

Managerial Leadership: Five action-logics viewed via two developmental lenses.

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Abstract

My essay aims to further develop the concepts first proposed in the 2005 paper “*Intervening into personal & organisational systems by powerfully leading & wisely managing – an uneasy but vital integration*”, which defined Managing and Leading as two distinct processes or modes of action. By adding a third mode: Experimenting, that paper establish an integrated repertoire of modes for managerial leaders to choose from when intervening into a situation or system.

This follow-up essay starts with a reminder that developing Leadership separately from Management is likely to confuse anyone targeted by a *separatist* training programme, the reality being that everyone in organisational life is simultaneously both Managing and Leading (**M&L**) and often desperately trying to integrate the two, albeit largely opposing, action-logics.

Managing and Leading can each be further sub-divided, yielding a total of four modes : *maintaining, continually improving, innovating, and transforming*, and this new *4 action-logic* model may then be portrayed from the perspective of two very different developmental world views/ epochs, as if different lenses. First a “conventional” lens, a majority worldview held by most individuals in most organisations, and second a “post-conventional” lens, a very different worldview representing the standpoint of a highly evolved organisation such as Toyota.

In a rapidly globalising world, the kind of post-conventional tools used in highly evolved organisations like Toyota are exceedingly prized. Even the NHS is now exposing itself to concepts such as Lean thinking, System Dynamics, Improvement Science, and the notion of becoming a Learning Organisation – albeit thus far only in a piece-meal way. Caution is advisable however because the tools may easily be misunderstood and misused – becoming de-graded and de-valued unless supported by the kind of post-conventional thinking that originally prompted accelerated organisational development and now somewhat invisibly underpins it. **Systems Thinking** (see **SIDE BAR**) for example is core to this “post-conventional” way of seeing the world, but it is a hard concept to explain to the 85% of individuals who when tested (15) typically score as “conventional” sense makers. Explaining it can feel metaphorically akin to explaining Einsteinian thinking to someone locked inside a Newtonian worldview.

As a device for describing the key tools and the thinking in each worldview, I use the **M&L** model as a structure around which each can illuminate the inherent tensions of simultaneously managing and leading, hopefully enabling a more elegant co-existence. The intention is to make the tools and the thinking more accessible to everyone, regardless of the prevailing organisational culture or the personal worldview. This is the principal aim of the essay. I offer specific examples of *paradigm shifts* and accountability for *performance* – each illustrating a marked difference between the two very different (conventional/post-conventional) epochs.

It turns out for example that real-time data and feedback are essential for driving the post-conventional organisation, and may additionally be used as a way of prompting individuals *and* organisations to rapidly evolve a new way of seeing. BaseLine® is a tool that has been designed with this in mind. It allows for example conventional organisations and individuals, even those considering themselves relatively innumerate, to develop post-conventional habits, simply by using the time-series data that in many cases is already being collected – often for reasons of accountability rather than methodical improvement. In this way, healthy evolution may be sparked at all organisational levels: bottom, middle *and* top.

As a finale, a fifth action-logic mode, *modelling*, is added, and will be the subject of a further paper. Its essence is embodied in a phrase coined by the late Russell Ackoff: “idealized design” and uses modern computing technology to facilitate transformative change within tolerable levels of risk.

(599 words).

Keywords

Leading; Managing; Modelling; Deming; Shewhart; Berwick; Ackoff; Quality; System; Transformation; Developmental; Conventional; Post-conventional; Evolutionary Organisational Development; Learning Organisation; Lean thinking; System Dynamics, Improvement Science; Epoch; Paradigm; Performance; Idealized Design; BaseLine;

Introduction

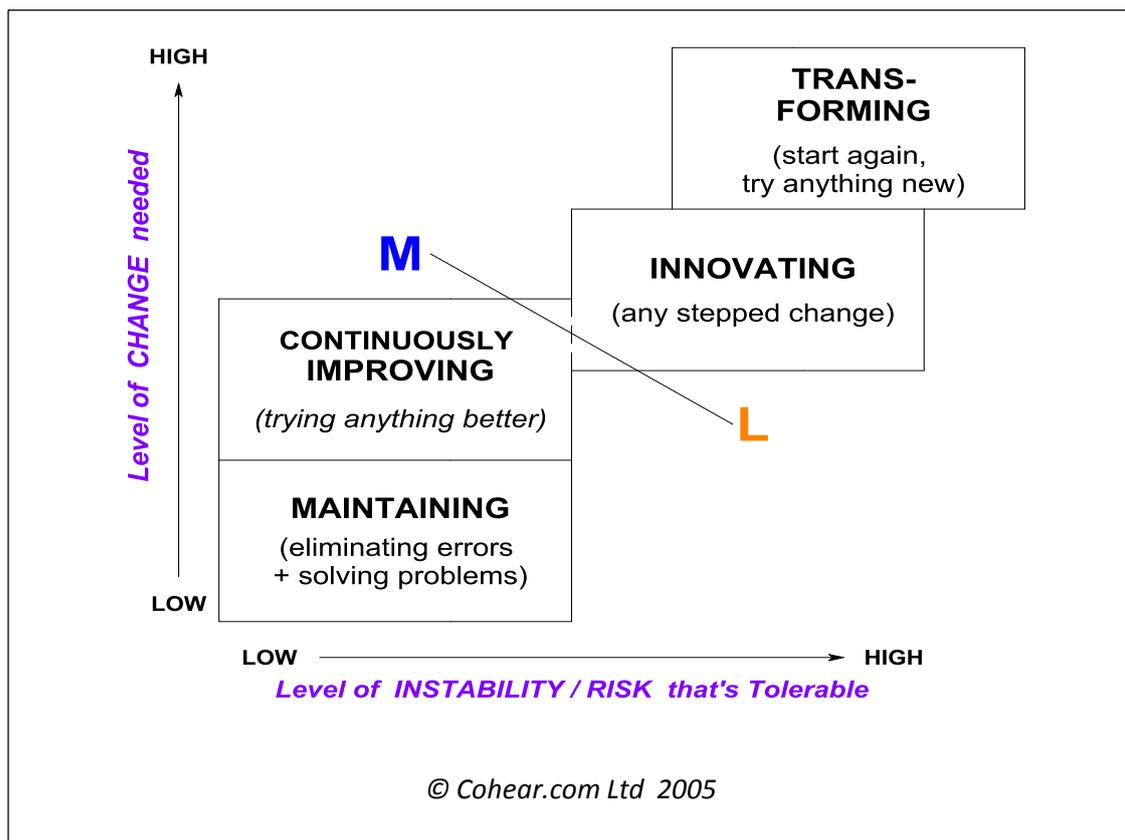
To begin, take a look at the **M&L 4 action-logic** model shown below as a 2x2 matrix. The premise is that people are not *either* Managers *or* Leaders, rather that everyone is both managing *and* leading, and alternating between all four of the action logic modes described.

Obviously, this model will make sense only if it squares with one's own personal definitions of "management" and "leadership" and the definitions given below are fairly standard ones. (6)

Managing = keeping things flowing and stable, and hence predictable, so you can consistently and confidently deliver what you are promising. Any improvement comes from noticing what causes instability and eliminating that cause, or from learning what causes it via experimentation.

Leading = changing things, or transforming them, which risks a temporary loss of stability/ predictability in order to shift performance to a new and better level – a level that can then be **managed** and sustained.

Fig 1. Four modes of action for Managerial Leaders



It can be very unhelpful to think of yourself as simply *either* a Manager *or* a Leader. Every individual who wants to take charge of a business system is necessarily both managing and leading at different times and in different situations, depending on what level of change is warranted, and what level of instability or risk can

be tolerated. Success therefore requires competence and capability in each mode, coupled with an ability to choose between the modes.

So, rather than describe yourself as either a manager or a leader, try to think of yourself as a “**managerial leader**” a term borrowed from Elliott Jaques (1). Looking at the diagram above – ask yourself in which box do you **actually** spend most of your life, minute to minute, hour to hour? Then separately ask yourself a different question: where do you **most enjoy** spending your life?

As you contemplate your answers, read the following descriptions of each managerial leadership mode.

1. MAINTAINING things – working to the definitions given above – has probably more to do with managing than leading. If the situation being faced is essentially one of stability – with only the occasional thing going wrong – then keeping things steady and hence predictable is vital if you are to continue to consistently and confidently deliver what you’re promising e.g. to your customers or to your boss. Any improvement comes from noticing irregularities and eliminating them, if possible in a way that ensures they will not return to haunt you. In this way, a well-maintained system may – over time – experience enhancement to its capability and performance. If things go wrong, an inquiry can be instigated and the cause uncovered – maybe via some kind of Root Cause Analysis procedure that can prompt some kind of countermeasure to be put in place thus avoiding future recurrence.

Most people look at maintenance as something that is necessary, if a little boring, but many also view it as something that if at all possible should be personally avoided. Car manufacturers for example, in recent years have had to build-in more and more automatic prompts of impending faults (via electronic diagnostics). This is in recognition that few drivers prior to embarking on any significant journey are prepared to do even the most basic of checks (oil level, water level, tyre pressures, fan belt, etc.) tasks that fifty years ago many drivers were happy, even proud to undertake. Annual or even bi-annual servicing is nowadays all that is required. Nevertheless, maintaining systems in a steady and therefore predictable state remains as vital a task as ever. And even those people who see maintenance as boring are very much hoping that others – those whose job it is to maintain critical systems such as aircraft flight systems or hospital in-patient systems – are thoroughly competent and, clear that their role *excludes* occasional experimentation. Few passengers on a train are hoping that the driver is trying to continuously improve the way they respond to signals – most passengers prefer to believe that the driver is maintaining the system as laid down in the manuals, with zero deviation. They are also expecting that in the event of break down, the driver will know exactly what to do in every conceivable situation, and in the event that something goes wrong how to quickly and safely recover normality.

2. CONTINUOUSLY IMPROVING things, by trying something different, is hence a very different mode – justified perhaps because things currently seem so chaotic and that almost anything different feels worth a try; or maybe it has become obvious that there’s going to be an increasing struggle to keep up with meeting the wants and needs of customers. Alternatively, an enthusiastically proactive managerial leader may simply be motivated to make things as good as they can be. They will try things – anything – to discover what might make things better, and provided they are careful about the implementation of any happened-upon solutions, to ensure the changes are likely to be lasting ones, they may even end up actually delivering a steep and sustained improvement in performance. Having decided what, to them at least, is the exact nature of the improvement needed, the managerial leader will form a plan; inform those who will do the implementation; communicate to anyone else who they feel needs to know; press the start button; then agree a date for review to ensure the implementation is completed and is working as intended. This is referred to in some circles as: **Plan → Do → Review** (PDR).

These first two modes fit most people's definition of Managing more than Leading. The situations being faced are pervaded by a low level of instability, and/or tolerance for any risk that might predictably be associated with making major changes. If mode 1 (*maintaining*) is already delivering cumulative enhancements that meet or beat the changing needs of customers and other stakeholders, then even the risk of opting for mode 2 (*continuous improvement*) can be avoided. However, if it is thought that a system can achieve significantly better output – either in terms of reduced time, reduced costs, or enhanced quality – then a more innovative approach may be justifiable as long as sufficiently capable managerial leadership is available. Some might say that “leadership” is needed. In summary: Modes 1 and 2 coincide with the realms of Managing rather than Leading – hence the **M** and **L** in the diagram.

3. INNOVATING on the other hand is a word much used to describe technological and/or product breakthrough. Such opportunities are usually accompanied by the need for significant system redesign that will reliably deliver enhancements recognisable as such by customers. Even without the spur of technological or product advancement, a fundamental review of the system with larger scale experiments than would normally be considered part of mode 2 (continuous improvement) remains an option provided the risks during change-over, especially for customers, can be well handled. Software companies for example know that for newly launched innovations, they can always rely upon a small number of especially enthusiastic customers – to endure as guinea pigs, whilst most customers sensibly prefer to wait until the bugs are ironed out before adopting the change. These early adopters are put to work to minimise risk further on in the commissioning process.

Major redesign of products and services may sometimes be ethically essential rather than merely optional e.g. in the public sector where most of the costs are being borne, often somewhat blindly, by taxpayers. Some of the services, for some customers, may literally be a matter of life and death – albeit ironically such customers may be less discerning than say the buyer of a motor car.

Virtually all Mode 3 (innovating) activity necessitates good programme management to handle the inevitable complexity, often under-forecasted, that gets thrown up. Such capability is often in short supply and hence much prized.

4. TRANSFORMING things sometimes feels like the most attractive mode of all, especially if the situation being faced seems so hopelessly inadequate. Or perhaps previous attempts at mode 3 have caused so much disruption that no one person can get a handle upon the level of complexity that has emerged. Transforming things means breaking with the past and starting again. Transformation is naturally both risky **and** may feel culturally impossible – which is why most organisations will avoid such a level of change even when confronted by a demonstrably more capable competitor jeopardising their very survival. The attempting of mode 4- type whole-scale change is therefore rare, and often occurs only as a last resort, or when it is already too late. Many books have been written featuring the stories of amazing transformations that have been achieved in hindsight, but there are few books written about transformations that failed; either because the organisations concerned no longer exist, or because the stories are just too painful to recall.

These last two modes – at least according again to the assumed definitions – fit the realms of Leading rather than Managing. The situations being dealt with are requiring a high level of tolerance of instability – if only because it is felt that there is nothing much to lose. In such situations, leaders can either arrive from outside like a heroic white knight, or they appear from within having previously been invisible. Success however does not only depend on their ability to handle people, for all aspects of the system have to be both managed and led. Choosing the right action/logic mode for each situation and moment is as vital as ever, and even the

“white knights” (at least those who survive the hiatus and stick around long enough to tell the tale) are the first to admit that the success they achieved depended hugely on others. And that many of these individuals were better at managing things than they personally were i.e. they were able to cope with extended periods of instability in order to win through to a new stable state, one capable of functioning at a higher level than before the disruption. These people will have had to managerially lead in situations characterised by frequent incidences of error, unpredictability, increasing variation, increased incidence of downtime, extensive waste, customer dissatisfaction/ churn, and employee stress and churn, leading to a loss of vital experience and the tacit memory that is vital for organisational learning. Hence, managerially leading in modes 3 and 4 frequently requires considerable courage, and hope, that the great prize of a new stable state will eventually emerge.

ANSWERS?

Now that you have a basic understanding of the *4 action-logic* model, what are your answers to the two questions posed. Here are the questions again: (1) in which box do you feel you spend most of your life, minute to minute, hour to hour? And (2) in which box do you most enjoy spending your life?

Of course, there is no right answer to either question, but the most commonly given answers are: Mode 1 (*maintaining*) for the first question, and Mode 3 (*innovating*) for the second.

But, what if a Toyota employee were asked the same questions?

Seeing managerial leadership through a “post-conventional”⁽¹⁴⁾ lens

Let us now take a second look at the model. Have you ever wondered why it is that Toyota (credit crunch excepted) makes so much money, when most other volume producers of automobiles struggle? Well, the *4 action-logic* M&L model helps to explain some of the key reasons. First of all, Toyota are running a production “**System**”, one that has been evolving since the 1930s and which in the 1950s made a transformational leap. After 1950, they were encouraged to take a “systems view” of their activities by the business consultant W. Edwards Deming (4) and others. In 1960, Emperor Hirohito formally recognised Deming for the impact of his input. Two decades later in his own country, his contribution was recognised by the U.S. President.

At a time when “made-in-Japan” was a phrase that in the West was a byword for cheap rubbish, Deming was urging Toyota and some other Japanese companies to set themselves up as learning systems: organisations that use customer feedback and data on how **variation** is affecting organisational capability to continually improve their processes; aiming constantly for **quality**. His intervention and insights led to several learned paradigm-shifts. I will now review the same *4 action-logic* model, this time through a second more systems-based lens to highlight these shifts and how the learning was sustained:

- 1. MAINTAINING** a system, as explained earlier, can be seen as the first of the “managing” modes. If the situation being addressed is essentially one of stability – with only the occasional signal of instability – then keeping things stable and hence predictable is vital for continuing to consistently and confidently deliver what you are promising. Any improvement comes from **noticing what causes instability** and eliminating that cause, and from efforts to **reduce the inherent variation** – usually as a by-product **reducing waste** too. In this way, a well-maintained system can over time experience a considerable enhancement to its capability and performance. In any organisation, Mode 1 (*maintaining*) is where most people spend most of their time, and recognising this Toyota have gained huge competitive advantage from the improvement that ensues from simply being able to identify the source of systemic change in

real time. In this way they have grown into being the world's biggest producer of automobiles, amazingly not by acquisition, but principally via organic growth alone.

PARADIGM-SHIFT = STUDY THE SYSTEM AND REDUCE THE INHERENT VARIATION.

Whilst it was Deming who introduced the notion of reducing variation in production and service processes, it was Genichi Taguchi who in 1960, defined quality as “on the customer’s target with minimum variation”. Taguchi then went further by proposing that losses to the system, and to society, as a whole increase geometrically the farther away the delivered outcome from the ideal nominal value. In effect this thinking requires operators (across the whole system) to reduce variation around the intended nominal value. This means that an engineer setting-up a production line to manufacture a part, the dimensions for which have been specified by a designer, is first and foremost interested in the precise dimension, not in the tolerance of acceptability (plus or minus a specified amount) – just one single value. Whilst many manufacturers are aiming to deliver a product that is “just good enough” Taguchi was requiring Toyota to make all the products exactly the same, or as close to the nominal as possible. (See **SIDE BAR**: playing a different game – and without a referee).

ACCOUNTABILITY FOR PERFORMANCE

comes via measurement that is reported largely bottom-up, with no arbitrary targets being set from on high for that would only encourage individuals to try to perform better than the system naturally allows. The voice of the process/ system predominates, and is listened to separately from the voice of customer – or the voice of the boss. Improvement is measured not just in terms of whether scores have gone up or down, but in terms of what is actually happening to the average performance and (separately) what is happening to the range of variation. Most importantly of all, one question is being constantly asked: **is our system telling us it is stable?** Or, in other words: **what in our process/system at this very moment is systemically changing?**

In short, continual (as opposed to continuous) improvement is a 3-dimensional affair, monitoring in real time whether systemic change is occurring via three simultaneous parameters:

1. the individual values
2. the average
3. the range

Through the *post-conventional* lens – Mode 1 (*maintaining*) is never viewed as sterile or boring, but as dynamic and stimulating. It enables those working in and on the system to make timely decisions that keep them in control. Both diagnosis and prognosis then become possible: historical and current data is used 3-dimensionally to explore and diagnose the many possible causes of variation. And, once stabilised the current limits of variation can be used as a prognostic guide for future analysis and action.

Just-in-Time, Kanban communication, Andon cords, and Takt time are just some of the several tools that have been developed in the Toyota Production System in order to help people keep the system flowing predictably and evenly with continually minimised variation. However if two of these tools are considered indispensable, it is *system mapping* and *process behaviour charting* (Statistical Process Control) (17) – see **SIDE BAR** describing the Baseline® software.

2. CONTINUALLY IMPROVING a system, so long as it is being well-maintained in a stable state, then becomes an option, if it is predictably going to struggle to keep up with meeting the growing wants and needs of customers. Experiments are the only way to discover what may cause improvement, and carefully implementing any uncovered solutions (such that they are likely to be sustained) will, it is expected, deliver more stepped improvement – and more quickly than the mode 1 option alone. Albeit in mode 2 there's risk attached because of the temporary loss of stability – something that increases variation and is therefore not welcome (a consideration that on its own is counter-cultural for conventional organisations).

PARADIGM-SHIFT = NOT CONTINUOUSLY.

Notice that in the new version of the M/L matrix (on page 9) the mode 2 title has changed from *continuously* to “continually.” For the past quarter of a century, the phrase “*continuous improvement*” has been liberally used in organisational reporting, as if it is of vital importance to assure colleagues and shareholders that things are always bound to get “continuously” or even constantly better – suggesting that if the organisation is underpinned by such a philosophy nothing can possibly go wrong. Rudimentary calculus however defines “continuous” as equal increments of change over equal periods of time, or equal increments of acceleration over equal periods of time. Conversely, the word “continual” refers to intermittent and unequal yet frequent and unceasing changes over time. Continuous improvement may be theoretically possible in a mechanical or automated system, but not one that involves human intervention. Because all organisations – when viewed as a system – are comprising people that are working in and on processes, it is inevitable that if learning is to be the aim, then improvement will arrive only occasionally and intermittently. Improvement that is continuous is hence an impossibility.

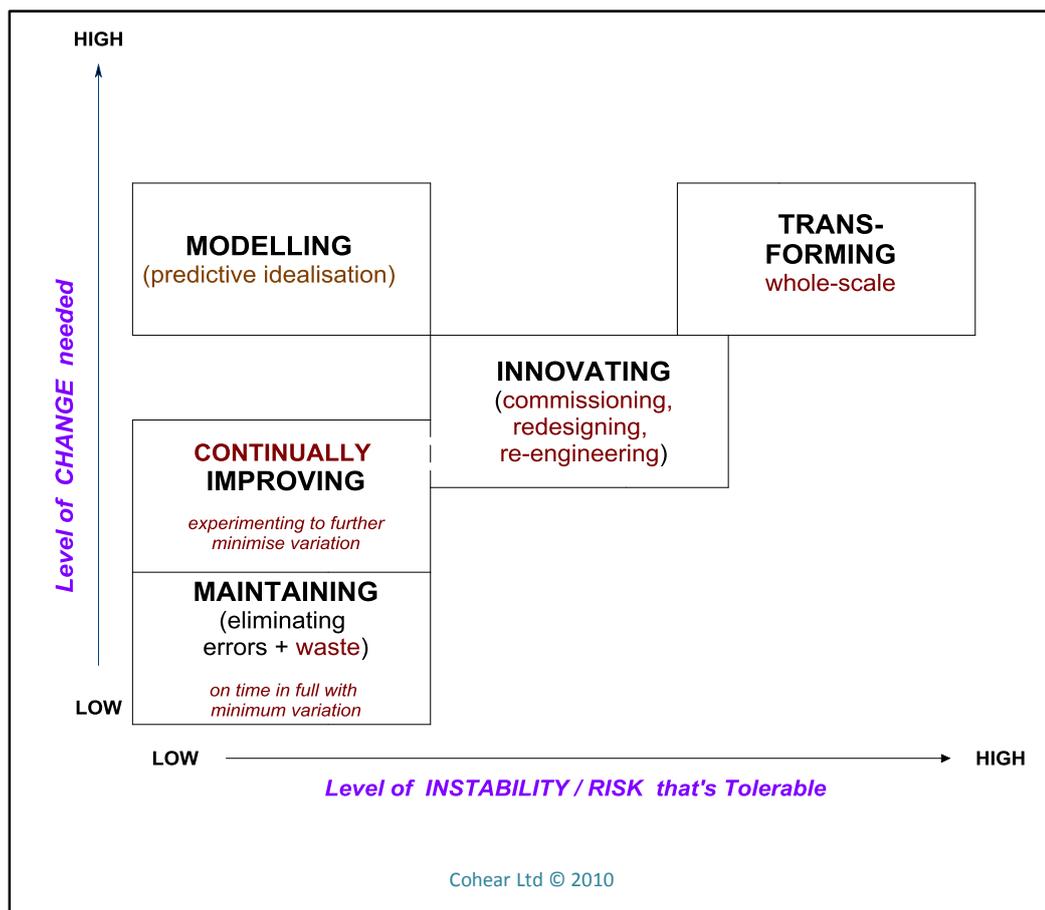
What companies like Toyota are doing is making it possible for everyone to be continually improving their processes, and to be additionally designing timely experiments/ pilots that deliver maximum learning/ improvement at minimum disruption, cost, or risk to future stability – and failure is valued as much as success because the aim is learning. They do this by teaching everyone the scientific method, remembered by their front-line people as PDCA: PLAN an experiment and form a hypothesis that predicts an outcome. DO the experiment in a way that minimizes cost relative to potential learning. CHECK the outcomes, analysing the variation to further understand the causal system. ACT to amend the initial working hypothesis prior to starting the cycle again. Everyone is expected to be scientific and to share the accumulating knowledge. Every individual is inducted in basic scientific methods so that they can contribute as part of a team – there is no other way because the system is comprised of sub-systems that are usually team affairs.

Notice also that this is different to the 1st world notion of improvement that operates as P-D-R (PLAN - Do - Review) which makes systemic learning difficult for there is precious little possibility of ever revising a hypothesis. As Deming said “***without theory there can be no learning***”. At Toyota changes are always planned and implemented as **designed experiments** based upon well formulated hypotheses, the outcomes of which are then studied to draw out the learning, and then there is a key 4th step: Adopt or Abandon the change (18) – Amending each hypothesis before embarking upon the next cycle – the next round of never ending learning.

ACCOUNTABILITY FOR PERFORMANCE

is again (like in mode 1: *maintaining*) handled largely via bottom-up reporting, in a 3 dimensional way, with no arbitrary targets having been set that might lure anyone in to trying to make the system outperform the level it currently allows. The regular use of system/process behaviour charting – using for example easy to use software like BaseLine® (3) considerably helps to guide performance conversation up and down (and across) the organisation, continually contributing to a culture in which this new paradigm can as a whole make sense. This is so that people are always using data “analytically” (4) to assess the causes of problems before taking action, rather than to blindly judge performance only then to react without theory, and in a way that hinders learning. In mode 2 conversely, BaseLine® is used prognostically to predict performance within the known limits of variability – and against which the outcome of the experiment/ pilot can be observed.

HR processes such as appraisal and reward for performance have to be philosophically and operationally aligned otherwise individuals will become motivated to manipulate the systems, work against the team, or worse still “tamper” (see definition on page 11).



To summarise:

Modes 1 and 2 for most people may fit the realms of Managing rather than Leading. Each of these modes however may be seen afresh through a *post-conventional* lens. For whilst in the 1st world the situations being faced by managerial leaders are characterized by a low tolerance for instability, in the 2nd world the loss of stability is now viewed as an opportunity to learn about what causes variation – and **any new knowledge is**

used to gather even more control over the process/system. From this second paradigm, the separation of managing from leading seems an ever more redundant thing to do since as they *choose* their behaviour moment-to-moment managerial leaders need to be aware of all 4 action-logic modes. The M&L line is therefore absent from this second version of the matrix. The “transforming” box too shifts to the right because instability and risk are not *as* tolerated under the post-conventional worldview.

Far from being boring the task of understanding one’s process/ system has become intellectually stimulating, and because most systems are operated by teams rather than individuals the ensuing conversation generates team spirit. This is nothing less than the scientific method operating in a way that energises what Peter Senge (2) calls a “Learning Organisation.” It is important to emphasise that in this second world, both modes 1 and 2 will deliver significant improvement in two specific ways:

- (in mode 1) by removing one-by-one the *special causes* of variation – each of which can be safely taken to be genuine root causes, and
- (in mode 2) by establishing hypotheses about what might be causing variation and then testing ways of reducing it – PDCA.

The BaseLine® User Guide (3) provides operational examples of both modes. System/process behaviour charting the data is an essential activity for both strategies, and BaseLine® makes this easy for both – and incidentally can make creating this second world a genuine possibility even if you are not yet working for a full-blown learning organisation.

PARADIGM-SHIFT = A MORE PRECISE DEFINITION OF ROOT CAUSE ANALYSIS

Inside the second world view the definition of a problem’s “Root Cause” is more than just the first obvious explanation, or even the 5th one after asking “Why” the full five times. Because there is a common understanding that there are always 2 types of variation in play: “common cause” variation and “special cause” variation – and that only the latter is signalling a loss of stability, hence it follows that without being able to make this distinction everything can get treated as special cause variation according to who has the most say. All kinds of pet theories are therefore likely to get labelled as *the* root cause of whatever problem appears to be most pressing.

Toyota’s corporate slogan is “**good thinking, good products**”, and problem solving is seen as a mixture of detective work and scientific experimentation that follows from being able to safely assume your system is stable (19). PDCA and SPC thinking in other words have become so established in the culture that SBC (System Behaviour Charting) itself may not these days be even visibly in use.

Under the first world view when problem solving is driven by a culture in which who so ever shouts loudest (or pulls rank) wins. A whole-systems view cannot prevail, and problems tend to be seen as singular rather than plural. Moreover the opportunity to distinguish (in real-time) a genuine root cause is forgone, and systemic causes usually remain hidden.

PARADIGM-SHIFT = STANDARDISATION OF PROCESS, NOT PEOPLE

“Standardisation” too may well mean something different in the new paradigm. In an organisation like Toyota, standard criteria and methods are agreed for how things ought to get done, and once a new process has a demonstrably proven performance over time it will by agreement with those who work in the process be standardised in order to embed the team’s learning to date – and as a baseline for further learning (19). People performance however is only ever self-standardised, and though *goals* may be agreed, arbitrary motivational targets are never imposed.

ACCOUNTABILITY FOR PERFORMANCE.

System-wide performance improvement means involving the whole system – including suppliers. Toyota is an organisational system that includes hundreds of subsidiaries many of whom are 1st, 2nd and 3rd tier suppliers, as well as downstream customers. Balancing demand and capacity throughout the whole system is critical if waste is to be minimised and quality maximised. A more benign culture is needed to make all this possible, but many approaches to first world Performance Management actively work against the grain, preventing the emergence of such a culture. For example: data being used to rank people/ departments/ work units in order to extrinsically motivate them to adhere to policy. Conversely in the 2nd world, data is used to connect people to reality rather than to motivate them to see what those

PARADIGM-SHIFT = TAMPERING IS RECOGNIZED, AND MITIGATED

In addition to making real-time data available to decision makers, Deming urged managerial leaders to consider the counterintuitive, because even with the availability of good data, the need for over-control, or over-interpretation of the data, can in time actually make things worse. Having good data available is the 1st essential step; interpreting that data and acting/ intervening in a way that in time reduces variation is the 2nd step, but some profound systems thinking capability is also needed if the managerial leader is not to inadvertently make things worse. Deming referred to such behaviour as “Tampering” e.g. when trying harder makes things worse, *or* implementing a quick-fix based on what seems to be common sense with insufficient follow-up to see the actual outcome, *or* wrongly interpreting apparent trends.

If mode 1 (*maintaining*) is delivering cumulative enhancements that meet or beat the changing needs of customers and other stakeholders, then even the cost and risk of adopting mode 2 (*continually improving*) can be avoided. However, if it is thought that a system can achieve significantly more output – either in terms of reduced time, reduced costs, or enhanced quality – then a more innovative approach may be justifiable, provided of course that a sufficiently capable managerial leader is on hand to handle the temporary disruption. (5)

3. INNOVATING requires system intervention on a larger scale than the kind of incremental improvement delivered over time using simple experimentation – testing your (or your team’s) theories one-by-one. It may well lead to technological and/or product breakthroughs, but many of the innovations in the first instance stem from process or system changes. Just-in-Time pull system design for example was an innovation inspired by retail replenishment systems when in the 50s, Taiichi Ohno of Toyota was questioning their accounting system. It did eventually enable improved product quality and innovation through the exposure of previously hidden waste in the system, but only indirectly. Mode 3 innovation usually requires a series of concurrent experiments that require good programme management to handle the complexity.

PARADIGM-SHIFT = SYSTEMIC INTERVENTION IS DESIGNED EXPERIMENTATION

Innovation in the new paradigm is seen as a large-scale experimental system intervention – usually a programme of many parallel experiments. For this reason, much of Taguchi’s work for Toyota concerned developing their capability in the “design of experiments”. Experimentation is costly, and temporarily jeopardises hard won system stability, so it is seen as vital not to bite off too much in one go. The prize of well-designed and well-managed experimentation is seen as maximized capability/ learning gain, at minimized cost. Together with the rapid return to sustained stability, as monitored via a suite of systemically chosen metrics – again using tools that are simple to use and do not get in the way of the conversations that teams need to have to maintain their system well. BaseLine® (3) is specifically designed for this purpose.

ACCOUNTABILITY FOR PERFORMANCE

Again, the system is monitored in real-time via a suite of systemically chosen metrics, and there is no external interference (e.g. by the setting of arbitrary numerical targets) because motivation is viewed as something that is spawned naturally out of treating individuals as adults and expecting them to declare openly what is currently happening. People are left free to perform, to act in whatever way seems right to them, and by upwardly reporting outcomes to senior managerial leaders who understand that their job is to own and be ultimately accountable for long term performance as defined by the aim of the system as a whole. For example, their role will be bounded by the system rather than by job function. They know that enabling self-empowered subordinates is necessary though not sufficient, and is anyway pointless without good data. Innovation may also be prompted via proactively sought comparison with equivalent systems in other organisations i.e. true “benchmarking”, but not something done blindly or without the two parties fully exploring the differences between their respective systems in order to properly understand the level of comparability.

Even asset replacement is viewed as designed experimentation. The replacement of an asset that has a planned life of say 20 years can accommodate the learning accumulated during years of maintaining and continually improving. In the first world, organisations typically fail to scope their requirements properly before commencing the design of a capital project. In the second world, the stored lessons, coupled with experimentation designed specifically with the impending replacement in mind, together feed what is viewed as a re-engineering opportunity; one that can also take in to account the likely scenarios envisioned for the next 20 years.

Innovation at Toyota succeeds because the culture handles well the many contradictions and paradoxes that get thrown up. *“Employees have to operate in a culture where they constantly grapple with challenges and problems and are continually required to come up with fresh ideas.”* (20) This culture can be captured in 4 basic rules which guide the design, operation and improvement of every activity, connection and pathway for every product and service. (9)

Toyota's DNA (9)

- **Rule 1:** All work shall be highly specified as to content, sequence, timing and outcome.
- **Rule 2:** Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests or to receive responses.
- **Rule 3:** The pathway for every product and service must be simple and direct.
- **Rule 4:** Any improvement must be made in accordance with the SCIENTIFIC METHOD, under the guidance of a teacher, at the lowest possible level in the organization.

All the rules require that the activities, connections and flow paths have built-in tests to signal problems automatically. It is the continual response to problems that paradoxically makes this seemingly rigid system so flexible and adaptable. Systemic discipline is the glue holding the culture together, one that is not felt to be constraining – what Bill Torbert calls a “liberating discipline.”(14) It is these rules, and not the specific practices and tools that people usually observe during their plant visits – which form the essence of Toyota's system. (9)

4. TRANSFORMING the system as a whole means a fundamental breaking with the past and starting again. This is both risky and may even feel culturally impossible – which is why most organisations will avoid such an extreme level of change. This is especially the case for a company like Toyota who would aim never to be forced to do whole-scale change of this kind – the closest they get is the commissioning of a new plant in a new country, albeit, the 2008 credit crunch has been a profound challenge.

Of course, some moment-to-moment change originates from external sources, and some is self-generated – and Toyota make sure they have the data that lets them know which is which. A proactively initiated transformative change would be made very rarely, and may involve something more philosophical than directly operational – it is vital that **constancy of purpose** is not tinkered with.

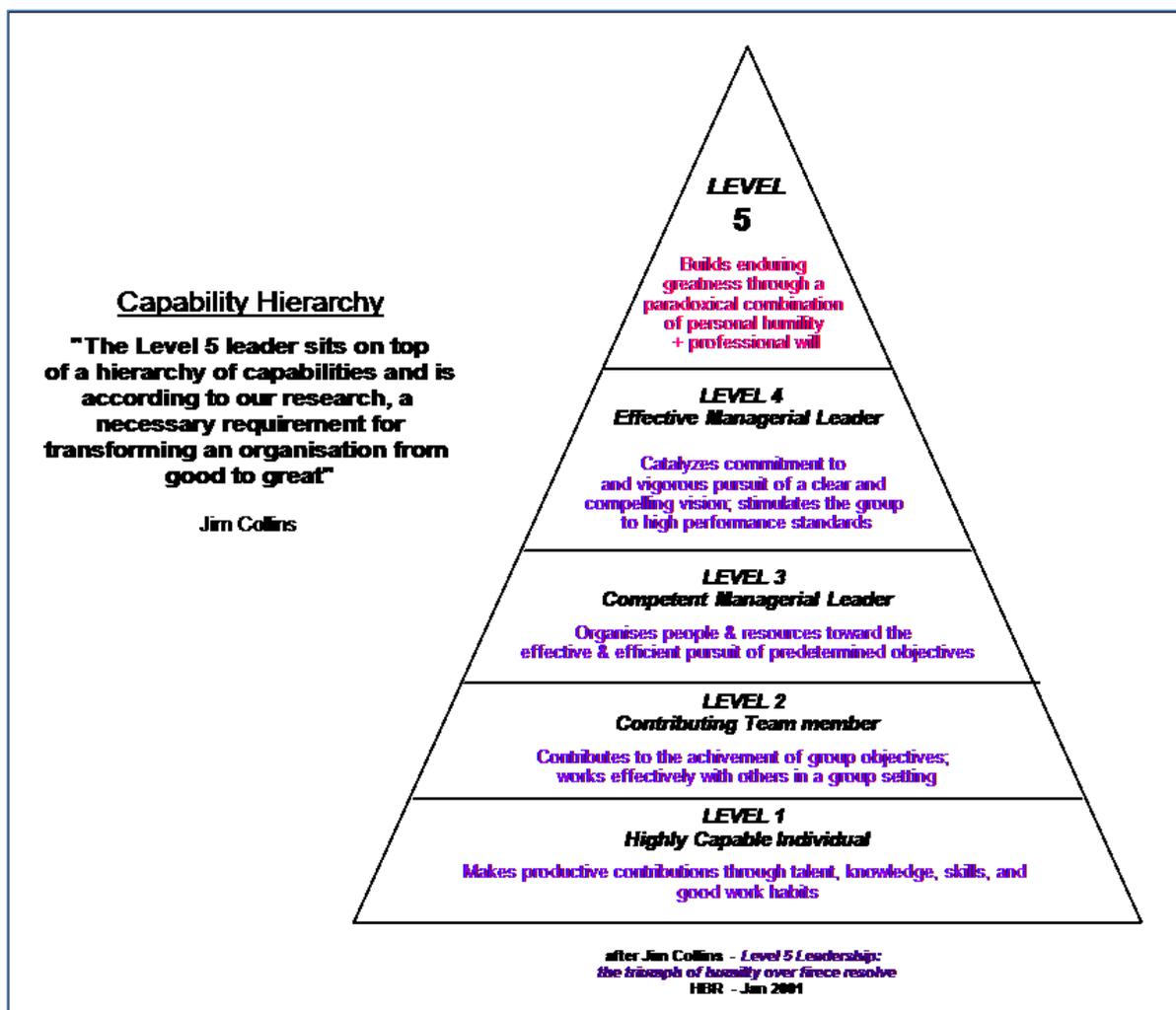
As a “learning organisation”(2) Toyota are aiming continually to adapt to their environment by understanding moment-to-moment what is changing, and so the need for mode 4 (*transformation*) is as close to zero as they can make it.

PARADIGM SHIFT = ROLE BEFORE STATUS

In Toyota, people are clear about their roles at each level, and in each critical process. For some especially critical roles (e.g. a production plant cell leader) people churn is kept very low because tacit knowledge over time is so highly valued. Once such a role is accepted the incumbent knows they will be keeping it for a long time, typically 5 - 7 years. Roles are considered more important than status, and capability is clearly defined.

Jim Collins' book "*Level 5 Leadership*" (5) adopts this same thinking. In his research the highest level required for transformational change was found to be a combination of "*system design capability, professional will, constancy of purpose, humility, ferocious resolve, and the giving of credit to others.*" This is the kind of leadership that he sees as necessary for successful transformational change.

It is a sobering thought that in his research only 11 examples of Level 5 leadership were uncovered out of 1435 leaders. It's "lucky" that transformational change is rarely needed in Toyota. The other 4 levels that Collins suggests a healthy organisation needs are shown in his diagram below.



5. **MODELLING** the system also means a fundamental breaking with the past and starting again, but uses a mixture of operations management thinking and computer system design to test assumptions in the safety of a backroom, before even contemplating real live testing. Hence, the risk to the existing system is near zero, whilst high levels of change may be contemplated. There are of course risks; assumptions have to be made about demand, capacities and constraints, as well as about capabilities i.e. the level of expected variation inherent within each part of the system model. It is all too easy to say to yourself “I will remember all the assumptions I am making” but in practice even the ones that you are aware of can become quite numerous and multiply the complexity in your thinking. Modelling the system prior to implementation would rarely occur to a conventional person, but if it did they might easily over-rely on such a model, or be lured into adopting someone else’s model without a good enough level of understanding about the underlying assumptions involved.

PARADIGM SHIFT = USING COMPUTER-AIDED MODELLING to enhance collective understanding between those who best understand the system and its context, can produce a triple win.

When **people** are engaged and passionate (**heart**), and they have a method for doing things in a timely way and Right First Time (**head**) quality for **customers** always improves; whilst “as a whole” **costs** (*counter-intuitively to most conventional beings*) always decrease.

Modelling creates possibility and has only minimal costs associated with it. The reality of implementation however will serve to highlight the models imperfections and assumptions, so a post-conventional planning and change management capability is also necessary.

Summary

- Continuous Improvement is not the same as Continual Improvement – a concept that is at the heart of a “learning organisation”.
- Leading and Managing too are different (and usefully thought of as opposite) action logics: Learning by changing things, versus Learning by keeping things the same. Russell Ackoff describes a similar tension between “commissioning versus omissioning” (13)
- Relative to the degree of change needed, and the level of risk that can be tolerated, it can be useful to think about making choices between not two, but 4 separate modes of behaviour: **transforming**, **innovating**, **continually improving**, and **maintaining**. And knowing which mode you are currently in, *as well as* which you *should* be in, makes it possible to address change and risk with more awareness, and hence to do so more powerfully.
- These four modes are timeless, and have probably been around for as long as human organisation has existed. There is however a 5th mode that has emerged only recently and which has been made possible by the exponential growth in computing power. By “Modelling” we can place ourselves in an idealised future whilst making our imagined system real – then testing those imaginings to destruction, and very cheaply – ensuring that no one dies in the making of our movie.
- These *five* modes might also be a helpful way of thinking about some important differences between two paradigms (lenses) that organisations may live by – some people find it helpful to think about these epochs as “conventional” and “post-conventional.” (14)

- It is hard to describe a post-conventional way of seeing things to someone who developmentally has discovered only the conventional way – about 85% of individuals (15). It is as if the instructions about how to get out of the box are on the outside. It is hoped that this paper may help some individuals unlock this conundrum?
- People often readily admit to spending much of their life in mode 1 (*maintaining*), whilst really preferring to be in mode 3 (*innovating*) – and even to seeing mode 1 as relatively boring, or at best as overly bureaucratic. And such people may even shun regimes in which they feel overly controlled. What the post-conventional worldview offers however is not the prospect of *being* controlled, but the prospect of *being in control* – whilst simultaneously letting go – a paradox that is not easy to get unless developmentally ready – hence the 2005 essay. This goes for the tools too – especially when being deployed with the full cultural support that comes with this 2nd worldview or epoch.
- If the organisation can be designed to properly support the right people to take control of each critical process or sub-system, and at the right level (usually the lowest point in the hierarchy that accountability may be accepted), then genuine empowerment becomes possible – and sufficient people may feel safe enough to self-empower and take charge of their system.
- As a highly evolved and designed organisation, one post-conventionally designed company Toyota has grown to become the largest volume car maker in the world; and largely via organic growth. They have achieved this simply by constantly delivering what the customer wants with low variation (hence high reliability) and by continually studying that variation to uncover the real causes of problems. Performance is seen largely as pertaining to the system rather than to individuals and is assessed over considerable lengths of time. Charismatic job hoppers – who will never have to live with the longer-term consequences of their actions – are not appointed to key roles.
- Toyota are an exemplar “learning organisation” (2) that manages risk by continually adapting well to its changing environment – their preoccupation from bottom to top is understanding what’s changing in real time so that changes (to the system) can then be proactively and wisely made. Each employee at each organisational level is educated to both manage and lead.
- Some readers of this paper will now be saying to themselves that little of this applies to me or my organisation – we are not Toyota, not a private company and not even in manufacturing. The principles however apply as much to service industries and the public sector – both commissioners and providers – some of whom are now beginning to intentionally evolve a post-conventional culture.
- Systems Thinking is a core capability in such a culture, and BaseLine® (17) is SPC software (statistical process control) that is designed for accessibility by every managerial (or clinical) leader from bottom to top, to initiate systemic conversation at every level in an organisation - be it a conventional or post-conventional one. At the point where assessment, evaluation, judgment, and opinion are asserted (21) people are prompted to think about systemic causes and outcomes – as an entrée to the kind of everyday conversation experienced in a culture like Toyota’s.
- I am predicting that as a tool it will be helpful but not sufficient. For as Ackoff (13) suggests, it remains incumbent upon business consultants, coaches and academics to make Systems Thinking core to everyday organisational life; and we need to work harder at finding ways to do this – as he says: **“Let’s start to think outside the box into which we have painted ourselves!”**

Side Bars

SYSTEMS THINKING

Systems Thinking is seeing things and events from the point of view of the system or the whole that created or caused those events and things – from the outside-in. Rather than seeing things or events as mostly unrelated or unconnected, thinking systemically allows patterns to be revealed across both time and space – knowledge of which in the moment can open up more options for how, when or if, to take action.

All systems comprise flowing energy, material and information – and the connections are as influential as the component parts. Seeing systems outside-in, as wholes, often feels helpful if only as an antidote to feeling overwhelmed by life’s complexity. Yet because their boundaries are often porous, systems can still feel hard to define and manage. In organisational life for example it may be necessary, if you want to make a map of the system, to invent a rule-of-thumb maxim e.g. “boundaries are defined as the point where competition takes over from cooperation.”

Organisations short on systems thinking default to drawing boundaries too rigidly according to function, thereby cutting across the natural flow of things and blurring the whole. The significance of the psychological and behavioural processes needed for the proper support of an organisational system may also get underplayed.

Listening to a system’s outcomes and the processes and inputs that cause them makes it easier to understand its behaviour and performance. By collecting data over time and graphing it as a timeline it becomes possible for the people inhabiting the system to tell their individual and collective stories of what has been happening, what is happening, and what predictably is going to happen. Especially if the timeline is set-up to reveal systemic change (see **BaseLine**[®]). In this way, the whole can then appear as much more than just the sum of its parts, and data can become evidence that links to possible explanations of what is leading to outcomes. And by exploring and experimenting upon the system in this way, against a now believable baseline, evidence can be turned into knowledge.

Making use of the accumulating knowledge you may then choose to intervene, but only as long as you observe the principle “seek first to understand the system as a whole”, and only as long as you have positioned yourself to be able to judge your intervention’s effects against data that has been collected beforehand as a baseline. Otherwise, how would you know if the changes match your intent or truly match the outcomes you are predicting?

PLAYING A DIFFERENT GAME – AND WITHOUT A REFEREE

Metaphorically, this means that whilst their competitors are playing rugby and following the conventional rules, Toyota have since Taguchi's input in 1960 been playing to very different rules. Conventionally in Rugby Union a penalty scores 3 points if the ball is kicked anywhere between the two posts – even if en-route it scrapes in off one of them. Toyota engineers however are requiring themselves to aim at just a single post – scoring themselves on the distance that the ball misses by, which in time via experience and learning becomes ever smaller. They are also playing the game without a referee, nor linesmen, as there is no need to argue about the score.

Taguchi has in effect made it possible for Toyota to focus on getting nearer and nearer to the one single value that matters. This means for example that when the 10000 parts comprising a car are assembled, they fit together exceptionally well, and that there is minimal rework.

SPECIAL CAUSE VARIATION vs COMMON CAUSE VARIATION

Deming's mentor Walter Shewhart made a key discovery in the 1920s, that whilst every process displays variation, some processes display controlled variation that is **natural** to the process, while others display uncontrolled variation that is not always present in the causal system. Deming called these two types "common" and "special."

COMMON CAUSE variation is the **noise** within the system, it is characterized by: Phenomena that are constantly active within the system; Variation that's probabilistically predictable; Any apparently irregular variation being explicable by the historical experience base; Individual high or low values being readily explainable.

SPECIAL CAUSE variation conversely always arrives as a surprise. It is the **signal** within a system, and is characterized by: New, unanticipated, emergent or previously neglected phenomena within the system; Variation that's inherently unpredictable; Variation that's outside what's explicable by historical experience; Evidence that there's been some inherent change in the system or our knowledge of it.

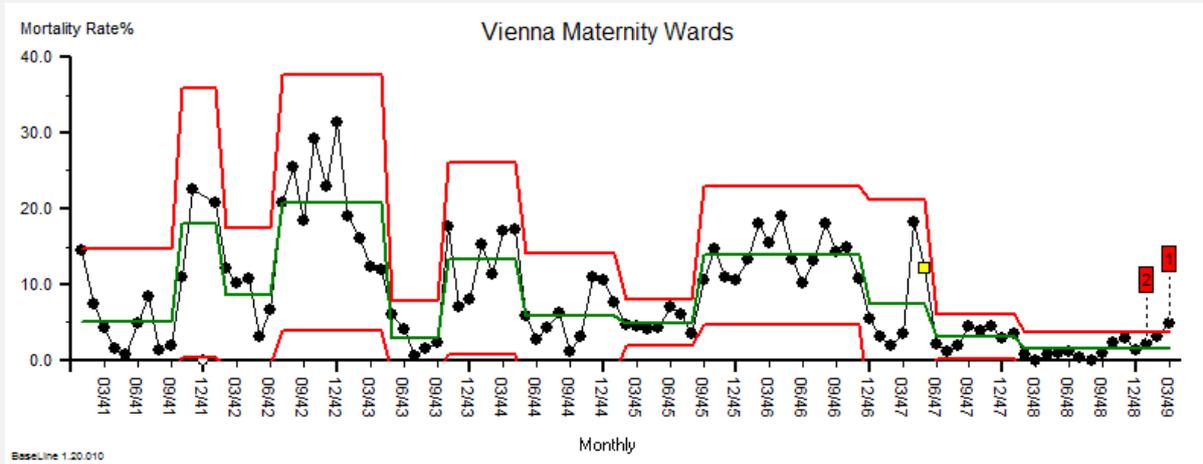
BaseLine® - A NEW PERSPECTIVE - A TRANSFORMED CONVERSATION

Baseline® is for any individual, team or organisation wanting to take charge of their system and the outcomes it delivers. Anyone wanting lasting quality and value-for-money, and who is prepared to use real evidence to guide their actions, will love it.

Anyone with time-sequenced data in spreadsheet form, can simply copy n' paste that data into BaseLine®, instantly converting it into an Individuals & Moving Range chart – the simplest and most ubiquitous of system (or process) behaviour charts.

With just a single click of the mouse BaseLine® displays a picture of the system for which you are taking accountability, enabling you to see if it is stable and hence predictable, and if so within what range of variation. It is a picture that is *literally* worth a thousand words because conversations can then be about the system rather than about isolated or spurious events. (continued on the next page)

This is the chart that Ignaz Semmelweis might have loved to have had when in 1849 trying to convince his clinical colleagues of his theory: that doctors washing their hands in chloride of lime prior to assisting with childbirth reduces the incidence of childbed fever. Here is his monthly data converted by Baseline® to illustrate the seasonally systemic shifts before and after his hand washing experiment – which was implemented in the month marked with the yellow data point:



The choice between the four separate improvement strategies opens up, as the possible causes of performance get discussed and uncovered. BaseLine® is therefore a tool that empowers those working *on* the system, with the help of those working *in* it, to maintain their system in a stable and predictable state, as a platform for safely steering sustained improvement and innovation.

Seven ways to extraordinary insight

BaseLine® instantly converts your time-sequenced spreadsheet data into a picture of the system from which the data came.

1. Converting your tabular data into a picture that displays variation over time so you can easily spot and interpret patterns.
2. Enabling you to tell an informed story of how your system's performance has changed over time – via the simultaneous 3 dimensional monitoring of the (i) **Individual data points** (ii) **Average** and (iii) **Range**
3. Enabling you to distinguish *between* signals and noise – so that genuine root causes can be properly unearthed, rather than imagined.
4. Helping you reduce over-reactivity by distinguishing *between* what is a genuine trend or significant event, *and* what is just natural variation.
5. Helping you differentiate *between* systemic changes that you yourself are the cause of – *as opposed to* those that originate from outside.
6. Enabling you to make predictions about future performance, against which you can choose a planned response.
7. Helping you to expand your understanding of how your own common sense can inadvertently lead you actually to reduce your system's quality – a syndrome referred to by W. Edwards Deming as "Tampering". (4).

The **BaseLine**® software (together with full User Guide) is designed to be accessible to those who consider themselves innumerate, and is available via <http://www.saasoft.com/baseline/baseline.php>

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Author



In 2005, Julian Simcox was an independent organisational & personal coach/facilitator, practising out of Bristol (UK). Nowadays he is largely retired, and working as a Patient Leader in his local North Somerset NHS – both with commissioners and providers.

He is Chair of the Practice Participation Group for the GP surgery where he has been a patient since 1984. He is also the patient representative on the Quality Assurance Group for North Somerset CCG. In both roles, he seeks to know and understand just what leads to quality outcomes for patients. He is especially passionate about enabling patients to self-empower and take charge of their own health outcomes over time. In 2010, he co-designed the software tool: BaseLine® which makes it easy for managers, clinicians and patients to identify and interpret systemic change in real time. This tool is becoming an NHS standard and hopefully will prompt more of what Bill Torbert calls Action Inquiry. Recently he has also become a Public Contributor for the West of England Academic Health Science Network who bring together the local health service community: industry, higher education, research bodies, patients and the wider public – with the aim of taking patient care and experience to new levels.

Sponsor



Simon Dodds studied medicine and computer science at Cambridge before following a career in general and then vascular surgery. During his training, he researched the problem of modelling blood flow in networks of diseased arteries and then used computer simulations to develop more accurate non-invasive tests for arterial disease. As a consultant surgeon at Good Hope Hospital in North Birmingham, he applied his skills as a software and system designer and a clinician in the redesign of the vascular surgery clinic and the leg ulcer service. The project earned a national innovation award for service improvement and the story told in the book called *Three Wins: Service Improvement Using Value Stream Design*. This experience led directly to the creation of SAASoft, a global portal for the development and dissemination of the theory, techniques, tools and training of Improvement Science in Healthcare. His current NHS role is part-time consultant general surgeon at Heart of England NHS Trust.

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