SCiO
Building viable organisations

Viability Today

Autumn 2012

Editorial

Like the miracle of the liquefaction of the blood of San Gennaro in the cathedral of Naples, another edition of Viability is here, thanks to the contributions of members.

We live in times of crisis and times in which a vision of "the system" is becoming ever more important. However, anyone caught propounding the idea that "its the system stupid" suffers the fate of Cassandra. The brainwork and the need to face the uncomfortable truths involved in unravelling complexity sit uneasily in a world based on the short term. We see today's politicians being blamed for the behaviours of those who were in office yesterday (including failure to act), when it's the structure of the system that allowed the abuse of a position of power in the first place and which permitted and even encouraged the observed behaviour. And so we repeat the endless cycles of blame while Rome burns. Is it really so difficult to understand delay in a system when all you have to do is get into a shower with an overenthusiastic cold water supply?

One of the key themes that recurs throughout analyses of the current crisis is the lack of control and inadequate governance. In this case it refers to the wild west world of finance but the other night I watched a debate on Italian tv in which two senior politicians were arguing about the current political crisis in Italy. Gianfranco Fini, the Speaker of the house, pointed out that the reason why the Italian equivalent of the serious fraud squad has been knocking on the doors of the regional governments recently is that there were absolutely no control stuctures in place. Is it any wonder that within the space of a few weeks we have seen numerous high-profile arrests for the misappropriation of tax-payers money on a shocking scale? All down to control or rather a lack of it.

Back to this issue though, where we have a couple of firsts: our first contribution from overseas (ignoring the editor!): Jan Kuiper describes a visit to Cwarel Isaf Cottage. In another first, Roger Duck provides an analysis of the SCiO organisation using the VSM framework as a result of a Board modelling session. It's nice to see the lens being turned inward. We've also got the first part of an article about the psychological impact of control from David Bovis, a reflection on self-interested traffic in Wiltshire and an item on variety to finish off with.

As ever, we need your input so please, if you've read something interesting recently which is related to systems, write a review. If you've got a systemic view on something which you think would be good to share, please get in touch. In the meantime...

Happy reading,
Gordon

This Issue

The Newsletter	2
Bookworm	2-3
Modelling SCiO using the VSM	3-4
Cwarel Isaf Cottage: the place to be	5
SCiO Development Day Manchester	6-7
The human cost of control - part 1	7-9
The Perils of Kindness	9
Variety - the spice of life?	10
Mandelbulbs	12
Calendar	12

The Newsletter

At a recent board meeting I was asked to provide a little more information about the newsletter to the SCiO public to explain a little about its scope and purpose and also something about me, the editor.

The SCiO Newsletter was born out of a conversation between a couple of members at one of the SCiO open meetings a while ago in Manchester. I suggested a short Newsletter as a way of sharing the experiences of the open days and the life of SCiO with the SCiO audience via a push rather passive mechanism. By push I mean something that you can receive in your email and (if so desired) print out rather than a webpage "out there". Not being able to attend many meetings in person was a certainly a factor in my decision to try to participate in SCiO by producing the newsletter.

The initial runs were a little irregular: it was difficult to gather material, the preparation wasn't very quick - there was some new software to learn and the process for the preparation of the document wasn't elaborated thoroughly which contributed to the lumpiness of the publication. Let's say that the processes and the preparation have been ironed out to some extent over time, whereas the supply of material is still a concern (sorry to keep harping on about it!).

As for me, well I'm learning a bit more about what it takes to pull together a newsletter on a voluntary basis. From new software (I'm using Scribus, the open source publishing program) to getting articles from potential contributors and working with them to get the contribution into a suitable form. I don't do this alone, as there are some additional proof-reading eyes in the background providing guidance and comments.

Clearly, this endeavour needs some form of active participation from the membership. The occasional article is welcome and if there are enough occasional articles from enough members, we have a small stock and that means that the next issue is not quite starting from scratch. Please bear this in mind!

I hope that these efforts will go some way to helping SCiO achieve its aim of being a reference point within the systems landscape.

Gordon Kennedy

Bookworm

THINKING IN SYSTEMS: A Primer
Donella H Meadows
London: Earthscan, 2009, 210pp. ISBN: 978-1-84407-726-7 (pbk)

On several forums where people ask what is a good book to read to get a general understanding of systems thinking, people recommend “Thinking in Systems” by Donella Meadows. It is a very clearly written and well illustrated guide to the way systems behave and the steps we should take to understand them. Meadows was an award winning lecturer at Dartmouth College and wrote a weekly column called "The Global Citizen", commenting on world events from a systems point of view. She died in 2001.

“Thinking in Systems” is a well researched and well written book suitable for beginners and seasoned practitioners – especially those who who need refreshing on why we are doing what we do to try and move mountains.

Meadows makes simple statements that are full of depth – “One of the central insights of systems theory, as central as the observation that systems largely cause their own behaviour, is that systems with similar feedback structures produce similar dynamic behaviours, even if the outward appearance of these systems is completely dissimilar”. This means that learning can be transferred across systems and models can be polished and improved without starting from scratch on a different set of issues. The book uses oil and its extraction to explain many concepts and uses a simple analogy of a car showroom to show that delays in balancing feedback loops makes a system likely to oscillate. The diagrams show the way behaviour impacts the stock and delivery numbers and clearly shows the huge impact of small decisions.

One issue that has come up in the last two or three books I have read (including an excellent one by Dr Peter Scott Morgan which I have just started) is exponential growth. It appears that the human brain struggles with anything other than linear growth. Meadows says that “A quantity growing exponentially towards a constraint or limit reaches that limit in a surprisingly short time.” and again she explains this with diagrams and text.

A point that is well explored in the beginning third of the book is the inputs and outputs and

reinforcing and balancing loops of systems and the author comments that "... we can be surprised by the counterintuitive behaviour of systems when we start trying to change them."

The author then goes on in the next part of the book to discuss archetypes, seeing them as traps and opportunities. Many of the examples used are environmental or financial and are very pertinent, making you think about systems but also about political decision making and the huge difficulties faced to get cooperation to make the changes needed to protect/help our planet. A good example if the positioning of electricity meters in a block of Dutch flats. Meadows also talks about goals and the importance of setting the right one but also checking regularly to see it is still the right one! Again this becomes even more critical where the systems takes time to show the impact of the change. "If you define the goal of a society as GNP, that society will do its best to produce GNP. It will not produce welfare, equity, justice or efficiency unless you define a goal and regularly measure the state of welfare, equity, justice or efficiency."

The book then goes through "leverage points" and this is also well covered in an article written by Meadows available from: - http://www.sustainabilityinstitute.org/pubs/Leverage_Points.pdf
Some "rules" are prepared giving advice like, "exposing you mental models", "honour, respect and distribute information"," use language with care" and my particular favourite "Pay attention to what is important, not just what is quantifiable" – I am sure we have all had experiences where people are paying attention to the "wrong" data just because it is readily available.

The book finishes with an excellent summary and bibliography which makes me wish I had the book in hard copy rather than kindle as would be excellent to refer to regularly.

I will finish with two final quotes from Meadows and the link to her website.

"We can't control systems or figure them out. But we can dance with them!"

"Stay humble – Stay a learner".

http://www.donellameadows.org

Reviewed by Anne Maguire.

"A quantity growing exponentially towards a constraint or limit reaches that limit in a surprisingly short time."

Modelling SCiO using the Viable Systems Model

Modelling SCiO as a Viable System

The SCiO Board met in September to carry out a modelling exercise on the organisation. The aim was to review and update the working model of SCiO, to ensure a common understanding across the Board, and to provide a reference model for members. This article is intended to share aspects of the process and the outcome with members and a wider audience.

The introduction of Common Interest Groups (CIGs) was a major change for SCiO, initiated by members at the AGM in 2011. The existing model, and associated board responsibilities, did not properly account for CIG activity. This needed to be rectified in order to enable clearer management and development of SCiO.

The figure summarises the outcome of the modelling process, shown as an activity model of SCiO as a whole. This is mapped according to the traditional layout of the Viable System Model (VSM). In accordance with standard practice, wavy shapes show environmental activity, ovals show operational activity, and rectangles show management activity.

The starting point was SCiO's declared aims, which are:

- to develop systems practice as applied to organisation,
- to disseminate this practice, and
- to provide support to practitioners.

SCiO's primary activities – or elements of System 1 (S1, Operations) in VSM language – are each related to one or more of these aims: the relevant aims are shown in red in the figure. The five elements of S1 are Open Meetings, Development Meetings, Communications, the Professional Development Programme (PDP), and Common Interest Groups (CIGs).

In the environment, the figure highlights just the target participants of each primary activity, from the membership in the case of Development Meetings, through specific target audiences for Open Meetings and Communication activities, to current and potential members for PDP. In the case of CIGs, the critical characteristic of their environment was identified as the existence of "common interests".

The specification of CIG activities as an element of S1 was new. It was recognised that at the next level of recursion "down", there are two different types of CIG, as shown: "outreach" CIGs (labeled "out") that generally include non-members, and members' only CIGs (labeled "int"). For example, a

The specification of CIG activities as an element of S1 was new.

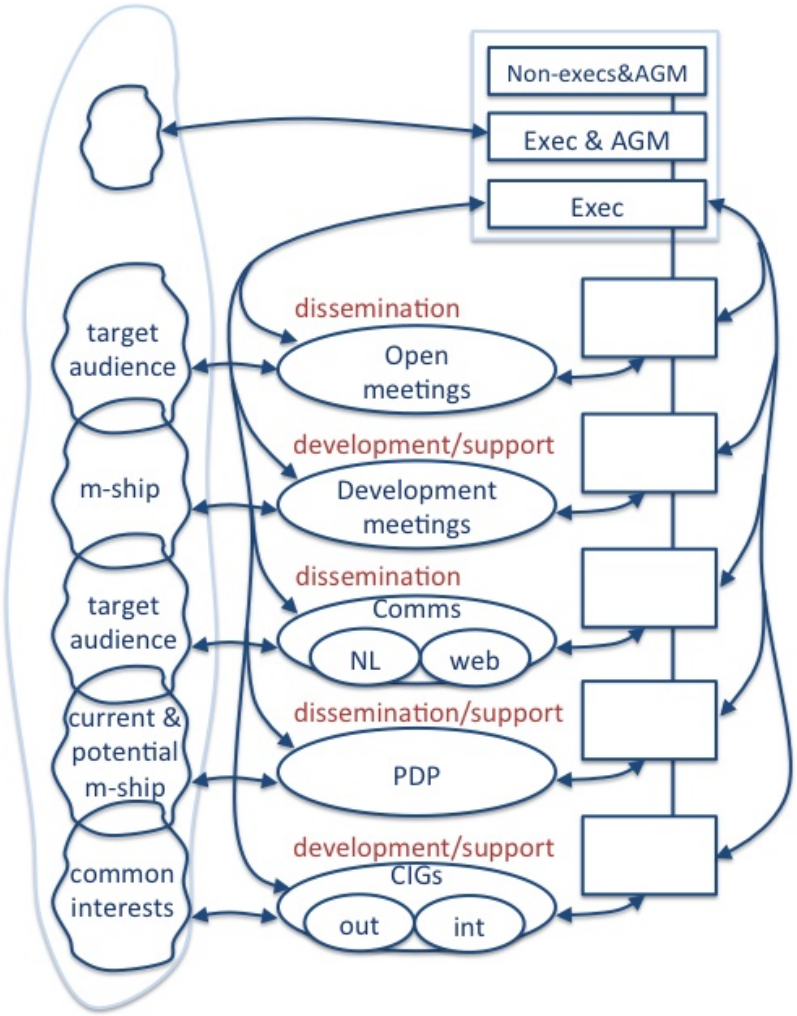


Figure: the model of SCiO mapped onto the general VSM structure.

Note: the conventional symbols for the S1 elements are circles, however, it is clear that ellipses make better use of the space available in the diagram and are a better fit with longer text. They have been used here to maintain a coherence with the original conventions which aim to distinguish the S1 elements from the control elements.

group of enterprise architects from outside SCiO meets on a regular basis with a number of SCiO members in an "outreach" CIG known as EAST. An example of a members' CIG is the so-called Portico Group which has a common interest in using systems practice in the third (i.e. voluntary) sector: this CIG has adopted Action Learning as a means of exploring and sharing participants' experiences.

Open Meetings, Development Meetings and PDP are split at the next level of recursion into individual time-bound events. Finally, Communications are primarily via this newsletter (NL) and the SCiO website (web), as shown.

Defined board members have responsibility for ensuring that necessary and appropriate management activities (the rectangles) are in place for each of these five S1 elements. The type of management required varies, from relatively tight control in the case of communications activities, to encouraging significant autonomy in the case of CIGs.

System 3 (delivery management) is the collective responsibility of SCiO's executives, as shown. Details of System 2 (coordination activities, indicated by the connections on the right hand side) and System 3* (monitoring, indicated by the connections from System 3 into the S1 elements) are beyond the scope of this discussion.

Activities needed for the development of SCiO as a whole, or System 4, are put in place by the execs, with critical input from members via the AGM. SCiO's three non-executive directors have a particular responsibility for establishing and protecting the organisation's identity (System 5, shown at the top of the figure), again in response to the wishes of members provided through the AGM.

One important debate that was sparked by the modelling exercise was about the contrasting nature of a membership organisation with respect to a service-based organisation. SCiO is a membership organisation. SCiO is, fundamentally, the collective activity of its members, in interaction with one another and with others. The role of SCiO's board continues to be one of establishing and maintaining structures to enable members to contribute to, and benefit from, the organisation's aims.

The Board would welcome comments on the contents of this article. Feel free to contact the author at roger.duck@scio.org.uk or any other member of the SCiO board, or to email comments to the SCiO members' google group at scio-members-group@googlegroups.com.

Roger Duck

Cwarel Isaf Cottage: The place to BE.

.... a covered 'meeting place' from which the aroma and sizzle of sausages and burgers proves an irrestistible accompaniment to flowing wine.

Stafford lived and worked in his Cwarel Isaf Cottage for many years. Luckily the cottage still exists. Malik improved the house and its surroundings beautifully. The cottage is available for cyberneticians who want to BE there to work, contemplate and meet with others.

Jan Kuiper and Mike van de Wijnckel went there allready several times. We met with Ian Kendrick and Trevor Hilder in the cottage and more recently we spend time there with Martin Pfiffner and Peter Stadelmann. Those meetings brought connection and insight and we made the same Picture as Stafford and his students made on the Aberrearon beach.

Visitors to the cottage:

Roger Harnden: “I have stayed at the cottage several times, both alone and with a partner. Absolutely secluded, it is a great setting for reflection, as well as a convenient base for exploring central and south Wales. Peaceful and cosy, with a wonderful wood stove, I never fail to catch fleeting glimpses of Stafford's benign presence. A large barbecue overlooks a stream, and is situated halfway between the cottage and a covered 'meeting place' from which the aroma and sizzle of sausages and burgers proves an irrestistible accompaniment to flowing wine. Great atmosphere and value for money.“

David Whittaker (in the CII diary): “As for this renovation: I'm completely awed by what has been achieved. CII must be applauded!!! Fantastic stuff. They have brought it into the 21st century without losing its timeless spirit. Yes, I know Stafford would have been deeply moved.“

Angela Espinoza (in the CII diary): “Coming back to the cottage has been an inspiration. Still Stafford's spirit remains here in many ways“

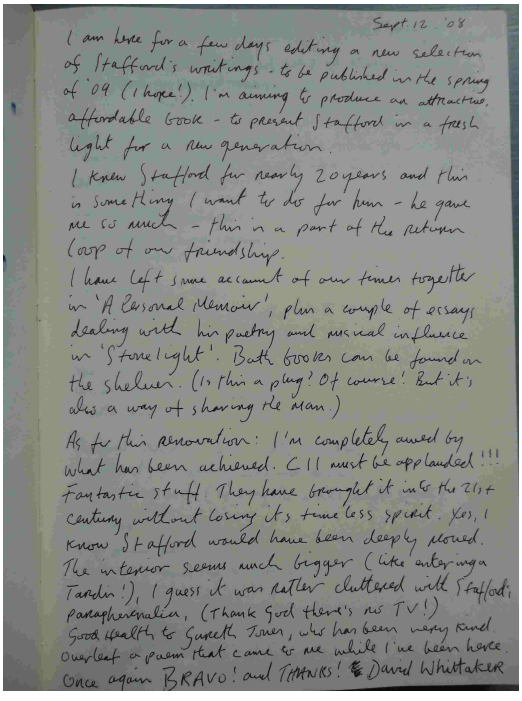
Members of SCiO, visit the cottage! Enjoy the good spirit of the place. Taste the remains of the whiskies in the house, light fires, cook and syntegrate at the wooden table that Stafford left there for us!

Check the website for booking and arrangements: http://www.malik-management.com/pdfs/cii_cottage_060103.pdf

Or contact: Frau Yvonne Irle at: Yvonne.Irle@mzsg.ch

And take the picture....

Jan Kuiper, (jan.kuiper@xs4all.nl)



Sept 12 '08

I am here for a few days editing a new selection of Stafford's writings - to be published in the spring of '09 (I hope!). I'm aiming to produce an attractive, affordable book - to present Stafford in a fresh light for a new generation.

I knew Stafford for nearly 20 years and this is something I want to do for him - he gave me so much - this is a part of the return (coop of our friendship.

I have left some account of our times together in 'A Personal Memoir', plus a couple of essays dealing with his poetry and musical influence in 'Starlight'. Both books can be found on the shelves. (Is this a plug? Of course! But it's also a way of thanking the man.)

As for this renovation: I'm completely awed by what has been achieved. CII must be applauded!!! Fantastic stuff. They have brought it into the 21st century without losing its timeless spirit. Yes, I know Stafford would have been deeply moved. The interior seems much bigger (like entering a Tardis!), I guess it was rather cluttered with Stafford's paraphernalia. (Thank God there's no TV!)

Good health to Gareth Jones, who has been very kind overleaf a poem that came to me while I've been here.

Once again BRAVO! and THANKS! David Whittaker

Cwarel Isaf - Dave Whittaker's diary entry.

SCiO Development Day Manchester 6th October

Have you ever been to a SCiO development day? If not I would like to tell you a bit about the last one we held in Manchester so that you can see what you are missing. It was a pretty normal session, so makes a good example. We started at 10 o'clock on a Sunday with seven of us and by the afternoon had 10 (Sunday train schedules had had their effect).

Development days have three objectives:
- Members meet and exchange views
- Individual members practice issues are addressed
- The group develop the body of systems knowledge

We went round the room collecting topics for the day and decided on the best order to take them, and set to with half an hour per topic, led by the person who proposed it. We ended up with:

- History of systems thinking
- Body of knowledge
- Socio Cybernetics
- Emergent employee engagement and culture
- Multiple layer co-ordination
- Measuring volunteering in Canal & River Trust
- Jane Jacobs
- Measuring development days

One member has just set off to write up, in an article, the history of systems thinking. He has started in the Neolithic and has just made it to the middle ages. We enjoyed some interesting stop offs on the tour at ancient music and the development of clocks. It's a pretty major undertaking! In summary we decided that it isn't systems thinking that is peculiar and needs to be explained, but reductionist thinking that is an anomaly, and why did it arise?

Another member proposed that we try harder to communicate the systems principles we consider and develop on a development day. The idea is to create a Body of Systems Knowledge, because it needs doing. Other collections of systems theory are either scoped to a limited subset or focus on the people rather than how their ideas relate. We agreed to start to build a body of knowledge from the next development day onwards– maybe a Wiki? - one topic per development day, starting with Requisite Variety and including practical examples of its use.

Next we learned what Socio Cybernetics is. Systems Thinking was the term used primarily in the west and Cybernetics is the more common set of concepts in the east, so Socio-Cybernetics brings both schools together and applies it to the related sciences such as sociology and psychology.

Well if that all sounds a bit heavy on the theory sides the following sessions were back to practice.

The next session focused on the CIPD research 'Engaging for Success' which has about 60 case studies of employee engagement. An initial trawl showed that at least some demonstrated aspects of a systemic approach and a few were fairly holistic. It was proposed that a simple VSM based tool could be used to make some sense of the case studies and perhaps find some clearer theory about what did and did not work.

Multi-layer co-ordination was an actual practice problem. The organisation concerned had strong views on how many layers of management should exist and were trying to shoe-horn their work processes to fit. The practitioner unpacked the levels of recursion required to deliver their services and showed there were more than would fit their Manager theory. The advice was to start by distinguishing between the need for people to do management activities (including the individual managing their own work) and the concept of full time Managers. Then do some simple variety equations to expose the complexity involved, and cost the amount of management required at each level. Could be nothing or a whole teams worth! This will then identify what work needs doing and they can then decide how the roles get allocated.

Measuring Volunteering in the Canal & River Trust was a practice issue based on using systems approaches in combination with the accounting model of Social Return on Investment and solving a nitty-gritty issue in how the two very different world views could be linked.

The next session was again back to theory, visiting the work of Jane Jacobs on her two 'syndromes' – the guardian model (a government style mindset) and the commercial model (a business mindset) and how a mixture of the two can create monstrous hybrids e.g. the mafia. We then looked at the insights provided by Ken Wilbur from outside systems in the AQAL model and the work of Graves who developed the work

of Maslow into a history of civilisations development as a number of incremental value systems, starting with survival at level one and culminating in what he calls flexflow at level 7. It was agreed that it would be interesting to explore the typical activities of a VSM system 5 in each of these different levels.

We finished up with a session on how we improve our feedback on development days through measuring how well each day meets the objectives from each participant's viewpoint and using this to learn about how the days are organised.

It was now five past 4 and time to call it a day, and I haven't even mentioned the local noodle restaurant, which was a great find and provided a really good fixed price lunch menu!

Would you get any value from being a part of a day like this? Is there anything that you would see as making such days more attractive? Should they be run nearer your home location? I would like to hear from you.

Jane Searles – SCiO director responsible for Development days

The Human Cost of Control - part 1

As the speed of life and business has increased with advances in technology, organisations have increased in size, posing many challenges our industrial ancestors may not have faced.
To accommodate larger numbers of people in businesses, increased production and service expectations, alongside rising commodity and lower sales prices in a global market, not to mention the challenge of working with 'virtual' teams, we innovative humans have developed various solutions.

In the computer age, first came MRP1, then MRPII2 & eventually different flavours of ERP3 & MIS4. Alongside this we find Strategic operational models like BSC5, EFQM6, Hoshin Kanri7 and tools like Lean8 and Six Sigma9, OpEx10 and Agile11. The common factor in them all is that they aim to connect a set of complex dots in a complex network of relationships to 'provide control'.

And there's the rub; controlling process and procedure, predominantly with computer-based solutions (Logic) which don't always make sense, can be shown to have a negative impact on the performance of other components in our organisational systems … i.e. people!

Try and control 12 people like you control a process and rather than the 'control force' provoking a predictable deterministic logical 'equal and opposite reaction', you will often provoke deeply embedded defence mechanisms, potentially provoking a disproportionate, irrational and emotional reaction that detracts from individual, team and ultimately organisational performance. Build this into the culture and leadership education process and you have yourself a significant problem the vast majority, educated within 'the system', will remain wilfully blind to.

This is a complex message in a world sold on simplicity, so it hasn't become a popular subject, even thought ignoring it leads to chronic social and organisational underperperfomance.

To delve into this world of the Socio-technical, i.e. the cybernetic elements of 'Systems' that we aim to control logically … I'm going to try to connect a few dot's I've noticed through my 26 years of experience in companies across Europe. These 'dots' come from the worlds of psychology and neuroscience and quite surprisingly include Dogs, Monkey's and Birds.

———————

In 1964 Martin Seligman strapped a dog down to an electric plate and electrocuted it. The dog yelled, barked, strained, cried, urinated and defecated … all to no avail.

After a few hours of this torture Seligman removed the straps and electrocuted the dog again. The dog just lay there taking the pain. It had learned in the space of a few hours that nothing it did could change its prevailing conditions: it had given up.

From a neurological point of view, its 'seeking mechanism' (the mesolimbic pathway in the brain) had turned off and it stopped trying to find a solution because nothing it did had led to the 'dopaminergic reward' the brain receives in normal circumstances.

This is a complex message in a world sold on simplicity, so it hasn't become a popular subject, even though ignoring it leads to chronic organisational underperformance.

.

This experiment was horrific, but it was also enlightening. It demonstrated a principle Seligman called 'Learned Helplessness'13. It is a principle that can impact most every adult mammalian brain.

———————————

A monkey was placed into a cage. In this cage, there was a bunch of bananas on top of a ladder. Every time the monkey went to get the bananas it was squirted with ice cold water.

A second monkey was introduced to the scenario. The first monkey tried to stop the second from going after the bananas. The second monkey ignored the first and tried anyway, only to be squirted with icy water. The second stopped trying to get the fruit.

A third monkey was introduced. The first two stopped it from trying to get up the ladder. This time peer pressure was adequate and number 3 didn't try to get the fruit.

When the fourth and fifth monkeys were introduced, the same thing happened. However, when a sixth was brought in, the first was removed. The sixth monkey was convinced by the group not to get the bananas. The same happened when the seventh was brought in and the second was removed.
The water was turned off.

Now of course, there are 5 monkeys in a cage, all of them avoiding fruit for reasons they have no first hand experience of and no further monkeys introduced to that cage ever tried to get those damned bananas.14

Belief about what is 'good' directly (i.e. via neurological action) and indirectly (via the mechanisms of social interaction) affects behaviours.
And it doesn't matter if the belief is about bananas or 'Lean tools', the earth being flat vs. round, the 'Keynesian Economic' view that perpetual growth is sustainable or the cultural acceptance of a corrupt version of democracy, which puts the development of wealth above the development of virtue, it can and does get passed on from generation to generation.

It also doesn't matter whereabouts in society the belief is held, whether it is in the House of Lords, Barclays Bank (members fixing Libor rates), a family home, a Street Gang, a boardroom or department of an organisation, people across generations will pass a belief around like a pass-the-parcel package that no-one ever stops to unwrap, look inside or understand in detail. Inheriting popularised beliefs about what is 'Good' or 'Bad' is something every adult mammalian brain will do naturally in a social environment.

Considering the Brain as an organ which constitutes only 5% body-mass while consuming 20% of the energy produced by the body (Medina et al), it is easy to understand that one primary function of the brain's 'standard operating procedure' is to reduce levels of glucose consumption. In fact, John Medina in his book 'Brain Rules'15 suggests that we (probably) only use up to 20% of the brain at any one time, because using any more than this requires too much energy. Unable to produce enough energy from food consumption (without other issues, like free radical production coming into effect), we have headaches, have trouble thinking straight (rationally) and can ultimately feint, shutting down other systems until energy balance is restored.

The brain has ingenious ways to avoid this that we're only just coming to understand. i.e. We don't see everything we think we're looking at, we fill in much of what we think we're seeing from memory, as it's less energy consuming to fill in pictures in this way than it is to process a constant flow of information through our photo-receptors; we are also really good at making assumptions for the same energy requirement reasons.

The kind of assumptions we make can be in respect to a social belief, or that a predicted performance target is a reality rather than a guess. These types of brain processes reduce our need to think too hard about complex and often moral and philosophical subjects. A reduction in such thinking = energy saving. Who Knew? Our brains are designed to be green!

This all becomes very complex at a neurological level, and we have to be cognoscente of issues around the reduction and removal of free radicals, as mentioned above (Medina), the purpose of brain derived neurotropic factor (YA Barde16) and the neurogenesis process (Gould17) – but that's all too academic for this little observation.

So, in summary and with an understanding of these interconnected neurological and psychological issues (all part of the 'Human' system society systematically ignores), we might generally say, that assumption based on popular beliefs allows us to reduce energy consumption to achieve a level of neural efficiency.

———————————

David Bovis

This article will be continued in the next issue

The Perils of Kindness

The First in a Series of Systemic Reflections on Everyday Life

.....followers of Ayn Rand, have concluded from this that the world would work much better than it does if everyone followed their "rational self-interest"

I have to catch a train to Slough for a business meeting today. I set off to walk to the railway station. It is, surprisingly, sunny and pleasant, given that this is England. The walk is only five minutes, and I soon reach a busy road which I have to cross. The crossing place is marked with yellow, rubberised slopes to help the partially sighted and wheelchair users to cross, but drivers are not obliged to give way to pedestrians here.

A kind driver stops to allow me to cross (you may have guessed that I don't live in London!), but I hesitate, because I can see that the driver behind him can't see me and doesn't know why the car in front of him has stopped. He is about to pull out to overtake the stationery car. If I accept the nice man's invitation to cross, I might get run over.
After a moment of mutual confusion, the driver behind realises what is going on, stops too, and I successfully cross the road and continue on my way.

As I stroll along, it occurs to me that I have just participated in a microcosm of something that happens all the time and causes no end of trouble. A number of well-intentioned individuals have just conspired to set up the circumstances for a road accident. If the first driver had acted less altruistically, everything would have been fine, but he was a nice man, probably local to the town in Wiltshire where this happened. The same phenomenon leads to what I call "The Wiltshire Roundabout Shuffle". Because the local people are so nice, they have an urge to give way to everyone else when negotiating roundabouts. As a result, the traffic grinds to a halt until somebody, usually aggressively, drives across anyway. When my kids were learning to drive, we realised that this phenomenon was the most likely reason they might fail their test!

On the theme of road traffic, I was reminded of a similar example, which I have heard occurs when motor cyclists get knocked over and are lying injured in the road. People arriving on the scene instinctively want to hug them or pick them up and carry them to safety. Unfortunately, if the motor cyclist is badly injured, this is the quickest way to kill her.

In all these cases, there is a mismatch between what kindness appears to dictate and what actually helps. On a much grander scale, there is considerable evidence that well-intentioned aid agencies, funded by the magnanimity of well-wishers, often undermine effective disaster relief by turning up at the scene of a disaster and getting in each others' way.

Some people, such as the followers of Ayn Rand, have concluded from this that the world would work much better than it does if everyone followed their "rational self-interest" instead of falling prey to sentimental nonsense about altruism. This "objectivist philosophy" has been surprisingly influential in the USA. Alan Greenspan, chairman of the Federal Reserve from 1987 until 2006, was a disciple of this strange lady. This might explain why he believed that it was not necessary to tightly regulate financial markets, because the "rational self-interest" of their participants would do the job for him. Since retiring from his post, he has admitted that this belief, which he had held for forty years, was wrong. This apparently has not dented his ability to earn good money on the lecture and after-dinner speaking market, but that is the subject for a different article, which I will be happy to write if there is a demand for it.

The problem with Ayn Rand is that she was what many ordinary people would call "bonkers". If you look on YouTube, you can find a TV interview in which she announces, with a strange look in her eye and complete confidence, that she has consistently followed her "rational self-interest" since her first memory, at the age of two and a half years. It apparently never occurred to her to wonder what "rational" really means or what "the self" whose interest she was pursuing actually is. Anyone who has studied the phenomenon of the rise and fall of cults will recognise her as the leader of a cult, and a cult that has been enormously influential and a contributing factor to the financial mess that the world has been struggling with since 2008.

Personally, I would much rather live in Trowbridge, where drivers act "irrationally" but kindly, than in London, where they act "rationally" and unkindly (although one could question what is rational about anybody trying to drive in London at all!). In fact, I moved out of London in 1985 precisely to escape the dreadful traffic jams (not to mention the insane house prices!).

This conundrum of Doing the Kind Thing versus Doing the Right Thing cannot be solved by choosing kindness on the one hand or self-interest on the other. It can only really be solved by learning to recognise the living interaction between the two and that acting in your apparent self-interest on one level may only be making things worse on another one. This requires us to

think systemically.

I found myself thinking about this as I arrived at the station, got my ticket and caught my train. So I thought I'd take advantage of the train ride to share these thoughts with you.

By the way, the business meeting went well, so I am feeling quite cheerful as I finish writing this, drinking my coffee before getting on the train home.

Trevor Hilder

Variety - the spice of life?

The concept of variety and how to manage it (control) are central concepts in a cybernetic view of systems. However when couched in these terms, they remain somewhat abstract and distinct from our everyday experience of variety and the effects of managing it (or not or too much). In this short article I want to look more closely at what we mean by variety and why it is so important.

When looking at definitions of variety it is very easy to come across highly technical descriptions which are based on mathematical calculations and before long we find ourselves in the midst of the information theory with its combinations and exponentials describing the variety in the universe as a whole. This is far too much for our humble purposes. We should therefore look for a more mundane down to earth definition. In a recent exposition, Glanville states that:
"...variety is a measure of the number of states a system might attain; this depends on how the observer describes the system".

Looking at this closely, what do we mean by "a measure of ...states"? A state is a particular condition of the configuration or arrangement of the components of a system. To take a simple example from the past, the dip switches on the backs of old printers could be either up or down as single switches but as a collection of 16, there were many possible combinations which allowed the printer to be matched to the program that was being run. So in this case the printer could be in one of many different states simply by setting the switches in a given combination – giving 2 to the power 8 or 256 possible combinations .

The second part of the definition describes the boundary of the system which we are defining as observers and which may be contested, but that is another story. However, it is axiomatic that the wider the boundary, the more potential states the system may occupy. The main point here though is that the number of states in a system will be finite, even if it is very large.

Why should this be important? Because variety is an issue of control and the purposeful activity of a human activity system comes from the application of control. Systems don't exist in isolation and interact with and are influenced by elements in the broader environment and this can occupy many more states than the system within it. In some case these states cause disturbances within the system which have to be balanced by a control mechanism. This is the job of the regulator.

There are many examples of automatic regulators at work in machines that we use every day and often we just take regulation for granted. However, the regulator must also exhibit the property of having variety if it is to counteract any number of possible disturbances coming from the environment. The subtlety in this is that the regulator must react to the disturbance in an appropriate way which means that its repertoire of available responses needs to be able to match the variety of the disturbances it is trying to compensate for.

To quote from Principia Cybernetica:

"...the larger the variety of actions available to a control system, the larger the variety of perturbations it is able to compensate."

The consequence of this is that since the external environment can present essentially unlimited perturbations to a system, the system needs to have as much internal diversity as possible in order to cope with any eventualities. I won't say anything here about how this internal diversity is arranged but there will always be limits to the system's response because by definition, it must have a lower variety than its environment (ultimately the universe). This can be seen when urban systems are thrown into chaos by random large-scale natural phenomena such as the recent tsunami in Japan and the earthquakes in Emilia Romagna in Italy.

This matching of variety between that presented to the system and that used by the regulator in its response is encapsulated in Ashby's law of requisite variety which has a number of different formulations of which the most succinct must be:

"only variety can destroy variety"

since the external environment can present essentially unlimited perturbations to a system, the system needs to have as much internal diversity as possible in order to cope with any eventualities.

which we can expand to make a little clearer:

"only the variety *of the regulator response* can destroy *(= manage) the* variety *that the environment presents to the system*."

What about a couple of examples where we can see this mismatch in variety presented by the environment and the capacity to absorb it? I will take two quite different situations and present them as examples in which the mismatch of variety and the response can cause (or has caused) problems for the system of interest.

First of all let's think about a laundry service which deals with commercial cleaning for hotels, hospitality centres and hospitals. While the system as a whole consists of the customers and the laundry offering the service, the laundry is the principle focus here because it has been set up to do the cleaning job. The purpose of the laundry is to provide clean sheets or whatever back to the customers in a satisfactory manner (cost, time, quality).

What sort of variety is present here? We can imagine that from the point of view of the laundry, it has to deal with different types of requests from different customers with different types of articles at different times. Also, it is likely that customers will have different views of what constitutes quality service and demand for the service itself may be highly variable. Within these broad elements we can identify likely categories of behaviours each of which can occur in a variety of states. For example, the arrival of the linen is a category containing all of the possible combinations of deliveries. If all of the customers always send their articles at 0900 a.m. on Monday morning, the variety of the arrival time is low. However, if each delivery contains a mixture of bed linen, tablecloths and napkins amongst other things, the variety in the handling operation is considerably greater. A practical consequence of this is that a queue may form while the laundry staff desperately try to reduce the pile to manageable proportions. As we know from experience, queues can have a negative impact on the perception of service.

The challenge here is to create a system which can provide consistent outputs (laundry cleaned and presented to specified standards) for relatively chaotic inputs.

From the practical example of a laundry business, let's shift our focus to an example from the news. Government regulation of the banking system is currently a hot topic. However, what follows is valid for many contexts where government or institutional regulation is important and it occurs in other industries such as pharmaceuticals and food.

As we know, the banking industry is currently in trouble because in the recent past, there was a sort of internal arms race in which increasingly complex ways to make large profits became the norm as banks vied with each other to attract custom. We hear about complex derivatives, selling things you don't own on millisecond timescales and it is little wonder that the impression is of a complexity that no one really understands or can predict. Couple this to the dubious morality of selling cut price loans to people who had no real chance of paying them back and well, we are now living the consequences.

Industries are driven to innovate by internal competition which increases the internal variety, while the regulators, who are external to the cut and thrust of the innovation, only see the results of this once the products of this innovation are released to the world. There is a lag and being external to the innovation process which is the source of competitive advantage, regulatory bodies will lack the knowledge, the competence and capabilities of the industry that they are supposed to regulate. Public regulatory bodies cannot pay the required sums to attract the best and thus they are condemned to be constantly behind the curve because of the knowledge asymmetry that is inherent in the system. In short, the variety of knowledge of the regulators is inferior to that of the sector with a consequence that regulation is inadequate.

Is there a solution to this? For example, regulation could be based upon setting hurdles that have to be overcome before market approval is granted for new products. This is how the pharmaceutical industry works (however much it is maligned, it is highly regulated): *no approval, no market access*. Could this work in banking? Should the banks just go back to being banks, safe, solid, steady and boring? This is what the debate about separating investment banking from high street banking is about. However, this is only a partial solution and the analogies between regulated products that people expose themselves to through ingestion and those which expose them financially can only be taken so far.

In summary, variety and control (regulation) are central to a cybernetic view of systems. In this last section I have alluded to the other important part of variety and control, that is, the forms of control that can be used to attenuate the effects of too much variety being presented to the regulator. That can wait for another time. In the

meanwhile, I would like to invite you to look at the morning newspaper on your ipads, tablets and netbooks, identify the systems at work and look for examples of the variety mismatches which lurk beneath the surface of the daily news.

The author would like to thank Denis Adams for his helpful suggestions during the preparation of this article.

Gordon Kennedy

References

Glanville, R., A (Cybernetic) Musing: Control, Variety and Addiction, http://www.asc-cybernetics.org/2004/glanvillepaper.htm

Maull, R. and Godsiff, P., Operationalising and Managing Variety, http://business-school.exeter.ac.uk/research/areas/topics/management/outputs/publication/?id=689

Principia Cybernetica, http://pespmc1.vub.ac.be/REQVAR.html

Mandelbulbs

Usually Mandelbulbs witters on about fractals and recursion in poetry and in nature. All very nice. This time I'd like to point your attention to an interesting blog called the Ackoff Collaboratory (thanks to Bill Tate for the heads-up) (ref: http://ackoffcenter.blogs.com/).

There are lots of juicy systems things in there and in particular the entry for 15 July 2011 has a whole list of videos regarding Stafford Beer and the cybernetic approach to management. While you are on that blog, check out the entry for 22nd August 2012 which has a link to a very thought provoking (and entertaining) Russell Ackoff lecture posted to YouTube. There is not much more to say other than go and watch.

Calendar 2013

Mon. 14th Jan. 2013 BT Business Centre, London 10-4.30pm EC1A 7AJ

- Dr. David Robinson: Using a personal VSM to introduce managers to the VSM
- Alan David: Social Networking – A strategy Dynamics Perspective
- Sally Bean et al: EA Insights and Developments
- Trevor Hilder: All Science is Systems Thinking

Mon. 8th April 2013 Manchester Business School 10-4.30pm M15 6PB

- SCiO Members: AGM
- Dr. Martin Reynolds et al: Open University Masters in Systems
- Dr. Susan Smith: Caring Behaviours assurance system – a systems-driven programme in a hospital and community context.
- Brendan O'Connell: Promoting learning within a non-systems community

SCiO Board 2012

Chair	Patrick Hoverstadt	Webmaster	Steve Hales
Membership	Jane Searles	CPD	Roger Duck
Secretary	Jane Searles	Outreach	Sally Bean
Treasurer	Steve Hales	Non-Exec	Alex Hough
Meetings	Doug Haynes	Non-Exec	Denis Adams
Newsletter	Gordon Kennedy	Non-Exec	Trevor Hilder

Website: scio.org.uk/systems
Membership enquiries: Jane Searles scio@janesearles.co.uk
Newsletter contact: Gordon Kennedy (kennedygordon85@yahoo.com)
Open Meetings: Doug Haynes doug@ei4change.org.uk
prepared using Scribus 1.4.1

SCiO