

Think about the System before you Work on the Process

Mastering the 'First Metre' in order to Achieve Sustainable Economic-Quality

by David Howard

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Deming's legacy does indeed blow your mind. It blew mine in the eighties when I first met 'ED'. And the after shocks continue to reverberate through my experience as an independent management engineer. You could say that his legacy provides us all with the 'mother of all weapons of management development'. Once you have lived the reality of Deming's system of profound knowledge you cannot return to the swamps of mediocrity from which you have escaped. The sceptics amongst you rightly ask "How do you know?", and I answer in the only way I can: "Because I experienced it!" And if I might develop a Chinese proverb:

*What I hear I forget; what I hear many times I may remember;
What I see I remember; what I see many times I may understand;
What I do I understand; what I have done many times I can explain to others.*

So it is in the spirit of this last line that I now aim to encourage others to respect the legacy of Dr Deming, his mentors (such as Lewis and Shewhart), his peers (such as Bridgman, Taguchi, Sarasohn and Popper) and his able interpreters and successors (such as Myron Tribus and Donald Chambers).

My experiences of systemic (that is connected) as opposed to fragmented management have been in regional planning and capital construction projects in the UK, Africa and the Middle East, in the UK food manufacturing industry and as an independent consultant with a range of European and American clients in industries ranging from aircraft production to telecommunications.

Now you may recall from Greek mythology that mankind was denied the gift of fire by the god Zeus. It was only by the insightful intervention of Prometheus that mankind was entrusted with the secret of fire and access to the knowledge of the gods. Over the millennia our exploitation of fire has been complete - from lighting the home-caves of our forefathers to creating the arsenals of weaponry that define our deepest insecurities. Mankind has embraced the technology of fire so fully that his species has for the last 60 years tottered on the brink of extinction.

With knowledge man has been equally adventurous over the recent centuries and now stands poised at a delicate juncture where advances with fire need to be better balanced by sustainable advances with knowledge. However with the work of great minds like Galileo, Leonardo, Newton, Darwin, Einstein, Wiener, von Neuman, Bertalanffy and many others the overarching harmony of the natural order has been progressively revealed and classified thus allowing others (in our particular field of interest, Deming) to integrate discrete bodies of primary knowledge into methodologies available for more general practitioner use.

In our case the systemic inter-connections between the sciences of cybernetics, epistemology, statistics and psychology (the four elements of Deming's SoPK) now guide our actions and insights into developing the ways and means of better ordering businesses and other organisations. We therefore are meeting in the spirit of Prometheus – the wisest of the 18 Titans of Greek mythology that preceded mankind on Earth. Prometheus was, as his name implies, the master of 'forethought', unlike his brother Epimetheus, the greedy, stupid and scatter-brained Titan, whose eponymous habit was that of 'afterthought'. (Today his icon would be the rear view mirror.)

Because by our very attendance at this Forum we all would admit to a love of knowledge for improving commonwealth – through invention, innovation, service and commerce – we also stand in direct line of descent from Prometheus and have the opportunity (some might say obligation) to pass on to others that compendium of knowledge collected for us by our forebears. While Edwards Deming may to many here be the guru-of choice there are others whose work is congruent with, and indeed adds to, his systemic outlook – people such as Stafford Beer, Karl Popper, Ludwig van Bertalanffy, Ross Ashby, Russell Ackoff and Peter Checkland to name but a few. 'No man is an island unto himself'. Indeed, we do a dis-service to our mentors if we put them on pedestals. As Deming reminded us some years ago - the 'horse-doctor' of his childhood was, after all, only a man.

So, at its simplest, the world that surrounds us can be divided into two communities – the wise and the stupid. The new Prometheans and the old Epimetheans. A moment's reflection about the events of the past decade will confirm the appropriateness of this classical metaphor when earlier this week we were told that some of the highest rated hospitals in the NHS actually also have the highest morbidity rates – oxymoronic evidence if ever it was needed of the stupidity of performance targets.

My aim this morning is to capture aspects of my management experience from the past twenty or so years and, in so doing, offer some observations that might be useful to others intent on improving the way business is transacted, managed and experienced. As a chartered civil engineer my career passion has been problem solving while my career purpose may be said to have been to promote systemic thinking and process working as my preferred means to this end. I have noted that nature cannot be hurried. Everything takes place in its own time and in accordance with well-defined cycles. Witness the seasons, new life, growth, and evolution.

Thinking about Nature - 1

*Nature operates in systems and cycles, not by chance or incident.
For everything there is a timescale that cannot be accelerated.
Nature displays constancy of purpose.*

And so it is with any change. Consider the annual reporting cycle, a not unreasonable cycle time for humans. Then consider half-yearly and even quarterly reporting for which the only benefit can be to fuel the fires of the share-price casino. But all is not lost. Just as shareholders are rounding on over-paid, under-performing directors at AGMs so two news items from last week serve as encouraging indicators of changing attitudes.

The godfather of French business, Claude Bébéar who is the founder and chairman of AXA, France's largest insurance company, recently published a book in France entitled '*They Want to Kill Capitalism*' in which he describes how financial markets and the real economy have become totally disconnected. Share prices no longer reflect true values. Analysts follow ratios like sheep - even lemmings - and have sold-out their self-claimed professional independence to their corporate-finance colleagues. All the major investment banks have seriously eroded reputations and are now seen for the bastions of greed many had assumed them to be.

Mr Bébéar suggests that the financial hijacking of public companies by adventurist directors has only been possible because shareholders - i.e. owners - have failed to exercise their proprietorial duties. He advocates compulsory voting, and voting rights that increase with ownership duration. His proposed reforms are systemically appealing as they would re-inforce loyalty over time, inhibit churning and other hysterical market activities and encourage owner participation in long term growth. He may not have heard of Deming, I do not know, but he would be comfortable with his views. And he is in an influential position to lead change.

And then as if in support of a Franco-German business alliance Porsche, the car maker, has recently informed the Deutsche Börse that it no longer intends to submit the mandated quarterly reports as they are inconsistent with its longer term business strategy. I feel sure that these two items of news would have found favour with Dr Deming. It is to be hoped that the more macho minds of the Anglo-Saxon business culture will be smart enough to see the advantages of moving in this direction - if only for reasons of enlightened self-interest.

Let me now list some of my more serious concerns about contemporary Anglo-Saxon management that have been persistently apparent in my work over the past decade or so. I shall mention just five. More would be too depressing.

1 - Human Resources - The 'shovelling pig-iron' approach to people.

This echoes Frederick Taylor's time-and-motion studies at the Bethlehem Steel Company in Pennsylvania - arguably the most important company in the world, certainly the backbone of America and sold one week ago to the International Steel Group leaving 95,000 pensioners without their expected retirement package. Taylor's experiments

centred on the ill-educated person of Henry Noll (aka 'Schmidt') who fitted his view that a good shoveller needed to be 'stupid and phlegmatic'. So often it seems that the present generic approach to HR is aimed at a 'stupid and phlegmatic' audience by 'calm and not easily agitated' managers blind to human frailties and sensitivities. Surely as the essence of the HR function in an organisation is to do with team building rather than nurse-maiding then HR should be accordingly re-defined. If an organisation were seen as a Venn diagram the concept of a teamwork hub becomes apparent. (See Figure 1.)

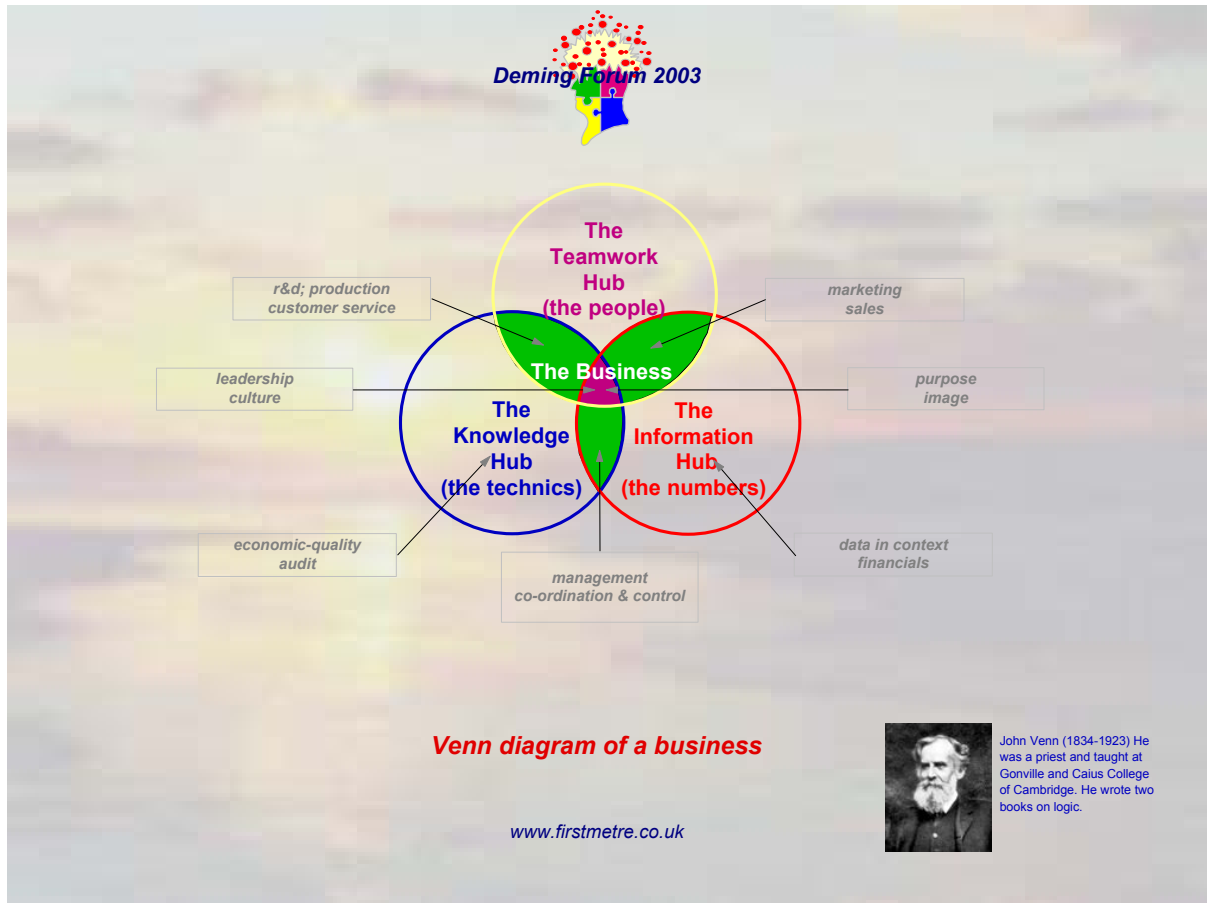


Figure 1 – Venn diagram representation of a business putting people in their place.

2 - IT/IS

The 'because we can is why we should' approach to technology. This is increasingly the explanation of so much of today's adoption of technology. It deforms processes to suit models, automates mistakes, threatens to destroy individual creativity, limits opportunities for feed-back driven continuous improvement and in short validates the warning made in 1966 by Lewis Mumford in, arguably, his finest book '*The Myth of the Machine*'. It warned that it is only man himself – and not his machines – that can most beneficially shape his destiny. Too often I feel that the traditional IT manager resembles those latter-day custodians of the stationery cupboard issuing pencils, pens, books and paperclips begrudgingly and belatedly.

Robert M Solow, Economics Nobel Laureate, 1987, observed just three years ago that "You can see the computer age everywhere these days, except in the productivity statistics." As IT/IS is

widely regarded by senior executives as having so far failed to deliver promised advances in productivity on-time, on-cost and to spec is it surprising that so many firms led by a-systemic action-men have now been lured into the final hi-tech resort of out-sourcing their ill-understood central corporate nervous systems to the very same people that have rushed them for veritable fortunes in exchange for obsolescent technology over the previous two decades?

*Technology will let you down if it can;
People only let you down if they have to.*

Stafford Beer

Stafford Beer (of whom more later) the great management cybernetician who died last year and who formulated the Viable Systems Model of business (essential reading for all Demingites) said when asked to define a system: "The purpose of a system is what it does". So if a major aircraft manufacturer sells off its central nervous system to a totally separate major computer services company where is the singular ownership of the 'viable system' so essential to any attempt to deliver economic-quality to its customers?

3 - MBAs - The 'management by arrogance' approach to business.

This is based on variation-denying case studies, money-pump thinking and learning interpreted by those who lack theory. Also the newly qualified MBA's often will lack deep practitioner wisdom, but instead worship incomplete financial models that account for the 'cost' of every thing and the 'value' of nothing. There are some 1,500 business schools and graduate programs worldwide. The first, the 'Amos Tuck School of Administration and Finance' was established at Dartmouth College in 1900 with a class of just four. A century later the class size was 188. Worldwide over 100,000 people graduate with a salary enhancing MBA annually and the growth rate presently exceeds 10% per annum. It is said that the popularity of the MBA with employers is that it is a recognised 'currency' in the 'human resources' marketplace. Employers claim that they know the value of the qualification and what they should be able to expect from an MBA, regardless of whether it originates from North America, Europe or elsewhere.

Henry Mintzberg, professor of Management Studies at McGill University in Montreal, is one of the MBAs most informed critics, as he was of strategic planning. His 'grand fallacy' applies to both equally well: he points out that "analysis is not synthesis". Analysis may precede and support synthesis, by defining the parts that can be combined into wholes. Analysis may follow and elaborate synthesis, by decomposing and formalizing its consequences. But analysis cannot substitute for synthesis. No amount of elaboration will ever enable formal procedures to forecast discontinuities, to inform managers who are detached from their operations, to create novel strategies. Ultimately, the term 'business administration', which purports to define how value creation can be correctly reported by cost measurement alone is as much an oxymoron as his earlier *bête noir*, 'strategic planning'. His advice: "Don't get an MBA. Pick an industry you can fall in love with, and get in *deeply*." This is truly systemic advice.

4 - Mission Statements

The 'pro-forma' approach to stating corporate purpose. This is the territory of unmemorable platitudes from focus groups enshrining the advanced lip service paid to management-fads by boards of directors. These executives' ambitions are more often than not to do with career advancement, perks, privileges and personal banking arrangements than the demanding tasks of corporate leadership and the continuous innovation and improvement of processes, products and services - by which actions they should broadcast clearly and simply both the common purpose and the binding passion of the organisation to those they lead. (See Figure 2.)



Figure 2 - Statement of Purpose v Mission Statement

5 - Performance Related Pay

The 'I'm all right Jack' approach to executive remuneration. Designed in detail by it's main beneficiaries (or their placemen) this refined form of legitimised theft from owners by hired managers has long been favoured by Epimetheans with its implicit rejection of any claim on their behalf to systemic understanding and coupled with an equally exemplary absence of any true and selfless leadership values. Enough, it is too depressing.

The first time that I heard Dr Deming speak – in 1988 – I was struck by many of his pithy phrases, such as “No one gives a hoot about profit”; “There is no such thing as a fact” and “We are being ruined by best efforts.” After a few days his presentations truly blew my mind. One phrase, in particular, intrigued me: “You cannot know what you do not know!” Rather self-evident, I thought, on first hearing. Clearly true, but so what? In my quandary I missed the rest of his dictum.

The next time I heard it I listened more carefully and noted the second phrase which stated that “You can only learn from others” Yet it was only at the third hearing that I finally caught up with the profound nature of his advice: “. . . . by invitation.” The penny dropped! The power of invitation. That ultimate evidence of a low noise, high signal learning loop.

You will hear nothing from me that adds to the academic stockpile of Deming research but what I hope you will hear, through different interpretations, are observations about those fundamental aspects of Deming’s system of profound knowledge that encourage you in your own efforts at personal and business transformation. I also hope that you will have gained some insights into the need to communicate the SoPK message in a relevant and convincing context to those, perhaps too busy to hear all that you tell them the first time. Above all I hope to convince you of the need to thoroughly master the details of the literal ‘first metre’ (face to face; face to screen) of any process or project journey so that when you sooner than later enter the ‘last mile’ you do so confidently and don’t stumble over the costly inherited errors of faulty preparation and defective design.

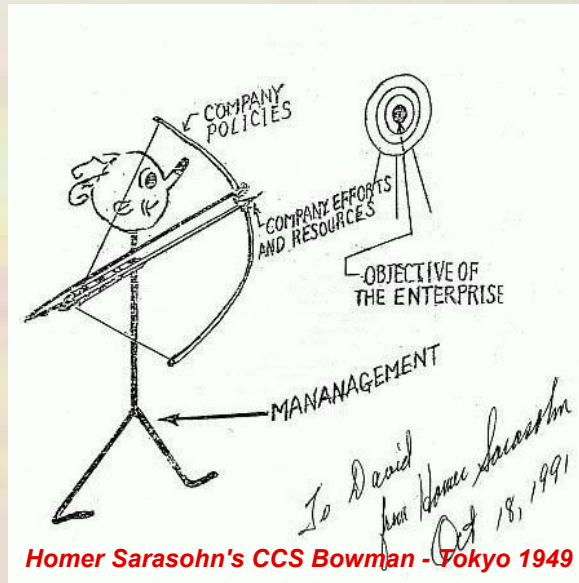
When Hazel mentioned in her invitation to me the sub-title of the forum was to be ‘Hitting the Target and Missing the Point’ I thought back to a signed copy of Homer Sarasohn first diagram used to introduce Japanese managers to the running of a successful business. I also recalled that over the past thirty years an awful lot of corporate arrows have impaled the target of self-professed quality. Indeed, in sufficient numbers for many businesses to survive after a fashion and with the help of pro-forma creative accounting albeit devoid of any natural philosophy. (See Figure 3.)

But very few arrows have hit the bull’s eye of world-class quality and the essence of what Walter Shewhart and Genichi Taguchi described for us in their works on variation and loss functions, respectively in the 30s and 60s. This is what I refer to as ‘economic-quality’ which in my view stands in stark contrast to what I might call ‘premium quality’ – that is quality only attainable after paying a cost premium due to process inefficiencies, rework and attendant waste. I suggest that no supplier should strive after, let alone claim title to ‘quality’ products or services unless they can demonstrate the quality to be economic in the Shewhart and Taguchi sense of ‘On target with minimum variation’ and for which there is accordingly no premium incurred.

Thinking about Nature - 2

*The material world is solely governed by the laws of nature
as revealed by our cumulative experiences.*

*We ignore natural philosophy and social history at our risk.
Whatever proves to be biologically incorrect will never be economically sound.*

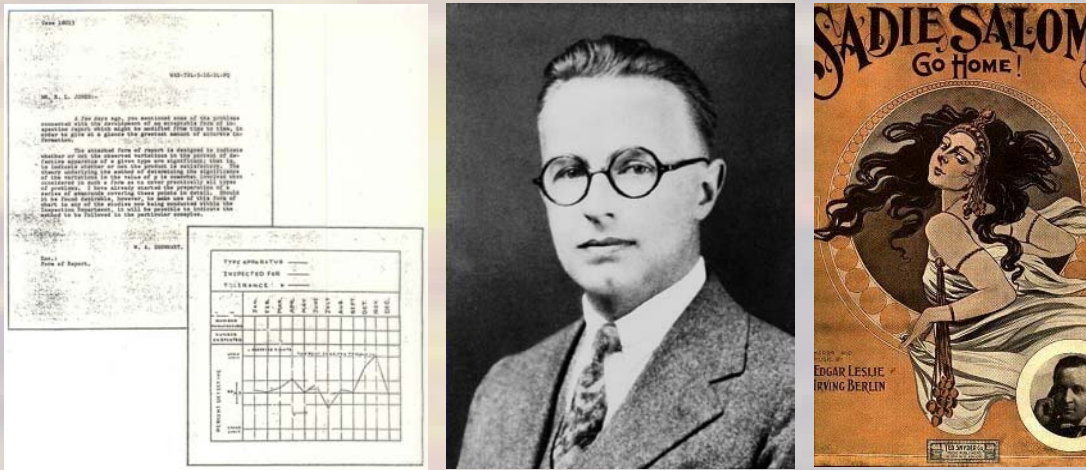


www.firstmetre.co.uk

Figure 3 – Homer Sarasohn used this diagram to communicate his ideas about management's responsibility about hitting the target.

My authority (indirect as it may be) for using the phrase 'economic-quality' is simply Shewhart. You see in the late 1920's he wanted to attract attention to his newly devised charting method and hit on the idea of exploiting a link with the name of no less than the lyrical belly-dancer of the day, Sadie Salome, who was immortalised in Irving Berlin's famous vaudeville hit song (#5 in the charts of 1910) 'Sadie Salome Go Home'. (See Figure 4.)

Now Shewhart realised in the slower moving days of the mid 1920s that the name of Sadie Salome could sell most anything to the young engineers and apprentices working at Western Electric's mighty Hawthorne Plant on the rural outskirts of Chicago and so he engaged her virtual services to promote his work on the control of variation under the deceptive title of 'SADE-Q'. Having hooked his informal gossip-hungry young bloods in the canteen audiences with his powerful opening invitation – "Have you heard the latest story about Sadie-Q?" – he went on to explain his equally revealing story of SADE-Q, namely how to consistently achieve Satisfactory, Adequate, Dependable and Economic – Quality on the production lines of Western Electric.



May 1924 and Shewhart starts promoting his control chart.

www.firstmetre.co.uk

Figure 4 – The advent of the control chart introduced a means of real-time prediction.

Those of you who are familiar with the use of SPC process behaviour charts on a real-time basis for real-time action will doubtless have experienced the true buzz that comes from empathising with the voice of a process that is in control and knowing that your output – be it tangible or intangible – is thereafter characterised by economic-quality. You will also know that three-sigma is the practical hallmark of economic-quality – not a mathematical constant. Shewhart was confirmed in his view about assigning three-sigma to the economic control limits following testing of his theoretical construct against the stale-bread returns of ten bakeries in the greater Chicago area (ranging from 2.0 to 11.7%).

Thinking about Nature - 3

*Nature decrees variation in all things.
It manifests itself both as a virus that leads to progressive economic destruction
and as a catalyst for variety that can ensure balanced economic prosperity.*

All bakeries showed production variations beyond 3-sigma limits but significantly over a period of 36 weeks the bakery with the most capable production process chart was also the one that experienced the lowest return rate.

By contrast those of you suffering under the strictures of today's unquestioning fad for Six Sigma (itself a refutation of everything to do with Shewhart's profound insights about economic-quality) will doubtless be troubled when you discover the statistical corruption

embraced by its Motorola founders (a 1.5 sigma non-centredness and then the misrepresentation of 4.5 sigma as 6-sigma) doubtless to support the dubious benefits of alliterative assonance of the methodology's name that is unworthy of the term economic-quality. Just think at 6-sigma they could claim not merely 3.4 ppm but 2 ppb! Henry Neave's BDA Paper # 7 is essential reading for those of you interested in this matter.

It was as a graduate in my first job that I began to find that however elegant the engineering I was engaged in (hydraulic structures and earthworks in my early years) the management that controlled me was entangled in a mess of disconnections that could only be tolerated by the unquestioning. In those days one heard about the contents of fewer imperial wardrobes than now, but just the same the Emperor of the moment was usually as naked as ever.

I eventually escaped from single-skill engineering into an engineering publishers. By writing to deadlines I discovered not only the power of communication but also more importantly the power of language and thus the importance of what I subsequently came to know as 'operational definitions'. Over the years I have always noticed one common thread with all the impressive minds that I have been lucky enough to learn from: a deep respect for language. In the case of Deming I recall once when asked what the essence of his message was he answered that it was originally 'variation' but over the years he had come to the conclusion that it should be 'operational definition'.

Operational Definitions

Pythagoras' Theorem - 24 words

Archimedes Principle - 67 words

The Ten Commandments - 179 words

The American Declaration of Independence - 300 words

European Union regulations about smoking in public - 24,942 words

After a year I returned to my first-love, real engineering in the field and, by good chance, multi-disciplinary team-working. I was appointed the utilities engineer on a major regional planning project in Saudi Arabia. Our success relied upon systemic thinking by teams of un-like disciplines and mindsets. Our mentors in the 1970s were polymaths such as Lewis Mumford (urban planning); Buckminster Fuller (architecture and people); Ove Arup (engineering and multi-skill working) and others less well known from the fields of sociology, geography and economics - this last being represented by Harold Caustin - not unlike Deming in stature and likewise well informed and equally well experienced in his field.

In 1980 when Burroughs Machines (now Unisys) competitively selected my A/E project group to scope, develop, design and supervise the construction and handover of a fully commissioned 170,000 sq ft residential computer training centre in Milton Keynes in 30-months as opposed to the more usual 55 months for a project of this size. I was responsible to my firm's UK owners and to our new US client. Each was as different as chalk from cheese. Burden-sharing was the vivid and highly specific American phrase that operationalised the more comfortable British term of 'teamwork'. Without understanding

the importance of operational definitions we would have been fired after the first three months. Even with them we nearly were but that was because the building user – as opposed to the owner – initially resisted agreeing to any firm definition of his needs – other than to say ‘I need a lot’.

Searching for some innovative way to control the creative indulgences of the architects in my team was my primary ‘first metre’ task, by which I mean getting the starting blocks properly set so that we did not have any false starts that would cost us dearly at a later date, ie face-to-face briefings and sketch designs. (See Figure 5.)



Figure 5 – Setting the starting blocks in the first metre is essential to winning the race.

When your professional service fee is one half the industry norm what goes on in the first metre of the project (or process) journey is of critical importance. Taking your losses early is always far cheaper than taking their consequences subsequently. (I have found over the years that there are many parallels between architects and IT professionals, notably that they are not the world’s best team-players and are usually convinced that they alone hold access to the requisite Holy Grail – be it the design of floor-plans or algorithms.) Faced with the not unusual tampering of top management in creative environments it was necessary to get early sign-on by all parties to a tight schedule of events that would ensure a suitable balance between creative freedom at the outset and rigid adherence to deadline as tender approached. It was clear to all that if we stumbled at the outset of this mould-breaking project we would never recover, so preparation was all. The solution was a

simple swimlane chart assigning ownership of responsibilities against time - people in the left margin and time across the top. (See Figure 6.)

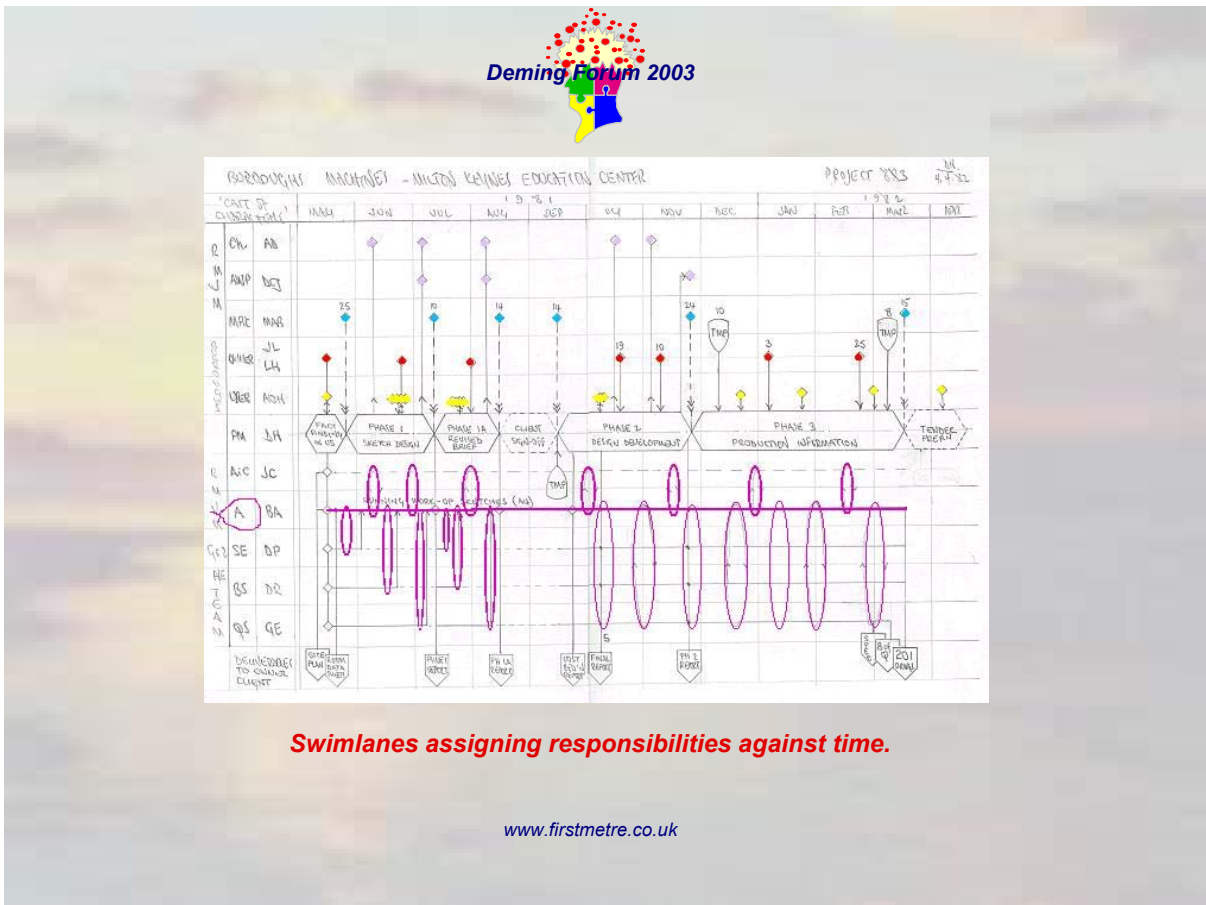


Figure 6 – An early sketch example of a swimlane chart from a 1982 construction project.

Aware of the risk that the project could cost the firm dearly attention was carefully focussed on the First Metre and in due course each and every self-appointed overseer including our Chairman signed up to respect the jointly negotiated milestones. Less than three years later the building complex was handed over one week early, on-cost as defined at tender (with full information) and to the required 'spec'. Final account followed within six weeks as opposed to the usual year or so and both client, consultant and the cast of characters went on to use the techniques on subsequent projects .

How Deming? An American family friend, Karl Noble, (a statistician and businessman) hearing of the MK project asked if I knew of Deming's work and discovering that I did not sent me a batch of papers. He had been taught Deming's statistical methods in the forties (testing improved mortar shells for the US Army) and used the same statistical approaches during a highly successful career in the paper industry. After retirement he gave classes at George Washington University on Statistical Control Methods for Productivity and Quality during the 1980's.

Alerted to Deming I tracked down the BDA and joined it in its second year. I was lucky enough over the years, and with others, (such as John Norrie and Paul Hollingworth) to spend many hours in the company of Deming at Ashridge and elsewhere when he visited London to talk and work with representative members of the BDA's various research groups. To be frank, Deming's insights often seemed too good to be true and this led me to inspect the shoulders on which he - like all great men as Isaac Newton reminded us - had so firmly established his stance. I thus discovered the work of Walter Shewhart and began to patch together the wider picture. Of course one also got to know and enjoy the company, friendship and wisdom of that great interpreter and friend of Deming, Myron Tribus. And through Myron I was in turn introduced to the remarkable Hopper brothers, Ken the engineer and Will the banker. You may be pleased to hear that their long awaited opus magnum on the history of American management is due to be published later this year. Most notably, through Myron and the Hoppers I was privileged to contact and then meet that most wise and elegantly gentle of American management engineers, Homer Sarasohn who worked for General McArthur in Japan from 1945 to 1950 and prepared the way for Deming's subsequent contributions. I invited Homer to visit London as a guest speaker for my firm in 1991 after which he became a good friend and influential mentor.

"A leader's main obligation is to secure the faith and respect of those under him. The leader must himself be the finest example of what he would like to see in his followers."

Homer Sarasohn

Myron addressed the BDA in 1989 and amongst many other things spoke about his discovery in Japan of the method we now know as 'deployment flowcharting'. It had been copied by Japanese engineers visiting a software company in California during the late sixties just before the IT industry (like the accountants some years later) grew too smart to bother with the discipline of mapping their processes so others - such as the guys paying the bills - could understand them.

Imagine my joy at seeing Myron's deployment flowcharting 'swimlanes' - albeit they were from top to bottom rather than left to right - and the use of symbols to highlight with clarity what was expected from whom and by when. I particularly liked the meeting and information symbols with their provision for those 'not involved'. I had sat through too many meetings over the years where many attendees were of the view that 'attending beat working' and thereby contributed to ineffective outcomes, hysteresis and waste. DFC as a technique is I believe the most powerful tool for operational use at all levels within an organisation and for revealing insights and guiding improvement. I would also venture to suggest that it is the only way to operationally define a *divergent* process (ie one involving people) due to the way it invites contribution by specified participants who each know the fundamentals of 'how the jobs gets done and the time gets used'.

Following my A/E projects, consultancy management and a four year spell helping to transform (in part) a group of food manufacturing companies, I set up my own niche practice for process consultancy in 1990. I named it *Management-NewStyle* in an effort to warn would-be clients that the implications of our advice would require sensible change. Indeed while many people in business at the time knew that they needed to transform themselves - oops no, not themselves, rather everyone else - they saw Deming's philosophy as an attractive offering but one which they lacked the nerve to engage with

fully. "Maybe we will cherry-pick!", they would think. Little in fact has changed ten years later, although I am noticing an significant shift within the IT community towards our sort of process understanding as they try to make their IT/IS offerings more attractive to disillusioned business managers.

I would now like to draw together some of the threads we have gathered so far to list five questions which I believe provide a useful framework for early discussion with the leaders of an organisation intent on transforming and at the same time espousing a general acceptance of the Deming philosophy.

Is there evidence of an Abiding Passion? Passion is essential to success in any venture (*passion is derived from the Latin word for 'suffering'*). Without passion nothing will get done properly. Second best will be the order of the day. Details will be omitted for convenience and defects passed on to others unseen. Those who are dispassionate about their work just have a job. Do as they are told. Question nothing. Lack loyalty. Move on to new pastures which they then proceed to over-graze. A few over-paid CEO's may come to mind in this category.

Is there evidence of Binding Purpose? To be the preferred supplier in your selected field of business is the only purpose a firm can have if it wishes to prosper in the new economic era unfolding around us. 'Preference' implies a customer-based *objective value judgement*, whereas being 'best' implies no more than a supplier-based *subjective value judgement*. Preferences pull businesses forward from outside, whereas judgements of 'bestness' do little more than push it forward from within.

Is there evidence of Compelling Principles? These principles will affect the way customers are dealt with (has the new technology been adopted to get closer to or be more protected from customers. Most help lines actually make it harder to reach another human being with anything to hand other than a script; websites further distance customers from people; try getting help from Microsoft about some feature of software which is not the latest release. What are the principles that determine the company's attitude towards improvement and innovation; does theory play a part. What are the attitudes toward staff training, community work, suggestions, research and development?

Is there evidence of Determined Preferences? For example with regard to trust; consideration for others ; the need for a distinctive and well defined contribution from each and every employee; the need for new learning; and just how is a preference for economic-quality as opposed to premium-quality to be exhibited and deployed? And finally:

Is there a respect for the Primacy of People? Business is at root a social process – without people there is nothing. *"If you destroy the people of a company, you do not have much left."*

Persistence

*Nothing in the world can take the place of persistence.
Talent will not; nothing is more common than unsuccessful men with talent.
Genius will not; unrewarded genius is almost a proverb.
Education will not; the world is full of educated derelicts.
Persistence and determination alone are omnipotent.*

Calvin Coolidge

Deming's legacy to us all was summarised practically by his primary emphasis on constancy of purpose – persistence – and in his ultimate legacy to us, his System of Profound Knowledge. SoPK does not bear the most elegant name, admittedly. Indeed if faced with the average businessman or old-style manager asking for help you would be well advised to suppress reference to three of the four words and maybe talk about the ways of mother nature that prescribe all performance in the material world. Such as the fact that '*nature decrees variation in all things – especially Excel spreadsheets*'. Or, '*nature works in cycles and manages by processes of cause and effect*'. Or, '*nature manifests itself through connectivities first and entities second*'.

Man has always sought to better understand his individual trajectory through time. Astrology has held sway over the centuries but lacks substance or theoretical foundations. The 'predictive' mechanisms offered by astrologers are varied and do not meet the crucial tests of definition and falsifiability called for by Karl Popper and others. They therefore lacks any value. Incidentally Popper and Shewhart (each unknown to the other) published at about the same time almost identical examples of the improvement cycle which follow the generic and cyclic form:

Initial Problem -> Trial Theory -> Error Elimination -> New (Lesser) Problem

Prometheus was aware of the importance of theory. He had a theory that said fire and knowledge will eventually help men become gods. Epimetheus was more interested in Pandora and her box of gifts, which he believed would confer instant riches. Ignoring the instructions of his brother to leave both the box (and the beautifully fashioned first ever woman) alone and lacking any theory to guide his actions Epimetheus opened the box and fell victim to Zeus revenge for Prometheus' theft of fire by unleashing into the world all the ills of ignorance and destruction that we know so well.

Last month the completion of the Human Genome Project was celebrated, thus ending a scientific experiment actually started in 1926 with Thomas Morgan's book *The Theory of the Gene* a continued by the magnificent example of persistence and theoretic investigation based on the discovery of DNA by Watson and Crick in the 1950s. I will return to the subject of DNA at the end of my paper to suggest there may be an intriguing metaphor of business organisation that complements Deming's SoPK – for business is no more than an organic (socio-technical) activity. It is interesting that when the double helix model of DNA had been fashioned Watson remarked "*A structure this pretty just had to exist.*" The interlaced helixes were indeed the essence of elegant simplicity.

Thoughts about Nature - 4

*Nature does nothing in vain.
It is the universal expression of pure economic-quality.
It is characterised by nested levels of elegant simplicity and emergence.*

The word 'elegant' derives from the Latin verb *eligere*, to select, and relates to 'choosing carefully' (the act of 'pleasing by minuter beauties' as it was originally described). Indeed the spirit of elegance is no better summed up than by the 165 year old Swiss watchmaker Longines whose view is that 'elegance is an attitude'.

Elegance conveys an important sense of harmony, appropriateness and fitness for purpose. Usually it is applied, outside the world of fashion, to mathematical solutions that appeal by virtue of the deeply revealing insights gained with an economy of effort and calculation after much hard-won precursor activity.

As any problem is disentangled from its surrounding complexity it will often reveal its solution more readily than expected. This is why it is often observed that the questions are more important than the answers. Indeed for divergent problems - those for which there is no unique formulaic answer or equation to solve - the biggest difficulty in finding a valid solution is the formulation of the correct question.

In this context the work of Stafford Beer (1926-2002) is probably as important as that of Deming and I would like to dwell a moment on his work as it is my opinion, that taken together with Deming's, it can provide additional valuable insights into organisational structures and behaviour (such as recursion, emergence and stable predictable performance) that can be explored to advantage by the Deming community seeking development of the SoPK model.

Stafford Beer was from childhood a polymath. He contrived to get a place at University College, London to read for a degree in Philosophy and Psychology but the war intervened and he duly found himself posted to India as Staff Captain of Intelligence for the whole of the Punjab, no less.

Returning to England in 1949 with his draft thesis on philosophy he sought a PhD for his efforts but lacking a first degree he had to appeal to the Dean of the Arts Faculty of his old college for support, only to discover that the Dean, knowing that Stafford had attended lectures in the Science Faculty before the war, there and then rejected his request on grounds of insubordination! Stafford stood up, saluted and uttering, in his phrase, "just two words" left for industry.

At Samuel Fox's steel mills outside Sheffield he applied his wartime experience of operational research to devise a better way to run the production line. The factory manager said his scheme was mad and he should be sacked but, fortunately, the plant director saw

the vision in Stafford's scheme and appointed him to the post of Production Controller. He increased factory output by some 30%.

At this time Stafford, serendipitously, came across Norbert Wiener's newly published book "Control and Communication in Animals and the Machine". Wiener, at MIT, had coined the word 'cybernetics' in 1948 (from the Greek word for a "steersman") to describe his theory derived from his wartime work - on radar directed anti-aircraft systems - and which, he maintained, would be equally suitable for general application in the wider-world of dynamic interactions at whatever scale.

Stafford was impressed - for here was the essence of his practical work in print. He wrote to Wiener who was in turn also impressed - for here was evidence of his theory in use. By 1959 Stafford, encouraged by Wiener, had written *Cybernetics and Management* which was promptly translated into 26 languages. Stafford's books *Heart of Enterprise* and *Platform for Change* are recommended reading Deming habitués wanting to learn more about his Viable Systems Model. (See Figure 7.)

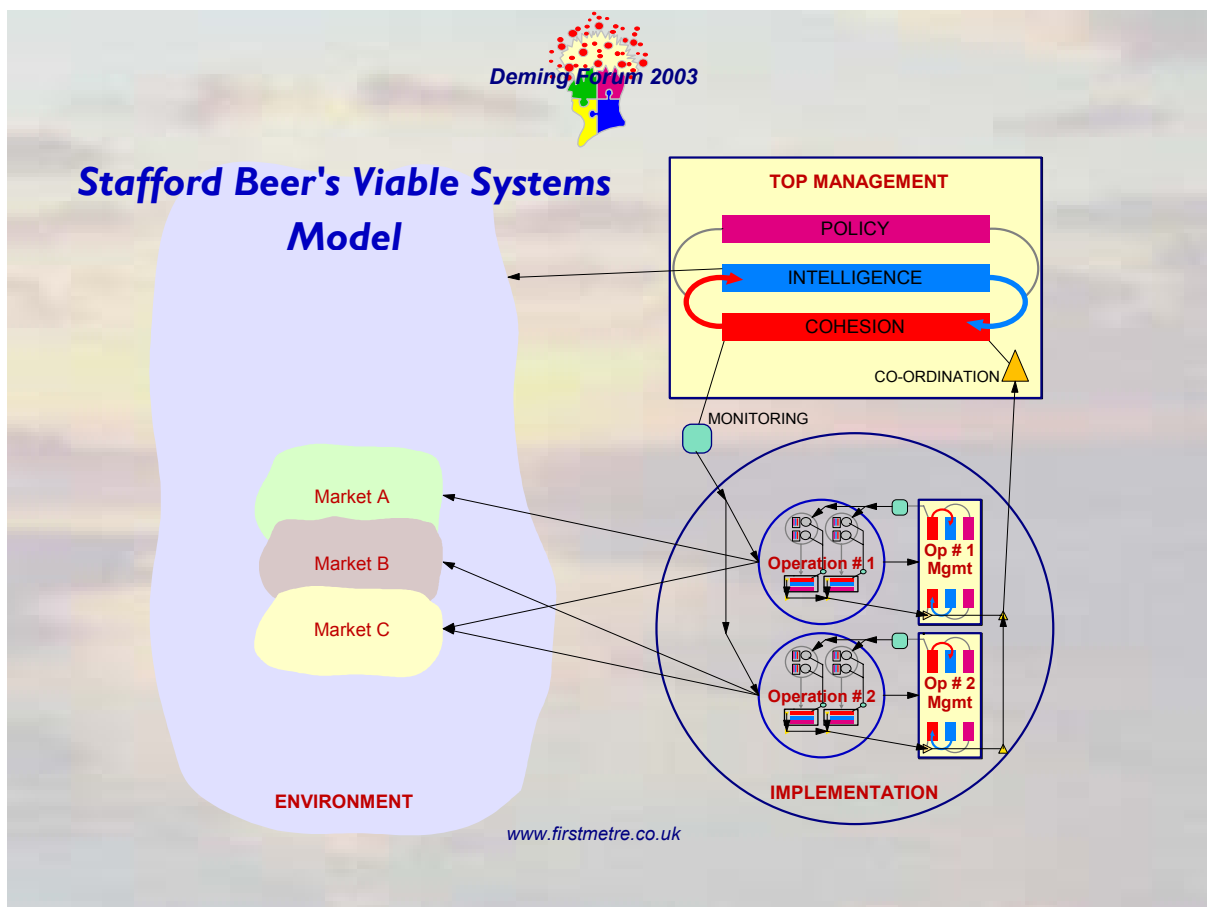


Figure 7 – Stafford Beer's Viable Systems Model can significantly reinforce Deming's SoPK.

Throughout his professional life Stafford was more interested in the organisation of connectivity's within entities than the entities themselves. It is the connectivity's that generate the synergies and emergence that are the stuff of creating value. His viable systems approach was thus well suited to explain the emergence of behaviour of an entity that was not present in any part other than the whole. To appreciate the significance of

Stafford's approach consider some everyday examples of viable systems: no amount of detail searching will locate the human voice in a television set; no dismantling of a car will reveal its gift of comfortable transport; no counting of grapes will explain the essential quality of a fine wine; no single part of an aeroplane can fly on its own; no laboratory dissection will explain the source of gracious rotation of a cat's body in freefall. Failure by top management to recognise the importance of designing viable systems capable of delivering the required 'emergence' will readily come to mind for travellers, investors and customers present here this evening who have suffered endless delays; lost benefits or received defective service.

We do not have time to linger longer on Stafford's VSM but suffice it to say that many systems practitioners have found it a remarkably powerful adjunct to the SoPK, particularly in dealing with the all important issue of systemic emergence which was never addressed by Deming, I believe, and which is in my opinion of fundamental importance to understanding economic-quality. For instance any truly added value output from a process of transformation will in fact represent an emergent property of the host system. Without emergence there will be no distinctive quality to the output and without distinctive quality no new value will be attached to it. Understanding emergence is therefore of importance to understanding economic-quality.

We are surrounded by inelegant management where 'careful choice' is not a priority and arbitrary targets are; where 'pleasing' is seen as a sign of weakness and 'aggressiveness' as a sign of strength and where the 'minuter beauties' associated with attention to detail are rejected in favour of the 'grosser assumptions' concerning bulk cost-cutting and short-termism. Inelegant management will however never be sustainably economic.

By contrast elegant management, though rare, is founded on sound theories, win-win attitudes, teamwork, continuous improvement and a process approach to business than is systemically based. Elegant management will always tend towards yielding sustainable, economic-quality solutions. Elegant simplicity and economic-quality are I maintain necessary and sufficient conditions for world-class performance.

*"I would not give a fig for
the simplicity this side of
complexity, but I would give
my life for the simplicity on
the other side of complexity."*

Oliver Wendall Holmes, Jr

I would like now to return to wherever it is in your experience the work gets done. To the gemba, the factory floor, the laboratory, the workshop, the office. Even, for managers, the canteen or the water-cooler. Wherever all business revolves around the people and their interaction with each other and the technical processes that deliver results. It is essential that these socio-technical processes are properly designed and managed so that they operate predictably and efficiently. There is no room for chance or guesswork. In the delivery of products and information the final part of the process - the 'last mile' - is said to be the most difficult. But is it really? Look at the very start of the process - the 'first metre'. Brain to brain; brain to readable image and readable image to brain. Success here relies

upon communicating ideas, facts, designs and decisions both clearly and simply. Get this right and you'll find an elegant solution sooner. Get it wrong and you'll waste money, time and spirit as your competitors overtake you. And first-metre working is mainly to do with operational definition. Take it seriously.

I believe that there are some self-evident natural truths related to the attainment of economic-quality which we are advised to bear in mind not only during the first metre but also thereafter until we have breasted the finishing tape.

Nature's Winning Ways

- 1 *Nature operates independently of our wishes.*
- 2 *Nature is restless, abhors stasis and decrees variation in all things.*
- 3 *Nature proceeds in ordered steps and does nothing in vain.*
- 4 *Nature displays, through emergence, the elegant simplicity that is beyond complexity.*
- 5 *Nature's asymptote is perfection.*

We can then use these embedded natural truths of the material world to shape a set of values to guide out efforts:

Rules of Thumb for Economic-Quality

- 1 *Respect the primacy of nature and the individual - technology is but our servant.*
- 2 *Beware the dangers of the virus of variation - you may reduce it but you will not destroy it.*
- 3 *Respect causal linkages and the predictive value of theory.*
- 4 *Appreciate that connectivities are more important than entities; seek emergence.*
- 5 *Remember that the purpose of analysis is insight for immediate action.*

I am reminded that Deming said wisely that "survival is not obligatory" as he lamented the way business leaders ran their companies. I wonder what his overview would be now. Lets take a brief overview of the world of business today. Throughout the age of industrialisation (now coming to an end) those people that made things were steadily marginalised by those that count them - from widgets to costs. Up until the 1970s traditional consultants (from the making professions - mainly engineers) followed the long-standing traditions of their Victorian forebears. They served the best interests of their clients for a simple fee and pride in their achievement.

During the 1970s those that counted things (mainly money) saw opportunities to become 'consultants' in wider fields by exploiting their business connections. They served their own interests marginally before those of their clients by taking not just a simple time based fee but also other benefits such as insider information, proprietary know-how and even commissions and share options for their financial creations. Selfishness and greed festered away in imaginative - but otherwise bored - minds through the 1990s until at the turn of the century the more adventurous and unscrupulous accountants, bankers, lawyers and mesmerised young MBAs (to whom the concept of creating value was an intellectual rather than a material construct) shamelessly resorted to misrepresentation, market-rigging and what sometimes amounted to sheer theft. And so we credit Enron, Tyco, Global Crossing, WorldCom, Marconi, Arthur Andersen, KPMG, Citigroup, Credit Suisse, and Merrill Lynch as outstanding examples of defective organisations that have

off-loaded their greedy, ill-conceived failings onto countless hundreds of thousands of innocent households in Europe and the United States.

As the 20th century drew to a close manufacturing went out of fashion and counting became the safest way to find riches beyond the dreams of any apprentice, craftsman or honest practitioner. And so in the opening years of the 21st century we witnessed grand strategy give way to grand larceny. But despite the penalties and corrections of contrite Wall Street banks prompted by their own self-interest as much as the humbling investigations of Eliot Spitzer (the NY attorney-general) today we now stand yet again on the cusp of another example of how economic-man has still failed to heed Lewis Mumford's 1960s warning about the 'Myth of the Machine'. For just as 'manufacturing the tangible' is progressively giving way to 'ministering to the intangible' so those who built the computers that have so disappointed us in the delivery of economic-quality are now seeking to reposition themselves as purveyors of techniques in place of commodity technology. Both IBM and HP are metamorphosing into the new breed of mega-consultants to whom no task is too great to advise upon so long as it is ultimately owned by someone else with a fat chequebook. Yet again business CEOs appear to be abrogating their leadership responsibilities by employing soothsayers to tell them how to do their job. A situation not unknown to Deming as he occasionally reminded us.

I mentioned earlier in my paper that there might be some merit in considering a DNA-like model for business - business being ultimately a social, and therefore organic-based, activity. Now DNA contains the information needed to construct and operate a human body - it is our personal instruction manual. Would it not be useful if we could use DNA as a metaphor to help us consider the format of an instruction manual to construct and operate a business? In looking further I find some fascinating connectivities. Let us consider the DNA code for business as something that can assist us in Designing New Architectures for Business - DNA-4B if you like.

Just as reproduction at the molecular level is governed by DNA telling a new organism how to function so it would be pleasing if the four fundamental bases of DNA acid (the nucleotides A, C, T and G) could map across to the four fundamental aspects of business management for economic-quality. How far our metaphor will help to open our minds about organisational development I am not sure but until we can find a suitable pole-dancer to take the place of Sadie Salome it will have to suffice.

Might the four base pair letters offer some opportunity? And then I recalled that the next speaker had looked into what promotes corporate longevity. Could there be some helpful connections in his work? I dug out his RSA paper of 1995 on *Companies: what are they?* and it certainly seemed to be looking for the 'DNA' Instruction Manual for Business. Imagine my delight when I read that his study had identified four (so far so good) characteristics of successful long surviving businesses: 1 - *Conservatism in financing*; 2 - *Sensitivity to the environment*; 3 - *A sense of cohesion and company identity among employees*; and, 4 - *Tolerance of decentralisation and delegation*.

A moment's inspection suggested these four could usefully map to G, A, C and T respectively and in turn relate to the tetradic colour scheme long ago devised by me and

my Tetramain colleagues Paul H, John N and Pat D when we were looking for a model to use with clients that manifest the four facets of Deming's SoPK. (See Figure 8.)

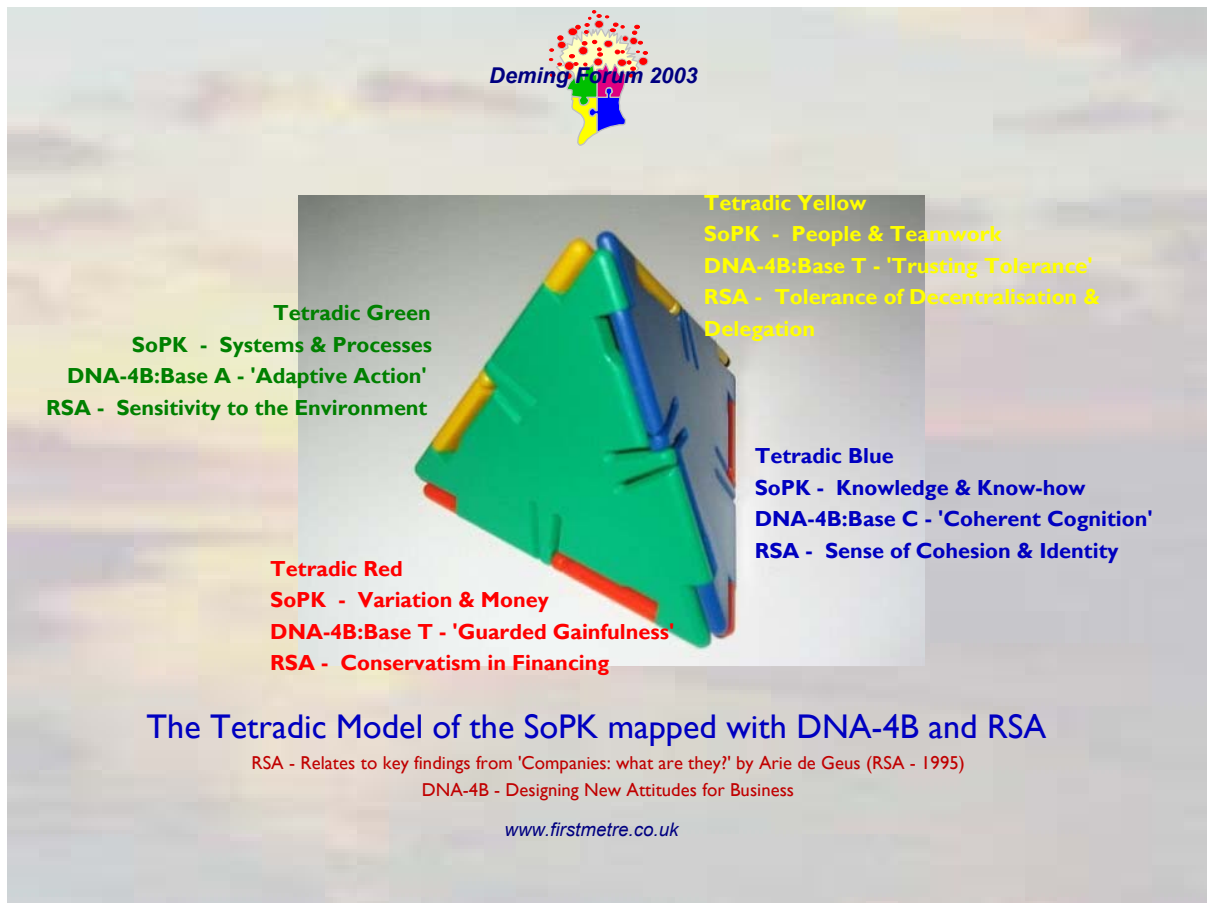


Figure 8 – There is encouraging congruence between Deming's SoPK; the author's DNA-4B metaphor and the findings of Arie de Geus in the RSA 'Companies: what are they?' study.

So returning to our example from Greek mythology, those impressed by the profound gifts of knowledge passed on to us by Deming and other visionaries are now the new Prometheans who can and must use the Tetradic legacy (of SoPK and its development) to forge a sustainable and secure future for profitable businesses that can continue to deliver goods and services enshrining economic-quality, satisfactorily, adequately and dependably.