# Systematic Innovation


# e-zine

Issue 177, December 2016

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Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.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

One of the most frequent questions we receive regarding the TrenDNA book is, ‘why are you predicting the demise of command-and-control organisations?’ The prediction appears counter-intuitive, especially, perhaps, in light of the current economic and political turbulence which appears to suggest, if anything, the precise opposite. The prediction is actually more about the demise of command-and-control enterprises *relative* to organisations that successfully embrace the complexities of the world and create self-organising solutions.

Counter-intuitive they may be, but it feels like the self-organisers of the world are already making significant inroads into the traditional, hierarchical world of command-and control. We’re living a really good example at the moment with one of our clients in the world of tourism. Specifically, a top-end-of-the-market hotel chain. They’re a classic hotel business, with several thousand employees distributed across their several hundred hotels. Part of our role has been to help in the process of reducing staff turnover and increasing innovation capability. Training several thousand employees about the values of the organization is an expensive and time-consuming business. And every time the hotel looks to expand and open a new hotel, it brings with it a whole new set of fixed and variable costs.

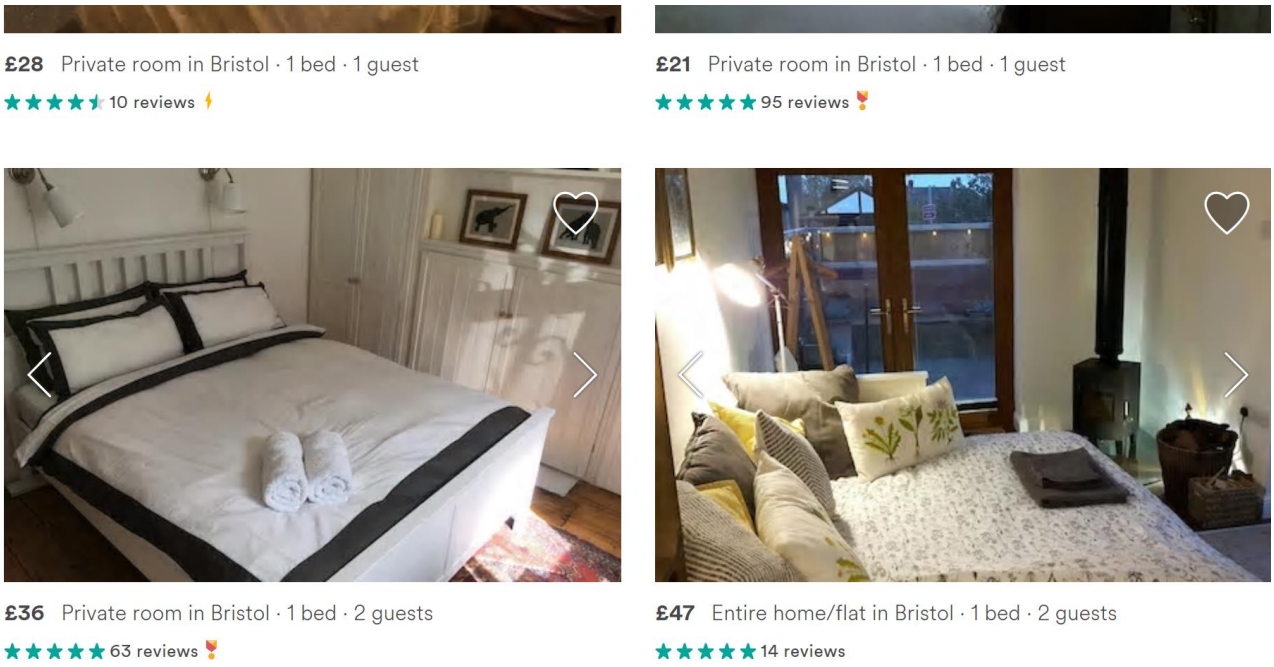
One might ask what all this training about? What are the employees being trained to do? Deal with customers? Or help make sure the hotel turns a profit?

Here’s the situation I experienced as a customer last time I checked out of one of the chain’s hotels: I’m met at the reception desk, as usual, by a happy smiling face. The smile looks kind of genuine as I’m asked whether I had anything from the mini-bar. ‘No,’ I answer. Still smiling, the receptionist picks up the house phone and calls someone. This is what the procedures require receptionists to do. Someone from housekeeping is heading to my room to check that I have indeed not taken anything from the mini-bar. I spend the next two minutes looking at the receptionist as we both wait in anticipation for the confirmation that I have indeed been telling the truth. By the time the awkward silence ends, her smile is beginning to appear a little forced and I’m reasonably frustrated. Not

with the poor receptionist, or the poor soul that's been summoned to my room to check on my minibar, but with the hotel operating protocols and systems that assumed each guest was a potential minibar thief. I'm assuming, when I say this, that the same happened to every guest, rather than just me – or maybe the hotel protocol identified me as a suspect individual, you never know. Either way, what the staff training has been about is ultimately, I think, about managing the conflict between customers and profit. If I've stolen from the minibar, the profit of the hotel is reduced; if they wrongly imply I might have taken something from the minibar, I feel less inclined to stay at that hotel next time I'm in town.

This is classic command-and-control behavior. What's being commanded and control is trust. Or rather the absence of trust.

Compare this to what happens with a typical AirBnB transaction. Let's say I decide that I don't like being accused of being a thief by the hotel chain any more and I decide to go and stay with someone close by that happens to have a spare room in their house. I get to choose from a whole bunch of alternative rooms, annexes, and even whole properties in the near vicinity:




I get to see an immediate tangible benefit since every option looks to be less than half the price of the hotel. I also get to see a whole bunch of information about, not just the room, but what previous guests have said about the host. Is the host a nice person? Are they trustworthy?

Then, the same thing happens the other way around. If I get in touch with a potential host and express an interest in staying with them, the prospective host gets to see a whole bunch of things about me. Am I a nice person? Am I the sort of person that is likely to steal chocolate and beer from their fridge? In other words, how trustworthy I am.

AirBnB is an organization that understands complexity and builds their business model around embracing that complexity. They are the opposite of command-and-control. The system self-organises because it is full of feedback loops that ensure all of the players have access to the important information they need. There's no need for expensive training in how to treat customers, because, taking away the customer-provider

relationship and replacing it with a human-human relationship means that we play by human rules and not corporate ones. Humans know that in order to be accepted by other humans you have to be trustworthy, you have to play fair, and you have to 'treat others and you'd like them to treat you'.

Eighteen months ago, my hotel chain friends didn't even have AirBnB on their competitor radar. This year, it looks like they'll lose something close to a third of their business to the upstart.

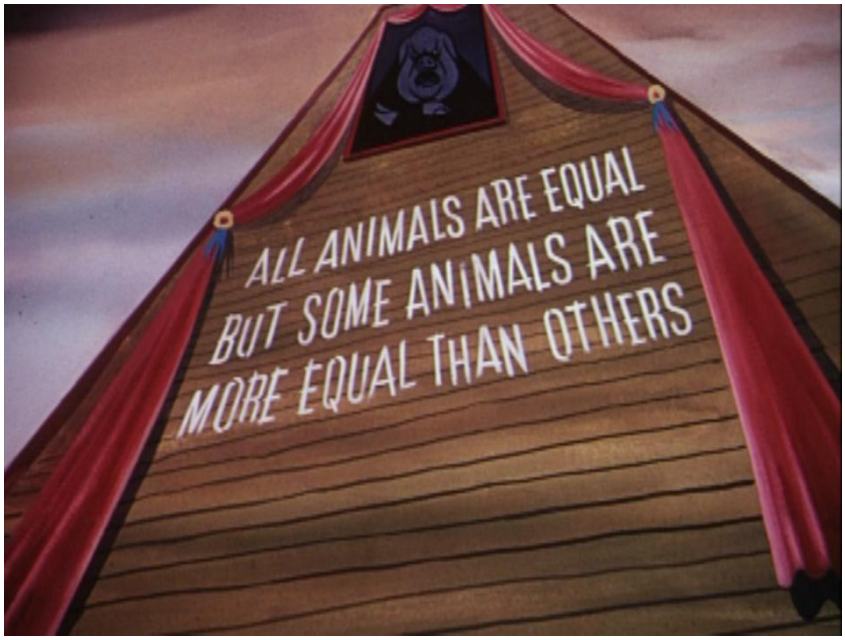
This is what command-and-control versus self-organisation looks like. AirBnB, ebay, Uber, Lyft, Zopa, and any other peer-to-peer business that understands and operates itself as a self-organising, trust-based system eat the lunch of their command-and-control contemporaries.

Self-organisation always beats command-and-control.

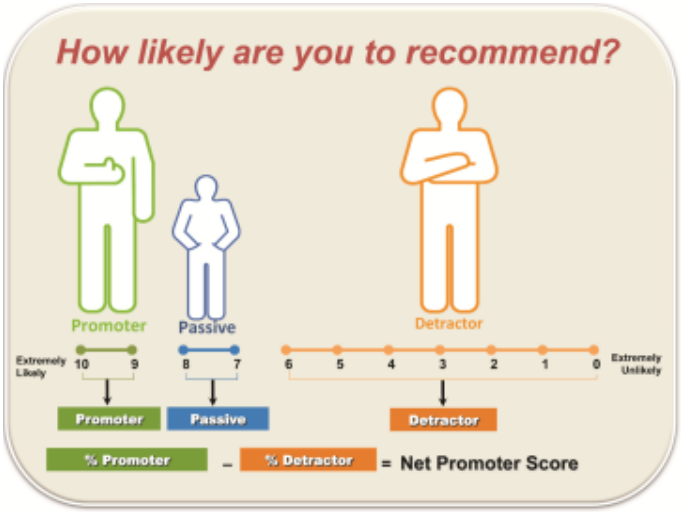
But – of course – there's always 'the next contradiction'. It's very easy for AirBnB and other peer-to-peer upstarts to embrace complexity because they have nothing to lose. The problems start to appear once they become big. And start to have very un peer-to-peer like management structures. And shareholders. They start to build internal command-and-control structures because they start to have a lot to lose. The DNA of the business shifts. Margins have to be maintained. Profit targets have to be met. Share-prices have to be managed. We can already start to see it with Uber. The first signs of command-and-control start sneaking in and all of a sudden customers begin to sense they're a part of nothing more than a whopping great Ponzi Scheme. The exception starts proving the rule.

Customers, it seems, understand 'self-organisation' far better than the corporate world.

It may already be too late for Uber, they're already starting to live out the urban transport version of Orwell's Animal Farm. All stakeholders are equal, but, thanks to a creeping evolution back to command-and-control, some are very definitely more equal than others.



# Not Promoter Score




If you ever need to see evidence of how the Operational Excellence world optimizes itself into a cul-de-sac from which it can never seemingly return, you need look no further than the world of the Net Promoter Score (NPS). AKA 'the ultimate question'. If you've ever been in a restaurant, or on a plane, or in a British hospital, and been asked the 'how likely are you to recommend us to a friend or family?' question, you already know where this article is going.

The whole shebang started, like a lot of management fads, with an article in a learned journal, in this case the Harvard Business Review. Enough people like the article that the author is encouraged to write a book. And then enough people buy the book that the publisher's demand a follow-up. Something like this:

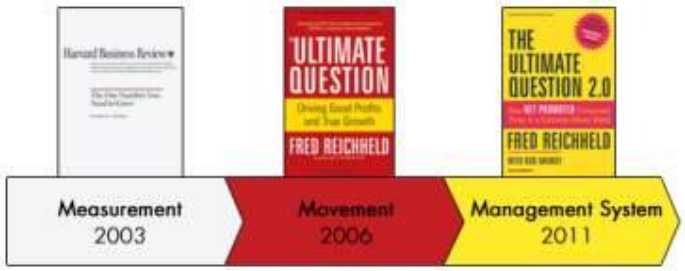



**Figure 1: Evolution Of A Management Fad**

Despite the irony that an 'ultimate question' would ever need a version 2.0, it's easy to see how managers fell into the trap. The whole thing starts from the author's discovery of a correlation between the share price of an organization and how much the customers of that organization said nice things about them. The key word in that sentence being 'correlation'. The second key element being the slightly more subtle idea that something that sounds inherently obvious ('successful companies have happy customers', duh) now had actual data to 'prove' that it was true. Not only that, but now managers had access to a standard measurement scale that held the potential to benchmark themselves against others, and – perhaps more importantly – to monitor their own progress. CEOs spend a lot of their time worrying about things like share-price, and so anything that purports to help them to 'manage' the unmanageable found a highly receptive audience. CEOs quickly came to love NPS. It allowed them to feel more in control of the business. And a weapon

to beat-up business unit heads when they could see the NPS heading in the wrong direction.

So far so good. But not, sadly, if you were one of the beaten-up managers. Very quickly the people tasked with actually looking after customers grew to hate NPS. The problem with managing businesses with the one 'ultimate question' score is that it knowing that your score had dropped three-points this quarter offered up no insight at all into *why*. Or, more importantly, what you might need to do to get things back on track next month.

Reducing complex situations – like 'customers' – down to a single number sounds great if you're the CEO. Sadly, unless you've accidentally hit upon the fundamental 'DNA' from which the complexity emerges, your attempt is destined to end in failure and frustration.

As soon as we see a book called 'The Ultimate Question 2.0', we can be fairly certain that said DNA has not been revealed. Author, Fred Reichheld, himself has been forced in recent years to concede that his research too has fallen into the frequently fallen into trap of mistaking correlation and causation.

A big part of the 'ultimate question' fallacy is that people asked the question rapidly become jaded. The first time I see the question as a customer, I'm likely to find it intriguing. It makes me think about my friends and family, and how I think they might enjoy what I've just experienced. It ticks all the ABC emotional boxes: I'm in control (Autonomy), it connects me to my (Belonging) tribe, and, hey, all I have to do a rank my experience on a Likert Scale, so I feel Competent.

But then, the second time I'm exposed to the question, it's less intriguing than it was the first time. From a Kano perspective, the Exciter is already a lot less exciting. By the time I've seen the bloody question for a fifth or sixth time, I'm thoroughly dis-enchanted by the whole charade. The damn restaurant hasn't got any better than the first time I visited, so why do I even bother? Or, because by asking me yet again, they're starting to annoy me, why don't I just lower the score. That'll show them.

And so the downward spiral of irrelevance begins.

Let's call it a contradiction. A conflict between a providers desire to understand what their customers think about them, and their inability to acquire a meaningful measurement. Or at least not an easy measurement. All NPS has done, it seems, is to trade meaning for convenience. Whereas, if Reichheld et al had sat down with the intention of actually solving the contradiction rather than trading off, they might have ended up somewhere else entirely.

Somewhere like PanSensic, perhaps? Not that this is intended to be an advertisement for our tools, just that things like the Net Promoter Score cause us to remember why we got into the measurement game in the first place.

Job one is to make use of existing, ideally 'free', data, rather than bludgeoning customers into answering questions they have no interest in answering. Job two is to make sure that the data is unstructured narrative in sufficient quantity that I'm able to have enough lines to read between, and to establish how representative, relevant, reliable, and congruent the words are.

Once I've got those two things, I'm well on the way to being able to conduct a sentiment analysis like the exemplar shown in Figure 2, an analysis of the blog content of a host of American truckers (a cohort, it turns out, that seems to find an awful lot of time on their hands to write about their lives!):

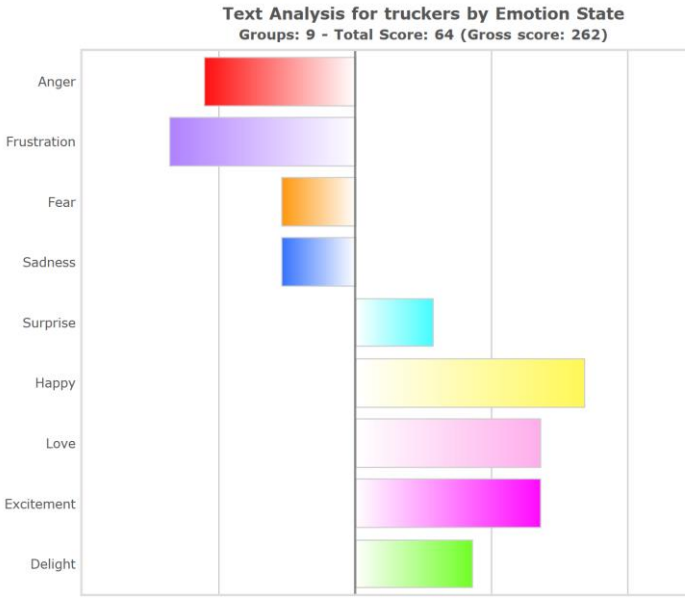



**Figure 2: Exemplar Sentiment Analysis**

This kind of analysis is standard fare as far as PanSensic is concerned. The steps from this analysis to a Net Promoter Score are then fairly short and sweet. Firstly, we need to calculate some kind of ratio between the positive and negative emotions being expressed. Second, we need to somehow cross-calibrate these ratio scores to some NPS data. This step is rather more troublesome, since it is far from clear that there is such a thing as NPS data that is in any way truthful due to the fundamental flaws in the whole system. In this regard, our main hope for the future is that, having given the world a basic scale of measurement, the method of scoring an organization on that scale has the chance to evolve away from the 'ultimate question' fallacy.

The best we've been able to do so far is to simply take lots of NPS data – such as the Figure 3 analysis taken from a cross-section of Australian customer perspectives – scrape lots of customer narrative around the different product domains being measured for the same time period, and use a machine learning algorithm to find the appropriate weighting of each of the sentiment analysis figures in Figure 2 relative to one another.

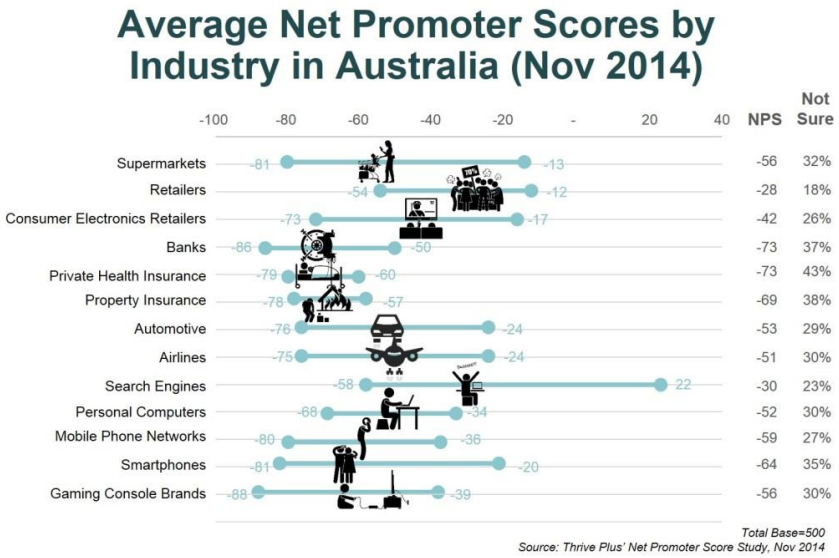



**Figure 3: Typical NPS Data Acquired Through 'Ultimate Question' Survey Means**

Do this enough times, and hey presto, what you end up with is effectively an automatic NPS tracker. Just point it at whatever social media narrative you determine is relevant (Trip Advisor reviews, Facebook, etc) and watch what your actual Not Promoter Score is doing – Figure 4. I say, 'Not' to avoid infringing on Dr Reichheld's copyright and also because, one of the things we're finding is that the reality we're finding is that most customers who say they're likely to recommend your amazing restaurant or not-so-smart-watch to their family and friends don't actually mean it.

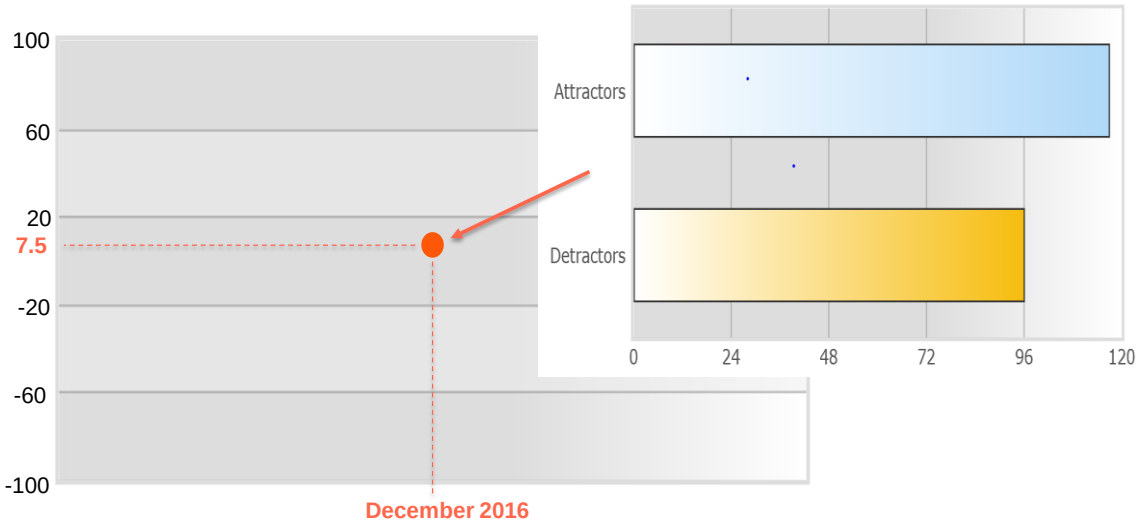



**Figure 4: Post Machine-Learning Training Of Not Promoter Score Algorithm**

Then comes the best bit. The bit that solves the CEO versus manager contradiction. The automated Not Promoter Score calculator gives the CEO the magic number he or she is looking for. But rather than being the blunt instrument then used to bludgeon the customer interfacing managers with, PanSensic allows them to drill-down into the sentiment analysis and work out what their customers are frustrated and angry about – Figure 5 – such that they now have a much clearer insight into what needs to be done to get the scores moving in the right direction. And thus allow the CEO to get a restful night's sleep.

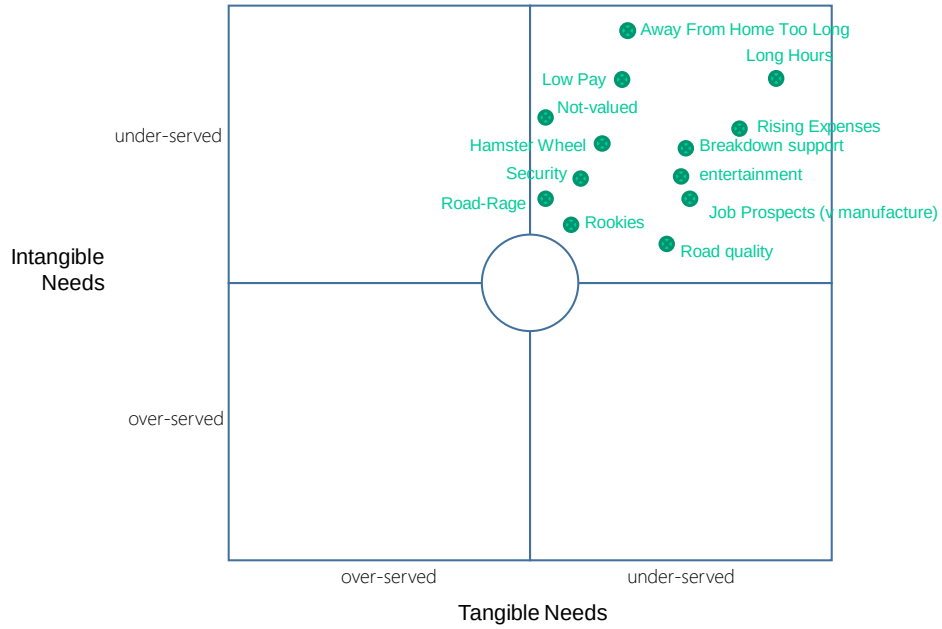



**Figure 5: Frustration Drill-Down Example – US Truck Driver Frustrations**

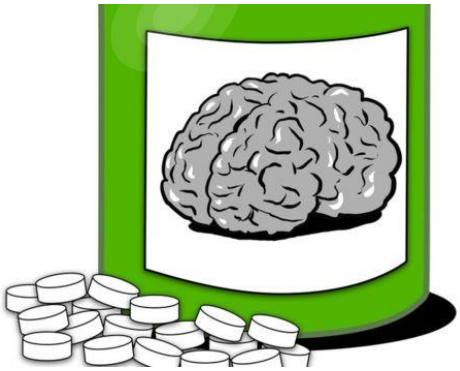
**Not So Funny – Emoldji's**

Without wishing to get too dystopian, the world of emojis seems to be bringing a new twist to George Orwell's thoughts about our use – or not – of language. In theory, emojis represent classic 'a picture speaks a thousand words' attempts to summarise oft experienced human emotions. In reality, they tend to get used as a time-saving excuse for regurgitating cliché. People, I seem to remember, generally strive to expand their lexicon. In Orwell's dystopian classic, the government in *Nineteen Eighty-Four* expressly aimed to cut back the Newspeak vocabulary. One of the Newspeak engineers says, "[we're] cutting the language down to the bone . . . Newspeak is the only language in the world whose vocabulary gets smaller every year". By manipulating the language, the government wishes to alter the public's way of thinking. This can be done, psychologists theorise, because the words that are available for the purpose of communicating thought tend to influence the way people think. The linguist Benjamin Lee Whorf was a firm believer in this link between thought and language, and he theorised that "different languages impose different conceptions of reality". So when words that describe a particular thought are completely absent from a language, that thought becomes more difficult to think of and communicate. For the Inner Party, the goal is to impose an orthodox reality and make heretical thought ('thoughtcrime') impossible. "In the end we shall make thoughtcrime literally impossible," explains the Newspeak engineer, "because there will be no words in which to express it"

Orwell didn't have the foresight to anticipate this as a way of suppressing a need to think:

Had he have made the connection between language-reduction and pictograms, he might, though, have gone on to predict the diversification of the art. In true Orwellian 'doublethink' fashion, the broader the range of emojis, the dumber we all become.

Enter 'emoldji's' – emojis specially designed for old people that can no longer be bothered to remind their significant others to take their memory medication:



Or how about, ‘I’ll meet you at Bingo later’…


Or, ‘disapproving look from old person’…

Or how about, ‘spending the kids’ inheritance’…



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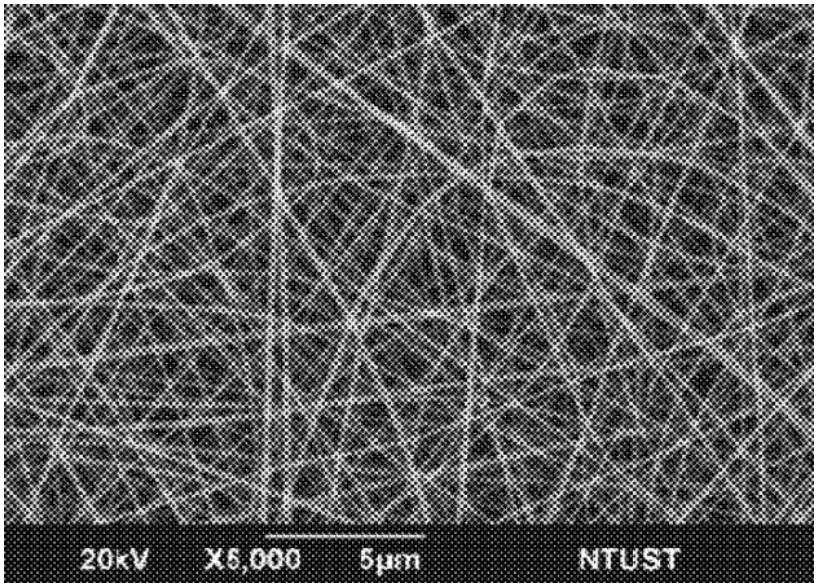
As for this one, let's just say you don't need to know anything about budgerigars…

And, while we're on the subject of looking forward to a pictogram-only future, thus destroying the human capacity for vaguely intelligent thought completely, I'm thinking of petitioning the Unicode emoji authorities ('Ministry of Education' division) to consider taking on board the following missing pictograms from their catalogue:

- Already regretting my Brexit/Trump/etc revenge-vote
- Fake news alert
- Fake news double-bluff alert
- Not-playing-your-politically-correct-BS-game-any-more
- Two carry-on items *including* your duty-free-shopping, you cretin
- Person prone to cheating queues to get to the front quicker, then takes forever when they reach the counter
- Boomer Narcissist-now-Moralistic (probably an image of Sting? Or Bono?)
- Walk in the right-lane you goggle-eyed, smartphone-obsessed idiot


Give it a couple of years and we might just get the global average IQ down to single digits. Then the budgerigars can legitimately take over.

**Patent of the Month – Sound Absorbing Material**

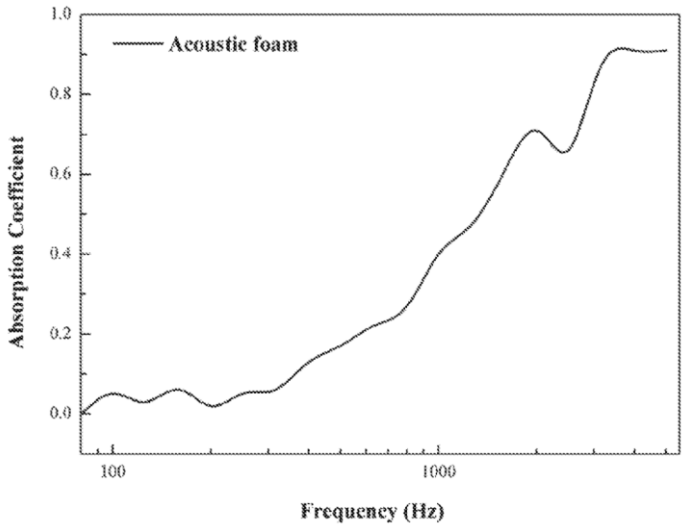



Short and sweet this month. Our winning patent takes us to a trio of inventors at the National Taiwan University of Science & Technology. US9,514,732 was awarded to the team on December 6.

Here's what the background description tells the reader:

*Nowadays, buildings become not only provide shelters but also symbolize quality of life. Governments and technology workers have drawn attention to noise problems. Noise may be controlled mainly in two ways, that is, to reduce or eliminate from a source of noise or to isolate the noise by using sound-absorbing material.*

*Since it is not easy to find where the noise came from, various kinds of sound-absorbing materials such like acoustic foams or fabrics were developed. With reference to [the figure]*




*…conventional sound-absorbing material mainly absorbs the sound in high frequency over 1000 Hz and performs bad absorption ability at middle to low frequency. Many researches indicate that middle to low frequency may cause more serious damages to human's healthy than high*



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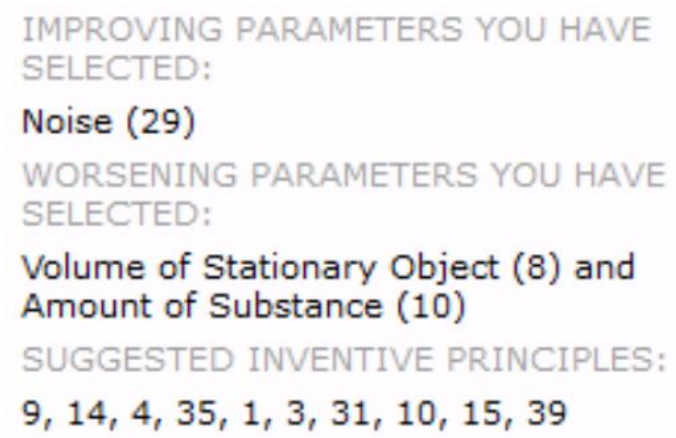
*frequency. Thus, creating a sound-absorbing material mainly absorbing middle to low frequency or even a full frequency sound-absorbing material is necessary.*

Although not specifically mentioned in the invention disclosure, the basic contradiction that usually emerges as a result of the poor low-frequency absorption performance of acoustic foams relates to the thickness of foam material deployed. The higher the absorption required, the thicker the foam layer needs to be. Here's what that conflict looks like when mapped on to the Contradiction Matrix:



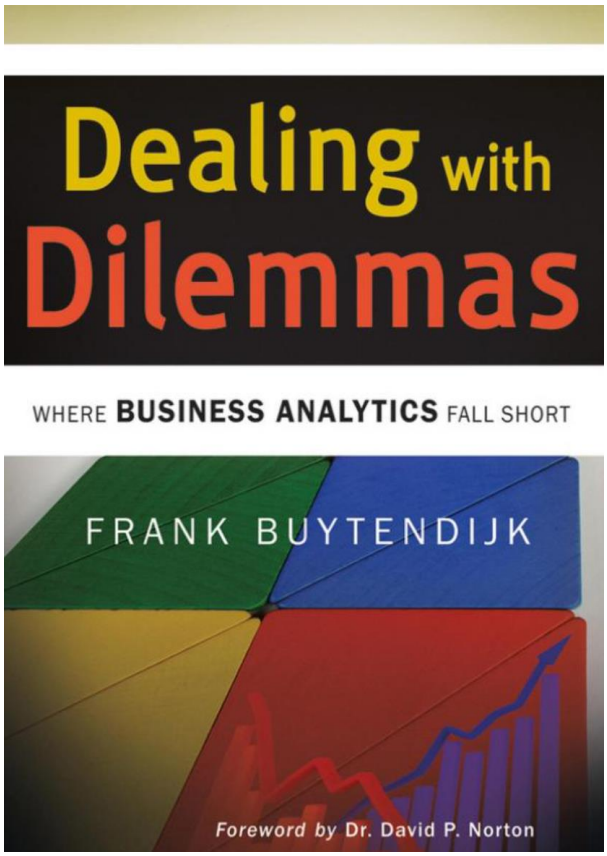

And here's what the inventors have done to solve the problem:

*…a membrane having multiple piezoelectric* (Principles 35, 15) *fibers, wherein: a density of the membrane is below 50 g/m.sup.2; a thickness of the membrane is below 1 mm; the multiple piezoelectric fibers are polyvinylidene fluoride electrospun fibers containing at least 65% of .beta.-phase polyvinylidene fluoride crystallization* (Principle 3)*…*

*…Importantly, although the PVDF electrospinning nanofiber membranes described are extremely thin (<1 mm)* (Principle 1) *and density are all below 50 g/m.sup.2, the present invention still performs excellent sound-absorbing ability in middle to low frequency with sound-absorbing coefficient over 0.1 at 100 Hz and over 0.05 at range from 800 Hz to 1000 Hz…*

Somewhat surprisingly, the disclosure doesn't say anything about why the fibers are piezoelectric… a fairly common characteristic in high Level solutions where inventors have stumbled upon something that works unexpectedly well…why explain how it works if you don't have to? Why reveal the physics to potential copyists? One might speculate that the compression and expansion of the fibers when they are subjected to sound waves are somehow working to convert the sound energy into a mechanical stress? In which case, one might also speculate that, although the inventors appear to have hit upon something quite important, they haven't made as good a job as they might have done of exploiting the untapped Evolution Potential of their step-change solution… over to any of our more entrepreneurial readers on that one…

**Best of the Month – Dealing With Dilemmas**




So, here's a rare thing. An 'establishment' management text book that mentions TRIZ. From 2010 no less. It also mentions Theory of Constraints and the 'Evaporating Cloud' contradiction model. Not that the author actually understands or knows how to use either. But at least the connection is made, and that can only be a good thing. The biggest value of this book is that it serves as a terrific primer for anyone trying to convince themselves (or, better yet, their boss) that contradictions (dilemmas) are a) important, and b) solvable. That aside, experienced TRIZ people will also find much of value. Even if they will find themselves periodically cursing the author's lack of knowledge of the method. Meanwhile, back to the main job… convincing others that dilemma-solving is the way forward…

…For the last twenty years, professionals in the innovation arena have complained that their work deserves more executive attention. Many would go so far as to say it should rank first on the CEO agenda. After all, isn't the CEO busy with dilemma-oriented decision-making every day? Aren't they literally surrounded by things like:

• "This-versus-that" dilemmas are about resource constraints. There's simply not enough money, time or manpower to tackle all business opportunities — which one to choose?

• "You-versus-me" dilemmas are about the needs of the stakeholders in the company. Shareholder requirements do not necessarily match the needs of employees. Consumers pose difficult dilemmas, too: They require the lowest possible price, but they also increasingly demand that a company should be socially responsible and have a green approach as well.

• “Now-versus-later” dilemmas are about the need to find a way to satisfy short-term requirements, such as quarterly profitability, while ensuring long-term success, for example by investing in innovation.

Traditionally, of course, most C-Suite executives have not got to where they’ve got by innovating. They’ve got there by climbing the Operational Excellence mountain better than everyone else around them. They have focused mostly on analysis and ‘grinding the numbers’ to get to the ‘optimum’ solution. We talk about simple analytics, such as variance analysis, drill-down, and management by exception, and we discuss more complex approaches such as data mining and predictive analytics. Yet, important as these techniques are, analytics are not very helpful in dealing with dilemmas. Analysis — the art of taking things apart until you understand how they work — only confirms and strengthens dilemmas. No wonder that executives tend to value innovation activities only for tactical issues.

A different toolkit is needed for strategic decision-making: not analysis, but the opposite, synthesis. Synthesis is the process of taking multiple, often contradictory, ideas and fusing them to create a single picture. By bringing together opposite positions, you fundamentally solve business problems, and you raise your organization to a new level of insight.

Think about this example: Most organizations have been centralizing and decentralizing for decades, without fundamentally moving forward. All they achieved was to exchange one set of problems for another, eventually reverting to the original set. The pendulum keeps swinging, and a stable synthesis between centralization and decentralization is never reached. The simple reason being that executives have little or no awareness of a ‘third way’. Any oscillatory organisational behaviour is symptomatic of too much analytical thinking and not enough synthesis-thinking.

According to Buytendijk, we can help simplify the analysis-synthesis transformation of executives by distilling the world of dilemmas into a small, manageable number:

**The Six Fundamental Dilemmas**

The idea of synthesis is not new — it was familiar to the ancient Greek philosophers — but it seems that in our MBA programs and business best practices, we have forgotten all about it.

But there’s some good news. Through extensive research, including high-profile executive interviews and a worldwide survey, Buytendijk has found (no surprise, TRIZ people!) that many of the dilemmas that organizations face are the same. And they are predictable.

Even better, Buytendijk proposes, we can use today's best practices to reveal them, particularly the Balanced Scorecard. This management tool started out as a performance measurement framework, then became a performance management methodology, and is now positioned as a strategy execution system. However, Buytendijk takes the Balanced Scorecard in a previously unexplored direction, that of strategy formulation, the area where executive decision-making ultimately resides. To do that, he goes back to the origins of the Balanced Scorecard in the early 1990s.

Originally, the Scorecard showed four perspectives that companies should consider, equally grouped around the strategic objectives. Later, the four perspectives were *linked* to create *cause-and-effect* relationships in what were called strategy maps.


However, if we don't link the perspectives, but instead *contrast* them, the six fundamental dilemmas that each company faces unfold:

| Dilemma | Balanced Scorecard Perspectives | Description |
|---|---|---|
| Value vs. profit | Financial/Customer | Customer value or profit maximization? |
| Top-down vs. bottom-up | Financial/Process | Zero-based view or resource-based view of the firm? |
| Optimize vs. innovate | Growth/Process | Also known as exploitation vs. exploration |
| Listen vs. lead | Customer/Growth | Innovate through listening to customer requirements or by creating new demand? |
| Inside-out vs. outside-in | Customer/Process | Who leads? Back-office or front-office? |
| Long-term vs. short-term | Growth/Finance | Long-term business performance or short-term financial results? |

(Note for TRIZ people: we know the Balanced Scorecard Model can't be 'right' because it doesn't satisfy the Law Of System Completeness. If Buytendijk had understood this, he would have ended up with more than six 'fundamental' dilemmas… nevertheless the insight that 'fundamental dilemmas' are the conflicts that exist between each of the essential elements of a system is a very compelling one… at some point in the future, expect an article from us on what, if we apply the Completeness law, ought to be fifteen fundamental dilemmas.)

### The Four Strategic States

Every organization has a particular way of dealing with its dilemmas. Buytendijk finds that there are four states you can be in for each of the six dilemmas: stuck, neutral, biased (left or right) or stretched.

*Stuck* means the organization scores low on both sides of the dilemma. This is the worst situation; you can neither optimize nor innovate, nor can you control for either the short-term or the long-term.

*Neutral* means the organization is doing OK, but lacks competitive differentiation.

*Biased* one way or the other (either to the lefthand or the righthand side of the dilemma) means that the organization scores relatively high on one side but low on the other. There is a natural preference for inside-out thinking, for example, or for profit maximization, and

the other side of the dilemma is often an afterthought. Indeed, the inside-out approach and a profit focus are the two most common biases.

*Stretched* is the state you want your organization to be in. A stretched organization has found a way to encompass both sides of the dilemma — for example, by listening to its customers while leading them at the same time. It's neither a balance nor a compromise, but instead a true reconciliation — in other words, a synthesis.

Some dilemmas are harder to deal with than others. Close to 40 percent of all respondents in my global *Dealing with Dilemmas* survey stated that they were strategically stuck in the long-term versus short-term dilemma, and more than 40 percent felt the same about innovation versus optimization. Even if you look at the companies that score very high overall (the top 4 percent that achieve stretch on four or five dilemmas), their lowest scores occur in those same two dilemmas.

The biggest area of strategic bias Buytendijk found is the value-versus-profit dilemma. Some organizations focus on the customer, following the philosophy that profits will follow as a logical consequence of providing value. But this is not always true. Most customer profitability analyses show that a certain percentage of large and respected customers are often simply not profitable. Having large account teams, offering quantity discounts, and other measures to keep and grow large customers adds to the cost of sales, which is not always considered in the customer relationship.

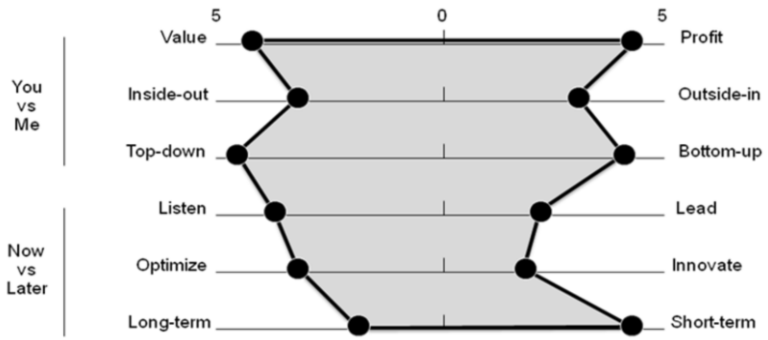
However, it’s more common for organizations to have a strategic bias for the profit side, even to the detriment of customer value. This cannot be a sustainable situation for the long term. There must come a point when customers discover the organization’s bias, or they find an alternative provider and defect.

**The Strategy Elastic**

According to Buytendijk’s thesis, a good way to visualize how you’re doing with the six dilemmas is to create what he calls a 'strategy elastic' . Creating strategic stretch is very much like working with an elastic band. If you only pull it from one side, the other side will move in the same direction. You can only stretch it if you pull from both sides. And the harder you pull in multiple directions at the same time, the more space you create, which is the objective of strategic management.

The metaphor of an elastic band is particularly appropriate because it implies that you can't stop pulling, otherwise it goes back to its neutral position. It’s the same with strategy; you need to keep working on creating strategic stretch, otherwise the organization will fall back to average results.

Here’s an example of what a ‘strategy elastic’ looks like for a typical organisation:



## Solutions to Dilemmas

Finally, and perhaps most disappointingly from a TRIZ perspective (or rather the 'lack of use of TRIZ' perspective), Buytendijk proposes a number of conceptual solutions for each of the six dilemmas. I suppose, at the very least, in fairness to Buytendijk, these 'solutions' do show some correlation to some of the Inventive Principles:

• **Value and profit.** Providing a transparent price structure and transparent terms and conditions makes it easy to create a clear value proposition for customers. Transparency can be a competitive differentiator, leading to higher market shares and profit. (Principle: 32)

• **Long-term and short-term.** Adopt an "options-based" strategy. When assessing your strategy, don't think just in terms of whether it's right or wrong; consider whether it helps you adapt to changing circumstances. Take decisions that address today's issues, while keeping your options open for future change. (Principles: 1, 15)

• **Top-down and bottom-up.** On the tactical level, align financial top-down planning with operational forecasting, linking resources to activities and financial results. On the strategic level, let go of the idea of a financial portfolio of activities, and focus only on activities that contribute to the brand. (Principles: 12, 2)

• **Inside-out and outside-in.** Many organizations seem almost to cherish the conflict between back office and front office, and treat their needs as trade-offs. However, there's no contradiction between the need for administrative efficiency and the need for sales flexibility. Customer self-service models bring more efficiency to the back-office, while improving the customer value proposition. (Principle: 3)

• **Optimize and innovate.** Create aspirational goals that cannot be met by optimizing existing processes and ways of working. Disturb existing processes on purpose with new and different inputs to see how people react to them and to ensure that your teams will be ready if external conditions change. (Principle: 22)

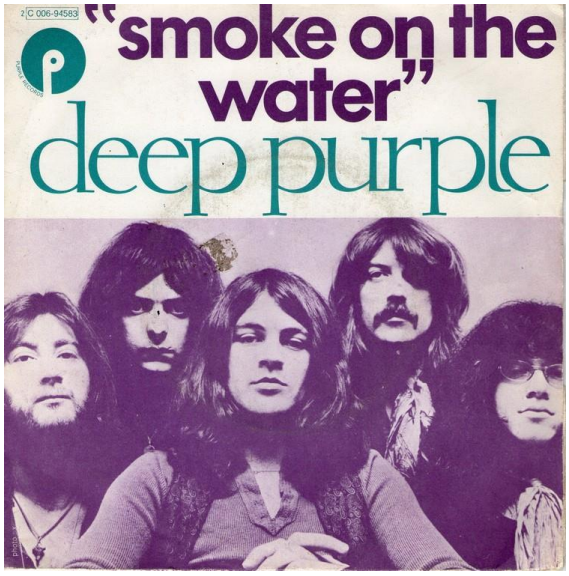
• **Listen and lead.** Why not lead your customers while listening to them? If you're able to detect the question behind the question or understand customer behaviour better than your peers, you can develop a great source of competitive differentiation. (Principles: 23, 5)

## So What?

Performance management, 'analysis' professionals, Buytendijk concludes, need to rethink their best practices. Many of these methods have proven to work perfectly when solving linear and tactical problems, but they're not useful for strategic decision-making processes. You need to bring a bigger toolbox to that job, and it must include an understanding of the dilemmas that executives have to deal with, the various ways your company tends to deal with them, and the practical solutions that have evolved in other companies, times and industries.

It's time, Buytendijk finally tells us, we had fewer people calling themselves analysts, and more people seeing themselves as synthesists. Amen to that from a TRIZ perspective.

**Wow In Music – Smoke On The Water**




Sometimes it takes the convergence of just a small number of unlucky events in order to make a catastrophe, as it is often the case in airplane accidents. Paradoxically, other times unlucky events and catastrophes lead to art and music (Principle 22!). In 1971 a fire broke at the Montreaux Casino during a Frank Zappa and The Mothers of Invention concert triggered when someone at the audience fired a flare gun toward the rattan covered ceiling (ouch!). Deep Purple was there as the band was in Geneva recording an album using a mobile recording studio rented from the Rolling Stones. The effect of the event on one of the band member's mind (bass guitarist Roger Glover) made him dream of 'smoke on the water', which became the title of one of the most famous songs of Rock and Roll history.

More than the story itself, which is somehow unique, what makes Smoke On The Water remarkable was the riff that was created by guitarist Richie Blackmore as a compositional 'trick' based on one of the most famous classical compositions ever made: the 5th Symphony by Beethoven. According to Blackmore the riff (a repetitive motif) is "an interpretation of an inversion" (Principles 13, 16) of the initial rhythm of Beethoven's work which, he adds, should be played in parallel fourths (Principle 5), like some songs from medieval times. Blackmore credits to Beethoven much of the money he made as a result of using this technique. The medieval 'twist', by the way, is also a major part of Blackmore's current work with singer Candice Night and their band Blackmore's Night, a sort of folk Rock and Roll.

Like in other famous rock anthems (Van Halen's Jump is another one - check the October issue n. 175 of this eZine), Smoke On The Water's riff plays an important role in connecting all the other musical elements together, including Blackmore's guitar and Jon Lord's organ solos (the climax of the song, perhaps?), and the song narrative. In itself, the riff is instantly recognisable, much as Beethoven's own 5th Symphony. It has a unique identity and, on its own, triggers in the audience members' minds a series of memories and emotions. Why don't you take the time to check your own memories and emotions when you listen to this song?

Here is a video on YouTube:
https://www.youtube.com/watch?v=zUwEIt9ez7M

And here, the lyrics:

*We all came out to Montreux*
*On the Lake Geneva shoreline*
*To make records with a mobile*
*We didn't have much time*
*Frank Zappa and the Mothers*
*Were at the best place around*
*But some stupid with a flare gun*
*Burned the place to the ground*

*Smoke on the water, a fire in the sky*
*Smoke on the water*

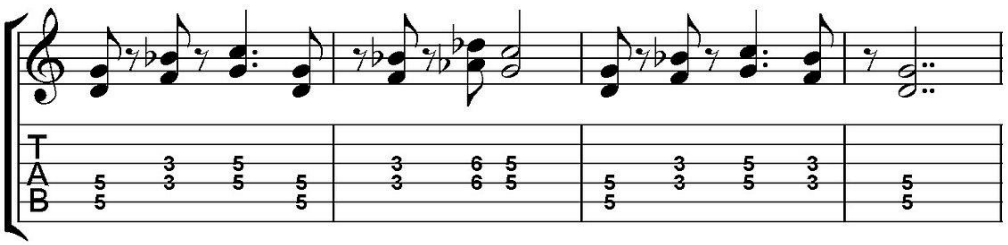
*They burned down the gambling house*
*It died with an awful sound*
*Funky Claude was running in and out*
*Pulling kids out the ground*
*When it all was over*
*We had to find another place*
*But Swiss time was running out*
*It seemed that we would lose the race*

*Smoke on the water, a fire in the sky*
*Smoke on the water*

*We ended up at the Grand Hotel*
*It was empty, cold and bare*
*But with the Rolling truck Stones thing just outside*
*Making our music there*
*With a few red lights, a few old beds*
*We made a place to sweat*
*No matter what we get out of this*
*I know, I know we'll never forget*

*Smoke on the water, a fire in the sky*
*Smoke on the water*

And here's the riff. Altogether now… duh-duh-duh, duh-duh-du-duuh…



# Plus de dix millions de francs de dégâts ?

Le feu a détruit le Casino de Montreux. Il s'est déclaré vers 16 h. 20, dans la grande salle, alors que 2000 personnes applaudissaient un concert de pop-musique. En quelques minutes, un brasier géant. En quelques heures, un bâtiment presque entièrement anéanti. Il ne reste que les murs et deux ou trois petits locaux.

L'origine du sinistre est inconnue. On a parlé d'un court-circuit, d'un spot éclaté, d'une négligence, d'un pétard même. Il importe de dire que toutes ces suppositions sont gratuites et qu'il appartient aux seules autorités judiciaires de faire la lumière sur le drame.

Il est également très difficile de mesurer l'ampleur des dégâts. Lors de la conférence de presse tenue par la Municipalité et le conseil d'administration du Casino, il n'a été évoqué qu'un seul montant, celui des investissements de ces dernières années : 5 millions. A cela il faut naturellement ajouter le bâtiment lui-même, édifice de valeur même si sa construction remonte à 1880. A première vue, et même si nous faisons ici une simple supposition, les dégâts devraient dépasser dix millions de francs.

La police d'assurance avait été entièrement revue en 1966, puis réadaptée trois ans plus tard, à l'ouverture du Sablier. Les arrières sont donc assurés, semble-t-il, mais il ne faut pas oublier qu'en la matière il est largement tenu compte de ce qui n'a pas été détruit pour établir la prime.

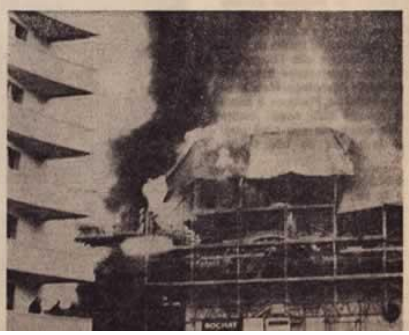
La perte de cet établissement sera douloureusement ressentie par la population tout entière, le Casino constituant l'un des éléments-clé de l'équipement touristique de la station de Montreux. Une certitude cependant : il sera reconstruit.

P.A.L.

*Le sinistre vu « de haut », depuis le sommet de la Tour-d'Ivoire.* *(photo jdm)*

## Dernière en date des réalisations LE SABLIER

La dernière en date des grandes transformations du Casino est l'aménagement sur la grande terrasse, du dancing du Sablier qui par sa décoration et son animation a su attirer de nombreux clients à Montreux. Il servit souvent, ces dernières années de salle de réceptions agréable pour la ville ou les corps constitués de la localité, ainsi que les sociétés de Montreux.



**Investments – Sonic Fire Extinguisher**

Funnily enough, I was doing some work with a fire-safety organization a few months ago and we were talking about the likely future evolution of the industry. Testing how futuristic their intentions were, I decided to show them the Dynamization Trend, or at least this version of it:


Needless to say the idea of 'Fields' came across as slightly too Star Trek. So we stepped back a little bit and I tried to talk about ultrasound. Still no interest. So I let it go and decided I'd do a little of searching after the event to see just how Star Trek the idea was. That's when I found this:

*A new type of extinguisher that uses sound waves to put out fires has been built by two engineering students in the US. Both chemical- and water-free, the invention offers a relatively non-destructive method of fire control, which could find applications in fighting small fires in the home, and the researchers now hold a preliminary patent application for their device.*

*While the concept of using sound waves to extinguish flames is not new, previous attempts to realize the principle – including efforts by teams at West Georgia University and the US Defense Advanced Research Projects Agency (DARPA) – had not been successful. Undeterred by this, as well as initial scepticism from their peers and faculty, Seth Robertson and Viet Tran – both final-year undergraduates at George Mason University in Virginia, US – elected to explore the concept, developing a series of prototype sonic extinguishers for a research project.*

***All about that bass***

*The principle behind the extinguisher is simple: as they are mechanical pressure waves that cause vibrations in the medium in which they travel, sound waves have the potential to manipulate both burning material and the oxygen that surrounds it. If the sound could be used to separate the two, the fire would be starved of oxygen and, accordingly, would be snuffed out.*

*Tran and Robertson explored the impact of different frequencies of sound on small fires. While ultra-high frequencies had little effect, the duo found that lower, bass frequencies – between 30 and 60 Hz – produced the desired extinguishing effect. Consisting of an amplifier and cardboard collimator to focus the sound, the duo's final extinguisher prototype – which cost them only about $600 to develop – is a hand-held, 9 kg, mains-powered device with the capacity to quickly put out small, alcohol-fuelled fires.*

*"In my opinion, [Robertson and Tran's] success has been down to their determination and willingness to try many different approaches to harnessing sound waves," comments Brian Mark, who is also based at George Mason University and is the duo's research supervisor, adding that the current prototype has been the result of many trials and experiments.*

***Catching on***

*Having acquired a preliminary patent application for the design, the researchers are now hoping to move onto further testing and refinements of their extinguisher, with the aim of taking steps towards a potential commercial application. Originally, Robertson and Tran envisaged their device as ideal for use on small fires in the home – for example mounted over a stove top – but are now investigating the possibility of applying the principle to broader applications. One possible use could be in space, where traditional extinguishing agents are hard to focus at a target fire. "Fire is a huge issue in space," says Tran. "In space, extinguisher contents spread all over the place. But you can direct sound waves without gravity," adds Robertson.*

*A possible complication may lie in the heat inherent in larger blazes. As the sonic extinguisher contains no coolant, it may be unable to prevent larger fires from reigniting after the sound is turned off. However, their duo's work could potentially be applied to "swarm robotics where the device would be attached to a drone", to be used in situations such as large forest fires or urban blazes, thereby improving safety for firefighters.*

I don't think it's all the way there yet – masses of untapped evolution potential – but the fact that it has already inspired two (almost identical) Chinese patent applications since the University put their video demonstration on line, suggests to me that there's disruption in the air. So much so, I'm thinking we ought to capture some of that untapped potential ourselves.

Here, in the meantime, is the video that started the story off:
https://www.youtube.com/watch?v=hkUv5gCA-1w



SYSTEM ATIC INNOVAT ION

**Generational Cycles – Pot Noodle**

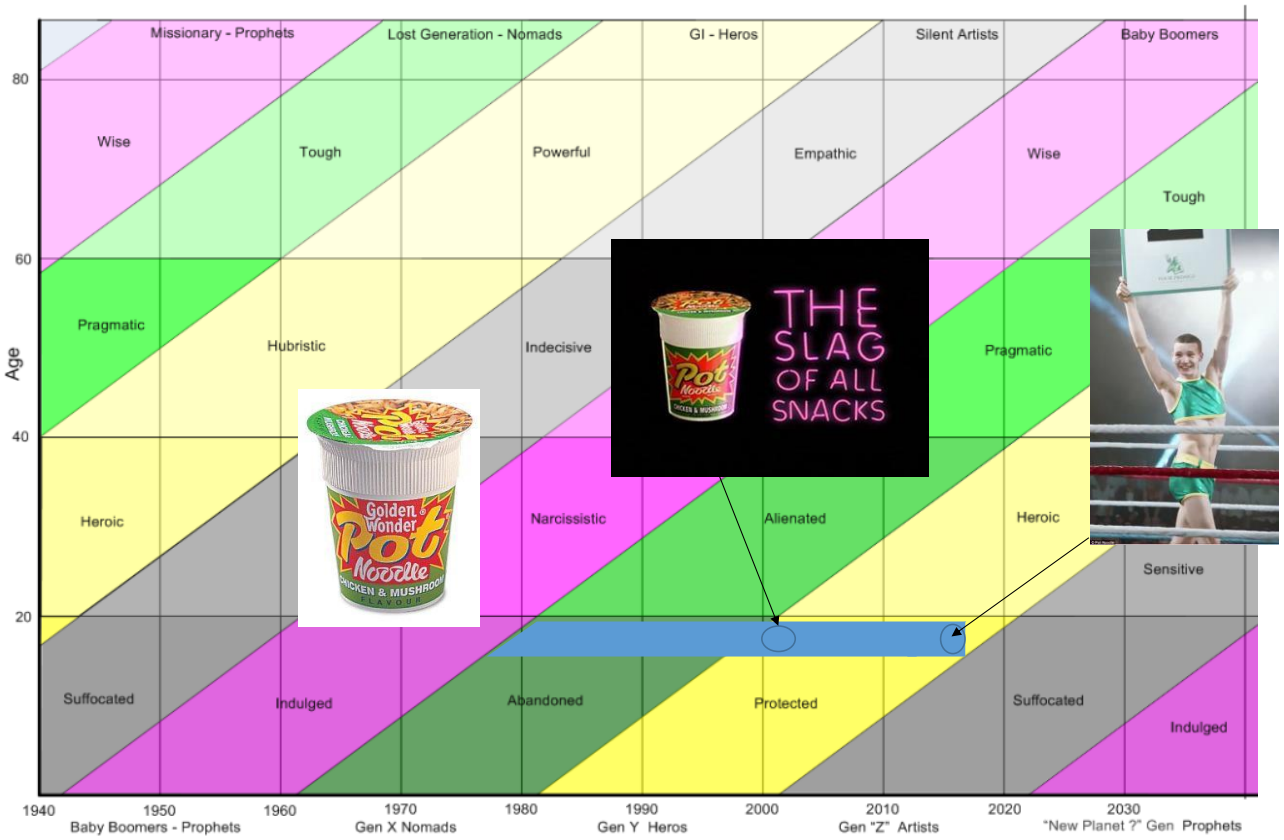
Pot Noodle is a UK brand of instant noodle snack foods, available in a selection of flavours and varieties. This dehydrated food consists of wide noodles, assorted dried vegetables and flavouring powder. It is prepared by adding boiling water, which softens the noodles and dissolves the powdered sauce. The product is packaged in a sturdy plastic pot, from which the prepared noodles can be eaten. It was introduced into the UK market in 1977. The perfect time, as it happens to launch what has since come to be known as one of the ultimate bottom-end-of-the-market convenience 'foods'. It didn't taste of much, it didn't contain too much by way of nutritional value, but if you were a 1977 latch-key kid, just home from school to an empty house, it was a whole new level of independent nirvana.

Pot Noodle, it turned out, has been one of the defining products of the Abandoned Nomad teenager. It was fake junk, and because it openly advertised itself as fake junk, it became utterly authentic.

So far so good. But no good thing can last forever. Generations come and generations go. By 2002, the Heroes were on the rise. Junk food was still de rigeur (ably supported by Alienated parents struggling to know what to buy when they were zombie-ing their way around the supermarket), but now it had to have a much more heroic edge. Enter, in August 2002, a series of television adverts that described Pot Noodle as "the slag of all snacks". The campaign was quickly withdrawn after complaints to the Independent Television Commission (if I had to guess, by Moralistic Boomers). A related poster campaign, revolving around the "Hot Noodle" range with a tagline of *"hurt me, you slag*" didn't last much longer. But it didn't matter, the tone had been set, and the inter-generational transfer had been successfully accomplished. More heroism followed: in May 2005, the Advertising Standards Authority received 620 complaints, about a series of advertisements featuring a man with a heroic brass horn in his trousers, with the suggestive slogan "Have you got the Pot Noodle horn?"

Then, last year, no doubt sensing another generational shift in the off-ing, the advertising strategy changed again. Now the heroism had a distinctly non-heroic tinge. A scrawny teen is seen working out in readiness for what looks like a big fight. A classic set-up for a David-meets-Goliath punchline. Instead we get this:

If it was an attempt to have a dig it the less-than-heroic, Suffocated Artist teen, it was probably a year or two too early. My theory is that the advertising was the work of a new generation of Nomad advertising executives, making public their appraisal of the GenY Hero's. Either way, there seems to be a very definite generational fit…




..which, once the real Suffocated Artist (or as much as anything their over-bearing, suffocating parents – who will most likely the people making the trip to the supermarket to go buy the noxious pots of cheap joy) market kicks in, my guess is that in the next couple of years we'll see:

a) A serious re-direction of the advertising to far more gentle themes

b) A very likely shift away from the 'junk' contents towards something that is convincingly more (heaven help us) 'healthy'…

You heard it here first.

**Biology – Flounder**

I've always thought flounder and other similar flatfish made for an amazing illustration of Principle 4, Asymmetry. If you end up living on the bottom of the ocean, hugging the floor, asymmetry helps you solve a lot of logistical problems. Like having two eyes on the upper side of your body. What I didn't realise is that when flounders are born they're much more symmetrical with, for example, one eye on each side of their head. The metamorphosis has long been a mystery to biologists, but now the mechanism that triggers the unusual asymmetry has now been identified by comparing the genomes of two related fish species.

Flatfish are some of the most unusual vertebrate animals on our planet. They start out their life fully symmetrical, like any other fish, but undergo a spectacular metamorphosis where the symmetric larva is transformed into an asymmetric juvenile whose eyes end up on one side of the head.

As they relocate from open water to live and feed on the seabed, a second change occurs: The flounder's downward-facing side loses its skin pigment. These transformations require the flatfish do undergo radical change, both in physiology and behavior.

**A mystery for Darwin already**

The puzzle of how these changes could occur in the course of evolution has been intriguing scientists for a long time. Even Darwin was at a loss to explain the "remarkable peculiarity" of flatfish anatomy. An international team of researchers has now unlocked the decisive mechanisms driving the metamorphosis.

The team was led by biochemist Manfred Schartl, Head of the Department for Physiological Chemistry at the University of Würzburg's Biocenter, with his former Würzburg student and co-worker Songlin Chen from the Yellow Sea Fisheries Research Institute in China. The scientists have published their findings in the current issue of the journal Nature Genetics.

**Two agents identified**

"We recently sequenced the genome of both the Japanese flounder (Paralichthys olivaceus) and its distant relative, the tongue sole (Cynoglossus semilaevis)," Manfred Schartl explains. The comparison of the two genomes delivered the clue about the genetic bases of the radical physiological changes.

Focusing on the genes that were active during the metamorphosis, the scientists identified a key developmental trigger: retinoic acid. "Retinoic acid is responsible for the changes in skin pigments in flounders and interacts with a thyroid hormone that causes both eyes to migrate to one half of the body," Schartl sums up the central results of their work.

Light also plays a central role in this process as the researchers were surprised to find out during their work. They discovered that the same pigments that capture light in the eye are expressed in the skin of the flounder larvae. "They sense differences in brightness to adjust the concentration of retinoic acid," Schartl says. This in turn affects the thyroid hormone and promotes asymmetry generation.

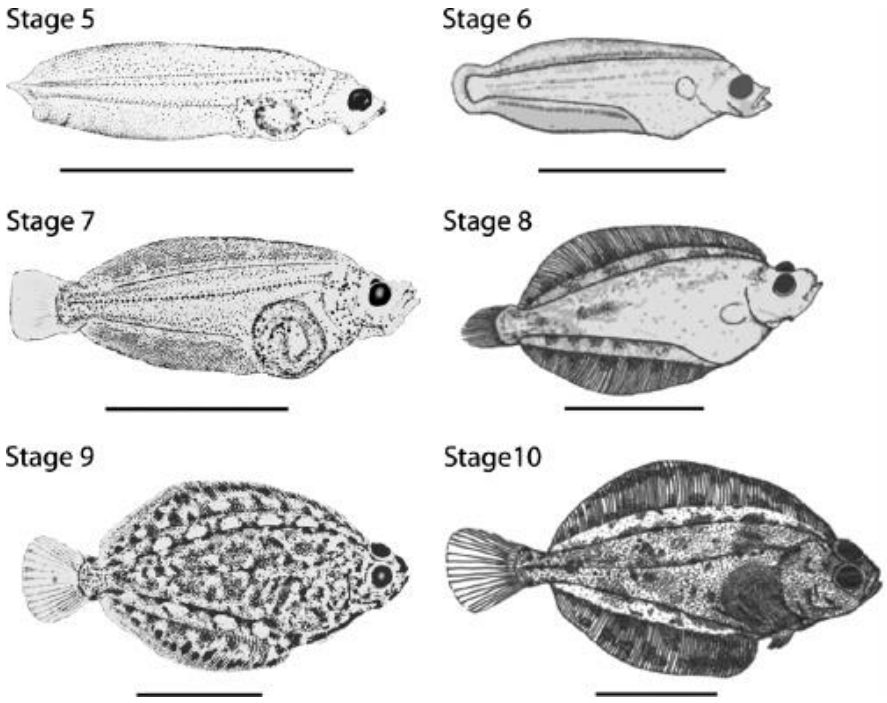
**Benefits for the fishing industry**

Scientists of various research institutes in China participated in the study. They received financial support among others from the Chinese Ministry of Agriculture. In addition to scientific reasons, this has an economic background: Flounders are highly priced food fish and accordingly expensive. To meet the increasing demand, China operates huge fish farms that produce more than half of the world's farmed fish.

However, failures in metamorphosis are a frequent problem in flounder aquaculture accounting for many millions of dollars of losses in production.

Understanding how these unique creatures develop not only solves a long-standing evolutionary puzzle, it also serves the fishing industry and helps feed a continuously growing population.

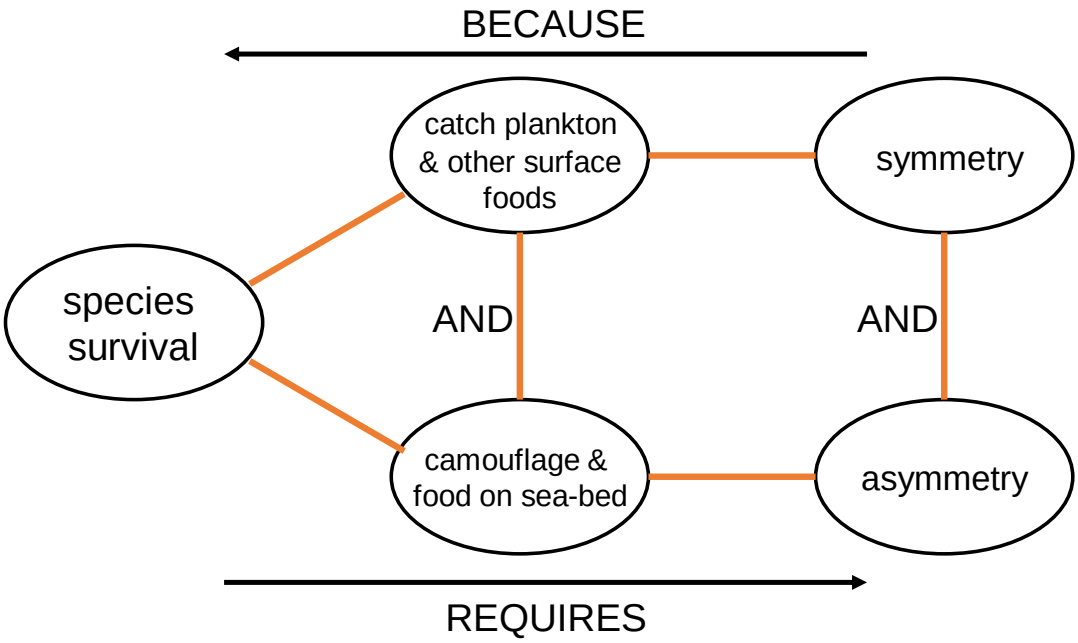
Here’s what the metamorphosis looks like:




And here’s a more detailed look at the underlying contradictions that necessitate the physiological shift from symmetry to asymmetry:

When the young flounder are born, much of their food is to be found away from the sea-bed. They need plankton and plankton tend to reside somewhere close to the water’s surface. In this scenario, symmetry, offers up a very definite evolutionary advantage. The big downside, of course, is that swimming near the surface makes you vulnerable to

predators. So, as the fish begins to grow, the metamorphosis begins that will allow the adult flounder to feed in far greater safety, camouflaged and hugging the ocean floor. Here's what that transition looks like when mapped onto a Contradiction Map:




Which, when looking at the Physical Contradiction on the right-hand-side of the Map, the flounder solves using a Separation in Time (I want symmetry when I'm feeding near the surfacel; I want asymmetry when I'm feeding at the seabed) and Separation on Condition (I want symmetry if I'm small; I want asymmetry if I'm big). And the contradiction gets solved using a Principle 15, Dynamics strategy.

Read more about the amazing transformation and its implications here**:**

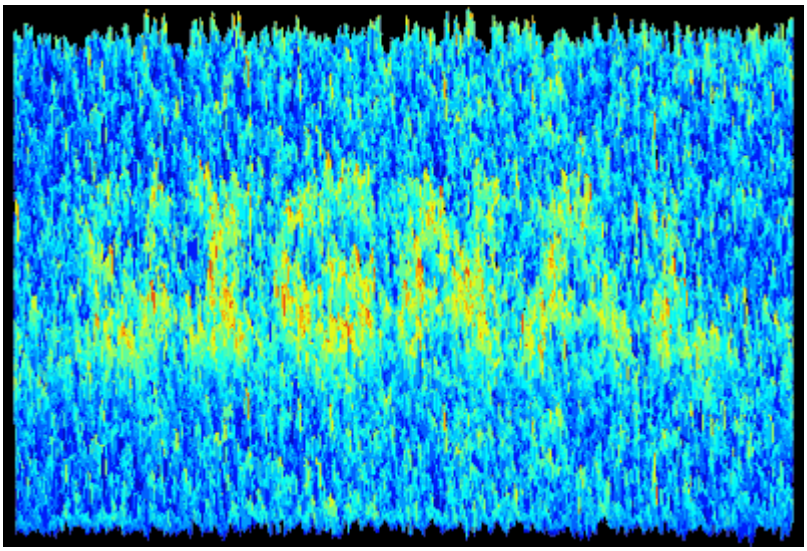
Songlin Chen et al. **The genome and transcriptome of Japanese flounder provide insights into flatfish asymmetry**. *Nature Genetics*, December 2016 DOI: 10.1038/ng.3732

## Short Thort

Churchill used to spend half his night polishing his "spontaneous" quips
to be used next day in House of Commons.

Churchill spent 1 hour of preparation per minute of presentation.

Seinfeld spends 6 months in off-grid clubs to add 2 minutes to his schtick.



Preparation time = { Presentation time }$^{n}$

Where n = desired ‘wow’ or ‘memorability’ exponent
n>3 if using trial and error
The trick is to not use trial and error.
The trick is finding and resolving contradictions.

## News

**Minneapolis**
We are very pleased to announce a series of three SI Certification workshops to be held in Minneapolis, hosted by our good friends at TIES, during the first half of 2017. The dates for the Level 1, 2 and 3 programme are confirmed as: 13-15 February, 17-19 April and 19-21 June respectively. Registration will be opened at the TIES website (events.ties.k12.mn.us) early in the New Year.

**India**
Darrell’s next trips to India are confirmed as the weeks beginning 20 February and 27 March. Cities to be visited so far include Mumbai, Pune and Bengaluru. About two-thirds of the available dates are already committed, but if you’d like to have him come and do something with you, there is currently some available time. Speak to Darrell directly to explore possibilities.

**Thanks**
From the perspective of working on real problems and projects with clients, 2016 has been our most successful year yet. We thank everyone for giving us the opportunity to 'join the family' working on some absolutely amazing innovation opportunities. Here's to an even more successful 2017…

**Book Schedule**
…one of the inevitable contradictions of working on lots of client engagements is it leaves less time available to work on some of the internal projects. One of our key resolutions for 2017 is to work to resolve this contradiction. Darrell currently has nine manuscripts at various stages of completion. 2017 is the year for breaking the log-jam. The current priority sequence of book projects is as follows:

1) Business Matrix 3.0 (the fold-out sheet is already available; the accompanying book has been '99% complete' for the last three months)
2) GenerationDNA
3) ICMM Journey Book – Level 1-2
4) SI Companion (replacement for TRIZ Companion)
5) HOSI – 3rd edition of the technical volume

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

FMCG – PanSensic study
FMCG – IP generation project
Automotive – Innovation Strategy workshops
Industrial – SI workshops
Pharmaceutical – Innovation Strategy workshop & IP landscaping
Fintech – TrenDNA workshop
Education – GenerationDNA study
Education – PanSensic Study
Automotive – TrenDNA B2B Project

**Happy Holidays**
The SI offices will be closed from 24 December until 2 January. We wish all of our clients and customers and happy holiday season and a prosperous New Year.