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CARFAX

Appreciation for a system: From fragmentation to integration

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Introduction

In his prefatory comments, and at the beginning of Chapter 3 of *The New Economics* (1993), Deming states that we are living under "the tyranny of the prevailing style of management", which we assume has always existed and is permanent. He then says that it is a modern invention, which has trapped our society into a decline. Deming insists that we are thus in need of transformation, and the system of profound knowledge is a *theory* for this transformation, the way towards it. This system comprises four elements—appreciation of a system, understanding variation, theory of knowledge and psychology—which constitute the lens through which we can understand and optimize the organizations we work in. The message is directed to leaders.

To my mind it is system thinking, the first point, which is the key to accomplishing the transformation. The other three are less of a barrier. Variation is a principle that is intuitively understood or that most people understand quite quickly and find quite interesting to observe. Epistemology has been around since Francis Bacon, in various guises as scientific method, and brought into useful empiricism through Karl Popper (who did not throw the baby of refinement out with the bath water of refutation). Psychology has been around since Galton, Spencer and William James in the mid-1800s, although the motivational aspect which Deming concentrates on is the mature child of the 1950s. Somehow, though, accepting the truly endless systemic nature of organizations is the troublesome infant of the 1990s. As such, it is the most discussed, least understood and least applied by our organizational leadership today—yet it unlocks fully the applications of the other three.

It is not for nothing that in *The New Economics* Deming introduces the idea of a system before he outlines his system of profound knowledge.

My theory is that, because leaders have little appreciation for systems, they create, unwittingly, the tyranny of society that Deming stresses. The major task of everyone who is attempting to create a quality culture in order to increase business excellence is to ensure that organizational leaders have a real appreciation of the power of system thinking. They also need to appreciate the negative effect of non-system thinking, which is exemplified by the competitive ethos. A key principle in system thinking is interdependence, and it is the unwillingness really to accept this which seems to lie at the heart of the leadership problems today. I wish to examine the evidence for this in the context of a vital contemporary issue: working in the knowledge economy. I shall be taking the British construction industry as the

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base for exploring the concept within the interdependence paradigm because it is: (a) the oldest knowledge industry; (b) the 'Cinderella' industry of the UK; in other words the one sector with the most potential for truly amazing contributions to our economy. Really wonderfully intelligent, capable and hardworking people. The industry is poised for growth; if the leadership seizes the baton.

The knowledge economy and construction

The knowledge economy is one in which the deployment of intellectual assets provides the competitive advantage. This has been, mistakenly in my view, attributed to so-called knowledge workers and the high-tech, computer-driven information age. US statistics state that people working with things (farmworkers, operators, craftworkers) or people offering non-professional services (waiters, receptionists, clerks, distribution workers, barbers) will have fallen from 83% in 1900 to 41% by 2000, while those working with information will have risen from 17 to 60%. These are cited as evidence of the growth of the knowledge economy. This is misleading. The really great potential today is the utilization of the knowledge available in the normal everyday work that people undertake. Construction is a startlingly clear example.

Construction is one of the oldest industries on earth. It is the imprint of ancient civilizations—the pyramids in Egypt, the lost cities of India and South America, the Great Wall of China—and is associated with arcane knowledge or wisdom. Hiram, the builder of Solomon's Temple, could trace his lineage to Seth, son of Adam, who brought the idea of the Kaaba from Paradise and built it on the earth at Medina. Archimedes is acknowledged in the carvings on the portals of Chartres cathedral. Freemasonry is a tribute to the esoteric knowledge of the craft, and the respect that society held for it. The magical proportions of the Greek temples, the fine geometry of the pyramids and the great cathedrals and the arching aqueducts of Rome are all testaments to the huge store of intellectual assets embedded in the art of building, and the will behind the organization of these assets. Above all, there is the recognition of the talents of those whose minds and energy gave birth to the structures of civilizations.

Then, it appears that, in the West, with the arrival of mass production and 'scientific' management, the ownership of this stock of this knowledge was transferred to those at the top of organizations. Deming captured this in his famous diagram of hierarchical thinking, which he first displayed in 1950, and which is presented in modified form in Fig. 1. The model is deceptively simple, containing the seeds of the tyranny of management he refers to, which he sees as a relatively new phenomenon. What it said was that transformation of thinking must precede organizational thinking. However, even he could not have anticipated the resistance to this new paradigm he encountered in the West.

My experience, arising from nearly 20 years of advocating and implementing cooperative ways of working and continuous improvement, is that the resistance has two clear symptoms. The first is the transmogrification of the thinking that the person who has the knowledge is the person in charge (at that time), which characterized early industrial life, into the thinking that the person in charge is the person with the knowledge (otherwise why is he/she in charge?). So, if you are not a leader of the company or an expert, then you just go and do what you are told, no matter how experienced or knowledgeable you are. The leaders, because they are in authority, do not get much honest feedback. Or if they do, it is not heard—especially from the upstream supply chain and employees. This is what Matsushita recognized 10 years ago; that the West would never catch up with Japan because we do not employ the thinking ability of our workforce.

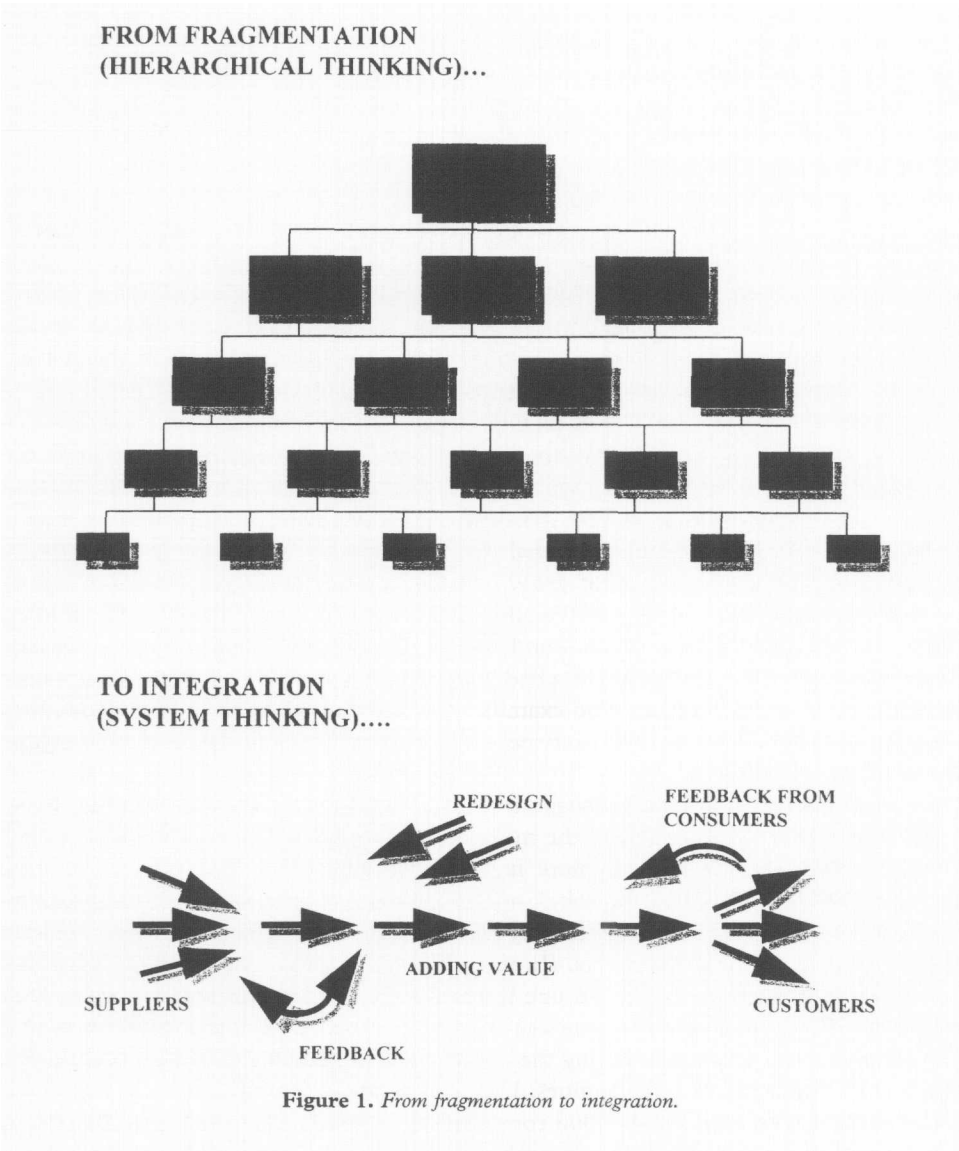

Figure 1. *From fragmentation to integration.*

Second, there is a deep-rooted competitiveness that underpins much of the behaviour within our society and the strange, divisive policies of our organizations. This belief system manifests itself in a number of ways, some obvious and some more subtle, but all equally damaging, and Deming becomes very angry about its effects in families, schools, governments and industry. His criticism of competition runs like a scarlet thread through his writing on systems, leadership and management, and there is a note of bafflement in it which is very touching. Here are some examples: ranking people in a team to reward the 'best', competitions for children, arbitrary targets, incentives for the best suggestions. Then there are competitive tendering, multiple suppliers, supplier of the month, short-term contracts and so on. To cap it all, in the UK, we have been left the legacy of internal markets, schools being ranked on performance and hospitals and universities competing with each other instead of being able to serve the community as they would like to. It is madness and a denial of the reality of

interdependence; the reality that working with is always more productive than working against. It is 'fragmentation' thinking.

Consequences

In the UK, there has been a recent history of projects coming in late, over-budget and badly finished. The Channel Tunnel remains an enduring nightmare for both investors and contractors; but it is merely an exaggeration of a continuing trend that has, for example, public works coming in, on average, 30% above budget, contractual letters flying back and forth and contingency fees held back.

This has benefited no one except, inevitably, the lawyers, as legal and conflict costs occupy 7% of turnover. The average profit margins, in contrast, are less than 1% for the industry, and 500 000 jobs were lost in the 5 years up to 1996. The unknowable losses include loss of expertise, the demise of training and apprentice programmes and an itinerant workforce with loyalty to no one; but with a longing to be gainfully deployed.

If we compare this with Japan over the same period, where projects come in on time and to budget, the contrasts are startling. Legal costs are only 1% and profit margins 6%; but, more importantly, the proportion of gross domestic production spent on construction is about 20%, compared with Britain's 70%. Britain's figure constitutes a vote of no confidence in the construction sector by investors—and who can blame them? Japanese comparisons are not only ones that show the UK up in a bad light. The UK industry also fares badly against Germany, the US and Sweden. For example, the mechanical and electrical engineering (M&E) sector suffers twice as much service time lost as in Sweden, and over 30% as much as in the US and Germany.

The difference lies, as Deming suggests, in the mind-set, the mental model we have of how an organization works. In Japan the main contractors know that they are as efficient as their smallest subcontractor—and, more importantly, behave like that, i.e. cooperatively. Plans are drawn up with the user in mind, not the designer or architect. Deliveries are timed to the hour. Site meetings involve all the key players every day, and activities are coordinated through shared operational flowcharts. (In the UK, site meetings may be held once a week, and then only for the contractor.) No one leaves the site until his/her work is finished, and each person is responsible for everyone's safety. Above all, there is constant communication about the work, with all parties sharing the latest news, and making their own contributions to continuous improvement opportunities. It is 'integration' thinking.

We have spent time with over 2000 construction workers and managers in the UK, and what emerges is that the typical site atmosphere is one of divisions, suspicion and a lot of argument. There are different camps protecting their own interests, resulting in meetings to allocate blame and a good deal of rework (the downfall of motivation and productivity). As a result, coordination is not too clever, so there is much hanging about, e.g. 37%, of measured time in M&E activity is spent waiting for something. Another important non-productive activity is writing and responding to critical or defensive letters. In one 3-year project the contractors' quantity surveyors managed to fire off 25 000 letters. This is a clear sign of a relationship breakdown and an expensive project. It is no wonder that many of the site people we spoke to said that they did not look forward to going to work every day, and that they were heartily sick of the adversarial nature of the work; but accepted that that was what working in the industry was all about! So much for joy at work.

Questions need to be asked of the leadership; the kind of questions Sir Michael Latham has been asking in his drive to improve cooperation in construction. One of the questions has to be: why has not more attention been paid to the green shoots of cooperation that have

been sprouting since 1981? Admittedly they were few, but they have great significance, and have pointed the way ahead. The North Sea has examples going back to 1981, with the building of the Fife Ethylene plant at Mossmoran (5 months early and 10% under budget), while in the retail sector Bovis had a 50-year productive relationship as a sole source for store building to Marks & Spencer.

Today, enlightened clients, like Whitbread, BAA, Sainsbury's and Welsh Water have made profitable progress with partnering. Whitbread and its four construction partners have already achieved reductions of 10% in their action costs, 10% further programme improvements and 40% reduction in paperwork exchange. Sainsbury's has cut build time by 25% and post-completion problems by 80%. Welsh Water has already taken £200 000 out of a £6 million project in the first year, and is solving creatively some very difficult, unforeseen, problems with its contractors. It is no coincidence that the most profitable contractors are those, like Morrisons and Thermal Transfer, who offer partnering, and who have margins at least equal to those in Japan. Imagine what would be achieved if this cooperation could spread right through the industry. Richard Lawson of Bovis Construction estimates that if it paid more attention to organizational, motivational and technological factors—knowledge—it would save over 60% in M&E projects alone. Confidence from investors would soar, application and design innovation spread from our great architects, designers and constructors (including a better environment) and would have delighted customers and work for our people. What a pay-off!

Given all these advantages and this kind of scenario, why is there still this paradigm of fragmentation and competition, with the confused assumption that compliance means cooperation? Because the illusion of control is more comfortable than the strange, but profitable, pursuit of cooperation. As a result, the organizations are divided horizontally and vertically in order better to control from the top where the power is, and not from lower down where the knowledge is. So, first we divide then we rule. Then we find we cannot really rule, so we introduce matrix management which is an implicit recognition that we should not have divided at all. Then everyone gets confused, until the intelligent people down the organization put in informal systems which overcome the inertia of the formal processes. Then it works, sort of, and the leadership takes the credit, while the rest take the strain. All this does not give much opportunity or allow much energy for really unleashing the knowledge within the system. This has to change. The last section will be a brief exploration of how it could.

Relationship capital

In our knowledge economy we have to make the very best of our intellectual assets. This is only done by deploying them effectively. Effective deployment is only achieved by having a good store of relationship capital (Fig. 2). If the organization is to succeed, it has to build this up with its key people and partners by transferring the dominant paradigm from fragmentation to integration. The first step is for the leadership to be convinced (for some almost counter-intuitively) that it is best for the short- and long-term good of the company. This is accomplished at the intellectual level by exploring Fig. 3 with them, with the examples given earlier. Then the group of leaders must be brought together to explore their own relationship to trust, cooperation and competition—including to what extent, as individuals, each cooperates with himself/herself. In shared conversations, and in affirmative interviews, they need to have real dialogues and get in touch with themselves as leaders, and each other as companions—not competitors—in the real world of interdependence.

This was one of the joys of working with what might now be the defunct Channel Tunnel

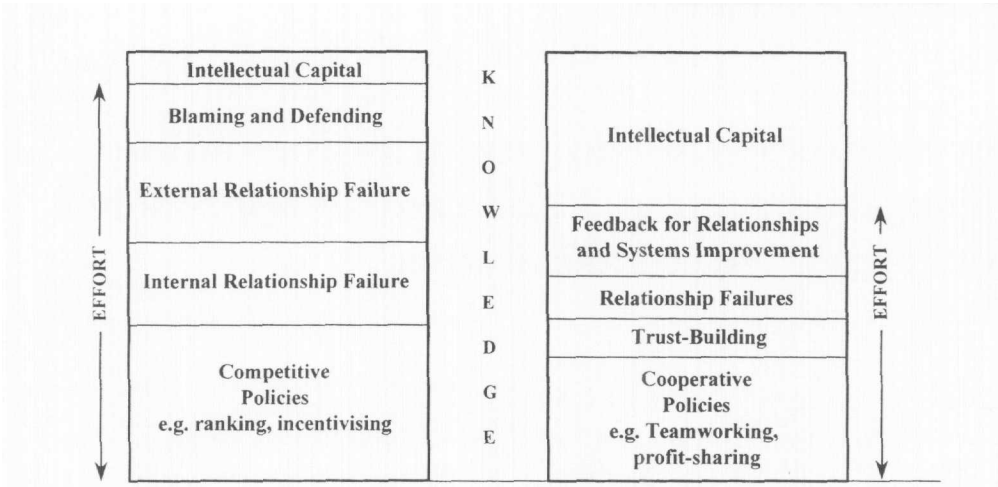

Figure 2. *The cost of non-cooperation (turning knowledge into intellectual capital).*

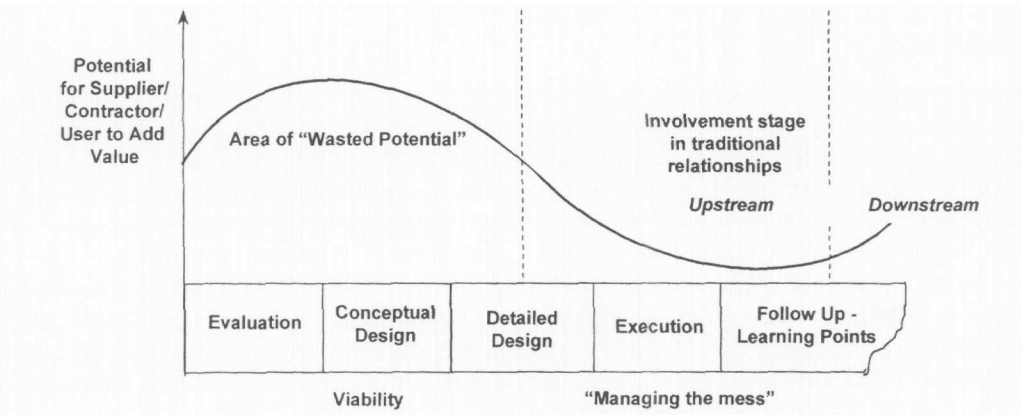

Figure 3. *The opportunity curve.*

Rail Link project. We discovered a longing among these genuinely hard-nosed leaders of all ages for cooperation, with story after story of its success at business and personal levels; and an utter damned weariness with aggression. We are convinced that we found the potential to build a Rail Link with such a stock of relationship and intellectual capital as to make it the demonstration project in the world for the next millennium. I hope we still get that opportunity.

Finally, what I believe we are talking about is being fully human at work. For far too long the construction industry has lost its heart. It is time our leaders rediscovered theirs and their employees'. As Hamlet says, "What a piece of work is man". As we build trust and develop confidence so we will add value to all we do together. As this happens our judgement will improve, and our appreciation for a system expand to include the symmetry and beauty of this wonderful world we live in and co-create. We will judge our work not by its economic value alone, but also by that ancient yardstick of truth, and beauty and goodness.

Reference

DEMING, W.E. (1993) *The New Economics* (Cambridge, MA, MIT).