Systematic Innovation

e-zine

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In this month's issue:

The Systematic Innovation e-zine is a monthly, subscription only, publication. Each month will feature articles and features aimed at advancing the state of the art in TRIZ and related problem solving methodologies.

Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.

Readers' comments and inputs are always welcome.
Send them to **darrell.mann@systematic-innovation.com**

Apple's Perfect Storm?

In the past six or so months I've noticed a significant shift in what I hear people saying about Apple in their emerging post-Jobs world. A company that could seemingly do no wrong prior to 2012, suddenly seems to have lost a chunk of its mojo, with share price plummeting by almost a third in the past few months. Is this a temporary blip, we found ourselves wondering, or the start of a more serious set of problems. We decided to investigate.

The first thing we did was scour the media for perceptions of things that had the potential to adversely affect the future of the company. We found twenty basic comment clusters:

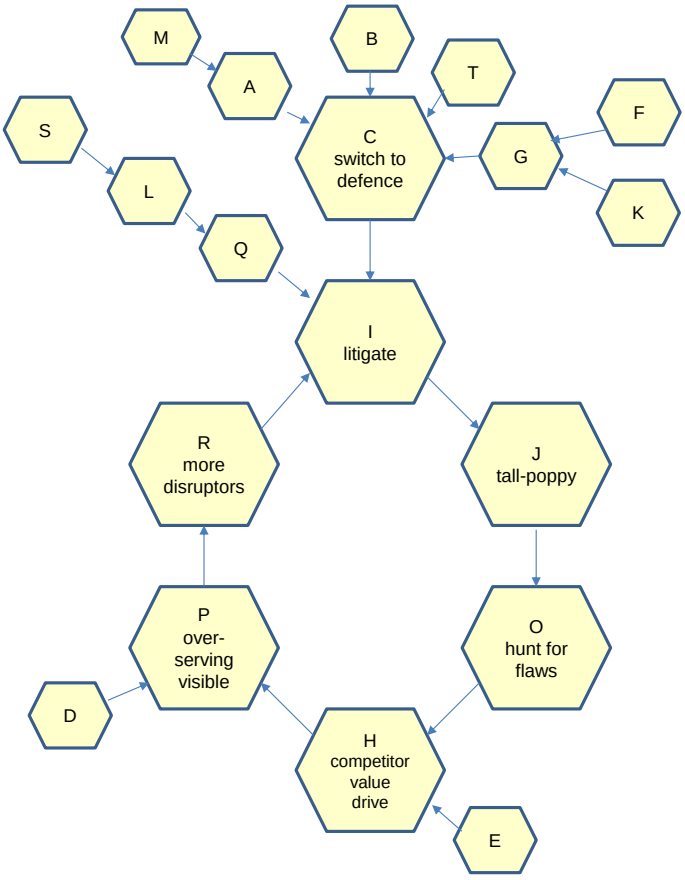
identifier	Thing's Hazarding Apple's Future…
A	(celebrity) talent leaving
B	increased market share means increasingly difficult to be the 'cool' brand
C	forced switch from attacking to defensive market position
D	products increasingly over-serving the market
E	customers beginning to resent closed eco-system
F	shareholder perception that Jobs Effect crucial to success
G	no 'maverick' successor to Jobs
H	Samsung's aggressive value drive
I	company now more inclined to litigate than out-innovate
J	Tall Poppy Syndrome – many people now want them to fail
K	Jobs never wanted there to be a successor
L	there is no 'next big thing' on the horizon
M	Apple has a 'starter' culture – never had to do mature products
N	competitors have now learned the business-innovation play, so no longer a unique Apple advantage
O	relative un-reliability of products has become a talking point
P	Samsung have made Apple 'over-serving' very visible to public
Q	lack of understanding of growing Asia markets
R	markets have increasing opportunities for disruptors
S	weak IP portfolio
T	Nokia have to go on the attack to survive

In its own right, although this list didn't make for great reading, there didn't appear to be anything that could be called catastrophic. Every maturing company, to some extent has to endure similar growing pains. So we decided to conduct one of our Perception Mapping exercises, in the belief that very often the most significant pictures begin to emerge, not when we look just at the problems, but at the relationships *between* the problems.

The following table re-draws the list of problems, with a new column added to describe what we think are the best 'leads-to' connections between each of the problem statements. As ever with these kinds of exercises, we invite readers to verify the appropriateness of our evaluation in order to confirm or otherwise the likely merits of the perception map that the connections will allow us to create. Here's the table we produced when we did the exercise:

identifier	Thing's Hazarding Apple's Future…	leads to..
A	(celebrity) talent leaving	C
B	increased market share means increasingly difficult to be the 'cool' brand	C
C	forced switch from attacking to defensive market position	I
D	products increasingly over-serving the market	P
E	customers beginning to resent closed eco-system	H
F	shareholder perception that Jobs Effect crucial to success	G
G	no 'maverick' successor to Jobs	C
H	Samsung's aggressive value drive	P
I	company now more inclined to litigate than out-innovate	J
J	Tall Poppy Syndrome – many people now want them to fail	O
K	Jobs never wanted there to be a successor	G
L	there is no 'next big thing' on the horizon	Q
M	Apple has a 'starter' culture – never had to do mature products	A
N	competitors have now learned the business-innovation play, so no longer a unique Apple advantage	C
O	relative un-reliability of products has become a talking point	H
P	Samsung have made Apple 'over-serving' very visible to public	R
Q	lack of understanding of growing Asia markets	I
R	markets have increasing opportunities for disruptors	I
S	weak IP portfolio	L
T	Nokia have to go on the attack to survive	C

And here's our version of the map that emerges from the analysis:



The picture highlights a pretty depressing (if you're the Apple management that is) downward spiral, as shown in the main loop in the picture: as the company becomes a 'tall poppy' it begins to attract a population that actively looks to find flaws in what the company dies, which then leads to competitors like Samsung emphasizing the relatively superior value offering, which then leads to Apple's perceived 'over-serving' of the market (for a classic example, see the recent Galaxy versus iPhone advertising campaign which blatantly starts to portray Apple customers as fools), which in turn leads to the emergence of more disruptors, which then encourages Apple to slip further into litigation mode, which because litigation is never cool, leads back to an even stronger tall poppy problem. Not an easy destructive cycle to break at the best of times. The best and easiest to implement strategy usually being to stop litigating. The thing making it difficult for Apple to adopt such a strategy, however, is the big collector leading in to the litigation perception: their switch from cool-attacker to not-so-cool defender. And what makes switching back to the attacking role so difficult are all of the factors leading in to the defender perception.

None of this is to say that Apple won't be able to break out of the defensive-strategy riven downward spiral they find themselves in right now. Just that, when you look at how all of the individual problems connect into the spiral, the whole things starts to look like a perfect storm might just have begun.

Seeing Trends Before They Become Trends

One of the main learnings from the TrenDNA research is that it's very rare for innovators to be successful by merely following market and consumer trends. The higher the rate of change in an industry, the lower the likelihood of success becomes. To the point, in the highest pulse rate sectors like FMCG or ICT, that by the time a trend has been observed, it is already too late to make money by exploiting it. The key to success in these situations lies in the ability to identify trends *before* they've become trends. There are a host of trend-spotting agencies that manage to earn a living by attempting to do this job. That few if any tend to get rich doing the job is probably indicative of both the difficulty of the challenge and – our hypothesis here – the inadequacy of the methods they deploy to do the job.

In essence the modus operandi of these various 'methods' generally involves large numbers of spotters looking at lots of so-called 'weak signals'. The problem with weak signals is that the majority will turn out never to be much other than weak signals. Choosing the weak signals that will subsequently turn into the strong signals that will open up the big bucks would appear to be as close to trial and error as finding needles in haystacks.

Trial and error is becoming prohibitively expensive, and the stakes are too high to rely on it any longer. The aim of this article is to start introduce some science to the needle-finding job.

The roots of the science start with what turned out to be the core insight underpinning the TrenDNA process: the biggest innovation opportunities arise not from consumer and market trends, but from the relationships *between* trends.

More specifically, the biggest innovation opportunities emerge when conflicts between trends emerge and get solved – Figure 1.

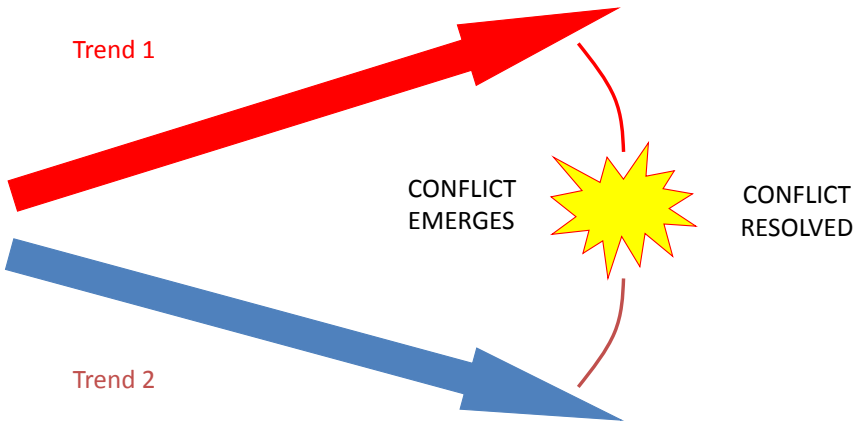


Figure 1: Innovation Happens When Trend Conflicts Are Resolved

The very simple extension to that finding is that, more often than not, new trends emerge from the resolution of these same trend conflicts. New trends, in other words, emerge from the interactions between existing trends – Figure 2.

Looking for weak signals is a pretty random way of projecting in to the future. Far more effective, based on our finding, is to focus a search of weak signals based on the findings of a trend interaction map: identify emerging conflicts and convergences between trends

and use this information to inform the search for weak signals of a solution to these interactions.

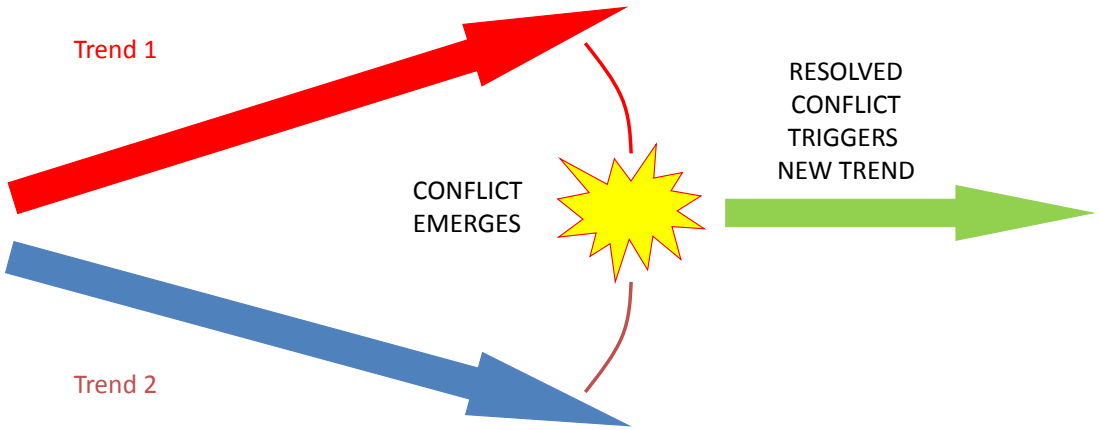


Figure 2: New Trends Emerge From Resolution Of Conflicts Between Existing Trends

The concept is a very simple one. Perhaps depressingly so considering the amount of effort it has taken to reach it. Our research to confirm the hypothesis is still at an early stage, so maybe it will become richer over time, but right now it already seems to us to have sufficient merit – and has already delivered sufficient client success – to merit sharing the basic idea more broadly so that others might begin to test its efficacy.

There are two basic ways and means to test the hypothesis. The first involves reverse engineering previous or currently known examples. The second involves using the model to predict something that hasn't happened yet. Clearly the first is easier to do than the second, but even clearer is the fact that the second option will always be ultimately more convincing, albeit taking longer to come to fruition.

We'll have a go at one of each type here. Starting with a very simple example in the consumer space…

Figure 3 illustrates what we think are the justifiable origins of an emerging trend the food industry have started to pick up in several Western societies, the so-called 'kids in the kitchen' trend:

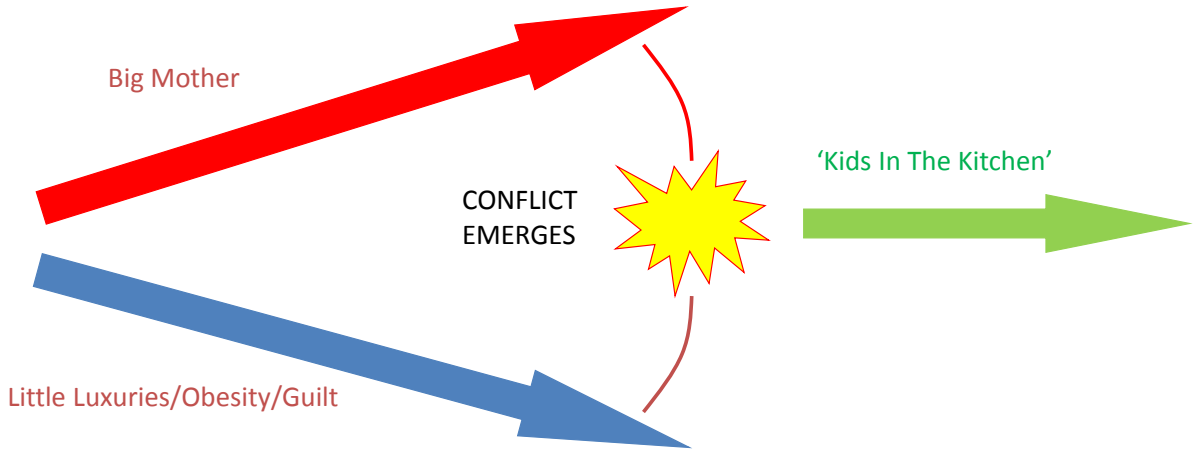


Figure 3: The Genesis Of The 'Kids In The Kitchen' Trend

Kids-in-the-Kitchen is all about parents having fun with their offspring, teaching them how to cook. The trend can be seen to emerge through the convergence of a number of trends, but the most important ones seem to be:

Big Mother – here we're thinking about the protective GenX or suffocating GenY parent and their strong desire to know their children are safe at all times. This is the trend that gives us webcams in kindergartens and children not being allowed to play out without supervision any more.
Little-Luxuries/Obesity/Guilt – a chain of three trends that start with our desire for rewards ('little luxuries' = paying too much for a small reward), that usually mean something with too many calories in it, which leads to the obesity problem which in turn leads to a high degree of guilt.

Guilt is one of the things that begins to conflict with and therefore prevent the 'progress' (i.e. spread) of the Big Mother trend – being the oppressive, suffocating parent starts to create visible adverse effects in their children: moms aren't a lot of fun!

Another side of the guilt trend is that the Gen X and Y parents are both the outcomes of a fast-food culture. A culture that has seen a strong decline in cooking skills, that, when the parenting job appears, there is a growing feeling that 'I don't want to poison my children with fast-food all the time'.

Take both sides of the conflict together and parent-plus-child doing fun stuff, cooking healthy food, learning together, in the kitchen becomes a very effective solution to both.

So much for reverse-engineering what is already happening. It's probably already too late for any prospective FMCG innovator to make too much money from Kids-in-the-Kitchen. Let's switch our attention, then, to a semi-random pair of current trends in order to explore what conflicts might be emerging and what new trends might emerge as a result of solutions to such conflicts.

Figure 4 illustrates the pair of trends chosen. We could've selected any of a large majority of the ones present in any of the TrenDNA decks, but this one seemed to present a very clear emerging conflict:

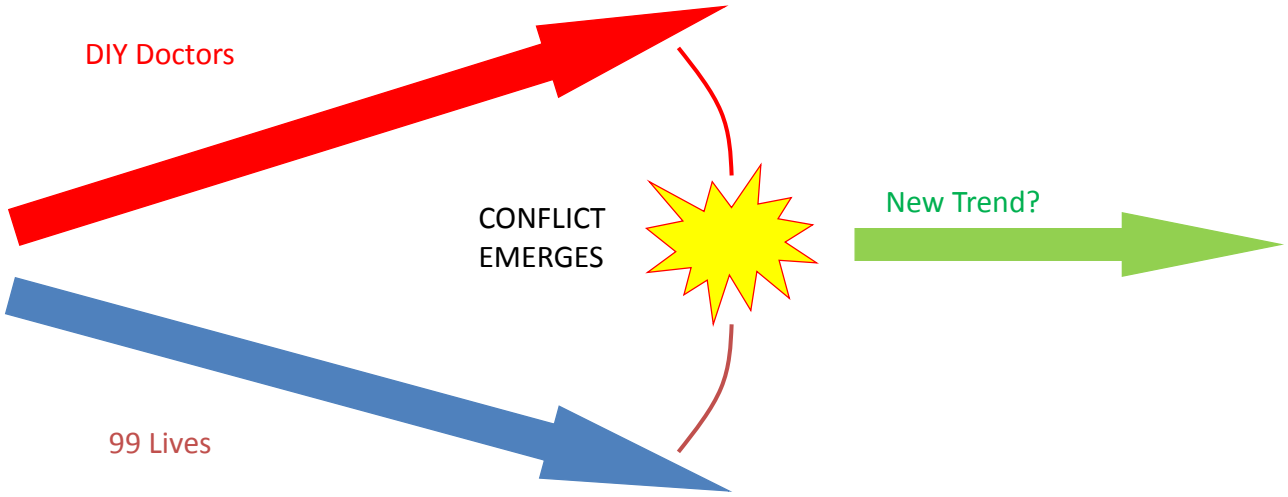


Figure 4: A Typical Emerging Trend Conflict

Before speculating on possible solutions, let's examine what the emerging conflict looks like. The 'DIY Doctors' trend is all about the emergence of massive amounts of medical information on the Internet, and the increasingly impossible job of General Practitioner doctors: the patient experiences a set of symptoms and invariably goes on the internet to find others who have experienced similar symptoms. Hence when the patient finally goes to the surgery for a 'proper' diagnosis', they're already crammed full of theories about the

cause and treatment of their ailment… the big problem being that some of them will be right and others dangerous quackery. DIY Doctors are, in other words, self-diagnosing, self-treating patients. The rapid growth in their numbers sparks the rising popularity of websites like WebMD.

On the other side of this time-consuming coin is the '99 Lives' trend. This is the trend that says we're all living increasingly busy lives in which there is seemingly never enough time to do all the things we'd like to do, and which has forced more and more of us to be living superficial, portfolio-lives in which we have to know 'enough' about a lot of different things, but never seem to have the chance to properly explore any of them.

Living 99 Lives and being a DIY Doctor thus come to find themselves on a direct collision course: there's a mass of knowledge out there, but how do we find sufficient time to turn that knowledge into contextually-relevant wisdom?

Solve that conflict and we'll make a lot of people very happy: we get to cure our ailments and go on being able to live our 99 lives.

It's perhaps not for us to say how best to resolve the conflict. The important prediction is that we think ('know') new trends will emerge as the conflict gets solved.

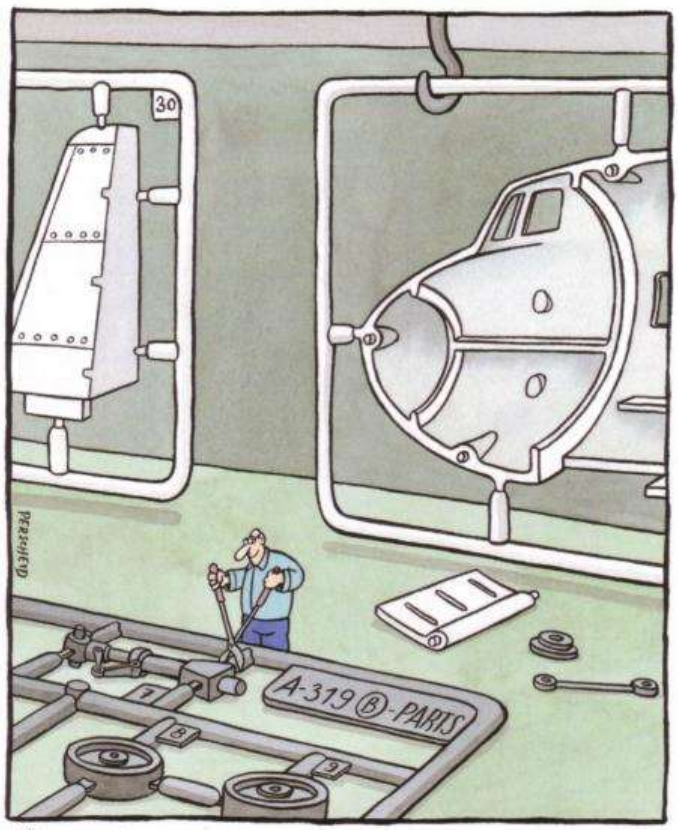
That said, we can already see several candidate solutions to the conflict:

- 'coaching spas' – (Little Luxury?) places we can go for rest and recuperation and a little pampering, where we also get to learn something about the ways in which our physiology works such that we become better informed patients.
- 'LifeCoach' software and tools – 'learning' algorithms that accompany us as we pass through life, feeding back pertinent information about how well we're doing (or not) both physically and mentally, and then offering us valid, meaningful contextually relevant advice that will help us do better.

No doubt you can think of a bunch more potential solution directions yourself. Several of which, assuming they genuinely solve the conflict, we propose will likely turn in to new trends. And, right now, help us to focus our search for the right types of weak signal.

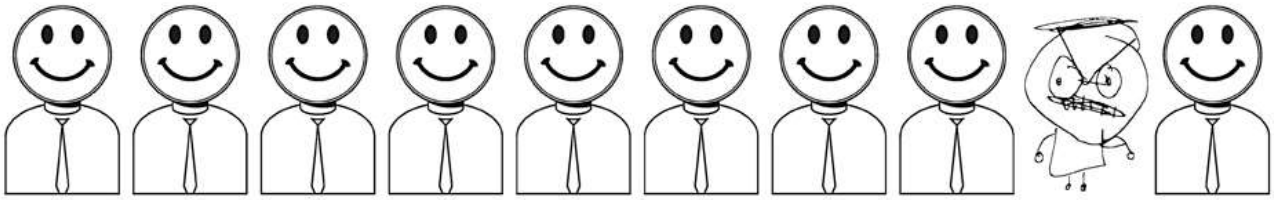
Principle 26 - Copying

One of our favourite aerospace cartoons… anyone that wasted their youth building Airfix kits faced a strong likelihood they were going to end up working in the aerospace sector:



An intriguing example of the Copying Principle perhaps? Here are one or two others:

(Spot The GenXer):



Or how about one of our favourite animal puns of recent months. ‘Punimals’ anyone? Can you work it out?

We'll give you a couple of minutes to let things sink in.
In the meantime:

Somehow not quite so scary as the original.
These on the other hand….

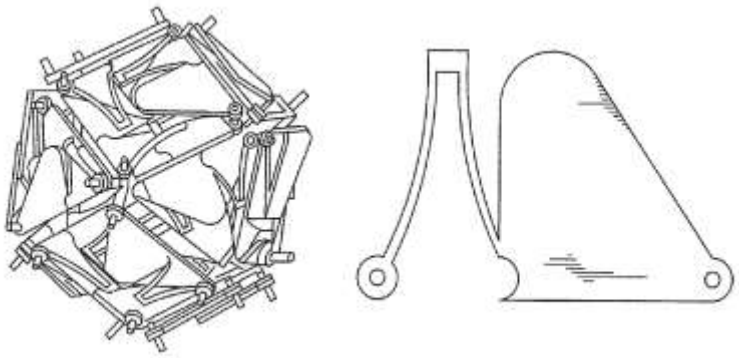
Close, but not quite close enough… go ask the Dalai Lemur.

SYSTEM·ATIC INNOVAT·ION

Patent of the Month – Shape-Shifting Surfaces

Body armor worn by police officers and soldiers offers a degree of protection, but there are still areas of vulnerability around limbs to allow them to move freely. So says a professor at the University of South Florida (USF), the inventor of our patent of the month this month. His solution provides the basis for technology that may fill in those gaps.

Dr. Craig Lusk, assistant professor at mechanical engineering at USF, has been working with shape shifting surfaces -- tiled arrays of polygonal cells, each cell consisting of compliant flexures attached to thin, overlapping plates or shells.



Lusk says that the best way to describe shape-shifting surfaces is to imagine a spring and a square. "Think of a spring flattened, he says. "I manipulate it so I can determine the shape when I pull on it. Then I connect some plates to them. I have layers of plates that slide across each other and move in interesting ways.

"They don't move unless you push on them. A square remains a square until you push on it. Imagine you squish it together to make an overlapping square, which can expand or contract. It can go from square to diamond shape held by the springs. It's still very strong but it's flexible enough to accommodate any shape I want to make it into."

Lusk says shape shifting surfaces hold promise for body armor. "The idea I'm going for with all this is to make these complicated surfaces work as barriers in one direction but that are flexible in another -- they can move and protect at the same time, like armor. I would love to have these arranged so they can protect better body protection for our police and soldiers."

Dr Lusk's patent was granted as US 8,424,265 on April 23. Here's what the invention disclosure has to say about the problem being addressed:

In 1827, Carl Fredrich Gauss published his `Theorema Egregium` which is the foundational result in differential geometry. The basic result is that small triangles do not change their shape when bent and that there is a fundamental difference in the shape of triangles that are planar (the sum of the angles is equal to 180 degrees) and the shape of triangles on a sphere (the sum of the angles is always > 180 degrees) and the shape of triangles on a hyperbolic or saddle-shaped surface (the sum of the angles is always < 180 degrees). His result means that spheres cannot be made into planes without crumpling or tearing or stretching (distorting) the surface. This fundamental geometric limitation makes the building of certain types of curved surfaces (those with two non-zero principal curvatures) intrinsically more difficult than working with planar surfaces (both principal curvatures equal to zero) or developable surfaces (one principal curvature equal to zero). This leads to a need for innovation that allows conventional surfaces to achieve new functionality,

to be constructed more precisely, or at lower cost. More particularly, a low-cost modular building system with customizable degrees-of-freedom and stiffness is needed. In addition to potential savings when a new barrier is erected, an innovative system would provide new methods and functionality to surfaces and objects.

Objects that function as physical barriers or supporting surfaces include walls, table tops, shelves, floors, ceilings, stairs, vehicle bodies, and pipelines. Conventional methods for constructing these barriers can be costly, but even when they are inexpensive, the numbers of these kinds of objects mean that they represent a significant economic investment. Such barriers often incur additional costs when they require modification or removal. Thus there is a need for a surface, and a method for designing such surface, having a shape that may be modified or adjusted without damaging the surface or rebuilding it.

Here's how we might map that series of problems onto the Contradiction Matrix, starting with the overall protection-versus-flexibility conflict pair:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Strength (20) and Stability (21) and Safety/Vulnerability (38)

WORSENING PARAMETERS YOU HAVE SELECTED:

Adaptability/Versatility (32)

SUGGESTED INVENTIVE PRINCIPLES:

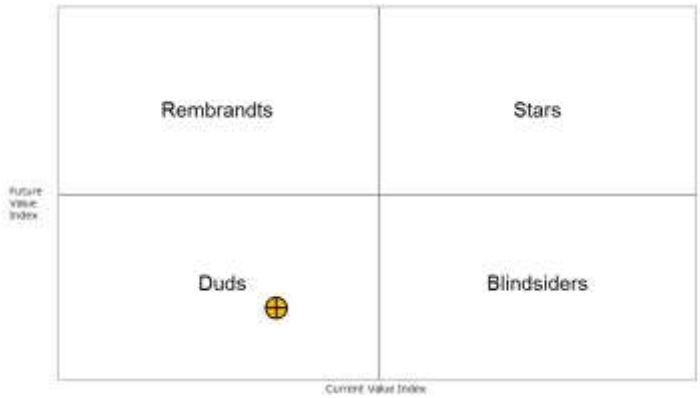
40, 15, 35, 30, 17, 29, 13, 1, 4, 28, 31, 2, 3, 24, 10, 5

And here's how the invention solves the problem:

The novel shape-shifting surfaces disclosed herein may include a single polygonal cell structure comprising multiple side members that have compliant flexures and plate or shell segments. The side members are attached at nodes to form structures that retain their effectiveness as physical line of sight barriers while undergoing changes in shape such as expansion, shearing, shrinkage, twisting, vibrating, encircling, wiggling, swallowing or constricting.

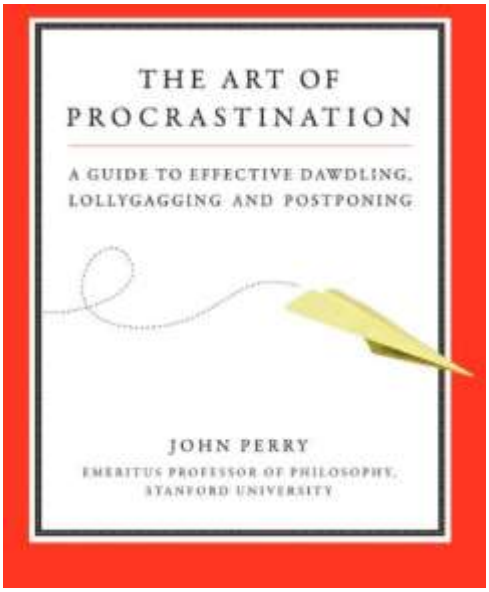
An intriguing combination of various strategies, including what can be seen as nice illustrations of TRIZ Principles 30, 15, 17, 4 and 5. Even better, go take a look at Dr Lusk demonstrating some of the resulting structures at:
http://www.youtube.com/watch?v=-lnonuxwIUc

Plus, if you're that way inclined, plenty of opportunities to build on the patent to create even stronger solutions:



Best of the Month - The Art Of Procrastination

"…anyone can do any amount of work,
provided it isn't the work he is supposed to be doing at that moment."
Robert Benchley, in Chips off the Old Benchley, 1949



Sometimes people come up to me and start expressing their amazement at how I apparently manage to 'do so much stuff'*. Slightly more often, other people approach me asking why the latest new book I promised would be out six months ago *still* isn't published. The answer to both questions, I realize now I've read John Perry's sly gem of a book, is that I am a structured procrastinator.

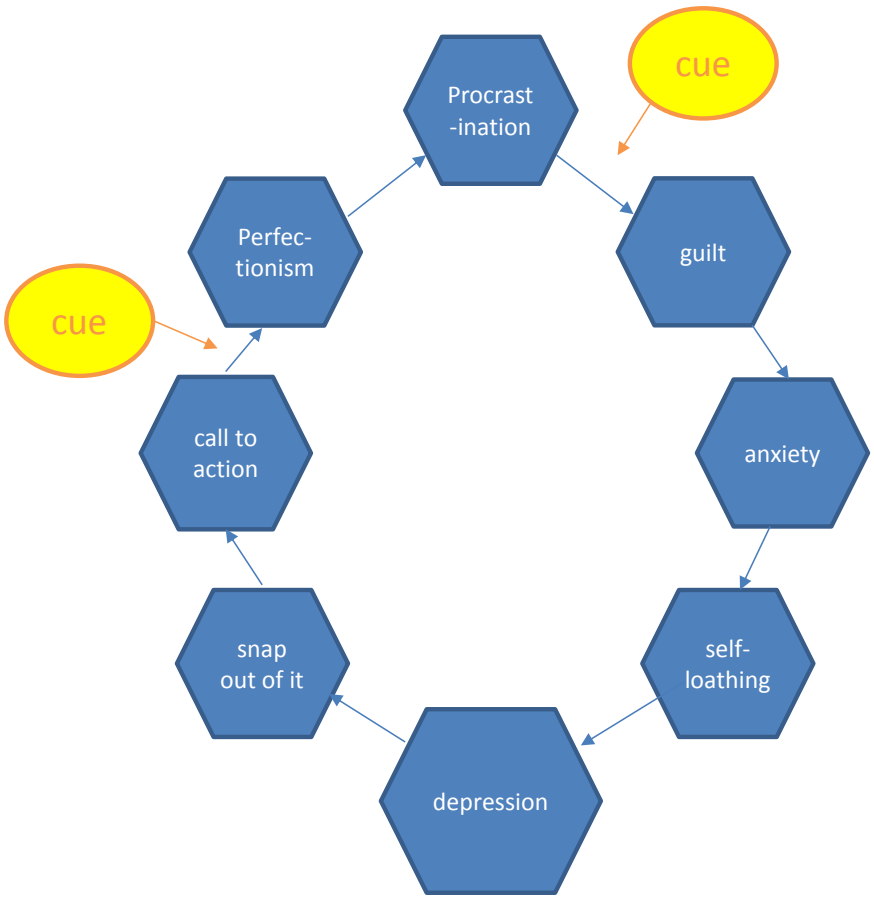
Here's what Professor Perry has to say on the subject:

"I have been intending to write this essay for months. Why am I finally doing it? Because I finally found some uncommitted time? Wrong. I have papers to grade, textbook orders to fill out, an NSF proposal to referee, dissertation drafts to read. I am working on this essay as a way of not doing all of those things. This is the essence of what I call structured procrastination, an amazing strategy I have discovered that converts procrastinators into effective human beings, respected and admired for all that they can accomplish and the good use they make of time. All procrastinators put off things they have to do. Structured procrastination is the art of making this bad trait work for you. The key idea is that procrastinating does not mean doing absolutely nothing. Procrastinators seldom do absolutely nothing; they do marginally useful things, like gardening or sharpening pencils or making a diagram of how they will reorganize their files when they get around to it. Why does the procrastinator do these things? Because they are a way of not doing something more important. If all the procrastinator had left to do was to sharpen some pencils, no force on earth could get him do it. However, the procrastinator can be motivated to do difficult, timely and important tasks, as long as these tasks are a way of not doing something more important.

"Structured procrastination means shaping the structure of the tasks one has to do in a way that exploits this fact. The list of tasks one has in mind will be ordered by importance. Tasks that seem most urgent and important are on top. But there are also worthwhile tasks to perform lower down on the list. Doing these tasks becomes a way of not doing the things higher up on the list. With this sort of appropriate task structure, the procrastinator becomes a useful citizen. Indeed, the procrastinator can even acquire, as I have, a reputation for getting a lot done."

As one might expect from a procrastinator, The Art Of Procrastination is a very short (96 pages; readable in an hour) book. As such, it also probably contains the highest insight/word-count ratio of any book I've ever read. Even better, many of those insights are very TRIZ Principle 22-like in the advice they dispense. Humans are walking mountains of bad habits, so rather than feeling bad about it, your best bet is to trick some of those bad habits into working for you rather than against you.

Take the problem of perfectionism – for many people the reason that they turn into paralysed procrastinators. The causal loop looks something like this:



The key to preventing the paralysis is breaking this loop. And the two best places to break it are at the places where some type of mental cue triggers the leads-to connection. Like giving yourself permission to do a less than perfect job by asking questions like 'how useful would a perfect job be here?' 'How much more useful than a merely adequate job?' 'what is the probability that I will really do anything like a remotely perfect job on this?'

The Indian edition of this book switches the title to 'Don't Buy This Book Now!' Which probably sets the tone pretty well. And hopefully provides all the no-procrastination-here stimulus to just go get yourself a copy. Our fairly safe promise: you won't regret it.

Conference Report – Hong Kong Knowledge Management Society Annual Conference

March 21 saw this year's annual conference of the Hong Kong Knowledge Management Society, an event that saw over 80 delegates turn up to listen to four keynote papers and a concluding panel session. Yours truly was one of the four speakers, which made for something of a unique occasion since, whenever we've tried to get papers accepted at any kind of KM conference in the past, we've had our submissions rejected. If TRIZ and KM should make for perfect bed-fellows, the KM community appears to have been reluctant to listen.

Perhaps the answer this time around in Hong Kong was that the KM community has been aware for some time that things are not going well. KM conferences have traditionally focused on the mechanics of KM, and as such have found themselves stagnating in what turns out to be the geek-ish 'easy' technological aspects of the KM problem. There hasn't been too much new to hear about. Hence this time around, the emphasis was very much on the non-traditional KM community: the application of KM in value creating projects, resulting in better decisions, increased productivity and deeper customer insight. The main themes of this year's conference were thus chosen as complexity, collaboration, customer innovation and convergence.

John Bordeaux made for a terrific moderator for the day. Here's what he was responsible for coordinating:

Whispered Voices - Understanding Customers Better Than They Understand Themselves

Speaker : *Darrell Mann, Systematic Innovation, UK*

Capturing the Voice of the Customer is a vital part of any organisation. Unfortunately, what every organisation knows is that the customer is very often completely unable to tell us what they want

next. So, they don't know what to ask for beforehand, but as soon as they see it (or pretty soon after), they know that they want it. Darrell provides insight into what organisations do in this situation?

Language Convergence - the power of people and technology

Speaker : *Dion Wiggins, Asia Online,Thailand*
As the world becomes increasingly connected and multi-polar, enormous value can be created by having an effective and rapid means of translating between languages. As a pioneer in the field of machine translation, Dion will provide us with an overview of the progress of all those working to tackle this problem. As all his developments have been done using Cloud Computing, he will also touch on some of his experiences in harnessing the enormous power of the Internet.

Case Study - KM in Financial Services

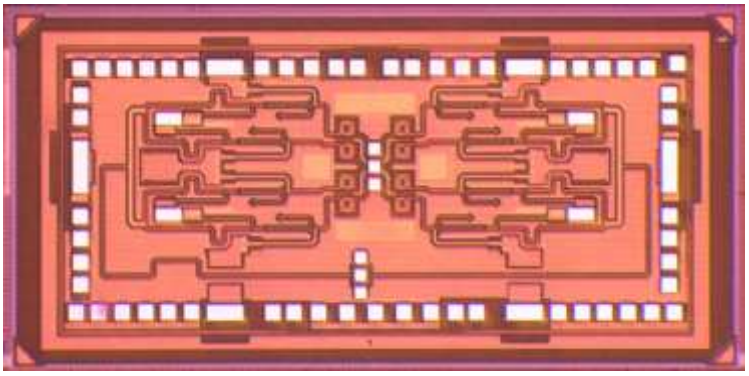
Speaker : *Larry Campbell, HSBC Hong Kong*
Until recently, HSBC presented itself as the world's local bank, with businesses in each country and community having grown over long periods as a key component of that geography's local business infrastructure. But as recent events have shown, there is a clear need to balance local decision making with global governance.
Larry will describe how, as Group Chief Knowledge Officer, he has started the journey of standardizing key group wide information , consolidating channels of distributing information, and creating a more collaborative culture across the group.

Finding Opportunity in Times of Uncertainty

Speaker : *Dave Snowden, Cognitive Edge, UK*
For the past two decades, developments such as TQM, BPR and others have driven business thinking and MBA teaching. Most organisations have achieved high degrees of efficiency, quality and process alignment. The recent global financial crisis is an indication that these approaches are limited in how they are best applied and new thinking is required to deal with the next level of business challenges in dealing with customers.
Dave will outline what new approaches to complex, human problems that address issues that current business practices leave unresolved.

With a large number of CIOs from Hong Kong's many financial institutions present in the audience, no doubting the fact that many of them had come to hear Larry Campbell speak, it being rare for any company in this industry to want to share what they're doing. The secret to HSBC's KM success turned out to be – surprise! – employees being encouraged to revisit the century-old values upon which the bank was founded. If people do things for, per our oft used JP Morgan quote, 'good reasons and real reasons', it seemed that HSBC is having a good attempt to tap into some of the very un-KM-like 'real' motivators of human behavior. All in all quite refreshing. Maybe there's some hope for the KM world after all. With or without TRIZ. Actually, probably without: TRIZ is perhaps merely a better way of organizing knowledge, the real issue, as I think the 21 March audience was only too well aware involves getting to the all too human aspects of the subject.

Investments – NanoCMOS



Harish Krishnaswamy, assistant professor of electrical engineering at Columbia Engineering, has generated a record amount of power output -- by a power of five -- using silicon-based nanoscale CMOS (complementary metal oxide semiconductor) technology for millimeter-wave power amplifiers. Power amplifiers are used in communications and sensor systems to boost power levels for reliable transmission of signals over long distances as required by the given application.

Used in virtually all forms of electronics around us, from phones to PCs, laptops, and tablets to satellite communications, nanoscale CMOS technologies have enabled the digital and communication revolution over the past 20 to 30 years. While nanoscale CMOS can do many things, Krishnaswamy explains the one thing that it cannot do very well is generate large amounts of power at high frequencies. This is because as transistors become smaller, they tend to break very easily with even a small amount of voltage or current -- "they're great for speed, but not power," he notes. But generating large amounts of power at high frequencies is critical for communication over large distances with high bandwidth.

"We have devised a way to use multiple nanoscale CMOS transistors in carefully-aligned synchrony to 'share the load' and generate nearly a watt of power at millimeter-wave frequencies -- nearly five times greater than what was currently possible," says Krishnaswamy. "This could enable extremely high-bandwidth communication over extremely long distances for the first time."

For instance, he points out, think of a citywide millimeter-wave wireless network that could support 10s of gigabit per second data rates -- nearly two to three orders of magnitude higher than WiFi. Such a network could serve as the backbone infrastructure that enables extremely high-data-rate wireless links to mobile devices.

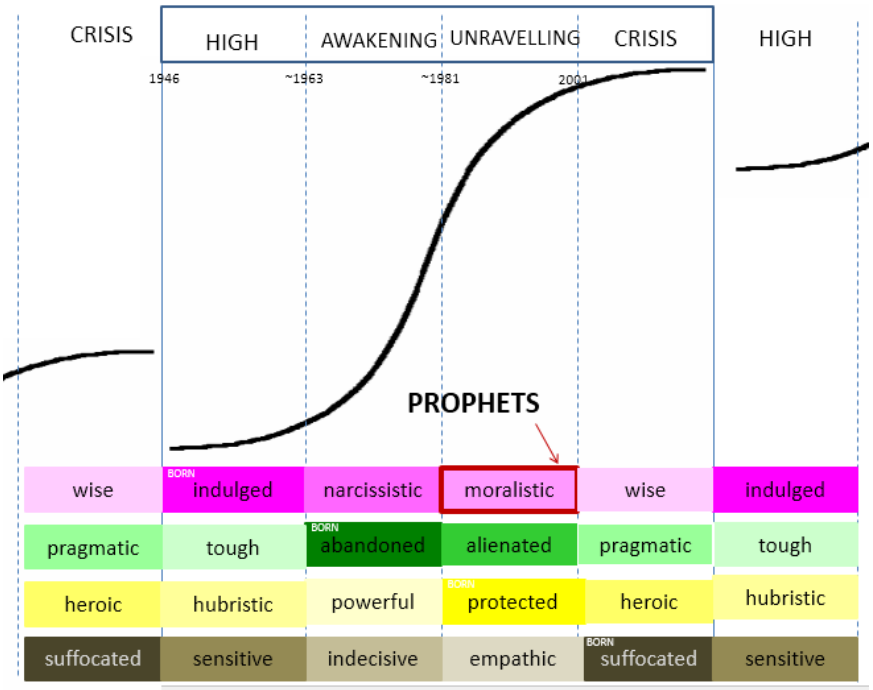
Krishnaswamy and his CoSMIC lab team accomplished this world record power output level for CMOS-based power amplifiers by developing a chip design methodology that stacks several nanoscale CMOS devices on top of each other so that they can handle larger voltages without compromising their speed. By stacking four 45 nanometer CMOS transistors within a power amplifier and then combining eight such amplifiers on a single chip, they achieved output power levels of nearly 0.5 W at 45 gigahertz.

"High-frequency nanoscale electronics is exciting to me because it is the confluence of many different aspects of science and engineering," Krishnaswamy observes. "It's an area where theory meets experimentation, where electromagnetics meets chip and circuit design, and where the abstract meets real-life applications. I find it fascinating."

Generational Cycles – Moralistic Prophets

		0-20	21-41	42-62	63-83
(Generation Y)	HERO	protected	heroic	hubristic	powerful
(Silent)	ARTIST	suffocated	sensitive	indecisive	empathic
(Boomer)	PROPHET	indulged	narcissistic	moralistic	wise
(Generation X)	NOMAD	abandoned	alienated	pragmatic	tough

The Moralistic Prophet is a person living through their 42-62, 'power' years. They spend the bulk of these years living through an 'Unravelling' period in history. Moralistic in the Prophet sense comes from a generational upbringing in which a rich, self-centred, narcissistic young adulthood has lead to a lot of experience and knowledge that they feel an urge to force onto the generations that have followed in their wake. Part, at least, of the societal unravelling can be seen to be caused by the rejection of this (perceived) moralistic stance: Moralistic Baby Boomer preaching to Alienated (Generation X) Nomad is quite likely one of the worst societal inter-generation combinations out of all of the possible different combinations.



The key shift that takes place between the Prophet's narcissistic phase and the Moralistic is the transfer of progressively greater levels of political and corporate power from the previous generation: put a narcissist in a position of being the leader, and they will tend to relish the role. Often to the point of coming across as pushy 'know-it-alls'. The worst part of the Moralism is what often feels to other generations as a preacher'ish 'I know best, so you should listen to me' take on life. The subsequent shift from Moralistic to Wise is the result of a realization that a lot more of the knowledge and experience gets listened to when the Prophet stops trying to ram what they know down peoples' throats and wait to be asked instead. When such requests come, watch the wisdom pour out. Before that transition happens, however, here's what other generation have to endure:

- Competitive
- Assertive
- High-flyer, more mature than their years in terms of desire for power
- Self-importance
- 'Being the best you can be'
- Command-and-control ('my turn at the top of the heap will not be wasted')
- Peter-Pan like desire to not grow up ('my ambition is to not know what I'm going to do when I grow up until I retire… not that I plan to retire')
- Struggling when mid-life crisis arrives ('accountant on a Harley')
- Materialistic/'keeping up with the Jones'
- Bon viveur/rich-life highly valued ('I deserve my rewards')
- Cocooning @ home
- Forward looking
- Outward looking
- Lifelong learning (transitioning to…)
- ..growing desire to pass on knowledge/life-learnings
- Idealistic/important to challenge the status quo
- 'Time to knuckle down'
- Desire to bring failed college-protest ideals to life again when in power
- Growing sense of responsibility
- Some 'Deadhead sticker on a cadillac' sense of selling out
- The pushy older brother/sister
- Boomeritis (still stuck in the Spiral Dynamic 'Communitarian' Level)

Politics, business-giants and popular musicians seem to offer the richest territory when it comes to finding iconic version of the Moralistic Prophet. Here are a few extreme examples to illustrate the potential size of the problem:






Arch (self-elected, naturally) spokesperson for a generation, Bono, is very likely the ultimate example of what bad Moralism can look like. Most Nomad's love the band U2, but I strongly suspect 90% of them dearly wish they could erase the vast majority of Bono's ill-thought-out pontifications on life, the universe and everything and just have the band focus on what they're actually qualified to do: make music. That he's found the ear of (celebrity-

seeking) politicans like Tony Blair probably says more than is necessary about the problem of influence-seeking Moralists consorting with celebrity-seeking Moralists.

If it helps the GenX Nomads any, the slightly older rockstar, Sting, would appear to have successfully made his transition away from Moralism and into something approaching wisdom – no more talk of the need to save lost jungle tribes, let's just reform the band and get back to what we were actually good at. Fingers-crossed, Bono is due to make a similar transition within the next couple of years. One suspects that The Edge and other members of the band will also be breathing a covert sigh of relief.

Key Contradictions:

1) Pushy command-and-control modus operandi makes enemies and impedes important things getting done
2) Materialism versus remembered adolescent ideals
3) Conflicted combination of guilt and despair when they think about their now grown-up children

Relationships With Others:

	Prophets	Nomads	Heroes	Artists
Outside Friends/ Family Group	Peter-Pans Virility racers Busy lives Pleasure before pain Making the most of one's life keeping up with the Jones'/competitive (did they sell-out more than I did?) forward-looking hedonism, guilt 'theory of everything' motivated allies – the next generation (our kids) have let us down, what do we do now?	Infuriating aliens, whatever I say, they do the opposite, (deliberately) antagonistic lacking consistency, freakish sense of humour (how could *anyone* find that funny?), difficult to get to know, stand-offish, anti-social, selfish no backbone apathetic (why do they sulk when things go wrong instead of protesting?)	energetic, enthusiastic, entitled, fame-seeking, egotists future-oriented, butterfly-minded enthusiastic, over-scheduled, over-protected, naïve, lacking persistence, expectation that everything should be easy, 'head in the clouds', no practical skills,	(older) Dull, In a rut, Depressing to be around ('energy black holes') one-dimensional, shallow, out of touch; not interested in getting back in touch, weak leaders, bureaucratic, ornery, pessimistic, apathetic, slow/single-paced, deliberate
Inside Friends/ Family Group	(siblings/friends) Energetic Full, rich life Joie-de-vivre La Dolce Vita Lifelong learning So much to do, so little time Exploration (internally and externally) Partners as long as it still makes sense – if not, best to go separate ways Wanderlust/wanderlux (kids left home = freedom again)	(offspring) Slackers, lazy, Feral, Apathetic, Deliberately contrary Why did they want to leave home so soon? (Why did I want them to leave so soon?) Ungrateful, Cynical, (self-)destructive Self-fulfilling prophecy pessimists, Over-protective parents, Reluctant to let me be the grandparent I want to be	(children – late parents) 'the future', Duty to do the best for them, Apple-of-my-eye, Nurture-worthy, rich education 'let me show you how to be a good parent' (grandchildren) 'the future', worthy everything-for-them, Fellow-rebels, Us-v-Nomad parents, High maintenance Manic/ADHD Over-scheduled, Under-persistent (over-)demanding	(parents) Reclusive, Unadventurous, Backward-looking, (memories>dreams) Stuffy, Stubborn, Closed, Inscrutable, Cold, Unaffectionate, Nothing I ever do is good enough, (maybe secretly proud of me though?)

Biology – Mother-Of-Pearl Moth Caterpillar (Pleurotya ruralis)

On a list of animals that can escape in a hurry to get out of the way of danger, one would not expect to see the caterpillar's name. But an English anatomist says at least one caterpillar, the larva of the mother-of-pearl moth, is adept at high-speed escapes.

Of course, high speed is a relative term when applied to such a deliberate crawler. In fact, caterpillars can walk at only 10 percent of the maximum speed of running insects of the same weight, said Dr. John Brackenbury, an anatomist at Cambridge University.

But when the mother-of-pearl moth caterpillar faces a challenge, Dr. Brackenbury reported in a recent issue of the journal Nature, it uses some locomotion tricks, like galloping in reverse. The caterpillar's reverse gallop looks much like its forward crawl, but the caterpillar can retreat faster than it can crawl forward, even becoming airborne for short spurts.

And when the caterpillar is sorely provoked, it zooms backward in what Dr. Brackenbury called a recoil-and-roll maneuver. Looking much like a cartoon snake, it forms a hoop and rolls away from the problem at a rate 40 times its normal walking speed. It is an effective strategy, at least for predators with a short reach. The caterpillar can manage such speed -- nearly one mile an hour -- only briefly, for about five revolutions.

From a contradiction perspective, the problem is quite easily defined – the caterpillar needs to be able to escape from danger, and the thing that prevents it is its relative lack of speed. Here's what that problem looks like when mapped on to the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Safety/Vulnerability (38)

WORSENING PARAMETERS YOU HAVE SELECTED:

Speed (14)

SUGGESTED INVENTIVE PRINCIPLES:

14, 13, 31, 3, 17, 19, 7, 11

Good to see the caterpillar's solution strategy right at the top of the most frequently used strategies to solve this kind of problem: Principle 14, Curvature, and specifically the instruction contained therein to 'switch from linear to rotary motion'. Simple when you know how.

Catch the caterpillar in action alongside it's Mount Lyall salamander Principle 14-user friend in a fantastic snippet from the BBC's Weird Nature programme: http://www.youtube.com/watch?v=HmLS2WXZQxU

Short Thort

"If we will be quiet and ready enough, we shall find compensation in every disappointment."
Henry David Thoreau

"When we refuse to work with our disappointment, we break the Precepts: rather than experience the disappointment, we resort to anger, greed, gossip, criticism. Yet it's the moment of being that disappointment which is fruitful; and, if we are not willing to do that, at least we should notice that we are not willing. The moment of disappointment in life is an incomparable gift that we receive many times a day if we're alert. This gift is always present in anyone's life, that moment when 'It's not the way I want it!"
Charlotte Joko Beck

News

TRIZ Future Conference

It seems that we have accidentally had three abstracts accepted for Europe's main TRIZ-related conference, this year taking place in Paris at the end of October. I guess this means we'll be turning up to present: 'ApolloSigma: TRIZ-Based IP Quality Measurement & Enhancement', 'Innovation Roulette: Why Most TRIZ Solutions Fail (And What To Do About It)', and, a collaborative effort with Ellen Domb and Tim Brewer, 'Crowd-sourced and crowd-funded business models viewed as complete (technical) systems'. Looks like a few interesting challenges ahead, at least in terms of being able to deliver all three by the submission deadline next month. Ahem.

HongKong

Looks like we will be back in HongKong at the end of June for a series of client engagements and ICMM assessment projects. Bizarrely, it looks like we'll be in town but not attending the Systematic Innovation Society conference taking place during the same week. A sign of the times, perhaps?

Buckingham Lean Conference

Our presentation at the UKs new biggest Lean event has now grown into a half-day workshop, to be co-facilitated with Chris Cooper. The session, 'Invisible Value, Invisible Waste: Tapping Into Unspoken Intangibles: accelerated and pro-active innovation, through

TRIZ and Lean Design' will take place on the morning of 12 July. More details on our shiny new website.

New Projects

This month's new projects from around the Network:

- IT services - ICMM assessment
- Financial Services – Innovation Culture workshops
- FMCG – Breakthrough finding project
- Conglomerate – Corporate IP strategy project
- Healthcare – PanSensic 'Voice Of Patient' analysis project
- Healthcare – TrenDNA/Voice of Customer capture project
- Education – Strategic study
- Education – Spin-out company IP enhancement project
- Automotive – SI Certification workshop series
- NGO – strategy definition workshops