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Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.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

Ten Innovation Trilemmas

One day in the not too distant future, we're hoping to finish the third part in our series on trilemmas. We see the trilemma as the next logical evolution stage to the dilemma (contradiction) story that presently sits at the heart of TRIZ and SI. The basic theory goes something like this: it is relatively easy to resolve a conflict between a pair of system attributes because there is an implied freedom to adversely affect any third attribute that wasn't part of the problem definition. Solving contradictions helps deliver 'more ideal' solutions only in so far as there is an expectation that the two conflicting parameters under consideration are more important than any of the others that might be present in or around the system. Adding a third element into the equation – as happens when we decide to define a trilemma – is a way to force the definition (and hopefully solution) of a higher level problem.

The 'trilemma-beats-dilemma' philosophy applies, as far as we can tell, to any kind of system. The focus in this article is to examine trilemmas in the context of innovation itself. The overall idea being that if we can identify the main trilemmas facing innovators, we give ourselves a more useful description of the challenges we need to be aware of when we're trying to design an innovation strategy or undertake an innovation project.

In thinking about the subject and formulating what we could see as the main innovation trilemmas, we have gradually built up a picture that in essence at least describes a clear hierarchy.

The top of this hierarchy – we think – comes from one of our earliest definitions of innovation as 'doing things better'. These three words in turn correspond to the three vertices of what we see as a classic trilemma – very easy to achieve two of the three, but very difficult to achieve all three. Figure 1 illustrates the 'doing things better', innovation-as-successful-step-change trilemma:

Figure 1: Highest Level Innovation Trilemma

At the next level down the hierarchy comes a pair of trilemmas, one focused on internal and one on external, customer, worlds. The customer-focused trilemma originates with the classic value equation, value = benefits / (cost + harm) – each of the three parameters on the right hand side of the equation relating to things where, again, it is relatively easy to solve a contradiction between any two, but very difficult to achieve all three together.

The big internal trilemma emerges through examination of Jagdish Sheth's classic book, 'The Rule Of Three' and the differences that any big three players in an industry need to emphasize when presenting themselves to customers. The main three being efficiency,

effectiveness and resilience. Figure 2 describes this trilemma alongside its parallel external version:

**Figure 2: Internal And External Second Level Innovation Trilemmas**

At the next level, we reverted to one of the pillars of SI, 'space time and interface' as the three main dimensions driving perspectives on a problem. One way of looking at these three dimensions is that they form their own trilemma – it being difficult to achieve simultaneous perspectives on all three at once – but ultimately, this didn't seem nearly as useful as looking at the trilemmas inherent within each of the dimensions separately. Figure 3 illustrates the results of this breakdown:
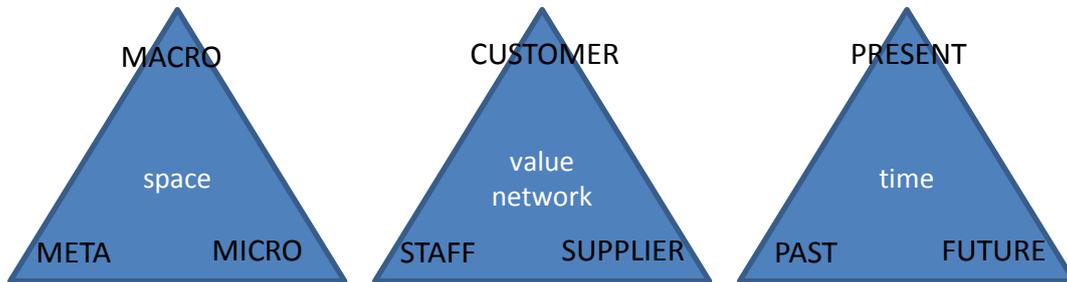
Figure 3: Space, Time, Interface Third Level Innovation Trilemmas

Given the problems that some people seem to have in explaining the 'interface' dimension in the space-time-interface story, the figure re-labels the parameter as 'value network', and then shows the three basic value network trilemma attributes.

As the innovation trilemma story has evolved over the past few months, we've literally constructed hundreds of different candidate trilemma pictures. In trying to rank them all, we ultimately decided that the hierarchy map needed to extend to cover four levels in order to describe a coherent picture. The fourth level in this hierarchy, reproduced in Figure 4, describes what we deemed to be the four most complete and coherent trilemmas associated with a detailed look at the details of a given innovation project… as opposed to the overall innovation philosophy or rationale held by an innovating enterprise.
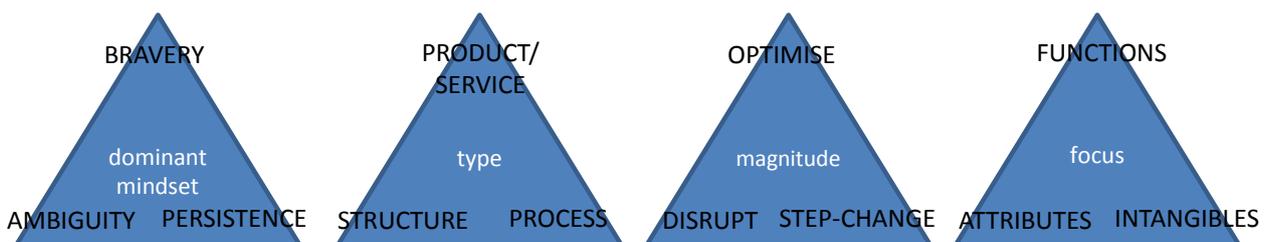
Figure 4: Project-Level Innovation Trilemmas

This quartet of trilemmas seemed to us to be the four main areas of focus that a project manager needs to address when guiding their project through the choppy waters between conception and completion. Get these four right, and chances are the project will have the best opportunity to achieve success at the highest level 'on time, on spec, on budget' innovation management Holy Grail trilemma.

We only really see this trilemma when we step back and take a look at the overall hierarchy. Figure 5 attempts to do this job:
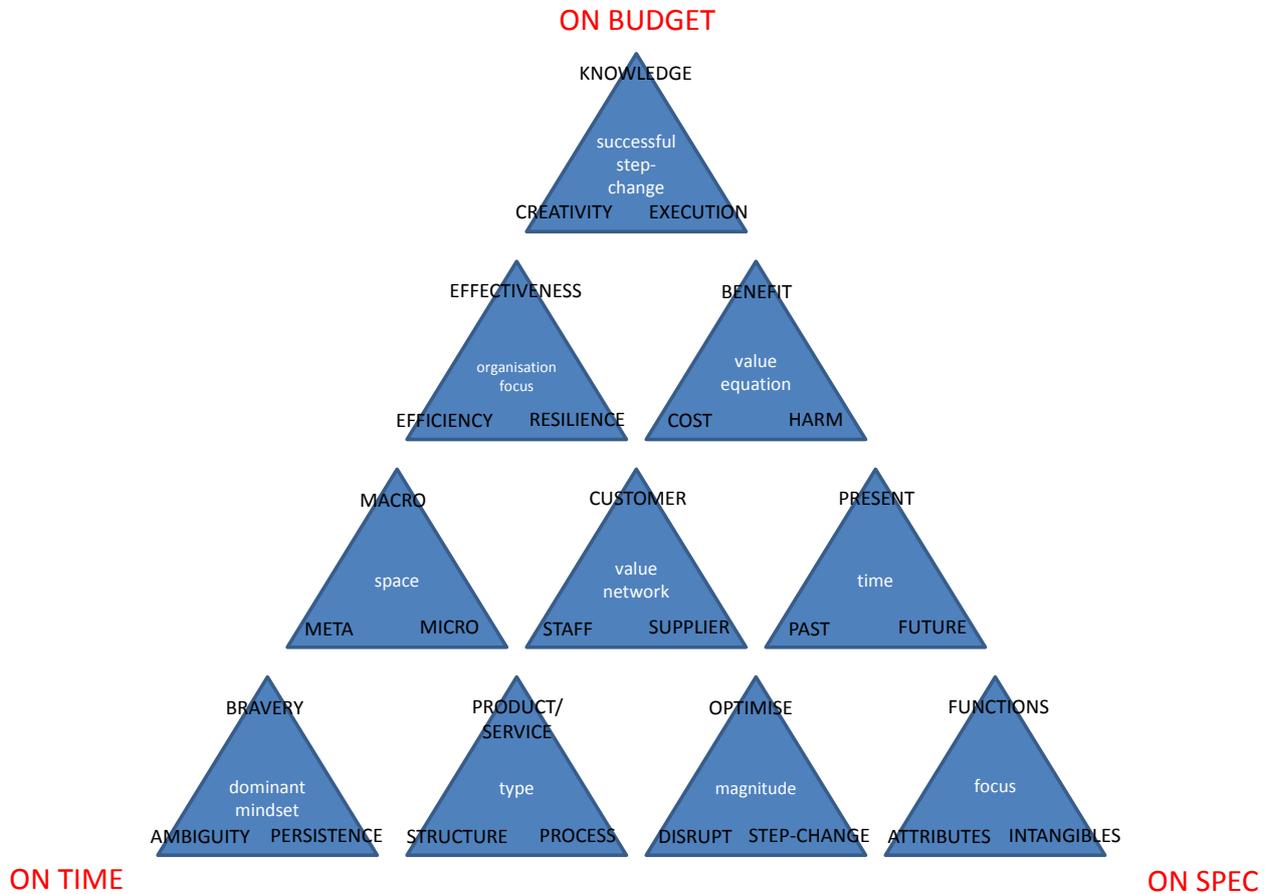
Figure 5: Overall Innovation Trilemma Hierarchy

The image showing a trilemma of trilemmas is still maybe just an 'intriguing' one in our research. We think there's a deep insight contained within the picture, we're just not sure what it is yet. The same, hopefully, goes for the 'missing' triangles found in the white spaces in the picture. We'll no doubt visit those topics in more detail in the next article in the trilemma series… another step along the road to a tri-dimensional, Trliemma Matrix maybe… you have been warned!

Holes

One of the most effective, but often least well applied, of the TRIZ solution strategies asks problems solvers to add holes to things. From an ideality perspective, the logic is very sound: the overriding evolution direction towards achieving the desired function without the use of a physical entity in effect says get 'empty space' to perform the required action.

The conceptual problem that frequently follows when a TRIZ or SI session throws out Inventive Principle 31, or an Evolution Potential analysis tells you you're still at the first stage of the Space Segmentation trend, and should be looking to jump to the second, is that 'adding holes' feels like exactly the wrong thing to do:

Add a hole to the bottle. Add a hole to the umbrella. Add a hole to the parachute…

All sound like very effective ways to deliver a leaky bottle, an umbrella that doesn't keep the rain off or a parachute that fails to prevent the parachutist from shattering in to a thousand tiny pieces when they hit the ground.

Of course, in all three cases – Figure 1 – inventors have discovered that judicious inclusion of holes has permitted the creation of some very useful solutions.


Figure 1: Useful Holes

Hence, a bottle for joggers, an umbrella that is windproof, and a parachute that is much more stable and controllable. There are many reasons why adding holes is a good thing, the challenge for the dedicated problem solver is to work out what type of holes would be most useful for the artifact they're designing and for what reason they should be incorporated. The only certain thing is that there will be a net benefit to be had somewhere… if you didn't find it yet, you just having been thinking hard enough about the problem.

Or, put another way, a really simple way of creating a patentable invention for yourself would be to identify something that doesn't have a hole yet, and then work out how adding one would be useful somehow.

Here are a few of our favourites, just in case you start thinking about the problem and begin a premature rush to your nearest Patent Office.

How about a contact lens with a hole:
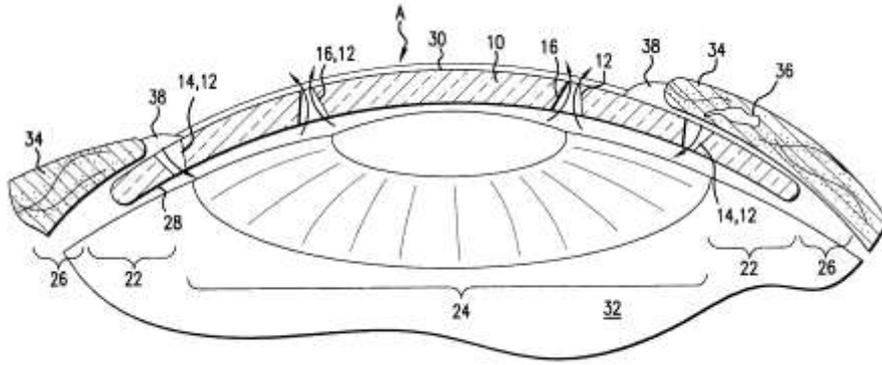
Figure 2: Fenestrated Contact Lens

Advantage? Better tear flow and therefore better self-cleaning properties.

Or what about aircraft design and a wing with a hole?
Figure 3 illustrates how several aircraft currently at the concept stage with Boeing, NASA and Synergy have successfully managed to incorporate holes:

Figure 3: 'Holey' Wing Concept Aircraft

Advantage: better lift properties; less structure; less drag.

Slightly more mundane perhaps:

Figure 4: Holes In The Kitchen

Advantages: better mixing, easier to clean, less cutting resistance, easier to get the cupcakes out of the tray.

Or how about something that taps a little more in to the world of the intangible driver. This coffee cup and saucer design from Anish Kapoor for example:

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Figure 5: Anish Kapoor Saucer With A Hole

Anish Kapoor played around with the illy cup and subverted its use: by placing the platinum saucer with the hole in the centre on the top, the flickering reflections "become form and touch on themes such as doubt, ambivalence and the desire to understand". Seriously…. Somewhere there's a benefit to adding a hole.

How about these as a few random (odd?) suggestions for currently hole-less innovation opportunities:

-   Wind turbine blades
-   Fire blankets
-   Credit cards
-   Touch screens
-   Newspaper
-   Toilet paper (careful with this one!)
-   Golf club
-   Suitcase
-   Dam
-   Bucket
-   Bank Account (unless you count mine which, somehow, seems to already have one)

That's another several billion dollars' worth of innovation opportunity we just gave away. No need for a thankyou. Really.

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Not So Funny – Killer Flapjacks

The very first story I heard when I landed back in to the UK after my latest Australia jaunt was the story of a recent incident at Castle View School on Canvey Island, Essex involving a flapjack. In the apparently brutal attack a seven year old boy suffered a "sore eye" when he was accidentally struck in the face by the 4in-long snack when it was thrown across the school canteen by another child. The poor mite was instantly patched up and sent home for the afternoon to recuperate.

For those that might not know what a flapjack is, it is a calorie-filled chewy biscuit. Up until the tragic Castle View incident, the most lethal aspect of a flapjack was believed to be its tendency to make small children obese.

As it now transpires, sugar and oat content is the least of the nation's flapjack problems. Sharp corners: that's where the real danger lies. Especially those found on – pause for sharp intake of fearful breath and cue Anthony Perkins shower scene from Psycho soundtrack noises – triangular flapjacks.
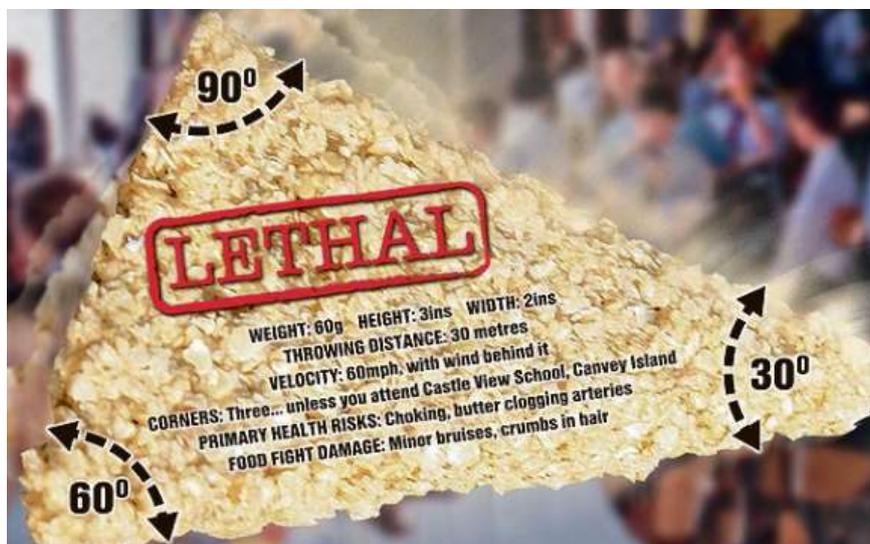
In the aftermath of the incident, head teacher, Gill Thomas, quickly decided to ban kitchen staff from baking the three-sided desserts — ruling only rectangular or square or flapjacks should be served. Kitchen staff were expected to re-design their flapjacks quite literally overnight, thus throwing years of design knowledge into disarray.

Subsequently, the UK government, keen to demonstrate its concern over the issue has commissioned the nation's academic institutions to urgently determine whether the shift from 30degree corners to an all-90degree design will satisfactorily resolve the safety issue. If it is deemed that a 90 degree corner could still cause injury, all flapjacks featuring a corner may be outlawed and the nation forced to only consume the much more benign round flapjack.

On a more serious note, the national interest in the angular flapjack might just turn out to represent a turning point in the child over-protection (nee suffocation) trend that has been blighting the UK (and much of the West) for the last 20 years. Per our generation cycles research, we're due for such a tipping point any day now:

Child Over-Protection Tipping Point
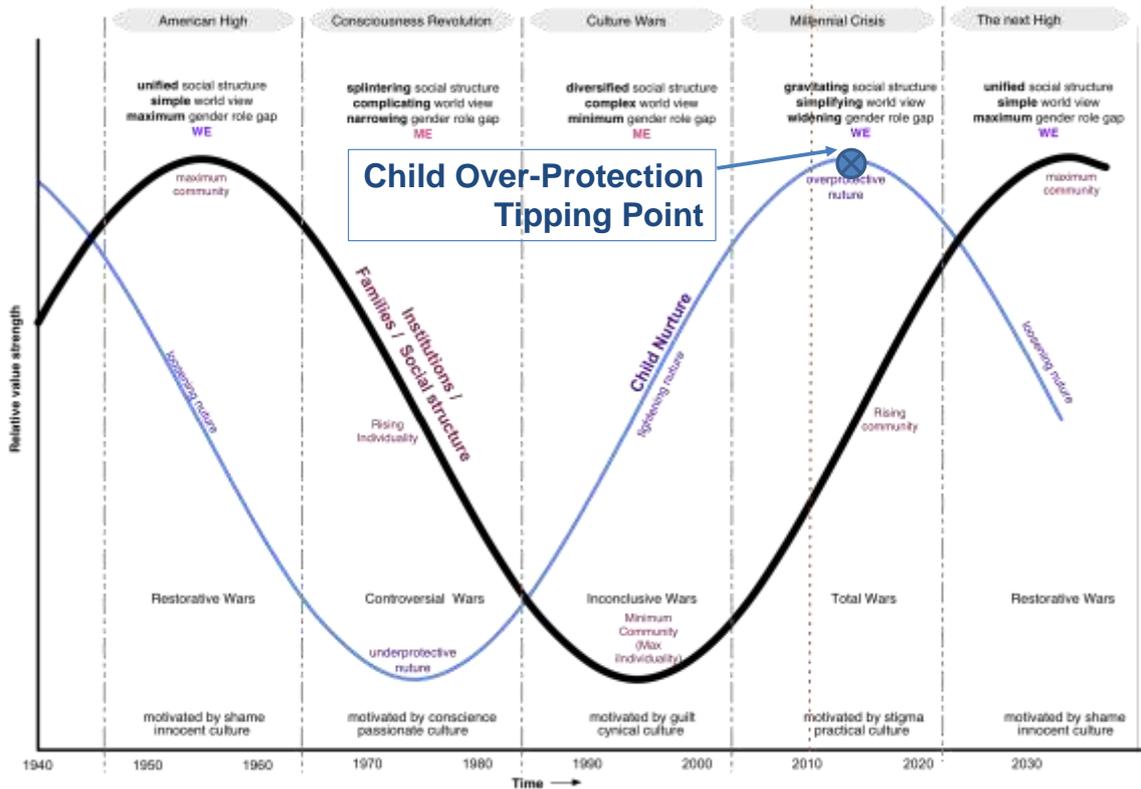
If it turns out that the flapjack story doesn't tip us over the edge, be assured that we'll bring you whatever else the media is able to dredge up in terms of threats to our precious next generation.

A number of candidates have apparently already been identified by the Prime Minister's food-danger Task Force:

6 MORE 'DANGEROUS' CAKES HEALTH AND SAFETY COULD INVESTIGATE:

BANANA MUFFIN
Drop one on the floor and there's no telling how many people might slip on the mess

ROCK CAKE
One landing on your head could cause a nasty bruise

UPSIDE DOWN CAKE
Uncertainty over which way up to eat it might cause confusion

SWISS ROLL
Its circular properties could set off a food avalanche in a canteen

RUM CAKE
Consumption may impair ability to drive and lead to a 2am punch-up outside a kebab shop

DEATH BY CHOCOLATE
Speaks for itself

My money is on a Swiss Roll avalanche disaster... round things can be just as dangerous as things with sharp corners. See the Geometric Evolution trend if you need proof. You heard it here first.

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**Patent of the Month - Temperature Responsive Textiles**
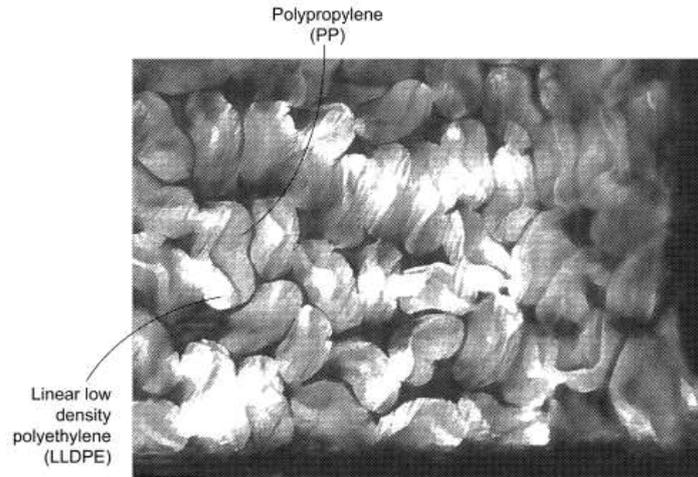
Patent of the month this month takes us to a pair of companies based in Massachusetts in the US. US8,389,100 was granted to a trio of inventors on March 5. It bears all the hallmarks of an invention where we find ourselves asking, 'why didn't I think of that?' As such, it's also one of the simplest inventions to describe we've ever seen.

Perhaps a good start point, especially if you've attended one of our presentations featuring the 'describe the characteristics of your perfect shirt' question. One of the frequent answers to the question is the idea of a temperature regulating garment – something that keeps us cool when the temperature is warm, and warm when the temperature is low. A very simple physical contradiction: we want the fibres to keep us warm AND cool.

So, how to achieve that?
A figure reproduced from the invention disclosure gives us a pretty good clue:
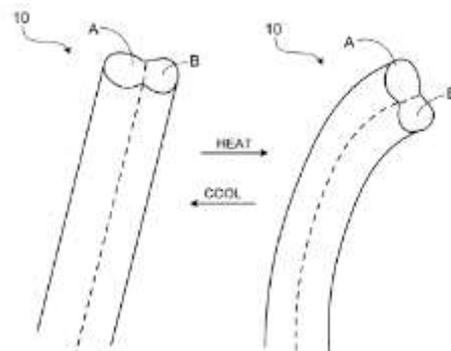
Answer: use a pair of conjoined but different textile materials (a polypropylene and a polyethylene are two cited in the claims) disposed in a side-by-side relationship, the two materials exhibiting differential thermal elongation to cause the combined fibres to bend or curl and reversibly recover in response to changes in temperature, adjusting insulation performance of the textile fabric in response to ambient conditions, and thus serve to increase or decrease the amount of air trapped between fibres, and therefore the amount of insulation provided to the wearer.

Simple when you know how. Now we just have to work out why it took until 2013 for someone to turn that into a practical, really simple solution. MMI-IPCO, LLC and Mide Technology Corporation, we salute you.

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Best of the Month – Yes To The Mess
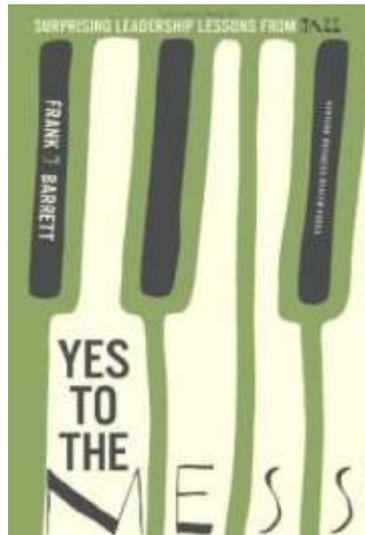
What could possibly go wrong with this one? A book about complex systems by a jazz pianist working as a management scholar in one of the US's most forward thinking business schools. And a really easy read to boot. Unlike the large majority of padded-out management literature, this is a book that can easily be devoured in a couple of hours.

The big idea is very simple: Peter Drucker's metaphor of organization as orchestra worked fine when the world was relatively stable. Now that the world is pretty much anything but stable, a pick-up band of jazz musicians makes for a far better metaphor. Orchestras are good for playing the same notes in the same order all the time; jazz musicians are all about experimentation, stretching boundaries and transcendental experiences.

Taken at that level, Yes To The Mess is really a book designed for two main SI audiences: mainly the ICMM Level 4 organisation – which, of course, immediately rules out 90% of the enterprises on the planet – but then also those people that find themselves in the 'learning and innovation' bubbles inside Level 2 or 3 organisations. People, in other words, that understand the world is complex and that their best strategy for achieving innovation success is to adopt the mindset of the prober, the experimenter and the agile adapter.

Beyond that, I'd have to say that the book isn't much of a 'how to' guide. Its success rests (or fails depending on your attitude) on the parallels that author, Frank Barrett, is able to draw between the characteristics of the best jazz musicians and the world of business. Which is to say that, provided you're open minded to the possibility that Duke Ellington or Miles Davis have something to tell you about how to run your team better than it currently runs, you're in for a great ride.

Mention Miles Davis and I'm already sold. Davis was a musician that, uniquely in almost any field of human endeavour, managed to completely re-invent himself and the music he made multiple times through his career. Never has one man created so many landmark step-changes in his chosen field. Barrett provides some terrific insiders insight into Davis' modus operandi. Like, for example, the story behind one of Davis' 1959 album, 'Kind Of Blue'. A session where the unsuspecting quintet turned up to find Davis handing them partially complete sketches of unconventional modal forms featuring none of the usual chord progressions, and then being told that they would be performing and recording only

one take of each piece. What turned out to be the best-selling jazz album of all time was, in other words, a whole string of one-take improvisations made by musicians that were so far out of their comfort zones, all they could do was swim for their lives to some new shore.

Barrett describes the Kind Of Blue story in the chapter on 'provocative competence' – one of seven key characteristics his model uses to parallel the jazz and business worlds. Provocative competence is all about the skill inherent in leaders that are able to take their teams out of comfort zones to discover new territories, all the time having a set of instincts that enables them to know exactly how far outside they can push in order to deliver a meaningful outcome. Or, put another way, it is all about the ability to interface to unknown dimensions.

As it turns out, the other six main chapters in the book describe other characteristics that fit quite neatly to an extended version of the Law Of System Completeness…
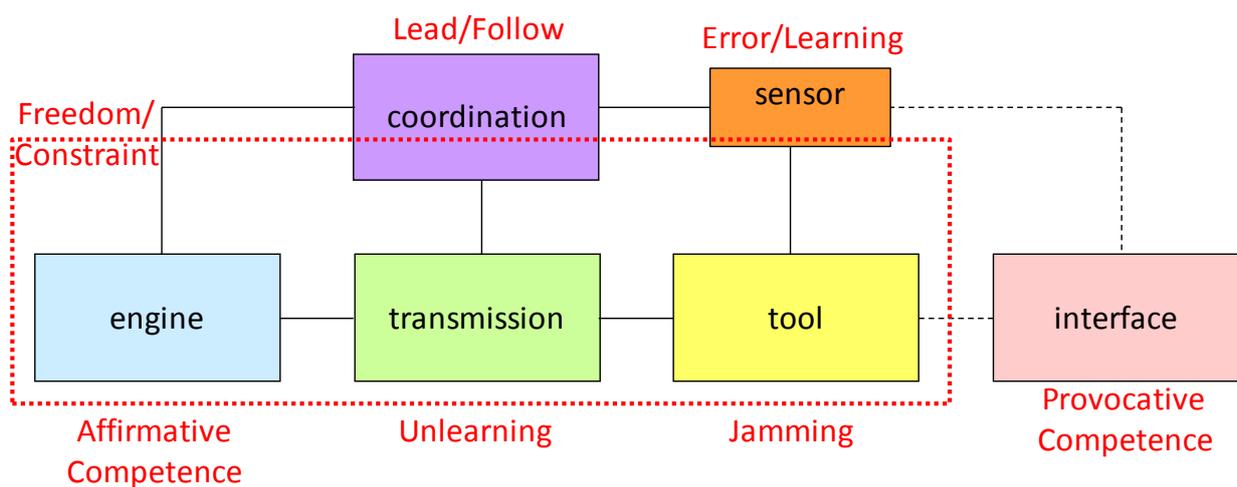
A complete system exists to deliver a useful function. In Barrett's jazz metaphor, the desired function is musical improvisation. Within that system, the following elements are required:

Jamming: the all-on-a-stage-together jam-session is where improvisation comes from. It is thus the 'tool' part of the system.

Affirmative Competence: the idea, like a musical Placebo Effect, that improvisation skills are at their peak when an individual musician believes that they're more competent than they perhaps actually are. 'What would a creative musician do at this point?' being a great spark to get people out of their comfort zone and in to a 'flow' space. This is the underpinning engine of an improvising system.

Unlearning: is the thing that connects the engine to the tool. The ability to unlearn established patterns (clichés and puns in jazz terms) is the conduit (transmission means) through which novelty is achieved.

Error/Learning: is the sensor that allows musicians to identify what is working and what is not. Central to the error/learning idea is the paradox that comes from having to learn by hearing patterns and watching gestures, repeating and imitating, and then also being able to put those patterns on one side in order to make up ideas on the spot that respond to what's happening in the moment.

Lead/Follow: crucially inside a jazz combo, although one person may have called the session, leadership within the session is constantly rotating as one musician after another takes a solo. A good jazz 'coordinator' has to therefore master both the skills of an effective leader and an effective follower…

Freedom/Constraint:.. which in turn requires the communication of a clear understanding of what is within and what is outside the rules and boundaries of the system. In jazz terms, this inside/outside debate centres around parallel desires for minimum structure to achieve maximum autonomy for the individual players.

Taken all together, Frank Barrett has done a great job of weaving together an elegantly coherent set of connections between jazz and management. No metaphor is perfect and, of course, this one has its limits – ultimately jazz, bound as it is by a framework that has only 12 notes, is a far less complex system than the fuzzy world of leading innovation teams – but I think it presses all the right buttons and sets out a direction that is both relevant and actionable. As the TRIZ world is oft found to say, there's really nothing new under the sun. Frank Barrett might well respond with the thought that not all repetition is the same.

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Conference Report – Hargraves 2013, Sydney

Fast becoming one of the premier innovation events on the calendar, this year's Hargraves main conference was convened in Sydney on 13 and 14 March, following a succession of six regional and specialist events in the preceding days. This year's theme was 'connect and discover', and as such brought together a veritable cornucopia of great and good presenters. As has always been the case, the main emphasis at Hargraves events has been on members presenting to other presenters… which means that there's an awful lot more pragmatic, hands-on, 'this is what we did' experience sharing than there is academic theory. In fact I think I was the only speaker that even vaguely veered into the latter direction – and that was only during my second day Innovation stream presentation on our new PanSensic capability. On the first day, I was invited to participate in the panel session that ended the day's proceedings with an examination of what was happening innovation-wise around the world. Here's what the conference artist made of the session:
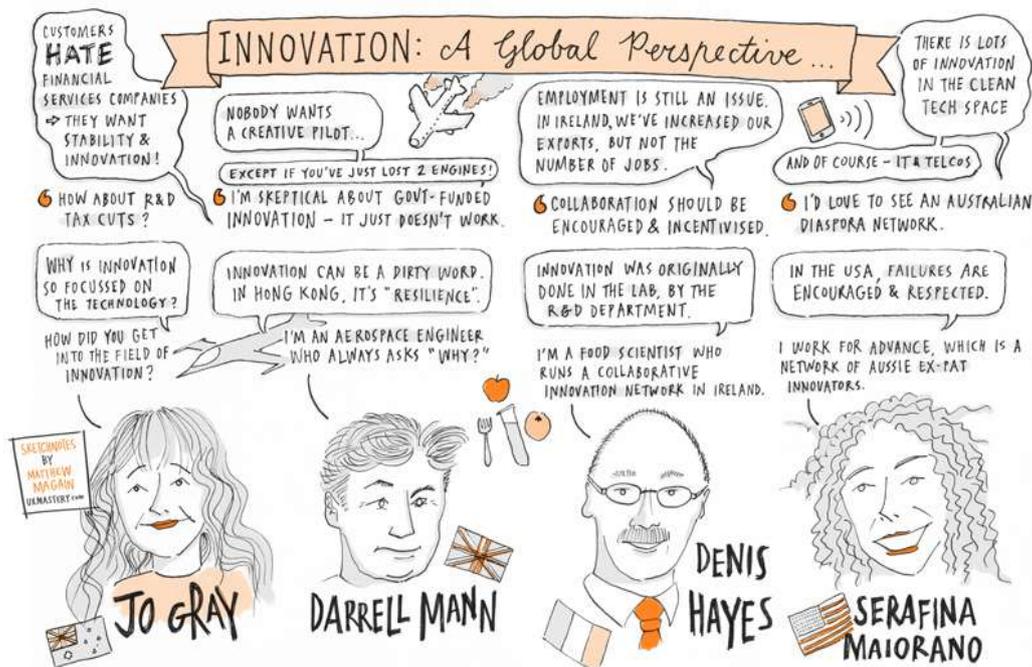
I haven't checked for a while, but I'm pretty certain my eyes don't always look like that. And rather than being an (ex) aerospace engineer that asks 'why', what I actually said was that I used to be an annoying six year-old that always asked why, and then became an aerospace engineer who tried (usually in vain) to provoke people into thinking differently by asking 'why not'. Just a detail.

Difficult to pick out particular highlights from the conference, although if I was forced to choose a couple of things, the AMP presentation on creating an innovation culture in the financial services sector was much talked about – including almost everyone saying that they would steal the concept of encouraging people to look out for and catalogue 'really dumb things' that were happening in the organization:

It was also pretty difficult not to admire the ever-expanding initiatives of ex-clinician, ex-filmmaker, Avnesh Ratnanesan and his latest foray into 'curing a million people in the next 10 years'.

Find Avi's presentation alongside all the other presentation from the 2 main days of the conference at http://hargraves.com.au/membership/members/presentations. If you're going to do it, do it quickly – the presentation will become 'members only' after April 15.

All in all, an absolute pleasure to attend. 150 people at the main conference (over 600 across the whole shebang), every one a mine of hands-dirty innovation insight. Thanks y'all.

Investments – Biological Transistor
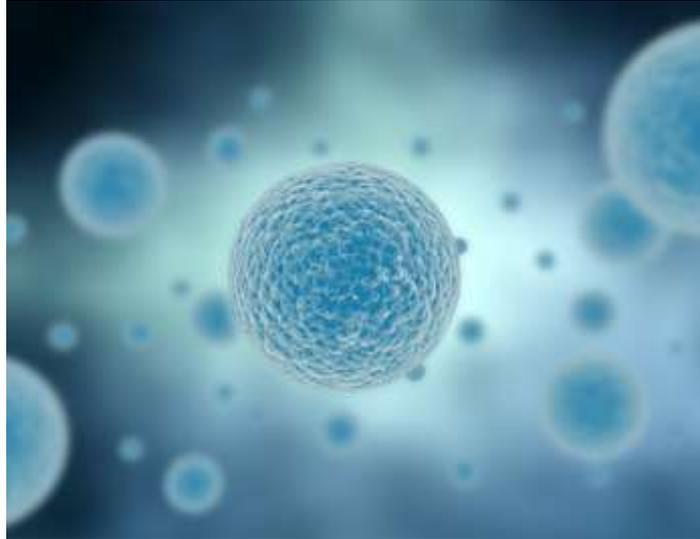
When Charles Babbage prototyped the first computing machine in the 19th century, he imagined using mechanical gears and latches to control information. ENIAC, the first modern computer developed in the 1940s, used vacuum tubes and electricity. Today, computers use transistors made from highly engineered semiconducting materials to carry out their logical operations.

And now a team of Stanford University bioengineers has taken computing beyond mechanics and electronics into the living realm of biology. In a paper published on March 28 in *Science*, the team detailed a biological transistor made from genetic material - DNA and RNA - in place of gears or electrons. The team calls its biological transistor the "transcriptor."

"Transcriptors are the key component behind amplifying genetic logic - akin to the transistor and electronics," said Jerome Bonnet, PhD, a postdoctoral scholar in bioengineering and the paper's lead author.The creation of the transcriptor allows engineers to compute inside living cells to record, for instance, when cells have been exposed to certain external stimuli or environmental factors, or even to turn on and off cell reproduction as needed.

"Biological computers can be used to study and reprogram living systems, monitor environments and improve cellular therapeutics," said Drew Endy, PhD, assistant professor of bioengineering and the paper's senior author.

In electronics, a transistor controls the flow of electrons along a circuit. Similarly, in biologics, a transcriptor controls the flow of a specific protein, RNA polymerase, as it travels along a strand of DNA.

"We have repurposed a group of natural proteins, called integrases, to realize digital control over the flow of RNA polymerase along DNA, which in turn allowed us to engineer amplifying genetic logic," said Endy.

Using transcriptors, the team has created what are known in electrical engineering as logic gates that can derive true-false answers to virtually any biochemical question that might be posed within a cell.

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Transcriptor-based gates alone do not constitute a computer, but they are the third and final component of a biological computer that could operate within individual living cells. Despite their outward differences, all modern computers, from ENIAC to Apple, share three basic functions: storing, transmitting and performing logical operations on information.

Last year, Endy and his team made news in delivering the other two core components of a fully functional genetic computer. The first was a type of rewritable digital data storage within DNA. They also developed a mechanism for transmitting genetic information from cell to cell, a sort of biological Internet.It all adds up to creating a computer inside a living cell. Adding the third element to the story is what turns 'exciting findings' into something with the potential to make an industry-transforming solution:

Digital logic is often referred to as "Boolean logic," after George Boole, the mathematician who proposed the system in 1854. Today, Boolean logic typically takes the form of 1s and 0s within a computer. Answer true, gate open; answer false, gate closed. Open. Closed. On. Off. 1. 0. It's that basic. But it turns out that with just these simple tools and ways of thinking you can accomplish quite a lot.

"AND" and "OR" are just two of the most basic Boolean logic gates. An "AND" gate, for instance, is "true" when both of its inputs are true -- when "a" and "b" are true. An "OR" gate, on the other hand, is true when either or both of its inputs are true. In a biological setting, the possibilities for logic are as limitless as in electronics, Bonnet explained. "You could test whether a given cell had been exposed to any number of external stimuli -- the presence of glucose and caffeine, for instance. Biological transistors would allow you to make that determination and to store that information so you could easily identify those which had been exposed and which had not," he said.

By the same token, you could tell the cell to start or stop reproducing if certain factors were present. And, by coupling biological transistors with the team's biological Internet, it is possible to communicate genetic information from cell to cell to orchestrate the behavior of a group of cells.

"The potential applications are limited only by the imagination of the researcher," said co-author Monica Ortiz, a PhD candidate in bioengineering who demonstrated autonomous cell-to-cell communication of DNA encoding various biological transistors.

To create their transcriptors and logic gates, the team used carefully calibrated combinations of enzymes - the integrases mentioned earlier - that control the flow of RNA polymerase along strands of DNA. If this were electronics, DNA is the wire and RNA polymerase is the electron.

"The choice of enzymes is important," Bonnet said. "We have been careful to select enzymes that function in bacteria, fungi, plants and animals, so that bio-computers can be engineered within a variety of organisms."

On the technical side, the transcriptor achieves a key similarity between the biological transistor and its semiconducting cousin: signal amplification. With transcriptors, a very small change in the expression of an integrase can create a very large change in the expression of any two other genes. To understand the importance of amplification, consider that the transistor was first conceived as a way to replace expensive, inefficient and unreliable vacuum tubes in the amplification of telephone signals for transcontinental phone calls. Electrical signals traveling along wires get weaker the farther they travel, but if you put an amplifier every so often along the way, you can relay the signal across a

great distance. The same would hold in biological systems as signals get transmitted among a group of cells.

"It is a concept similar to transistor radios," said Pakpoom Subsoontorn, a PhD candidate in bioengineering and co-author of the study who developed theoretical models to predict the behavior of the biological transistors. "Relatively weak radio waves traveling through the air can get amplified into sound."

To bring the age of the biological computer to a much speedier reality, Endy and his team have contributed all of their biological transistor work to the public domain so that others can immediately harness and improve upon the tools… and hopefully create investment opportunities therefrom.

Find out more at:
Jerome Bonnet, Peter Yin, Monica E. Ortiz, Pakpoom Subsoontorn, and Drew Endy. Amplifying Genetic Logic Gates. *Science*, 28 March 2013 DOI: 10.1126/science.1232758

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Generational Cycles – The Wise Prophet

This month, after a too-long gap, we continue our occasional series examining each of the four generational archetypes at each of their four main life stages. This month the focus shifts to the older Baby Boomers, currently in their indirect-power, late period, 'Wise' years:

		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 Wise Prophet's historical context is to spend their elder, 63 and above, indirect-power, 'advisor years' age in our ongoing global 'Crisis' period. In simple terms this means that they have a wish to advise society through this period. Their related problem being that they're not always likely to be listened to – since in the eyes of many, it is their generation that has caused the Crisis… many Wise Boomers having a sneaking suspicion the accusation is not without foundation. Here's how the Wise Prophet sits in the overall generational history cycle:
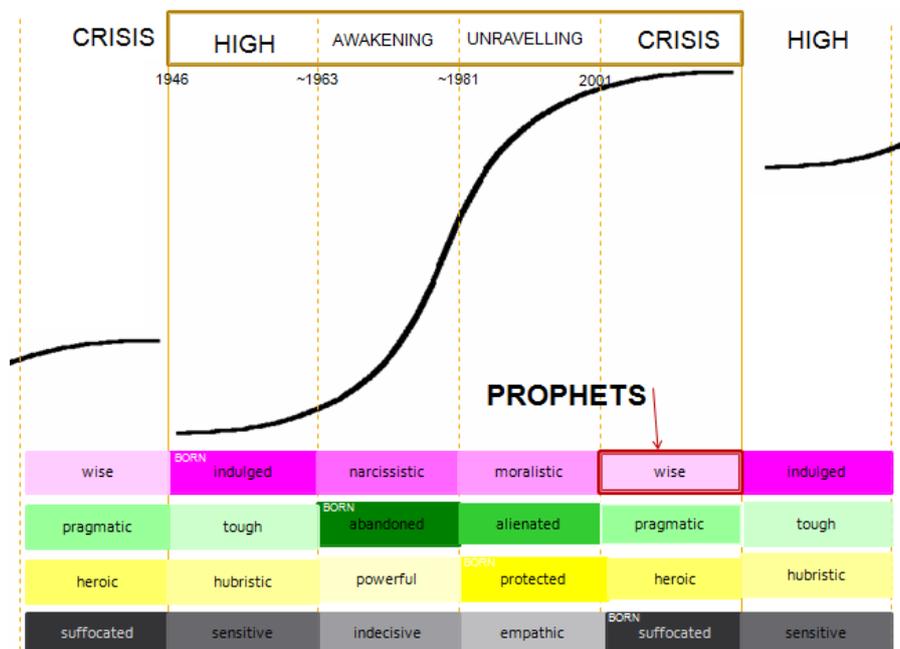
The Prophets, in this late stage of life have largely, albeit reluctantly, ceded power to a Nomad generation they're not too enamoured of. Having overcome their 'moralistic' mid-life, the Wise Prophet settles in to a life of 'handing over' what they've learned during the course of their rich and full lives on a 'when-asked' basis.

Here are what we see as their main characteristics (in no particular ranked order) during their Crisis period years:
- Immortality – no such thing as old age ('60 is the new 40')
- 'Eternal youth'
- Forward looking even in later life (dreams > memories)
- Outward looking

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- (Still) Fascinated by everything/passion for new knowledge
- Strong desire to pass on knowledge/life-learnings
- Nurturing (especially of grandchildren)
- Portfolio-lives (work, rest, play & relationships)
- Pressure to achieve from earlier life stages now removed resulting in opportunity to hit new heights
- Bon viveur/rich-life highly valued
- 'Restless calm' (Zen-like life balance)
- Idealistic/important to challenge the status quo
- Butterfly-minded/desire to do and be involved with everything
- Recognition of privileged position and being part of a very affluent generation
- (Some guilt at mid-life 'sell-out' – 'is the Crisis our fault?')
- Sense of responsibility
- Communitarian/Community/extended-family focused
- Reflective/philosophical
- Boomeritis (still stuck in the Spiral Dynamic 'Communitarian' Level)

Although it can never be said that Hollywood-anything or music-industry anything is 'typical', we can often look to both domains to see role-models and characteristics of the archetypes. Particularly useful Wise Prophet archetypes are Susan Sarandon, Helen Mirren and Jeff Bridges. Although on the 'oldest' end of the Prophet scale, Bob Dylan and (slightly younger) Tom Waits are also good illustrations of the archetype – especially when viewed through the lens of their respective re-invigorated careers and recent 'back to classic' reviews from the critics. Beyond the arts, Hillary Clinton is also highly symbolic of, particularly the female Prophet, desire to help make a difference in the world.

Key things to notice: some signs of ageing permitted, but youthful vigour is still a key appearance driver… often resulting in a lot of male hat wearing.

Key Contradictions:
1) Eternal youth versus health that is inherently beginning to suffer the ravages of time
2) Desire to 'give back' versus next generation of (Nomad) leaders not listening
3) Desire to leave a legacy versus guilt at selling out on early life principles

Relationships With Others:

	Prophets	Nomads	Heroes	Artists
Outside Friends/ Family Group	enriching, deep-conversation, (some) sold-out, redemption ongoing, competitive streak disappearing (except in relation to health – the most virile wins), forward-looking, future more important than what has happened in the past, sense of responsibility to society, community, keen to help (once asked, the floodgates will open)	frustrating ('why won't they listen to sense?'), infuriating, sinister, quiet, chip on their shoulder, lacking clarity, chameleon-like, confused, odd sense of humour, apathetic, difficult to get to know, stand-offish, anti-social, beaten-up, repressed, antagonistic, deliberately obtuse	energetic, enthusiastic, high maintenance (but worth it), open, sponges for knowledge, 'like I wish my kids had become', world-changers, future-oriented, mentees, keen to make a difference, rejuvenating, (endearingly) wreckless, brio, butterflies,	(older) depressing, 'I don't want to end up like that', surrendered, given-up, set in their ways (ossified), one-dimensional, out of touch, backward looking, memory-obsessed (youngsters) unhappy, leashed, repressed, over-scheduled, over-protected, vulnerable
Inside Friends/ Family Group	(siblings/friends) virile, stimulating, deep conversations, meaning of life, art of conversation, philosophical, reflective, willing to 'look in the mirror', positive outlook, 'glass half-full', faint sense of guilt at affluence or regret that poor choices were made, longing for previous energy/ innocence	(offspring) 'not what I had in mind', 'did I let them down?' 'refuse to listen', uncertain, stuck in minutiae of life, better parents than me (in most ways – why are they so protective even though the kids have grown up?), too-inward looking, not serious enough, given the rough end of the stick by life	(grown-up children – late parents) 'failure to launch', cosseted, 'I'll always be there for you', helicopter parents, accepting of help, optimistic, co-planning the future, mutual-engagement (grandchildren) 'the future', everything-for-them, investable, worthy, 'partners-in-crime'/co-conspirators (versus Nomad parents)	(parents) depressing, 'an anchor', difficult, reluctant sense of responsibility (grandchildren) amazingly savvy, suppressed, stifled, serious, measured, cautious, distant, questioning, philosophical, growing-up too fast

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Biology – Silver Ant (*Cataglyphis bombycina*) **II**

Way back in May 2007, we wrote about the Saharan silver ant (Issue 62). The focus in that article was the reasoning behind the ant's reflective surface. It turns out the silver ant also has a number of cunning attributes that make it into a worthy subject for our biology feature. Living in extreme conditions, as the silver ant does, seems to provoke a number of evolutionary directions that make for record breaking capabilities. In addition to being able to withstand 47degC temperatures, the silver ant also has to successfully avoid being eaten by lizards and other predators.

Largely due to the extreme high temperatures of their habitat, but also due to the threat of predators, the ants are active outside their nest for only about ten minutes per day. The twin pressures of predation and temperature restrict the above-ground activity to a narrow temperature band between that at which the predatory lizard ceases activity and the ants own upper threshold. The ants often traverse midday temperatures to scavenge corpses of heat-stricken animals. To cope with such high temperatures, the ant has several unique adaptations above and beyond their reflective silver skin. The one we focus on here is their long legs, and the contradiction they create: On the one hand, long legs help to keep the ants body away from the hot sand, but then on the other, the long legs make it more difficult to run quickly. Here's what that problem looks like when mapped on to the Contradiction Template:
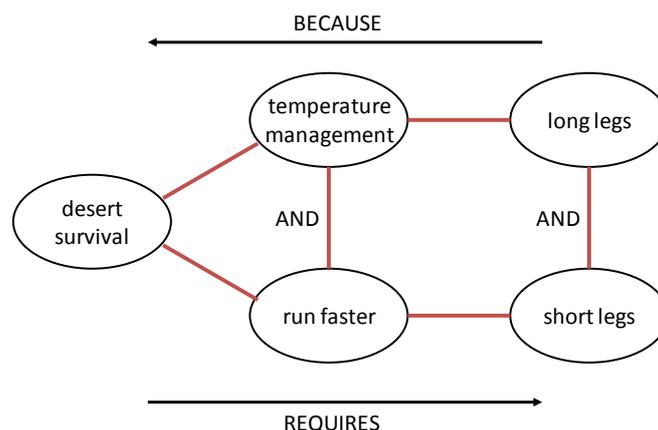
And then, here's what the central speed-temperature conflict pair looks like when mapped on to the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE
SELECTED:
Temperature (22)
WORSENING PARAMETERS YOU HAVE
SELECTED:
Speed (14)
SUGGESTED INVENTIVE PRINCIPLES:
28, 14, 36, 2, 30, 19, 13, 3

And their solution? When travelling at full speed, they use only four of their six legs. This quadrupedal gait is achieved by raising the front pair of legs. A classic illustration of Inventive Principle 2, Taking Out, in action. Or 19 or 3 if you're that way inclined.

See the ants in action at:
http://www.bbc.co.uk/nature/life/Saharan_silver_ant#p014dg7q

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Short Thort

Audience Engagement

Metaphor Rate
(metaphors/minute)
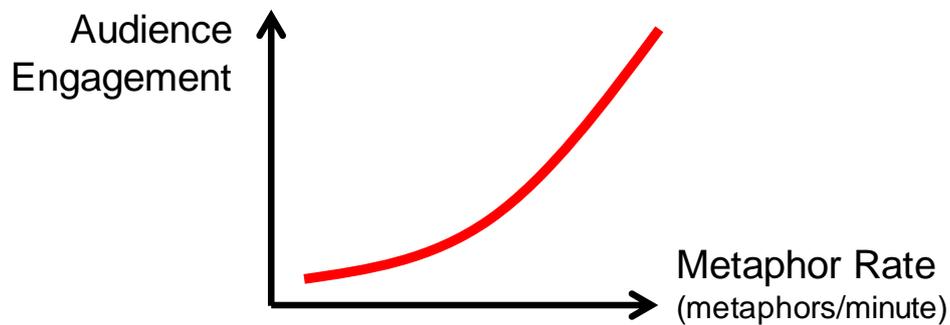
(thanks to Phil Kwok for the inspiration behind this model)

News

Australia
Following on from a wonderful trip to Sydney and Melbourne earlier this month, it looks like Darrell will be back in Australia during the first half of May. Most of the visit dates (1-15) have already been committed, but there's still one or two holes to be plugged if anyone is interested.

Music PhD
Our application for funding support for a PhD project in the area of TRIZ and music composition has been approved. Which basically now means we're recruiting for suitably qualified music/IT/SI people. Most likely starting at the end of summer.

Smartway
We are happy to announce our recently signed cooperation agreement with Smartway, a small-but-tough HongKong/China-based consulting company working in the continuous improvement domain. The focus of the cooperation will mainly be based around large-scale, long-term innovation-culture-building engagements with medium size China manufacturers looking to make the shift from OEM to ODM activities.

Cognitive Edge
Any of our readers interested in complexity and complex adaptive systems will be aware of the name Dave Snowden and his Cynefin framework. We are pleased to announce a

recently agreed experiment to integrate our ICMM model and questionnaire into his company, Cognitive Edge's range of measurement tools. One of the Cognitive Edge specialities involves the creation of 'un-cheatable' questionnaires that are better able to capture reality than normal survey methods. Expect an announcement in the next month or two as the new version of the ICMM questionnaire goes live.

Graves Future Conference
No sooner did we get all of our authors together for the proposed inaugural event in May (insert image of struggling cat herder here), several decided they had better things to do and pulled out (insert image of a frustrated Darrell shooting cats here). As a consequence we have had no option but to postpone the event. Actually, make that 'cancel': we can take a hint… we tried, but let's just say life is too short and there are far too many other interesting things to be devoting our time to…

New Projects
This month's new projects from around the Network:
>Automotive – innovation culture strategy project
>FMCG – IP study
>FMCG – New product insight study
>FMCG – Generations study
>FMCG – process breakthrough technology finding project
>FMCG – China anthropology study
>Healthcare – strategy workshop series
>Utilities – investment strategy project
>Construction – new product development
>Medical devices – product evolution strategy study
>Semi-conductor – IP workshop

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