managerial decision-making in transactional[1] service organisations:

- How much work is coming in?
- How many people have I got?
- How long do they take to do things?

In line with Chase's ideas about efficiency (Chase 1978), managers think of their job as a resource-management problem. The core paradigm leads managers to do the following types of things in pursuit of improving service operations:
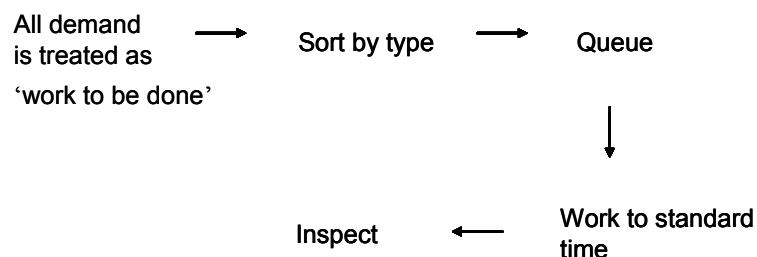
- Reduce average activity time (through procedures, job aids, call coaching and targets)
- Use I.T. to replace, support or control the service agent
- Outsource activity to lower-cost organisations/economies
- Increase functional specialisation (to reduce training costs)
- Standardise work processes
- Put similar work into back-office factories

All of the above managerial tactics are essentially concerned with managing cost. To manage customer service, managers focus on service levels, how long it takes to pick up the telephone or respond to a letter; how many things are done in three,

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[1] For example: financial services, telecommunications, IT services, police, local authority, government agencies and housing services.

five or however many days. Workers' activity is managed in line with anticipated 'standard' times and their work is inspected to achieve quality control. These features are now common-place, representing a factory view of service work. Managers assume that people need to be commanded and controlled (Seddon 2003). Scripts, procedures, targets, standards, inspection and compliance govern the way these organisations work.

We represent this factory view of service work as an archetype:

All demand
is treated as   →   Sort by type   →   Queue

'work to be done'

↓

Inspect   ←   Work to standard
                                time

Key measures: Activity and cost

Figure 1: The industrial archetype for factory service management

The archetype is a high-level representation. In practice, service organisations are much more complex but the complexities, nevertheless, follow this quintessential logic. Managers schedule resources according to the volumes of work coming into the system. Usually, the first step in the flow is to 'sort' the work by, for example, using interactive voice response [IVR] systems in telephony ('press 1 for x, 2 for y') and with incoming mail the work is typically scanned and sorted into pre-determined electronic work queues, often breaking one customer demand into a variety of sub-tasks, allocating each to its own queue. When work is done it is managed by 'standard times', the assumed time it takes to complete each task and resources are devoted to inspection to control the output to the customer. Often a customer demand into such a system is fragmented into many sub-tasks and consequently the flow of work crosses functional, organisational and geographic boundaries. Following Chase (1978), efficiency is assumed to be associated with the costs of activities.

We shall return to the systemic problems found in this archetype and offer an alternative archetype for transactional service design later, but it is into this environment that 'lean' and then 'lean service' arrived.

The Emergence and **Codification of 'Lean'**

Whilst service operations grew into its own field of study from the late 1970s, the greatest innovation in manufacturing – the 'Japanese miracle' – was beginning to excite interest in the West. Study tours to Japan led to the adoption of 'TQM' on the assumption that the tools associated with quality control and the involvement of people through suggestion schemes were the secrets of the 'miracle'. Tuckman (1994) gives an account of the folly that followed.

It was only in 1990 that the broader explanation of the reasons for superior performance was brought to widespread Western attention. In 'The Machine that Changed the World' (Womack, Jones and Roos 1990), the authors – inter alia – told the story of the Toyota Production System's 'TPS' creation and the 'genius' behind it, Taiichi Ohno. Through necessity, Ohno had developed a contrasting approach to the mass production methods of US car firms. Ohno's innovation represented a challenge to manufacturing management conventions. First published in 1990, Womack, Jones and Roos' book used the label 'lean' to what had occurred at Toyota; giving it a label had begun the codification of method[2].

The success of their first book led the authors to articulate 'a better way to organise and manage customer relations, the supply chain, product development, and production operations' in their subsequent book 'Lean Thinking' (Womack and Jones 1996 p9). Womack and Jones set out to answer the question posed by many who had read their work: 'How do we do it?', and offered five lean principles as the secret to Toyota's success:

> *'Precisely specify value by specific product, identify the value stream for each product, make value flow without interruptions, let the customer pull value from the producer, and pursue perfection.' (Womack and Jones 1996 p10)*

The third step in the codification of method quickly followed: the articulation of the tools employed in the TPS. The TPS had developed new methods to manage unconventional ideas: balancing demand, managing flow, materials being 'pulled'

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[2] The first published use of the term 'lean production' was by John Krafcik (1988) a researcher with Womack, Jones and Roos on the International Motor Vehicle Program (IMVP) at Massachusetts Institute of Technology (MiT). However, it was Womack, Jones and Roos' book which brought the term 'lean' into widespread use.

through the system. The associated 'tools': standard work, takt time, 5S, value stream mapping, kanban, poke yoke, etc., were documented and promulgated by many, promising that managers could replicate Toyota's remarkable success by applying the TPS tools to their workplaces. The applicability of tools was assumed to be universal, applying to all types of manufacturing and service organisations. One central feature of the TPS which has particular relevance to the argument in this chapter is standardisation. The conventional desire to standardise and industrialise service organisations had only been reinforced by the promulgation of 'lean'; it was an easy (conventional) argument to accept.

But is service the same as manufacturing?

Returning to the development of factory and service management, from the 1970s onwards discussion continued amongst academics over whether there were differences between management of services and manufacturing. The new fields of 'services marketing' and 'service operations' evolved as a direct result of the perceived need to treat services as different to manufacturing (Johnston 2005). Grönroos was a leading critic of treating the two as the same:

> *'Managers of service organizations may be making a mistake in following methods similar to those used by their colleagues in manufacturing.' (Grönroos, C 1990, p12)*

Normann (1984) wrote an early book in the area entitled 'Service Management', quickly followed by others (Lovelock 1988, Bowen et al 1990). Lovelock, writing on 'service marketing' (which despite its label encompasses much more than marketing), wrote:

> *'Are the marketing skills developed in manufacturing companies directly transferable to service organisations? I think not. It is my contention that marketing management tasks in the service sector differ from those in the manufacturing sector in several important respects. Among the characteristics distinguishing services marketing from goods marketing are the nature of the product, the greater involvement of customers in the production process, greater difficulties in maintaining quality control standards, the absence of inventories, the relative importance of the time factor, and the structure of distribution channels.' (Lovelock, 1984, p4)*

These publications represented a 'backlash' against the limited treatment of services in the operations management literature and the assumed universalism across service and manufacturing (Johnston 1994).

Grönroos (1990) offered a distinction between services and manufacturing management:

> *'A service management perspective changes the general focus of management in service firms as well as manufacturing firms from a product-based utility to total utility in the customer relationship' (p117)*

And Grönroos also provides a working definition of the components of a service:

> 'For most services, four basic characteristics can be identified:
> 1. Services are more or less *intangible.*
> 2. Services are *activities* or a *series of activities* rather than things.
> 3. Services are at least to some extent *produced and consumed simultaneously.*
> 4. The customer *participates in the production process* at least to some extent'
>
> (Grönroos, 1990 p29)

Bowen and Jones (1986) argued that the main difference between service and manufacturing is that 'service organisations experience a high degree of input uncertainty, because of the participation of customers in service exchanges.'

Bowen also contributed to the other side of the argument, when, with Youngdahl, he revisited and updated Levitt's work in an article entitled '"Lean" service: in defense of a production-line approach' (Bowen and Youngdahl 1998). The authors described three case examples of service organisations: a hospital providing a single treatment, an airline renowned for efficiency and a fast-food chain. The latter, Taco Bell, was compared with Levitt's original case, McDonalds, and argued to be the new exemplar of production-line fast food (Schlesinger and Heskett 1991). Bowen and Youngdahl argued that the cases were representative of 'lean' ideas in service and suggested that 'lean' ideas transfer well from manufacturing to service provided they were employed with minor alterations, for example training employees in customer service skills and training customers in how they contribute to quality service. Employing techniques such as 'service blueprinting' and 'value analysis', would, they argued, remove waste from processes and, hence, 'lean' would work in service organisations. The authors also argued that service and manufacturing were converging towards what they called 'mass customization'.

Johnston (2005) charts the history of the service/manufacturing debate and the development of the 'large-scale, worldwide academic movement concerned with the management of services.' He appeals for the development of frameworks and techniques to provide greater rigour to this field. It is an appeal that remains both relevant and urgent.

'Lean' Arrives in Service Organisations

Despite this lack of a sound knowledge-base 'lean' (as tools) took off in service organisations. Today, if you search for 'lean service' on Google, you will receive over 21 million hits. While the spread of lean tools in service organisations has no doubt been driven by providers marketing 'benefits' and, in the public service sector, centrally-determined obligations to adopt 'lean', academics have also fuelled the growth. In 2006 Radnor et al, in a report commissioned by the Scottish Executive, proclaimed as successful the adoption of 'lean tools' in the Scottish public service sector:

> *'Analysis from the research with organisations in the Scottish public sec-tor, together with evidence from the literature, indicates that Lean is transferable to the public sector ...' (Radnor et al 2006, p5)*

Consistent with the commercial protagonists, Radnor et al conceptualise 'lean' as a set of tools:

> *'A toolkit of methods for practical use at the operational level has been developed to support lean thinking. Tools include, for example, value stream mapping which is used to analyse the flow of resources, highlight areas where activities consume resources but do not add value from the customer's perspective.' (Radnor et al 2006, p1)*

Discussing the differences between service and manufacturing organisations, the authors wrote:

> *'In manufacturing, the emphasis is on a set of management tools and techniques that are used to standardise processes. Within the public sec-tor, however, there is engagement with the principles of Lean, but less with the full range of tools and techniques. Most organisations, for ex-ample, used just a few tools, such as value stream mapping. This implies that many of the tools and techniques used in a manufacturing context are currently not immediately and obviously applicable to service envi-ronments. Instead, some of the tools need to be adapted to cope with the need for greater process flexibility that are found in the public sector to meet the needs of the customer. In some cases, the limited range of Lean tools in use in the public sector may be because the service sector has yet to understand the value, relevance or purpose of the tools being applied from within the toolkit.' (Radnor et al 2006)*

Similarly, Ahlstrom (2004), despite acknowledging an important methodological weakness (participants were presented with descriptions of 'lean' concepts and asked to translate them for service organisations; the participants were all from 'communications' positions, thus unlikely to be familiar with service operations),

claimed that the principles of 'lean' manufacturing principles were applicable, with 'contingencies', in service operations.

Neither of these studies used objective measurements. It is insufficient to argue that evidence of use is evidence of efficacy and it throws no light on the reasons for efficacy. Both studies suggest lean tools will be usefully applied with adaptation but we learn little about what adaptations might be necessary and why they may be needed.

Radnor instead places academic validation for the application of lean production principles to services on Bowen and Youngdahl's work (Radnor et al 2006 p9). However, Bowen and Youngdahl had described successful service organisations which could be described as possessing lean attributes. None was presented as having employed lean tools.

Swank's (2003) article in the Harvard Business Review described the application of 'takt' time to new business processing in a financial services organisation. Takt time is the measure used in the Toyota system to achieve a heart-beat through material flow (an essential component of the system). Swank's use of the same term was to describe the use of 'standard time' in processing insurance documents, an entirely different (and more familiar) concept (to managers of conventional service organisations).

In recognition of the doubts being expressed about the lean tools movement, Jim Womack rationalised what had occurred:

> *"The focus turned to how organizations everywhere could transform themselves from mass producers into lean exemplars. Given the magnitude of the task and its many dimensions, it's understandable that lean tools came to the foreground – 5S, setup reduction, the five whys, target costing, simultaneous and concurrent engineering, value-stream maps, kanban, and kaizen. Indeed, I think of the period from the early 1990s up to the present as the Tool Age of the lean movement…" (Womack 2006)*

Womack went on to argue that what was missing was 'lean management' and acknowledged that he was unable to articulate its elements.

The TPS was, and is, first and foremost, a management issue. The tools were developed to solve problems associated with making cars at the rate and variety of customer demand; in other organisations management's first task is to know whether or not they are solving the same problems. We shall return to this.

Womack's explicit acknowledgement that lean had become enrapt in the use of tools came at what many see as a low point for the 'lean' movement. In January

2007, the movement hit a nadir with press headlines of "Is this banana active?" relating to the implementation of a 'lean' efficiency drive in Her Majesty's Revenue and Customs (HMRC), (The Times, 5/1/07)[3]. The staff union criticised the lean programme as 'demeaning and demoralising', saying that it 'reduced staff to little more than machines, on the whim of consultants'. Workers had been reorganised into more detailed specialist functions (hence had to do more repetitive work); the work processes had been standardised and were controlled through activity measurement. The 'lean' intervention in HMRC was having the same effect on workers as mass-production had on the workers at Ford in the 1930s: alienation and demoralisation (Berger 2001).

Back to the Beginning

To unpick the development of lean service we need to go back to the 'Japanese miracle' and travel forward again through this history. As Tuckman (1994), commenting on the industrial tourists sent to study the 'miracle', observed:

> *'A major discovery of the early missionaries, however, was also that the Japanese miracle had been created by — to mix religious metaphors — western gurus.' (Tuckman 1994)*

The guru most associated[4] with the 'miracle' and one of the most important critics of conventional modern management was W. Edwards Deming. Following his significant contribution (using statistical techniques to improve manufacturing quality) to the US war effort, Deming had been sent to Japan to help with statistical approaches to population surveys. By chance he had the opportunity to present to Japanese top management (Neave 1990). His influence on Japanese manufacturing led to recognition by the Japanese Emperor in 1960, with the award of the Second Order Medal of the Sacred Treasure.

It is perhaps ironic that Deming's teachings were assumed by his audience to be the best of American management, for his message to managers in his home country was quite different:

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[3] (See http://www.timesonline.co.uk/tol/news/uk/article1289640.ece for the coverage in the Times on January 5th 2007)

[4] While Deming was not the first or only 'guru' associated with the Japanese miracle, he became the most well-known, following his appearance in the (US) nation-wide airing of a television programme entitled "If Japan Can Why Can't We?" in 1980.

'Most people imagine that the present style of management has always existed, and is a fixture. Actually, it is a modern invention – a prison created by the way in which people interact' (W. Edwards Deming 1994)

His point was simple: we (mankind) invented management, we should re-invent it. His book ("Out of the Crisis" 1982) included a scathing and detailed critique of western management assumptions. The better alternative, he argued, was that we should understand and manage our organisations as systems. His famous 'figure 1' from the book – a picture capturing the flow of work through a manufacturing organisation – achieved its notoriety because it was often the only visual aid he would use to orientate his Japanese audience as to what to pay attention to when considering their work as leaders. He viewed constancy of purpose to improve the system as the cornerstone of management's efforts; his figure served also for discussions of method and measures: Management's focus, argued Deming, ought to be with the flow of work through the system as opposed to measuring and managing work in functional activities. Operating at this 'system' level achieves far more than focussing on the refinement of individual functions and/or processes.
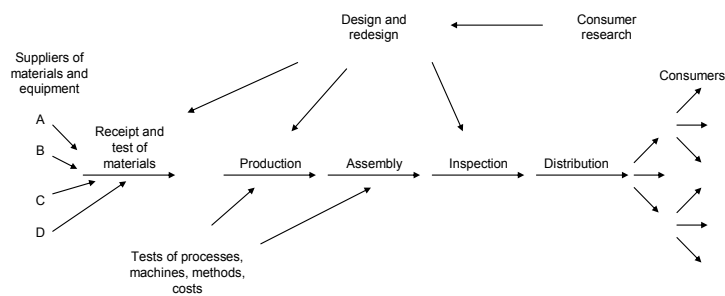
Figure 2: Deming's famous diagram: Production viewed as a system (Deming 1982)

In his criticism of what he called the 'present style of management' Deming illustrated how targets and all other arbitrary measures sub-optimised systems. He pointed to the absurdity of failing to understand that workers' performance was, in fact, governed by the system; as a result appraisal practices were at best irrelevant and at worst drove sub-optimisation. These and other ideas were direct affronts to prevailing beliefs: to accept them would be to accept that much that was considered normal was flawed and would have to go. Deming's descriptions of sub-optimisation created by the prevailing style of management were larger than mere production costs (such as poor quality or excess inventory), as they also incorpo-

rated human and societal costs. He argued that the greatest costs of sub-optimisation are 'unknown and unknowable' (Deming 1982 p98).

Deming's figure depicts manufacturing. We can look at it and imagine the Toyota system: cars being produced for consumers at the rate and variety of demand, the flow of work through the system – all the way back to suppliers – operating at the heart-beat created by the customers 'pulling' cars. But we can't so easily envisage a service organisation while looking at figure 1. Following Grönroos (1990), we have to build our understanding of service organisations as systems by studying what occurs at the point of transaction, we need to understand more about customer demand – what customers want – and how the system responds to those demands.

To echo Ohno, our first step has to be concerned with understanding. It was Ohno's favourite word:

> 'I believe it [understanding] has a specific meaning - to approach an objective positively and comprehend its nature. Careful inspection of any production area reveals waste and room for improvement. No one can understand manufacturing by just walking through the work area and looking at it. We have to see each area's role and function in the overall picture.' (Ohno 1988 p57)

Understanding Service Organisations

To return to transactional service organisations, when we set out to comprehend them as systems, we learn, as Deming argued, that what he called the present style of management (described here as based on the 'Core Paradigm') has fundamental flaws.

One flaw is the assumption that all demand is 'production' – work that has to be done. By studying the demands customers place on transactional service systems, from the customer's point of view, you learn that much of the demand is waste and, worse, it creates further wasteful activity.

Value and Failure Demand

At the highest level, there are two types of customer of customer demand: 'value' and 'failure' demand. Value demands are the ones companies want customers to place on the system, the reason that the company is in business is to serve these demands. Failure demands are: 'demands caused by a failure to do something or do something right for the customer' (Seddon 2003 p26). When service organisations do not do something that the customer has been expecting, customers call back, turn up again, or otherwise create more demand and hence more work.

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These, and failures to do something right from the customers' point of view – not solving a problem, sending out a form that a customer has difficulties with and so on - represent a significant means to improve service delivery and reduce costs. Treating failure demand as though it is indistinguishable from all demand is to fail to see a powerful economic lever for improvement.

In financial services, for example, failure demand can account for anything from 20 to 60 per cent of all customer demand. In police forces, telecommunications and local authorities it is often higher (Seddon 2003, 2008). If we were to use Deming's language, failure demand is a form of sub-optimisation. In Ohno's language it is a type of waste.

It is noteworthy that failure demand is not among the 'seven types of waste' promoted by the lean tools literature. Failure demand is a systemic phenomenon that is peculiar to service organisations; it is, also, the largest form of waste in transactional service systems when managed according to the present style of management. Given the economic leverage its removal provides, it is a poignant illustration of the general argument against 'lean' as tools. Starting an intervention with tools is to ignore the priority to know first your problem(s).

Ohno saw the purpose of the TPS as the eradication of waste:

> *'The most important objective of the Toyota system has been to increase production efficiency by consistently and thoroughly eliminating waste' (Ohno 1988 pxiii)*

And:

> *'The preliminary step toward application of the Toyota production system is to identify wastes completely.' (Ohno 1988 p19)*

Failure demand is waste. Predictable failure demand is preventable, a 'common cause' in a system, to use Deming's language.

Two types of demand on service organisations:

Failure

Value

Service
organisation
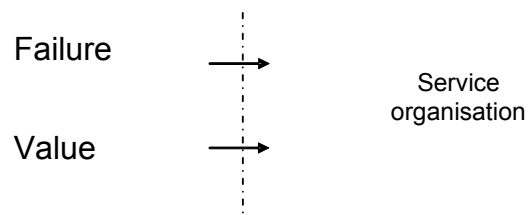
Predictable failure demand is preventable

Figure 3: Understanding demand: an economic lever

The notion that demand is predictable conflicts with Bowen and Jones' (1986) argument that service organisations experience a high degree of input uncertainty. A more accurate argument would be that service organisations experience a high degree of variety rather than uncertainty. In the authors' experience all transactional service organisations have largely predictable demand. By understanding demand from the customers' point of view management's attention is drawn to the advantage of designing the organisation to absorb this variety. While Ohno's (TPS) purpose was to build cars at the rate and variety of demand, a transactional service system's purpose is, we argue, to absorb the variety of customer demand. Understanding the problem leads to tools (or methods) with which to solve it[5].

Waste cannot be removed without understanding its causes. It is axiomatic that the primary cause of failure demand is the failure of the system to absorb the variety of customer demands. The single greatest reason for service systems to fail to absorb variety is standardisation. To the prevailing style of management this realisation comes as a significant shock. To give just one example of the impact of standardisation on performance, we return to HMRC, where the standardisation of

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[5] Methodological principles for studying and acting on failure demand are summarised in: "Failure demand – from the horse's mouth" (Seddon, 2009)

taxation services has created failure demand not only back in to HMRC[6] but also to many organisations 'down-stream' that are consuming resources dealing with the failure of the primary service(s) to work: local authorities, housing associations, advice centres, voluntary agencies, legal services and the courts are filled with demand created by the failure of HMRC (and the Department for Work and Pensions) to provide the primary service effectively (Advice UK, 2008).

In transactional service organisations, standardisation, central to the present style of management and valued by managers as a way of managing costs, can often drive costs up. Customers can 'see' the waste: they know how many times they need to call to get service, they are irritated by IVR systems that fail to get them to someone who can help them and hence mean they have to repeat themselves, they are infuriated by service workers who follow their scripts or procedures and thus fail to listen to or solve their problem.

While we have explored the genesis of standardisation in service management literature and practice and the fit with the lean tools movement, it is worth pausing to reflect on the lean-tools promoters' arguments for starting any intervention with standardising the work. They often argue that Ohno said 'first you must standardise before you can improve'. While this is essential in manufacturing, in a service organisation to standardise would diminish the system's ability to absorb variety. Fitting with the top-down conventions this means, in practice, that standards are determined by the hierarchy and/or experts and imposed upon workers (a common feature of tools-based interventions). In contrast, Ohno placed importance on workers writing their standards themselves:

> 'Standards should not be forced down from above but rather set by production workers themselves.' (Ohno 1988 p98).

It is a central feature of the TPS that improvements are made by workers adhering to a scientific method, an essential component in organisational learning (Spear and Bowen, 1999). Missing this essential emphasis, Womack, Jones and Roos (2007) placed the responsibility for standardisation with management:

> 'The work process itself, along with the management process, must be absolutely standardized by managers, and by manufacturing and industrial engineers as well, before a work team can have any hope of improving it. Standardization in this context means creating a precise and commonly understood way to conduct every essential step in every process.' (Womack, Jones and Roos 2007 p290)

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[6] Yet the extent remains unknown in HMRC. In presentations of their lean tools initiative, HMRC personnel demonstrate no knowledge of failure demand on their system.

This merely reinforces the present style of management. In service organisations work typically has been standardised and industrialised from an internal, cost-focussed point of view. Managers dumb-down the first point of contact (or out-source it) to employ cheaper labour and fragment the flow of work (again, to reduce training time and lower labour costs). The consequences are more handovers; more handovers means more waste, and an increasing likelihood of failure demand (further waste). The more work is fragmented – sorted, batched, handed over and queued, the more errors creep in. Every time a file is opened, it has to be re-read (duplication). These problems are exacerbated as workers are working to activity targets.

This is a further flaw in the 'Core Paradigm': holding workers accountable for their work activity. Managers pay attention to activity statistics, monitoring workers and doing 'one-to-ones' with those who fail to meet their activity targets. As Deming pointed out, this is to focus on the wrong things:

> '*I should estimate that in my experience most troubles and most possibilities for improvement add up to proportions something like this:*
> *94% belong to the system (responsibility of management) 6% special.'*
> *(Deming 1982 p 315)*

Deming instead encouraged managers to study variation and its causes – for example, things that would make the calls longer or shorter. Imagine the potential causes of variation in a call-centre worker's performance: the nature of the call, the type of customer, whether processes have been designed from a customers' point of view (and as managers do not frequently study demand as a matter of course, that is unlikely), whether the IT system works today, whether people in other departments have told customers things they did not tell people in the call centre, the knowledge of the worker and so on. These are the things that affect performance and are the things managers should be focused on (the '94%' in Deming's terms). Managing peoples' activity is an incredible waste of management resource; worse, this style of management demoralises workers. Workers are taught their goodness or badness will be judged by whether they meet their activity statistics; they usually learn how to cheat their numbers to avoid attention (driving further waste into the system). The workers' focus is survival not contribution and improvement; their ingenuity is driven by the system to work against its purpose. Managers find it hard to see things this way. When close monitoring of people gives managers evidence of people cheating, they claim it as evidence of the need for the controls (or more controls). Managers develop a jaundiced view of their people. When, on the other hand, management's attention is on the system (the 94%), significant performance improvement follows (see, for example, Pyke 2008)
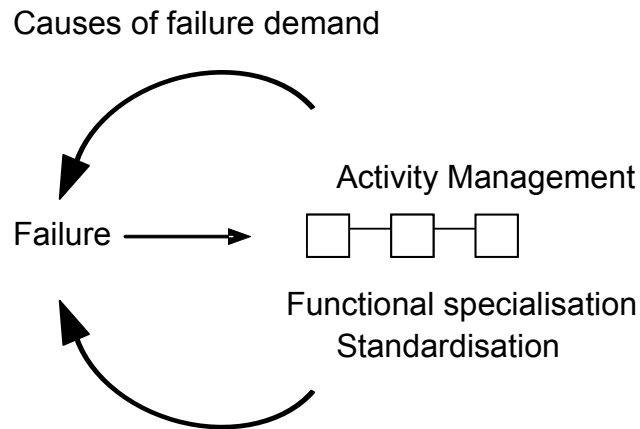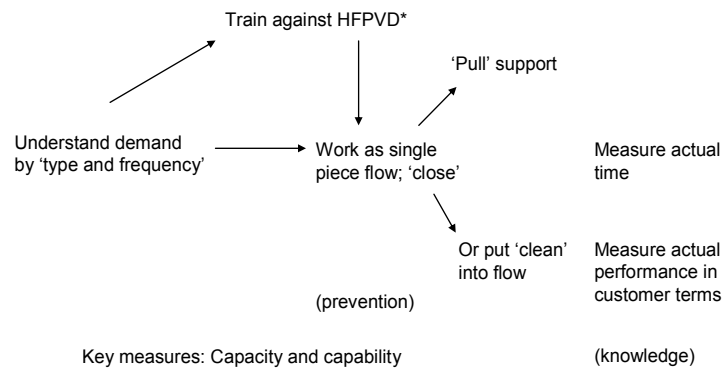
Causes of failure demand

Figure 4: Understanding the causes of failure demand

The prevailing style of management keeps failure demand and its causes invisible. Management's view of their system is limited by the management information in use, all of which relates to activity and cost. The phenomenon is systemic: failure demand can only be removed when managers change the way work is designed and managed.

The Better Alternative

Following Deming and Ohno, the better way to design and manage service organisations is to understand and manage the organisation as a system. The systems archetype below describes a design for managing service in such a way as to see and remove waste continuously (a feature that it shares with the TPS).

Train against HFPVD*

'Pull' support

Understand demand
by 'type and frequency' → Work as single
piece flow; 'close'

Measure actual
time

Or put 'clean'
into flow

Measure actual
performance in
customer terms

(prevention)

Key measures: Capacity and capability

(knowledge)

* HFPVD = High Frequency Predictable Value Demand

Figure 5: The systems archetype for transactional service systems

By understanding the demands from customers, it is possible to train workers against the high frequency, predictable value demands (things we know we are going to get a lot of) that are hitting the system. The consequences are shortened training times (for example from eight weeks to two weeks in financial services) and more productive employment of the worker. When the worker receives a customer demand for which he or she is not trained, the required expertise is 'pulled' as needed. In this way worker training is directly related to the requirements of the work. The worker aims to achieve single piece flow (to deal with each demand as it enters the system right through to resolution for the customer, before beginning with another demand) or, if the work has to be handed on to a flow, then the worker is focussed on passing it 'clean': it must be in such a state that the next person has everything they need to take the next step. Workers have measures which relate to the customer's purpose in their hands (one-stop capability, measures of end-to-end flow) and hence, like Ohno's workers, have the latitude to experiment with and improve the work design.

Training workers against demand and ensuring they are responsible for what they do is preventative (the better alternative to inspection). All arbitrary measures (standard times, cost, targets, standards) are removed from the system and instead real measures are used to help managers and workers alike understand and improve the work. It is better to know the actual time it takes to complete transactions as 'one-stop'; this improves resource planning. Similarly it is better to know the true experience of the customer for any work that goes through a flow (end-to-end time or on-time-as-required) in order to improve the flow and, consequently, reduce costs. There are many examples of these principles in use, published ex-

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amples include ODPM (2005), Jackson, Johnston and Seddon (2007), Pyke (2008), McQuade (2008), and Zokaei et al (2010).

At its heart, the systems archetype is concerned with designing against demand, managing value rather than cost. And this is the heart of the paradox: when managers manage costs, costs go up; when they learn to manage value, costs fall. It is a counter-intuitive truth.

Counter-Intuitive Truths

Ohno discovered a series of counter-intuitive revelations in creating the TPS. The most notable of these was to discover that costs were contained in the flow of work, not in creating economies of scale:

> 'To think that mass-produced items are cheaper per unit is understandable, but wrong' (Ohno 1988 p68)

This can be re-written for service organisations as follows:

> In service organisations to think that service activity is equivalent to cost is understandable but wrong.

Ohno's innovation might be termed 'economy of flow' (Seddon and Caulkin 2007) as compared to economy of scale. We have shown here how 'economy of scale' actually creates waste which is kept hidden by management's practices. Commenting on this distinction H Thomas Johnson said:

> 'It is time to raise awareness of how production systems designed along the lines of Toyota's system turn scale-economy thinking completely on its head, making it possible to build manufacturing capacity on a much smaller scale than ever before thought possible.'
>
> (Johnson 2003 p7)

Elsewhere, he went further and said that 'scale economy, beyond very small volumes, is a concept that should be discarded' (Johnson 2008 p102). Grönroos similarly says:

> 'Scale economies may or may not be a strategically reasonable objective, but it is never sound, and it is always dangerous to automatically consider economies of scale as a source of profitability. Rather, an uncritical pursuit of large-scale production and the potential benefits of scale economies easily turns an operation into disaster.'
>
> (Grönroos 1990 p120)

In this chapter we have explored further counter-intuitive truths concerning the design and management of services: that demand is the greatest lever for improvement, that current managerial controls create waste rather than control, that giving the workers control over their work (using measures derived from the work) achieves greater control and that managers should work on the system (not their people). Together, these truths represent a different, 'systems thinking' philosophy of management, comparable to the philosophy behind Ohno's TPS, and in opposition to the prevailing style of management.

Change as Emergent, not Planned

Ohno placed high value on the need for gaining an understanding of an organisation as a prerequisite for making any changes. This too is an affront to convention. Managers are taught that change should be planned, starting with a business case, a cost-benefit analysis or targets for improvement. It is to assume knowledge; and as Deming would often point out, experience is not the same as knowledge. To make the fundamental change that moving from the present style of management to managing the organisation as a system requires managers first to understand their problems. As they study their organisation as a system, managers discover the problems they thought they had are not their real problems[7].

It is worth pointing out this is also true for manufacturing organisations, for not all manufacturers make cars. John Darlington and Kate Mackle of Cardiff University's Lean Enterprise Research Centre share the view that the tools developed in Toyota were responses to particular problems; the tools were a means to an end, not ends in themselves (Mackle 2005). Darlington argues that car manufacturing is just one type of manufacturing, and each different type has different problems to solve. Thus the first question a manufacturing organisation needs to ask itself is 'what type of manufacturer am I?' before implementing any tools (Darlington et al 2008).

In this chapter we have presented an archetype for transactional service systems. The problems to be solved are quite different from those to be solved in fast-food services such as Levitt's McDonald's example (where standardisation of production is essential). In response to Johnston's appeal, it is a useful first step to articulate differences in service archetypes – different systems solving different problems. Two further archetypes not discussed here are 'break-fix' systems and 'preventative' systems (Seddon 2003).

Ohno said: do not codify method

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[7] A method for studying transactional service organisations as systems is provided in Seddon 2003 and 2008.

The 'lean tools' movement is directly in conflict with the beliefs of the architect of the TPS. Taiichi Ohno asserted that method must not be codified:

> *'While most companies focused on stimulating sales, Mr. Ohno believed just-in-time was a manufacturing advantage for Toyota. And for many years, he would not allow anything to be recorded about it. He claimed it was because improvement is never-ending – and by writing it down, the process would become crystallized (Ohno 1988 pxi [foreword]).'*

To codify method is to impede understanding, thus lessening the chance that people will challenge any underlying preconceptions they may hold.

Writing about the differences between what Henry Ford intended (for Ohno saw Henry Ford as a fellow 'flow'-thinker) and what subsequently occurred in the Ford Motor Company, Ohno said:

> *'As in everything else, however, regardless of good intentions, an idea does not always evolve in the direction hoped for by its creator.'* (Ohno 1988 p100).

The same could be said for Ohno's ideas.

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