Systematic Innovation

e-zine

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In this month's issue:

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ICMM Level 0

Four Axioms, Four Contradictions And A Funeral

No sooner had the ink dried on our plans to launch the Innovation Capability Maturity Model, we began to get a bunch of questions and feedback about the applicability or otherwise of the Model to SMEs and start-up companies. Given the fact that around a quarter of all people in, for example, the UK are employed in micro-businesses (<10 people according to official definitions), and another half are employed in SMEs (<250), the questions have to be seen as significant. Any start-up business – no matter the invention experience of the individuals that might make up that business – fundamentally has zero innovation capability. Innovation being an inherently multi-disciplinary, multi-person activity that happens when the initial individual sparks of invention have occurred. Similarly, those SMEs that successfully make it through their first three years (over 90% will not!) will have done it because they were lucky enough to have found the right initial idea, or – more likely – had the persistence and sheer bloody-mindedness to stick to their belief in what they were doing. These SMEs are also unlikely to have any innovation capability per se. Their innovation problem, though, is slightly different to that of the start-up in that they have an already viable business into which they are now trying to introduce something new in order to allow them to scale-up or grow their business, as opposed to starting from a blank piece of paper.

Whether micro-business or SME, start-up or scale-up, the issue of Innovation Capability becomes fundamentally the same: they are not even on the 1-to-5 scale defined in the initial model. All of these organizations sit at some as yet undefined ‘Level 0’.

The purpose of this article is to begin the process of defining what this zero-Level looks like and, perhaps more importantly, what the journey to Level 1 might look like.

The first piece of good news emerging from our research to study and understand what a Level 0 organisation is and what their 0-1 Journey might look like is that, as in so many aspects of life, there is an awful lot of noise surrounding the important signals. Or, put another way:

Defining Level 0 turned out to be the easiest part of the story: a Level 0 organisation is one that is either just starting or one that has been in business, successfully got their initial service or product offering past some kind of sustainability tipping-point, and is now

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looking to create and instigate some kind of step-change within the business. That step-change, per our usual definition of innovation, could be a new product or service, but could equally well be a process, marketing or operational step-change. We're talking in this second case about an organization that set themselves up with a Plan A in mind, and that plan turned out (more by accident than plan in historical terms) to be 'right'.

In terms of the capability Journey of these two Level 0 company scenarios, our research to date has uncovered four critical success factors (the 'axioms' of our sub-title), four possible insurmountable-ordeal contradictions of which at least one will have to be overcome, and an over-arching philosophy, which, if not embraced, will inevitably lead to some form of funeral.

It looks like the overall 0-1 Journey story will turn itself into a sixth book in the ICMM series. Alas, things being what they are, it is likely also to be the last one in the queue to be finished and published. Hopefully what follows will provide at least a few of the key what-to-do pointers for SMEs and micro-businesses in the interim. We'll start with what we believe to be the four critical success factors:

Four Axioms

1) System Completeness – any viable business needs to have a critical mass of each of the 6 tangible and equivalent 6 intangible elements of a complete system (Figure 1):

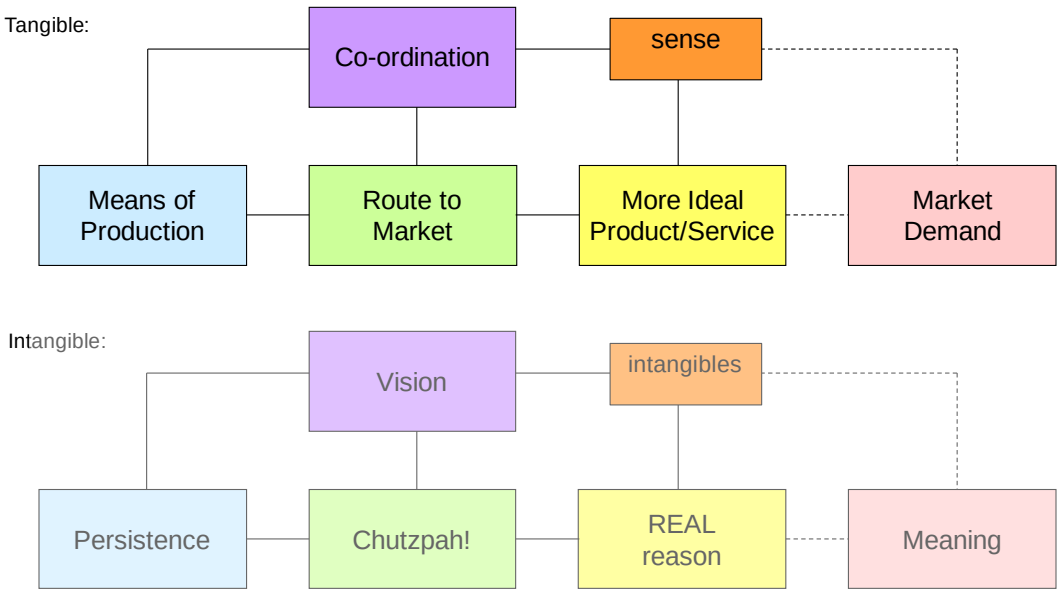

Figure 1: 6 (12) Essential Elements Of A Complete System

2) Don't Push Rivers – SMEs and micro-businesses have limited resources which need to be harnessed in the most effect ways possible. Not pushing rivers is about using these resources to their best effect. In complex systems terms, not pushing rivers is about identifying and then engineering the fluttering of an appropriate butterfly's wings in order to create the hurricane that will help take the business beyond a tipping point and into a success.

3) 'Yarak' – a Persian falconry term meaning 'super-alert', hungry-but-not-weak, and ready to hunt. Without this kind of mindset and these characteristics, in a critical mass of its people, a business will not succeed.

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Figure 2: Yarak

4) Von Clausewitz – the Austrian military strategist famously devised the number one rule for success in battle: 'the greatest number of troops should be brought into action at the decisive point'. It applies as much to small businesses as armies: the number of troops the business can acquire and harness determines the maximum size of 'decisive point' market segment the business should target at any moment in time.

Four Contradictions

As described in the overall ICMM model, each step-change advance in the innovation Capability of an organization involves a Hero's Journey. Which in turn means successfully overcoming an 'insurmountable' ordeal (root contradiction) of some kind. The exact same Hero's Journey is required in order for an SME or micro-business to jump from Level 0 to Level 1 innovation capability. To date we have identified four different possible 0-1 Journey ordeals. A business may experience all four, but will certainly need to overcome at least one in order to grow the Capability of their business:

1) Working-In Versus Working-On: one of the best SME how-to books of all time is Michael Gerber's classic-if-not-best-titled, 'The E-Myth Revisited'. The book begins with the tale of a baker. The baker loves baking, and because of their love they learn to make great bread, which in turn leads to growing popularity with customers. This in turn leads to an opportunity to grow the business in order to meet the growing customer demand. This then leads to a need to employ other bakers, which in turn creates a demand for the baker to reduce the amount of time they spend doing the baking they love and to increase the time they spend doing the far less love-able job of supervising others. Experience shows that the majority of SMEs – and just about all 'lifestyle' businesses – fail to successfully make the required transition from being a baker that loves making bread *in* the business, to being a leader that is able to work *on* the business. Of the four possible ordeal candidates, this is the one most likely to emerge as *the* root contradiction.

2) Death & Resurrection – Joseph Campbell's Hero's Journey tells us that every start-up and successful step-change within an existing business will 'require' some form of death and resurrection in the period between the arrival of 'the' innovation solution and its successful transition beyond a tipping point (Figure 3). The thing that needs to die could be one of several things, but most often it seems to be one of two main

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possibilities, either a) the 'death' of the inventor and originator of the solution (the characteristics of this person rarely being the right ones to successfully deliver the persistence needed to stick with things when times get tough) in the case of a start-up, or, b) an un-learning of some kind in the case of an already established business.

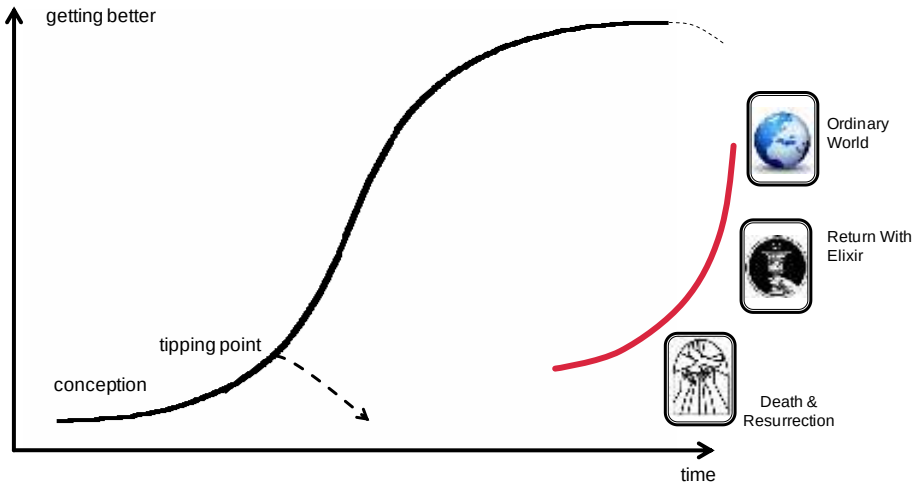

Figure 3: Death & Resurrection

3) One-Bullet-In-The-Gun: in their quest to achieve the von Clausewitz 'critical mass at the critical point', all small businesses have to weigh up the fact that they have limited resources which in many cases effectively mean there is only one chance to get things right. Either that or, a small enough critical point will have to be identified which permits a second attempt to be made if the first attempt somehow turns out to be unsuccessful. In other words there is a difficult trade-off between devoting resources to a big enough critical point to make a difference versus holding back some contingency such that failure at this critical point doesn't end up killing the business.

4) Cohort Groups: bringing more people into a business, a fairly fundamental aspect of growing it, creates a number of psychological step changes in terms of how those people relate to and view one another. What the precise step-change looks like is determined by the number of people within a business and how that number compares with the various different threshold levels we have previously talked about in regards to what we labeled the 'Cohort Group' trend – Figure 4. When the number of people within a business crosses one of these thresholds, a step-change in the design and management of inter-relationships between those people becomes necessary:

Figure 4: Cohort Group Trend Thresholds

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A Funeral

Simultaneously both an inevitable-death causing threat to a business and a life-saving opportunity is the over-arching philosophy that surrounds our oft-told story of two men being chased by an angry bear. When one of those men stops to don a pair of running shoes, he's made the crucial realization that the job is not to out-run the bear, but rather to out-run the other man. So it is with any micro-business or SME. Success comes from not out-running their equivalent of the bear – big business incumbents – but, having determined their von-Clausewitzian 'critical-point' making sure they out-run the other SMEs and competitors heading towards the same point. Too many SMEs, in other words, get too enamoured of the David-versus-Goliath story and make the mistake of thinking that every David beats every Goliath. In reality, almost no David's prevail. David-versus-Goliath stories tap into the heart of the human psyche. We love to hear these kinds of story because they inspire us to our own greatness *or* allow us to vicariously live the David part without fear of actual harm. Funerals arise when small businesses mix up these two emotional responses.

Precursor To A Funeral

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Intangible Resources #1:
Belief & The Leaky Integrator Valve

My father is adamant that if he tries to drink coffee after 6pm, it will keep him awake the whole night. I, despite the fact I come from the same genetic stock, am very happy to be drinking double expressos at 2am knowing that they will have no impact whatsoever upon my ability or otherwise to get to sleep once the lights go out. I propose that the difference between these two polar-opposite perspectives, if we can understand what's actually happening, can provide us with a significant resource that might be applied to just about every scenario involving humans. It is, of course, a resource that any successful brand successfully taps in to. Albeit, at this point in history, more often by accident than deliberate, engineer-able science. When people spend a (usually considerable) premium to buy, say, a branded pain-killer over a generic, private label equivalent, they do so because they believe it will cure their headache and that the generic product will not. Belief – in either a positive or negative direction almost invariably becomes fact. 'Scientific evidence' will repeatably demonstrate that branded pain-killers do indeed 'work better' in the eyes of patients than generics do. But that does not mean there is any difference at all between the actual formulation or active ingredients of the two. More often than not, there is none at all. The reason one *does* perform better than the other is because patients believe it works better. And belief invariably makes some kind of difference. Frequently – if the brand owner does things right – a big enough difference to make all the difference.

Understanding this issue of 'big enough' is, I propose here, critical to the successful realization of 'belief' as a potentially enormous intangible resource. Get it wrong ('your amputated leg didn't grow back because you didn't believe 'enough'') and belief is not a resource at all; get it right and apparent 'miracles' can be made to happen.

Let's come back to the father-versus-son caffeine problem. First a couple of objective facts:

1) Caffeine is a stimulant
2) Stimulants have the physiological effect of making humans more rather than less awake.

By rights, therefore, the presence or otherwise of caffeine in our body should have some kind of influence over whether we get a good night's sleep or not. So why does it affect my father so dramatically and me 'not at all'?

To try answer the question let's try and build some kind of model of how the sleep/no-sleep mechanism works inside our brain. We take our initial inspiration in constructing this model from one of our big-picture-thinker hero's, Steve Grand (Reference 1). Grand introduced the idea of the brain as what he called a 'leaky integrator'. What we'll try and do here is extend the basic model to examine how we make decisions.

First up, come a recognition that 'asleep' and 'awake' are two discontinuously different states. As in lots of models, this is not entirely true, but true enough that it justifies the model. The model in this case is shown in Figure 1: which shows a see-saw that, if it tips far enough, causes the transition between the two states occurs. The thing that causes the see-saw to tip in the direction of 'asleep' is a bucket labeled 'sedative'. The transition from a desire to do something ('go to sleep') and us physically achieving that desire is achieved by the creation of chemicals that then trigger a physiological response. Hence, when we

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say to ourselves, ‘I want to go to sleep now’, our brain instructs our internal chemical factories to start producing ‘go to sleep’ chemicals. These chemicals find their way into the ‘sedative’ bucket on the left hand side of the see-saw. If we can pour enough chemicals into this bucket, the see-saw tips and eventually reaches the awake/asleep transition point. Sometimes this is easy, but sometimes not so. In Grand’s model, one of the fundamental problems is that the bucket has a leak. This leak is important to us, because if it didn’t exist we’d soon flood our body with chemicals and none of the see-saws would work any more. In this leaky-bucket model, we now see that achieving the sleep state is all about generating ‘go-to-sleep’ chemicals at a fast enough rate that we pour chemicals in to the bucket faster than they are leaking out.

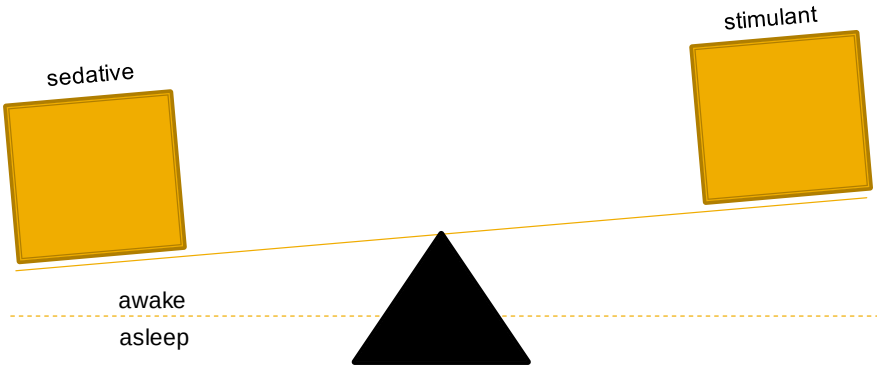

Figure 1: The Asleep/Awake Transition As ‘See-Saw And Two Leaky Buckets’ Model

Now let’s look at the other side of the Figure 1 see-saw. On this side, is another bucket, this time labeled, ‘stimulants’. This bucket works in the same leaky way that the ‘sedative’ bucket works – only this time, we fall asleep only if this bucket is empty or leaks fast enough that the net flow into the ‘sedative’ bucket is faster the net flow in to the ‘stimulant’ bucket. When we consume a cup of coffee, we inevitably introduce chemicals that find their way in to this ‘stimulant’ bucket. As such, we tend to tip the see-saw away from the ‘asleep’ transition point.

As far as my father’s belief in the ‘no later than 6pm’ rule, there is some kind of recognition that because the stimulant bucket leaks, provided he ingests the caffeine before this critical time, the contents of the bucket will have leaked away by the time he goes to bed.

Now let’s start adding the ‘belief’ aspect of the story in to the see-saw model. In the case of my father, his belief that drinking coffee after 6pm will keep him awake in effect acts as a valve that in effect reduces the leakage out of the stimulant bucket. And then, because this bucket stays fuller for longer, he needs to pump more chemicals in to the ‘sedative’ bucket to compensate.

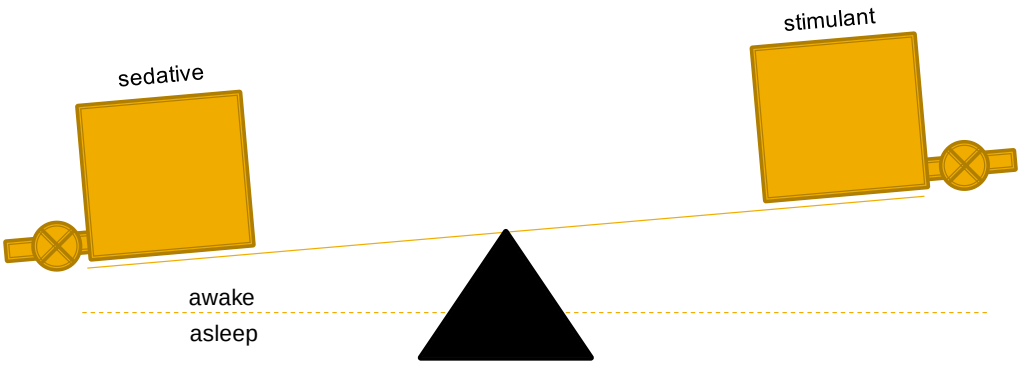

Figure 2: See-Saw Model Plus Belief Valves

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The fact that he really does stay awake if he drinks a coffee after 6pm is the 'closed' stimulant release valve means no matter how many 'go to sleep' chemicals he generates on the other side of the see-saw, he can't generate enough to cause it to tip past the critical point.

I, on the other hand, because I 'know' that caffeine won't keep me awake no matter when I drink it, have in effect, allowed myself to fully-open the stimulant bucket release valve. Actually, maybe not quite. Belief, I think, absolutely affects the characteristic of the valves – both in terms of opening the one to empty the stimulant bucket, and, on the other side of the see-saw fulcrum, closing up the sedative leakage valve. But I also think that my beliefs allow me to trigger or accelerate the generation of the chemicals needed to fill the 'sedative' bucket.

Whether it's about changing the behavior of metaphorical valves or pouring chemicals faster into buckets, I'm ultimately not sure. But then I'm not sure I need to be sure. The model is good enough at this level to help explain how the intangible 'belief' resource works inside our brain and body.

Without having any numbers whatsoever to back it up, I also believe that because there are inherent (physiological) limits that determine how quickly I can fill buckets with chemicals and how leak-proof I can make the valves, 'belief' can ultimately only have a limited maximum effect on how these decision see-saws work.

The reason I will never be able to re-grow an amputated limb is because there are no chemicals I can generate that can ever fill up a bucket labeled 'grow a new leg' to tip the see-saw past a critical new-leg/no-new-leg transition point.

For those situations where I *do* know how to generate the relevant bucket-filling chemicals, my belief is that my beliefs can in effect alter the generation and leakage affects by up to somewhere around 50%. That may of course be my own self-imposed belief limitation (!). To some extent at least. Whether the number is right or wrong, I believe the error will be of the order of a few percentage points rather than orders of magnitude. I also already find it to be a useful addition to the basic see-saw model. My basic justification for the number – in true 'someone, somewhere solved your problem' fashion – brings me back to the sorts of price premium that branded goods tend to sustain over and above the generic private label equivalents:

Our willingness to pay a typically 50% premium for a branded, say, painkiller 'knowing' that it will work tells us that when we are using such a product, it effectively comes with a set of valve-opening and valve closing handles that the generic version did not have. And that in turn will cause our headache/no-headache see-saw to tip into the 'no-headache' zone very soon after we swallow the pill. Our lack of belief that paying 75% more for the product, or double, or any other number greater than 50% will cure us any better, and our lack of belief that a product costing only 1% or 5% more than the generic would work at all, combine to tell me that somewhere in between the two extremes – i.e. at somewhere close to the 50% price difference (although interesting to notice the premium alters somewhat for different types of product) – we have calibrated the maximum potential of the 'belief' resource.

Your new mission right now, should you choose to accept it is, 'knowing' the 50%-belief intangible resource exists, how you make practical use of that resource. For me it's 'believing' that I can drink coffee at 2am without any effect on my sleep, and never 'having' to buy branded medication. Or indeed branded anything. Except possibly guitars… which might ultimately, I fear, need a whole new kind of see-saw model.

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Reference

1) Grand, S., ‘Growing Up With Lucy: How To Build An Android In Twenty Easy Steps’, Weidenfeld & Nicolson; illustrated edition, January 2004.

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Toilet Humour

During one of our regular trawls through the treacherous waters of bad design, we chanced upon this rather wonderful example of space-saving design, a rather unusual (in a good way, obviously) illustration of Inventive Principle 7C, 'allow one object or system pass to pass through an appropriate hole in another':

That – of course – sent us off looking for potential other toilet-based illustrations of other Inventive Principles. The search didn't take long….

…Principle 5? (or maybe 10?)

Or how about Principle 16 (in terms of name) and 14, and the 'iPoo' Toilet Seat by prestigious designer (by his own admission!) Milos Paripovic. The (real) seat is apparently designed for Apple fans. The seat is compatible with iPod, iPad 3, iPhone 5 and MacBook Air. In addition, the iPoo is also made of the same material as iProducts, so you can easily remove dirt splashes. "This toilet has exactly the same function as any other toilet and costs only twice as much for the same performance; but you will agree it is all about style and taste. And this is very cool and modern toilet design"

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On a similar ‘design’ theme comes a rather good Principle 17 solution to another frequent toilet problem:

‘Toilet Pages’, designed by Jan Ctyrtnik, is an innovative tabbed toilet seat that, it says here, is a perfect solution to the problem of wet and soiled toilet seats. In the Toilet Pages design there are multiple tabbed toilet seat each with a single user. So, the next time you want to sit on the toilet, all you have to do is select your personal tabbed toilet seat which will be available in the clean state as per your choice. Surely nothing can go wrong with that idea?

Meanwhile, for those looking for a slightly more hands-free, but still ‘design-y’ solution, all hail the instigator of the (Principle 9? 23? – the possibilities seem endless) Virgin Mary urinal….

…no offence intended. Apparently.

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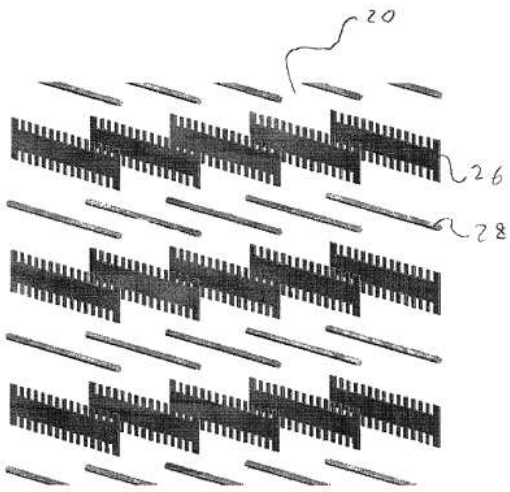
Patent of the Month – Pulsed Corona Discharge



There are few things in life finer than field-based solutions. Unless they're pulsed fields. Or – heaven of heavens – pulsed fields that also somehow manage to make use of segmented surfaces as well. How great would that be from a TRIZ/SI trend holy-trinity perspective? Well, here is your chance to see for yourself. Patent of the month this month manages to elegantly combine all three parts of the trinity: US8,173,075 was granted to (Russian – a clue?) inventors at Drexel University in Philadelphia.

Pulsed Corona discharge isn't a new invention, having been around in some form for several decades now. The problems that have kept the technology away from the mainstream have typically related to some of the 'devil-in-the-detail' peripheral application issues. Here's what the inventors have to say about what they see as the main one:

Pulsed corona discharge based systems are among the most promising approaches in the field of environmental control technology. Such systems are used for the cleaning of water, air, furnaces, fuel and vent gases. The systems are also used as electro-precipitators with pulsed power supplies, as well as for ozone generation. Further development of these systems is limited by the lack of cost-effective and reliable power supplies that can generate short high voltage pulses and that have the necessary characteristics for industrial applications. Methods for matching these power supplies with a non-linear load of pulsed corona discharge are also lacking. This matching is desirable in order to achieve reasonable energy input efficiency into the pulsed corona discharge.

Today most of the methods for pulsed corona discharge generation are based on the use of thyratrons, which are gas-filled hot-cathode electron tubes in which the grid controls only the start of a continuous current thus giving the tubes a trigger effect, or triggered spark gaps (with a third electrode or rotating electrodes). These methods have the following drawbacks: Industrial thyratrons, as well as triggered spark gaps, are relatively expensive and have a short life time as generators of short pulses. Moreover, use of thyratrons or triggered spark gaps demands additional power for thyratron cathode heating, or for the formation of control pulses (triggering) or the rotation of electrodes. This reduces the overall energy efficiency of the pulse generator.

The use of untriggered spark gaps that have the best time characteristics when generating single pulses in conventional methods with ballast (serial) resistors results in very large energy losses during charging of the discharge capacitor (Ohmic heating loss can be more than 50%). Furthermore, the typical untriggered spark gap cannot provide the high frequencies of pulse generation (1000 Hz and higher) that are necessary for commercial applications of the pulsed corona discharges such as gas cleaning, or ozone generation.

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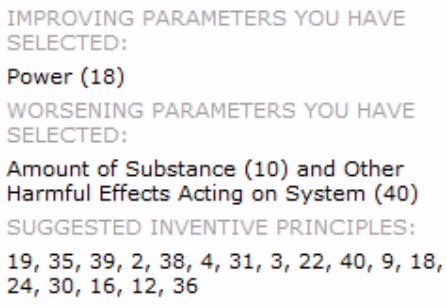
Russian patent no. 2144257 discloses a device that was developed for generation of short pulses of high voltage for ignition of pulsed-periodic electric discharges like pulsed corona discharges or pulsed barrier discharges. The device can generate high voltage pulses with extremely short rise times (up to 5-10 ns) with high pulse repetition frequencies (about 2000 Hz) and with a maximal energetic efficiency of the device (COP on the level of 90%). The device comprises a high voltage power supply, a discharge capacitor, and a high voltage commutation switch that connects a discharge capacitor and a load. The high voltage power supply comprises a main rectifier, a semiconductor converter, and one or more pulsed high voltage transformers that provide charging of the discharge capacitor by small portions that form in each operation of the converter, so that the frequency of charging pulses of the discharge capacitor is at least three times larger than the frequency of the high voltage communication switch operation. The high voltage communication switch is made as an untriggered spark gap in which one or both electrodes are made in the form of one or several pins, threads, needles, blades or other components with sharp edges, so that corona discharge appears on these edges when the voltage between the gap electrodes is still below the breakdown voltage.

The method used in this above device has one important drawback: The residual high voltage exists on the electrodes of the pulsed corona chamber between corona pulses. This voltage corresponds to an extinguishing voltage of a corona discharge. Because of this drawback this device cannot be used for the generation of a corona discharge in the presence of droplets of water (e.g. spray, fog) or other conductive liquids in the discharge chamber. This option is extremely important for most commercial applications of the pulsed corona discharge for gas cleaning to enable hetero-phase plasma chemical reactions.

Therefore, there exists a need for providing a method and system for the generation of high voltage, pulsed, periodic corona discharges capable of being used in the presence of conductive liquid droplets.

Here's how we might best map this voltage generation versus conductive liquid droplets problem onto the Contradiction Matrix:



And here's how the inventors have discovered how to resolve the problem (hint: don't expect too big a surprise hear given the 'holy trinity' discussion from earlier and mention of the Surface Segmentation trend – or Inventive Principle 3):

…discharge chamber electrodes 20 are designed to increase stability of pulsed corona discharge generation. Electrodes 20, as shown, are made as alternate rows of parallel plates 26 with sharp cogs and rods 28, or, alternatively, as round rods. Thus, electrodes 20 may be formed as plates provided with a series of protrusions along at least one side thereof. This electrode system is almost transparent for liquid spray or fog droplets and minimizes formation of continuous rivulets or streamlets of conductive liquid that may short-circuit the discharge, or spark gap 12. The invention thus encompasses various electrode designs that substantially eliminate formation of continuous streams of conductive liquid on the electrode and therefore various different shapes of electrodes can be employed as long as the electrodes meet this criteria.

Simple when you know how.

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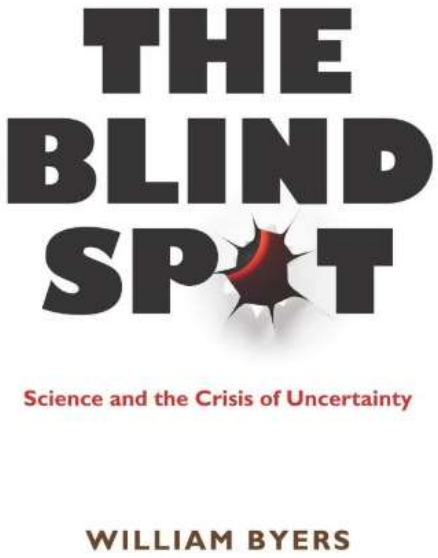
Best of the Month – The Blind Spot



‘This book is about science, what it is as opposed to what people say it is; what scientists do as opposed to what most people believe they do. Science is what we use to understand the world and to understand ourselves.’ So begins the Preface of this month’s best of the month selection. Author, William Byers, goes on, ‘modern civilization is in crisis! We face not just one crisis but a whole series of connected crises… [but] what looks like a series of disparate crises is really one crisis that manifests itself in various ways’. In other words, Byers has conducted a root-contradiction analysis of the world. And come to the conclusion that it is our collective mis-understanding of science that lies behind the multitude of other more visible problems around us.

The Blind Spot is the analogy Byers then uses to explain the mis-interpretation root contradiction. Like the blind spot evolved into the form of the human eye, our view of the world of science suffers from things that we (fundamentally – a key part of Byers argument) cannot see, but which we try and compensate for by ‘filling in the gaps’. Then, in the same way that an optical illusion is able to demonstrate the errors that can result from tricking the blind spot in our vision system, Byers shows how our often erroneous assumptions about the world create a similar set of potential errors about our world view.

As you may already have gathered, this is a book about the philosophy of science. If that doesn’t sound so good to you, don’t worry, it’s also a very readable book about the philosophy of science. Which may just turn out to be something of a world first; the words ‘philosophy’ and ‘readable’ only rarely ever finding themselves sitting comfortably in the same sentence.

The root of our collective scientific blind spot, then, is the difference between a worldview we might describe as the ‘science of certainty’ versus one Byers describes as the ‘science of wonder’. At the core of this difference is our understanding or otherwise of complex systems. Byers argues, convincingly this reviewer thinks, that people with the former worldview – in other words those people that the goal of science is to generate the absolute rules that in turn determine the way in which the world works – are people who are always going to feel somehow betrayed when scientific research (inevitably) fails to deliver, and that the scientists have therefore ‘let us down’.

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'My claim is not simply that we lack sufficient knowledge or wisdom to predict the future evolution of the biosphere, economy or human culture. It is that these things are inherently beyond prediction. Not even the most powerful computer imaginable can make a compact description in advance of the regularities of these processes. There is no such description beforehand. Thus the very concept of a natural law is inadequate for much of reality'.

In proposing a 'science of wonder' as an appropriate alternative worldview, Byers potentially falls into the same hole into which people like Edward Matchett have in the past fallen. The very term sounds 'new-age', 'fluffy' and generally the words of someone we probably imagine reading and believing groundless guff like The Secret. Matchett's equivalent failing was to use the word 'media' to describe the 'unknowns' that surround us, except in his case, we tend to get the wrong end of the stick because the word means something completely different in the 21st Century to what Matchett intended back when he coined the term in the 1980s. Neither the word 'media' nor the word 'wonder' seem adequate. But – crucially – their respective originators mean exactly the same thing. Get beyond this difficulty (remembering Byers is a renowned Professor of Mathematics helped me!) and an awful lot of things will start to fall into place.

Remember Alfred Korzybski's expression 'the map is not the territory' and you'll be pretty much all set to get an awful lot of insight through a cover-to-cover read of The Blind Spot. While I'm not massively convinced about Byers suggested conclusions and solutions to the global blind spot problem, I'd have to say I think he's pretty much hit the nail on the head when it comes to defining the right problem. And as anyone in or around the SI world knows, getting to that point is over half the battle.

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Conference Report – UK TRIZ Forum #4

15 and 16 May saw the convening of the 4th annual UK TRIZ event, held yet again at our HQ offices in Clevedon. A modest yet keen group of just over 20 people turned up to hear Darrell talking about the about-to-be-launched Innovation Capability Maturity Model on the first day, and a 13-presenter cornucopia of goodies on day 2:

Very encouraging was the high proportion of first-time presenters at the event. The big benefit here was that, even though overall numbers weren't up, the event had a fresh feel to it: great to see some familiar faces, greater to hear some new perspectives.

As in previous years, there was no overall theme to the event (having cancelled it twice – literally – this year due to lack of papers (thanks to Hannah for ignoring me and continuing to chase potential presenters!), it was a case of making the best out of what eventually turned up), everyone seemed to agree in the wrap-up at the end that the rollercoaster ride was one they were glad they attended. Stepping back from the events of the day, it is perhaps quite telling how little material was presented in the strict domain of TRIZ, and how much of it focused on the behavioural, business and 'intangible' aspects that surround the use of TRIZ. Almost as though the development and use of TRIZ is the 'easy bit' of the innovation process, and that it is the combined effect of the thorny surrounding stuff that determines whether an innovation project will be successful or not. Quite telling in this regard is the fact that a fair proportion of the presenters prefaced their presentations with apologies that they didn't consider themselves 'TRIZ experts'. If this might start alarm-bells ringing to the long-term TRIZ aficionado, rest-assured what each of these presenters contributed was, in the humble opinion of this reporter, a valid and meaningful contribution to the art. No need to pick out any particular favourites… I suspect if we'd had a survey at the end, there would have been almost as many candidates as presenters… rather simply

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say that those who weren't able to attend would be well advised to get hold of a copy of the proceedings CD (get hold of Hannah for more details of how to do this).

One thing that was unique about the event this year was that, comparatively speaking, we ran pretty much to the originally planned timetable. Which is to say that we had time for a lively discussion at the end of the day on whether and what to do about possible future events. The widely held consensus was that there was a definite need for some kind of Forum in 2013, and probably (get it in your diary) around the same time of year – the week of 13-17 May. As to the scope, location, hosting and possible themes, Mike Newnham kindly offered to chair a lean-and-mean committee to take care of the design and planning needed (anyone interested in contributing should get in direct contact with Mike). Secondly and, I think, also encouraging, was a stated desire to run a session about if and/or how TRIZ/SI/method-X might be better deployed within the UK. Shock, horror, the session might look to using the tools on offer (most likely TrenDNA in at least the first portion of the work) to explore the future of said tools. Action for organizing and facilitating this event was accepted by myself, and the initial thinking is that we will run this session with, likely up to 12 participants, during the normally quiet month of August. Anyone interested in participating as one of the twelve should, first, get in touch with Darrell, and second, tap in to the TRIZ UK LinkedIn Group dialogue that we hope will help us to work out what the right question(s) to be answered are before we arrive at the August workshop session.

Rapt audience for Mr Frobisher's Vegetable-Themed Presentation…
'Cauliflower-and-hammers' are the new Powerpoint'

Thanks, finally, to all who took part. Imminent collapse of Greece, Spain, Portugal, Euro-pending, we wish everyone a safe and prosperous 12 months in the run up to Forum #5.

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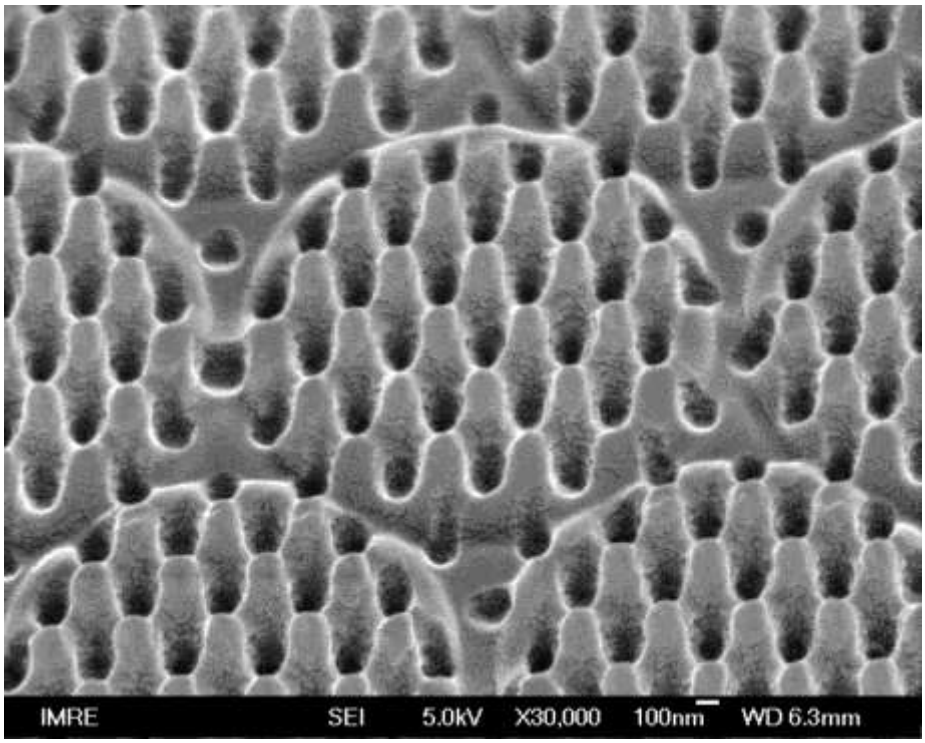
Investments – Anti-Reflective Plastics



Innovative plastics offer improved performance and wider viewing angles over existing anti-reflective plastics in the market. This plastic uses a nanotechnology method that creates a complex pattern of super tiny structures that mimic the patterns found on a moth's eye, which has a unique method of diffusing light.

Researchers from Singapore-based A*STAR's Institute of Materials Research and Engineering (IMRE) and their commercial partners have developed a new plastic that reflects just 0.09-0.2% of the visible light hitting its surface. This matches or betters existing anti-reflective and anti-glare plastics in the market, which typically have reported reflectivity of around 1% of visible light. Such plastics are used in anything from TV displays to windows and even solar cells. Because of the unique nanotechnology method used, the new plastic developed by IMRE maintains very low reflectivity (<0.7%) at angles up to 45˚. This means that TV viewers can have wider viewing angles with less glare and organic solar cells have larger areas for light absorption.

"The new plastic was made possible because of the unique nanoimprint expertise that we have developed at IMRE," said Dr Low Hong Yee, the senior scientist who is leading the research. Several companies are in the process of licensing the anti-reflective nanostructure technology from Exploit Technologies Pte Ltd, the technology transfer arm of A*STAR. "We are also developing complementary research that allows the technology to be easily ramped-up to an industrial scale," explained Dr Low.

This plastic material is the first successful result of the IMRE-led Industrial Consortium On Nanoimprint (ICON), which partners local and overseas companies to promote the manufacturing of nanoimprint technology. Nanoimprinting relies on engineering the physical aspects of the plastics rather than using harmful chemicals to change the properties of the plastic. The technology has allowed the researchers to create very unique, complex hierarchical 'moth eye-like' anti-reflective structures where nanometer-

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sized structures are placed on top of other microstructures -- different from how other similar plastics are made. This formed special patterns that are better at reducing glare and reflection and provides wider viewing angles than the current available plastics. "This is an exciting innovation -- mimicking nature through the nanoimprint technology to solve real world problems. I am very pleased that the collaboration with industry has helped move this R&D from the laboratory to application in the industry, said Prof Andy Hor, IMRE's Executive Director. He adds, "The development of the new plastic is a testament to the strength of Singapore's advanced R&D capabilities, the benefits of nanoimprint technology and the confidence that companies place on our technologies."

Combined use of hierarchical/nested structures and holes…. What could be better. And all thanks to a biomimetic study of moth-eyes.

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Generational Cycles – Gemma Hayes

Last night I went to see the utterly lovely singer-songwriter Gemma Hayes at her gig in the fair city of Bath. There were about 40 of us present, which was good from the perspective of getting up close and personal, but not so good from the perspective of working out how it could be possible that so few people had turned up to see someone with so much talent. Admittedly it was a Monday night, but even so, it felt like something must've gone wrong somewhere.

In addition to being a wonderfully engaging performer, Ms Hayes was also pretty good at between song story-telling. One of the stories she told hit what I thought was a strong generational chord. Born in 1977, Ms Hayes bears all the characteristics of late-period Generation X. The story involved an evening when she was performing a show at which the X-Factor judge, Louis Walsh (born 1952 = classic mid-period Baby Boomer) was present. Apparently impressed with her performance, Louis requested a meeting. At which, shortly after she stepped off the stage, he told her that he could make her into a star, and was she interested?

She nodded hesitantly. Louis went on, 'there are just a couple of changes I think we'd need to make'. Assuming this meant things like changing the style of her hair or way she dressed, Gemma nodded some more. 'Number one,' Louis continued, 'stop writing songs. Number two, go date a few celebrities'.

At this point, for readers not familiar with Mr Walsh might like to know that he got his X-Factor judge position in no small part due to his consistent success over the last two decades as something of a star-maker. To that end, taking his suggestions objectively, there was a lot of sense contained in his words: there are a million songwriters in the world, so why not cream the best of all of them and have Gemma perform those songs? And, to the second point, being famous generally speaking means being featured in the tabloid press on a regular basis. That coupled with the fact that Ms Hayes is extremely easy on the eye would appear to form a wholly logical connection.

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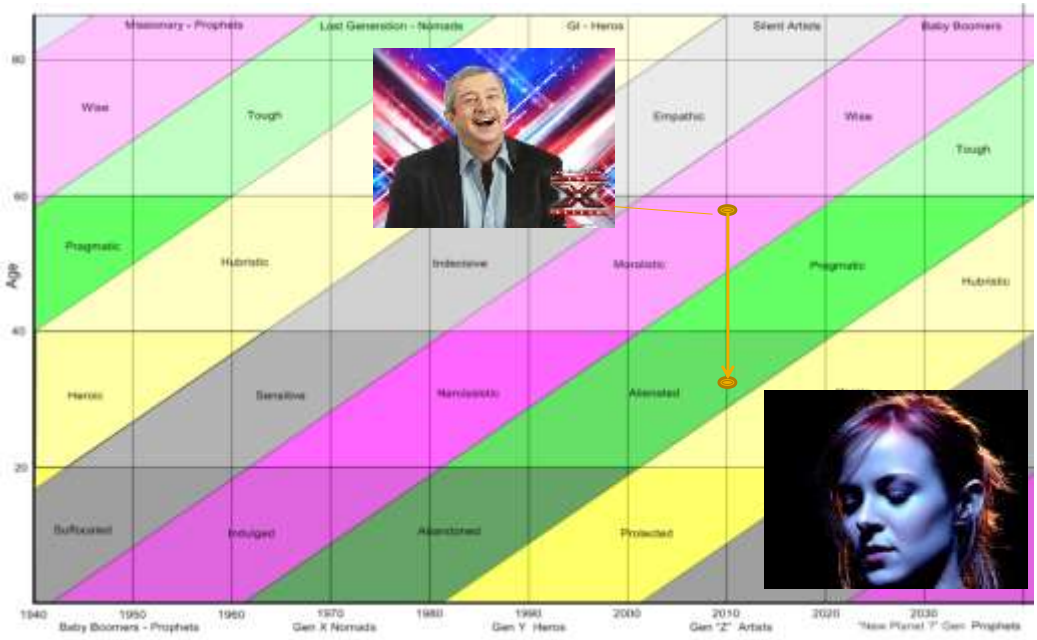
‘Are you in?’ Louis asked Gemma.

‘I’m out,’ said Gemma.

Thus fulfilling a prophecy we could have made in just about any Boomer-speaking-to-GenX scenario:



Anything emanating from a moralistic Boomer mouth is very likely to be rejected by alienated GenX’er, no matter how compelling the logic. The primary GenX driver is ‘don’t sell out’, and anything involving Louis Walsh immediately carries the scent of doing exactly that. Not to mention the veiled insult that Ms Hayes’ songs weren’t up to scratch. Never mind the fact that there are four albums worth of very good songs indeed in her name.

Playing to 40 people on a Monday night in Bath is a very telling consequence of ‘not selling out’. Maybe even carrying the hint of a contradiction… one of the myriad GenX contradictions (out of all the four generational archetypes, Nomadic X-ers are by some distance the most conflicted). Here’s another one:

Halfway through her set, Gemma played a blistering cover of (Baby Boomer) Kate Bush’s classic song ‘Cloudbusting’ (http://gemmahayes.com/mp3/ if you want to hear it for yourself). It was breathtakingly good. It also, by some margin, received the loudest applause and cheers of the night.

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Biology – Reflectance Basking

Ah, biologists. Never seemingly able to agree with one another about the way of the world. There are various perspectives on the existence or otherwise of the reflectance basking phenomenon in butterflies, some adamant that the effect exists; others the opposite. Speaking as an ex-thermal-management engineer, my vote goes against the half-baked experiments to disprove the presence of the effect, and for those that say it is real. So here goes:

Butterflies are cold-blooded creatures. They may need the sun to warm their wing muscles so they can fly. They fly best when air temperatures range from 75-90 degrees; so when it's cooler, they bask, using the sun's heat to warm their bodies. A large, flat rock in the butterfly garden provides a warm spot for basking when the temperatures are cool. When temperatures get too warm, butterflies seek shade.

The most common basking position is with the wings positioned flat, facing the sun. Butterflies that bask this way often have black bodies and dark colored areas on their wings. Most common among Satyrs (Satyridae) and Sulphurs (Pieridae) is lateral basking with wings folded and facing the sun. This is because the undersides of their wings are darker than the topsides, or the bases of the wings are darker than the edges. In a third type of basking, called reflectance, the wings are used to reflect the sunlight to the butterfly's body rather than absorb it – the body being the place that needs to be warmed the fastest in order to get the muscle system up and running as quickly as possible. Butterflies that use reflectance basking, such as whites, blues and coppers, have lighter colored wing ends so that energy from the sun is reflected onto the (usually darker) body.

Reflectance basking is most efficient when the butterfly basks with its wings half open, so as to both help focus the reflected energy onto the thorax, and ensure that the heat produced by sunlight falling directly on the dark thorax is contained within the "cage" of the half-open wings, rather than being dispersed on the breeze.

Here's how we might map the reflectance basking story onto the Contradiction mapping template:

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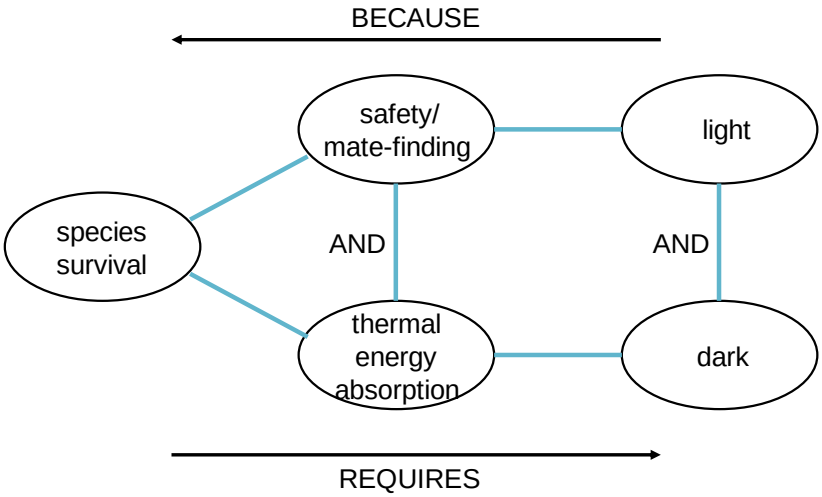
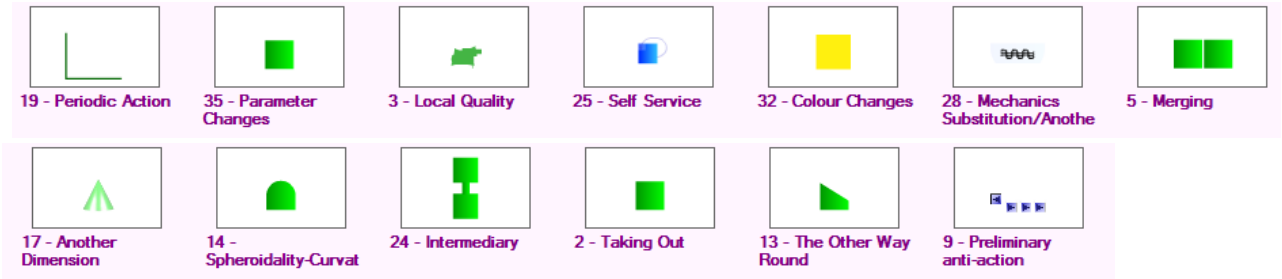


And here's what the Matrix+ software wizard suggests as the ranked list of strategies used by others to resolve similar issues:



What this output does, of course, is mashes-up several different specific conflict pair problems into an overall priority sequence of Principles. In terms of mapping to reflectance basking, most obvious is the presence of Principle 32, Colour Change (which, in its modern form, specifically now talks about making use of the emissivity (= 1 – reflectance) properties of an object. The light wing and dark body part of the solution gives us a good illustration of the Local Quality Principle. And Principle 17, Another Dimension gives a similar strong nod to the idea of half-open wings – as opposed to flat or folded. Digging deeper, and there is also a pretty good case for saying that the reflected energy from the wings is an Intermediary to provide additional heat input to the thorax. Not to mention our old friend Self-Service and the use in this case of 'waste resources'.

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Short Thort

"There has to be an end somewhere,
It's just that nothing's labeled, 'this is the end'.
Is the top of a ladder labeled, 'this is the last rung,
Please don't step higher than this'?"
Haruki Murakami, IQ84

News

IIT (Bombay)
We are pleased to announce that we will be running another round of workshops at IIT. So far scheduled will be a 2-day Systematic Innovation workshop to be held on 18 and 19 October. More details will be shown on the diary page of the website as they become confirmed.

GenerationDNA
Given the enormous interest in the Generational pattern story as it exists in different parts of the globe, we will be running a first 'beta' version of a one-day workshop dedicated to just this topic. 4 July in London seems to be the chosen day and geographical location. Anyone interested in attending should contact Hannah for more details.

TrenDNA Workshop
Speaking of July, part of the reason for convening the GenerationDNA event in London is that we are running a one-day TrenDNA 'Voice of the Customer' workshop at the Institute of Directors HQ in the capital on 3 July.

UK TRIZ Forum #5
Following the small-but-successful Forum #4 (see the Conference section of this ezine), the attendees agreed we should do it again during the same week next year. By way of re-thinking the size and focus of the event, Mike Newnham kindly agreed to chair a committee to design how we do it and what we do next year. Anyone interested in getting involved should get in touch with Mike directly.

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UK TRIZ Forum #4
In case you didn't read the conference review, readers that weren't able to attend the event in person can re-live at least the presented slides by ordering the conference CD from the Systematic Innovation on-line shop.

Public Workshops
We will be running another series of public Systematic Innovation Certification workshops in the third and fourth quarters of 2012. The Level 1 workshop will take place on 19 and 22 September. Level 2 will 30 and 31 October, and Level 3, 22 and 23 November.

New Projects
This month's new projects from around the Network:

- Automotive – IP strategy study
- FMCG – SE Asia TrenDNA/anthropology study
- Pharma – Sweat project
- Materials – IP creation & proof-of-concept experimental programme
- Creative – innovation workshops
- O&G – IP licensing
- FMCG – ICMM evaluation
- Government – strategic study

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