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Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.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

Measuring 'Good'

There's an emerging problem in our feedback-overload world. Most of us love learning something new. Especially about ourselves. And so the world is crammed full of questionnaires and measurement instruments purporting to inform us about our personality, creativity, and you-name-it. The problem is that the people building those measurement instruments are too often guilty of measuring what's easy rather than what's meaningful or important.

Take the viral media story from earlier this year declaring that Axl Rose was 'officially' the greatest vocalist on the planet. The story hit all the newspapers because a lot of us fall for this kind of 'best' measurement survey. In no small part because we're often looking to obtain some kind of validation of our opinions. Surely, I thought in this case, the greatest vocalist has to be Aretha Franklin or Marvin Gaye? When we see a result that doesn't match our expectations, our first instinct is to challenge the method used to create it. In Axl Rose's case, it turned out the method was quite simple: he's officially the best vocalist because he has the greatest vocal range – Figure 1.

Figure 1: The Human-v-Computer Mistake Contradiction

I think this represents a classic example of falling in to the 'measuring what's easy' trap. Albeit measuring vocal range did take a fair degree of effort. Not least of which was forcing oneself to listen to the whole of Axl Rose's recorded output to find the lowest note he hit (an F1 on There Was A Time, from the 2008 album Chinese Democracy apparently) to the highest (a Bb6 on Ain't It Fun from the 1991 album "The Spaghetti Incident"). The moment readers discovered this was the sole criterion upon which 'best' had been judged, was the moment they also realised the assessment was pretty much meaningless. Yet again we had been promised some kind of vocalist holy grail, and what we got was trite, glib nonsense.

Creating a meaningful measurement means starting from the premise, 'what is it that I need to know' and not, 'what can I conveniently measure'. The reason we tend not to ask the first question is that we assume that it will probably require us to measure a potentially

infinite number of things. Reality, however, tells us different. As with so much of the TRIZ body of research, the world spends most of its time re-inventing wheels. There aren't, in other words, millions of ways of meaningfully measuring what's important in any situation, there are a very finite few.

The next challenge is working out which 'few' we mean. Again, TRIZ can come to our assistance. This time with the Space-Time-Interface pillar. A pillar that tells us that there are three fundamental dimensions available to us when we're looking to measure something. Space-Time-Interface gives us a generic solution to a measurement problem. In order to transform that generic perspective into something specific to a given context – vocalists, for example, in this story – we need to be able to appropriately translate the three dimensions into things relevant to the subject at hand. Figure 2 represents an attempt to do this for the specific situation of an aim to measure who really is the best vocalist in the world:
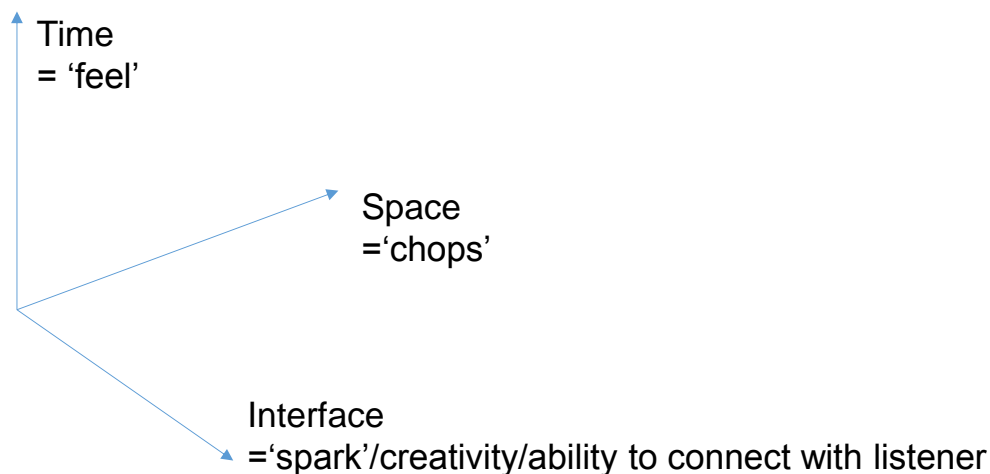
Time
= 'feel'

Space
='chops'

Interface
='spark'/creativity/ability to connect with listener

Figure 2: Space-Time-Interface Dimensions In A Musician Measurement Context

The idea here is that the person designing the measurement instrument needs to think about what the three dimensions actually mean. This isn't always easy, but then, that's probably the whole point of the exercise.

In the world of music, for example, 'space' is perhaps a difficult concept given that music is largely a temporal thing. Take 'time' out of the equation for a second and what you're left with is basically the notes. Which, looking at Figure 2, we took to equate to the ability of a musician to create those notes. Vocal range, for example, might be one element of this form of ability. Musicians more generally, call the overall subject of technical ability, 'chops'. I mention this because, in true 'someone, somewhere already solved your problem fashion, it's usually the case that we can find a parameter description that those in the domain tend to use anyway. And in the case of musicians, 'chops' is very much one of those things. Especially in situations where a musician who 'has chops' is in the presence of someone (me, usually) that doesn't. Chops often means being able to play too many notes in the right order. It's an important dimension, but we know it's not the only dimension.

And so to the 'Time' dimension on a best musician measurement instrument. Again, it's a good idea to look at the domain to find the words that musicians tend to use. When we make that search, 'feel' is the expression we'll hear most often: feel being the ability, or otherwise, of a vocalist to put all the right notes (and sometimes the wrong ones!) in the

right places. It's about gaps and pauses, being ahead or behind the beat, and rates of change of tone and timbre.

That, finally, leaves us with the 'Interface' dimension from Figure 2. The key piece of thinking when we're exploring this dimension is the interaction between different things. The key word being 'between'. Again this could be taken to mean many different things – does it mean between musician and their instrument? Or between the musician and the listener? Probably, in this case, the latter. If only because if our job is to identify meaningful things to measure, the main useful function of music is ultimately to affect the emotional state of a listener and so our job ought to be to try and measure how well a vocalist achieves that aim.

So much for defining the three Space-Time-Interface axes, we still have the problem of working out how to measure the parameters we've defined. Some appear to be easier than others:

Chops – measurable as things like vocal range, ability to hold a note, ability to sing lots of notes, ability to transition from one note to the next, etc

Feel – measurable through things like gaps and pauses, syncopations, varying the pace and accents on different words, playing ahead or behind the beat, knowing when to switch between the two, knowing how to build and release tension

Then more difficult:

Creativity? Ability To Connect? – we struggled with this one for a while, but ultimately decided that the best way to measure the creativity of a vocalist (in this case) was to somehow measure their ability to pull off the unexpected. This dimension, in other words, gets us right to the heart of our current 'Wow in music' project at Plymouth University: creativity boils down to the ability of a musician to break expectations. Actually, we need a bit more than this, it's about the ability to break expectations in ways that a listener will find emotionally engaging. 'Only connect', right?

The next – and thankfully, final – challenge is to now go and find ways of making these measurements. Preferably, in our case, by automating the process as much as possible in order that we can make as many measurements as possible with a s little manual input as possible. In the case of our 'Wow' project, this has meant building sophisticated audio-file analysis tools performing all sorts of Fast-Fourier-Transform analyses and using neural-nets to 'train' the analysis tool to know what 'good feel' is compared to 'not so good feel'.

Which is all well and good, but still leaves us needing data to help train the neural-net. Which in turn is hopefully where you, the reader, come into the equation: what we're looking for right now is as many people as possible to give us their opinions about their favourite musicians – pieces of music that made them go 'wow' is one of the aspects of this, but much more specifically, we need people to separate their favourite musicians into assessments along our three different axes. How would you score Aretha Franklin against 'chops', 'feel' and 'creativity'? for example. Figure 3 presents the sorts of picture we're using to plot pairs of the chops-feel-creativity dimensions… and so finally it allows us to prove that Aretha is indeed the best vocalist in the world, and Axl Rose isn't ☺…

…unless, of course, you tell us different: anyone interested in participating in the official process is welcome to get in touch with Darrell or Marcelo. The ultimate aim is to help the project really understand how to compose 'best' music, but the win for everyone that takes part, we hope, is that by sharing which musicians we like and why we like them – as

defined along all three of our dimensions – we get to learn something useful about ourselves. From a personal perspective, for example, just realizing that 'feel' was as valid a measurement axis as 'chops' has made me feel an awful lot less guilty about my lack of chops. Now I get to tell people I don't play fast, but I do have a pretty good idea when is the right time to play the pauses.
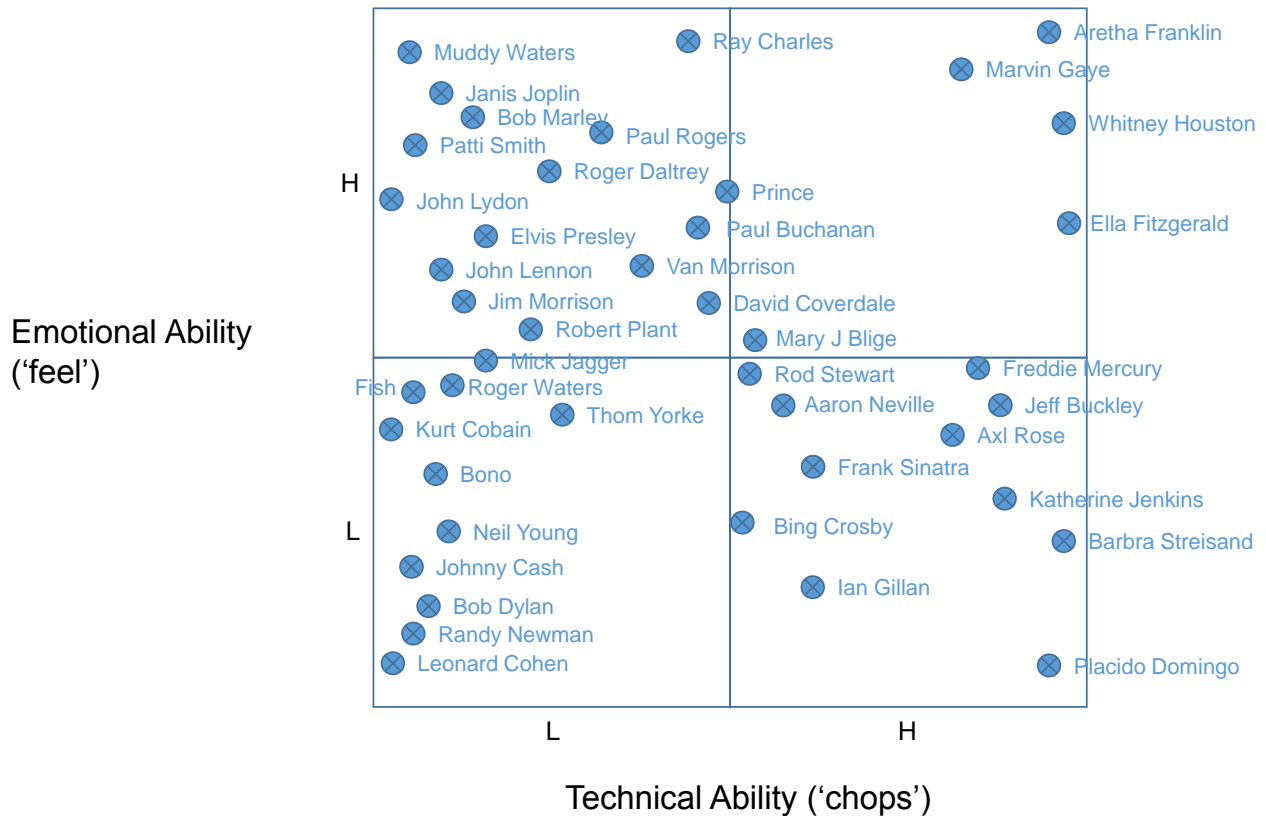

Figure 3: 'Best Vocalist' Judged Along Chops-Feel Axes

Final thought. While the focus here has been on measuring 'good' musicians, the same process applies to any measurement of 'good' in people in any context:
1) Identify what's important to know
2) Break the measurement down into the three Space-Time-Interface dimensions
3) Establish means to meaningfully measure things that provide information about each of these dimensions
4) Plot a pretty picture of the results
5) Validate!

Case Study: Driver Distraction

It's been said many times: humans aren't 6 Sigma creatures. We make mistakes when tasked with any kind of job, but especially when the job is a repetitive one. Achieving three mistakes per million opportunities is way beyond our evolutionary best. The best (only?) way to exceed 6 Sigma levels of getting things right is to get humans out of the loop and computers in. Or mostly. There's a tricky contradiction here between what we're good at and what computers are good at:
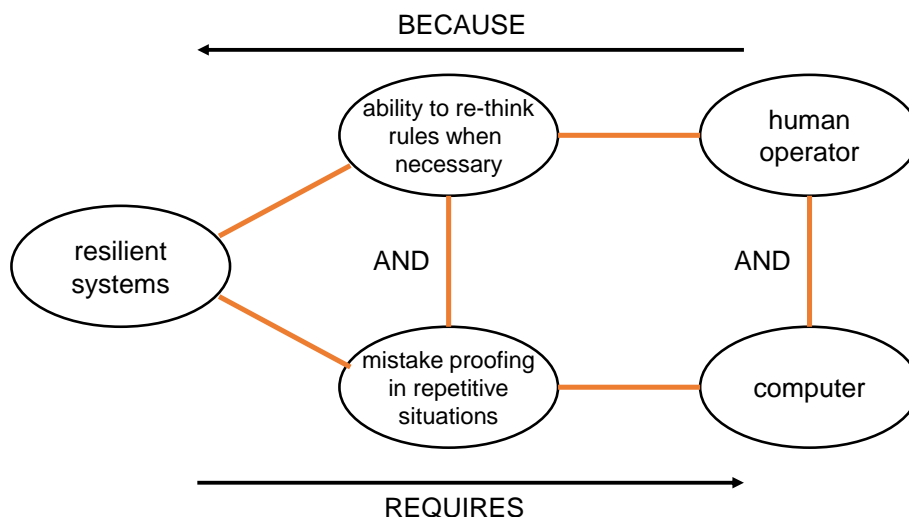

Figure 1: The Human-v-Computer Mistake Contradiction

There are many manifestations of this contradiction, but one that seems to cause us all the greatest concern is driver distraction in public transport systems. Probably in no small part because the moment any of us step on to a bus, train, ship or plane, we've just handed over control for our safety to someone else. Someone that isn't 6 Sigma capable. No matter how much training we might as a society deem it necessary to provide them with.

When we map the Figure 1 story onto the Matrix+ software wizard, here is the ranked list of Inventive Principle solution clues we obtain:
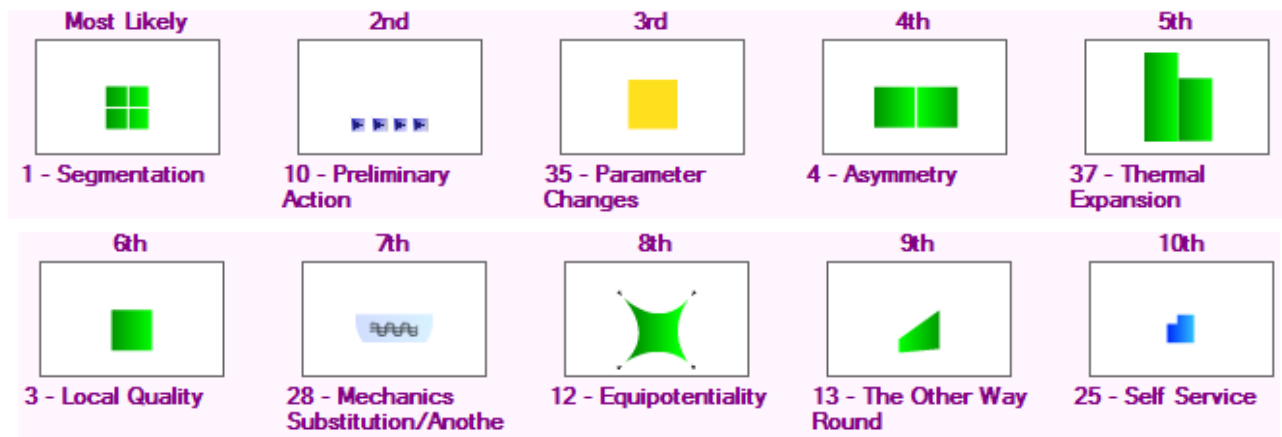

Figure 2: Ranked List Of Inventive Principle Suggestions For The Driver Distraction Problem

Working with a group of transport system designers to think through some of the implications of the Principle suggestions quickly revealed a common problem when trying to connect the Principles to a problem defined at its highest (system) level: when the system contains lots of things, how do we know which should be Segmented? Or made Asymmetrical? Or done earlier? Or turned around the Other Way? The gap between generic solution and specific solution, in other words, is rather too large. Especially if the group contains an unfortunate combination of people who know the Principles but not the distraction domain, and people who know the domain intimately, but have never seen the Principles before.

If you're thinking that sounds like another contradiction, you're probably right. It's one, however, with a fairly clear resolution strategy. A strategy that, funnily enough, you won't see mentioned too many times in any TRIZ book. Including our own.

The strategy in question involves getting back to 'first principles'. Maybe the TRIZ world assumes everyone automatically does this already? Maybe everyone used to do it anyway? Maybe our increasing reliance on computers and the data they convincingly spew out means that we tend not to do it any more?

Inventive Principles aren't intended to be a substitute for properly understanding a problem. They're simply there to help us to move from one state of proper understanding to another.

Solving the driver distraction problem, in other words, isn't going to happen through randomly making symmetrical things asymmetrical or turning random things upside down. Well, it might, but ultimately, given the number of combinations of Principles and things in the system that could be changed, we're pretty close to the realms of a million monkeys with a million typewriters reproducing the works of Shakespeare. Far better that we apply the Principles to our best possible understanding of a situation.

Here's an example relating to the driver distraction problem. A problem that, if we're to have any hope of making a difference on, we need to have a pretty good understanding of what causes distraction to occur.

Figure 3 illustrates an example of the sort of thing we can find in the neuro-science literature:
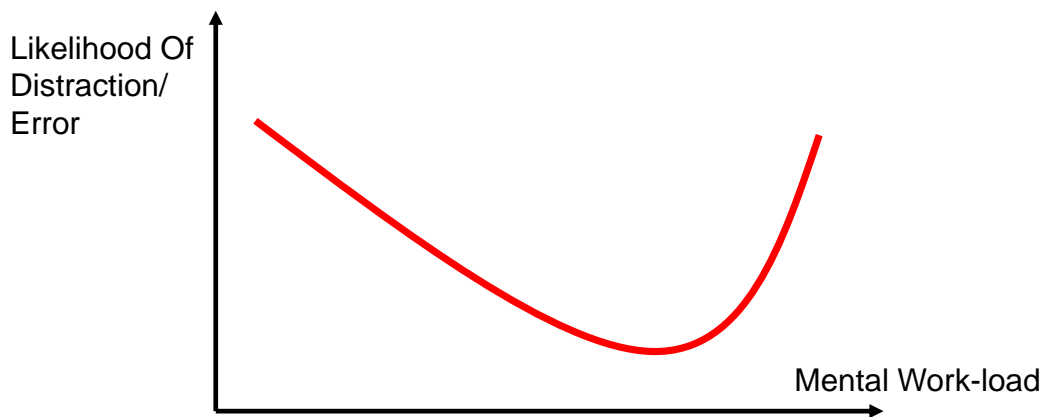

Figure 3: Propensity To Error As A Function Of Mental Workload

What this picture tells us, even though it is quite qualitative, is that if we give our brain too much work to do, we reach a point where the likelihood of error starts to rise exponentially. The error curve goes vertical. But then, when we reduce the mental workload we hit another important point: likelihood of error hits a minimum, but then starts rising again. Too little mental workload can make us as prone to errors as too much.

Conventional logic in the driver distraction problem, and the human-versus-computer conundrum shown back in Figure 1, is that the way to reduce errors is to transfer more and more work from the human to the computer, and just leave the human to do the difficult bits when things go wrong. The 'first principles' story in Figure 3, conversely, tells us that if we decrease mental workload below the point of minimum error likelihood (a point we might think of as the 'flow' state) we are going to make things worse.

As it turns out, many of our transport safety systems – in both the public transport system, and in our own personal modes of transport – have reduced workload beyond this critical point. Instinctively, I think we all know this. We only have to look at traffic safety statistics around the world to see that the 'safer' providers make things, the more we all seem to compensate for by driving worse. In our desperate desire for more convenience, designers have unwittingly turned us all in to increasingly dangerous idiots. All in all, we appear as a society to have put ourselves into a cruel downward spiral of learned helplessness. And not just when it comes to driving and driver distraction.

We're destined to never be 6 Sigma creatures, but when we find ourselves surrounded by systems that have reduced operator workload below the flow-zone minimum point, we finally get to observe why Inventive Principle 13 is a good strategy to bring to bear: Maybe we've reached a point as a society where the only way to make things safer is to make them more dangerous.

If that's the case, the next thing we need is a reliable way to measure precisely how much more dangerous. I suspect that's going to end up being a job for PanSensics.

I Sit and stare at people blankly, making them extremely uncomfortable.
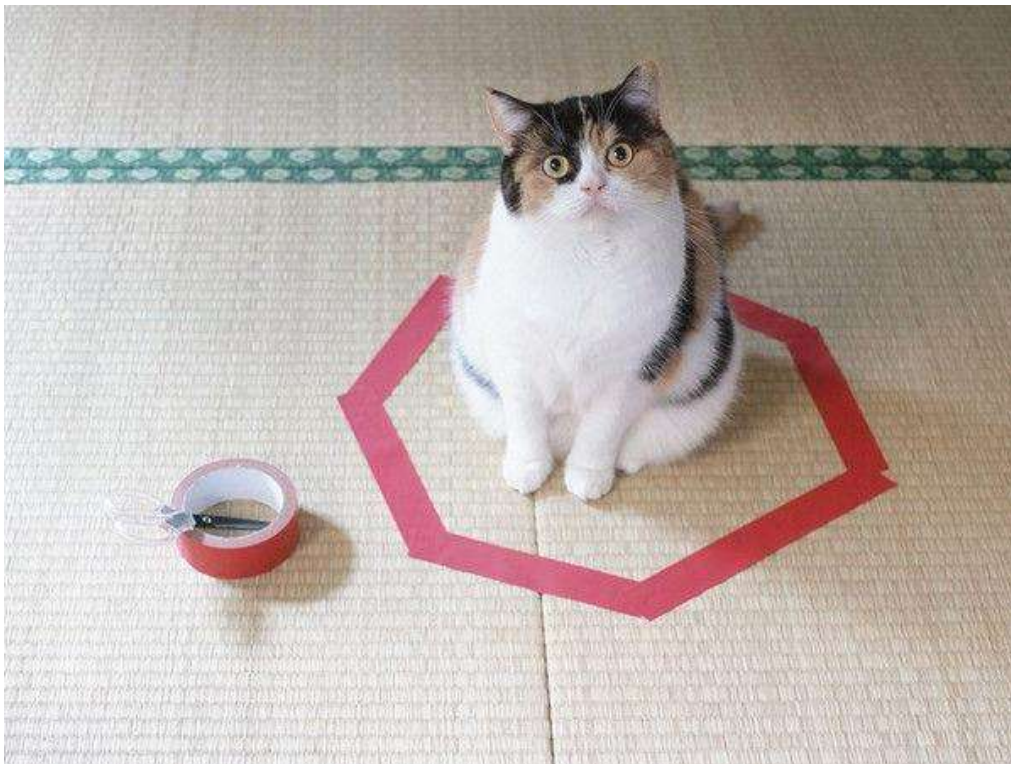

I TRIED TO HUMP THE VACUUM, AND I BROKE IT (I'M NOT SORRY.)

I RUN FULL SPEED ACROSS THE WOOD FLOOR AND USE THE WALL TO STOP ME!! IT DOESNT ALWAYS STOP ME!!

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Dogs or cats?

Cats.

Putting the wrong words in a dumb animal's mouth.
What Principle is that??

Come in Number 41, your time is up.

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Patent of the Month – Acoustic Meta-Material

Patent of the month this month takes us to Hong Kong and a team of inventors at the University of Science & Technology. US8,857,564 was granted on October 14. If one of the definitions of a good invention is that a contradiction gets resolved, here's an invention disclosure that stakes its contradiction-challenging credentials on its sleeve. Here's what the background description has to say:

Acoustic metamaterials are man-made structures that aim to achieve acoustic/elastic properties which are not available in tradition materials.. Current panels do not offer simultaneous negative-valued effective mass density and bulk modulus in acoustics.

Not the easiest contradiction to map on to the Contradiction Matrix, but this is somewhere close, if we assume that bulk modulus is all about resistance (i.e. force) to compression:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Weight of Stationary Object (2) and Noise (29)

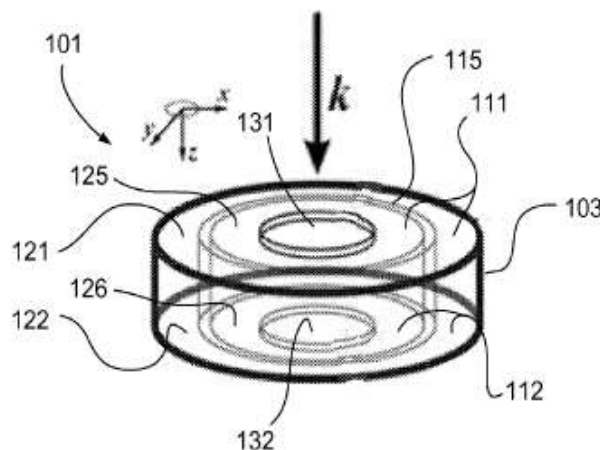WORSENING PARAMETERS YOU HAVE SELECTED:

Force/Torque (15)

SUGGESTED INVENTIVE PRINCIPLES:

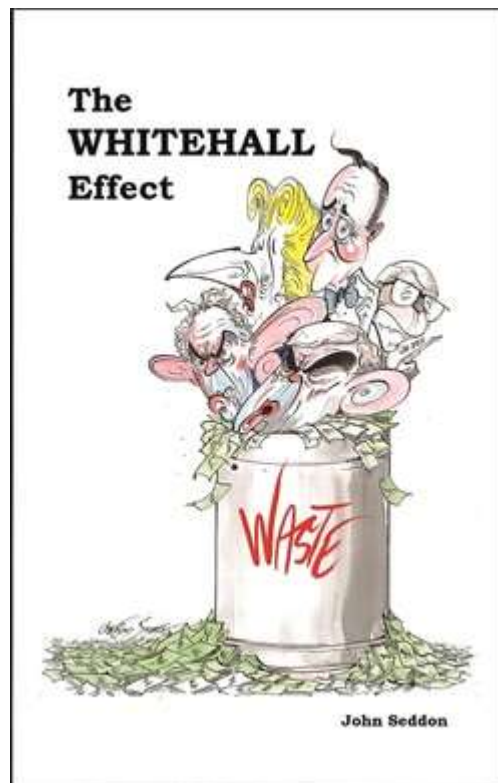3, 35, 9, 14, 17, 8, 4, 40, 1, 13, 31

Here's how the inventors solved the double-negativity dilemma:

The present disclosure describes a type of acoustic metamaterial (Principle 40) *that can exhibit simultaneously negative effective mass density and bulk modulus in a finite but tunable frequency regime. The described configuration comprises two identical elastic membranes* (Principle 35) *sealing the two opening ends of a hollow cylindrical tube. Two identical platelets of certain rigid material* (Principle 3) *are attached to the center of each said membrane. The two membranes are connected by a second hollow cylinder tube of certain rigid material. The side surface of the structure is enclosed in an air-tight manner. The resultant structure is a resonator that displays double negativity.*

We love 'negative materials'. Now we get to love 'double negative materials'. That might just be a trend of evolution jump!

Best of the Month – The Whitehall Effect

Maybe it's because of the amount of work we've been doing with public sector bodies this year and get to meet so many people beating their heads against walls. Or maybe it's just because anything that comes from John Seddon is always going to be essential reading. His new book, The Whitehall Effect, exposes twenty years of his work with British public sector bureaucracies and builds a damning premise that they are institutionally resistant to new ways of doing things, perpetuating a system that is both profligate and inefficient.

Why don't public services work very well? One key reason is that they have been 'industrialised'. The book is divided into five main parts:

Part 1 explains why call centres, back offices, shared services, outsourcing and IT-led change almost always lead to service failure. It explains, in particular, why 'economies of scale' are a myth.

Part 2 proposes a better (and tried-and-tested) alternative to the alienating and unresponsive experience of industrialised public services. Good services are attuned and sensitive to peoples' needs. Where the 'industrialised' approach tries to drive down costs but invariably drives them up, the better approach – managing value – drives costs down significantly.

Part 3 challenges conventional thinking and received wisdom about public services. Targets, inspection and regulation <u>have</u> to be part of the solution, don't they? Seddon explains why they're actually part of the problem and shows that the most effective lever of change and improvement is to stop 'managing' the people (public sector staff and managers) and start managing the system they work in.
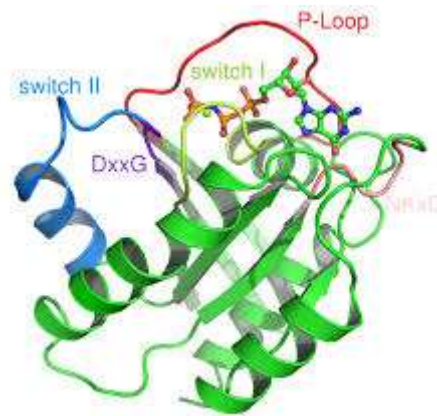
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Part 4 discusses some of the current fads in public-sector reform: 'choice', 'managing demand', 'nudge' and 'lean'. Politicians pursue them because they are plausible and fit their narrative, the story they like to tell about reform. But these fads only make public services worse or, at best, detract from the opportunity at hand.

The opportunity John Seddon describes is breath-taking. We can undo the costly debacle of public sector 'reform', but only if we first change Whitehall. In **Part 5** he describes how Whitehall is systemically incapable of listening to and acting on evidence and finally turn to how Whitehall needs to change if we are to turn away from the mistakes of the last 35 years and realise the profound opportunity.

Overall, Seddon, in his usual no-holds-barred manner, vividly illustrates the fact that it makes no difference how much money is thrown at a public service such as the NHS if the way it is run and managed is fundamentally flawed. Departmental ministers should read this book and have the words "It's the system, stupid" pinned up in large letters on the walls of their private offices.

The book probably won't change anything (Level 5, governance problems require Level 5 innovation capabilities, and Whitehall barely makes it to Level 1), but listening to Seddon vent sure makes me feel better anyway. I think it will do the same for you too. Irrespective of whether you work in the public sector, or merely suffer the consequences of their lack of understanding of how the world actually works. Happy New Year.

Investments – Faulty Proteins

Scientists have found a possible way to halt one of the most common faults in many types of cancer, according to research presented at the National Cancer Research Institute (NCRI) Cancer Conference in Liverpool.

A team of scientists at the Max Planck Institute of Molecular Physiology in Germany has uncovered a new strategy and new potential drug to target an important signalling protein in cells called Ras, which is faulty in a third of cancers.

When the Ras protein travels from the centre of a cell to the cell membrane, it becomes 'switched on' and sends signals which tell cells to grow and divide. Faulty versions of this protein cause too many of these signals to be produced -- leading to cancer.

Scientists have been attempting for decades to target Ras, but with little success. The reason the protein is so difficult to target is because it lacks an obvious spot on its surface that potential drug molecules can fit into in order to switch it off, like a key closing a lock.

But now the researchers have shown that instead of directly targeting the faulty protein itself they can stop it moving to the surface of the cell by blocking another protein which transports Ras -- preventing it from triggering cancer in the first place.

By targeting a link in the chain reaction that switches on the Ras protein, the scientists have opened opportunities to develop new treatments in the future.

Dr Herbert Waldmann at the Max Planck Institute of Molecular Physiology, said: "We've been scratching our heads for decades to find a solution to one of the oldest conundrums in cancer research. And we're excited to discover that it's actually possible to completely bypass this cancer-causing protein rather than attack it directly.

"We're making new improvements on compounds for potential drugs, although the challenge still lies in developing a treatment that exploits this discovery without ruining the workings of healthy cells."

Professor Matt Seymour, NCRI's clinical research director said: "This is an exciting approach to targeting one of the most common faults in cancer, which could lead to a new way of treating the disease. The research is still at a very early stage and it will be years before it can benefit patients but it is a key step forward in the field."

(PS)

From a TRIZ perspective, the conflict that has been solved is that between the desire to target and remove the Ras protein, and it's unfortunate reluctance to allow anything to attach itself. Here's what that problem looks like when mapped on to the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Amount of Substance (10)

WORSENING PARAMETERS YOU HAVE SELECTED:

Compatibility/Connectivity (33)

SUGGESTED INVENTIVE PRINCIPLES:

35, 2, 24, 13, 21, 7, 30

The solution derived by the Max Planck Institute scientists represents a lovely illustration of a Principle 24, Intermediary, solution strategy.

Wow In Music – Surprise Me!

In the current days, saying that technology has become something utterly pervasive is nothing new. The side effect, one could argue, is that privacy, a traditionally cherished human asset, has become nothing but a mirage in the desert or, in this case, a "desire in the crowd". Think that, while you uncompromisingly walk in a shopping mall looking at store displays, wishing that your presence would remain unnoticed, the simple fact that you carry a smartphone on your pocket necessarily means that your steps could potentially be traced. Take a look at this recently broadcasted BBC Click's show ("What price for free wi-fi?", http://www.bbc.co.uk/news/technology-28525108) and you will understand what I am saying.

Think why companies like Apple, Amazon, and Google (just to mention a few) collect (and what they do with the) information from their customers. However creepy that may seem, the fact is that, while sellers want to maximise revenue, we as costumers want better products and services. In other words, we want to be better cared for (and understand ourselves, etc.). For no other reason, the products and services we get are offered (packed, displayed, etc.) the way they are. In fact, we all want to be surprised.

In the music field, the story is no different. Traditionally, composers would want to craft a new masterpiece in ways that would maximise its impact on their audiences. Audiences, on the other hand, would want to be amazed by new compositions in ways that would fulfil their emotional needs. Of course, in order to be successful, this cycle, from music creation to personal wonder, needs to be constantly monitored. After all, a wow moment in music doesn't necessarily occur in the same way for all people all the time. Today, the novelty resides on the fact that a number of new inventions can make this process much easier.

This is where new technologies come into play. We are talking about things we constantly use such as (no surprise!) computers, smartphones, etc. Analysts have already said that the real reason behind the recent billionaire acquisition of Beats was the fact that Apple would be able to introduce and spread new technologies that would then transform the way we interact with music (http://www.cultofmac.com/281353/apple-focus-reinventing-headphones/). If, only a few years ago, smartphones brought the possibility of permanent

connectivity, today they have the potential to completely transform the way we interact with the world.

This is how it works: while you listen to your favourite songs, your gadget (headphone, in this case) is able to monitor your heart rate, perspiration or even your brain waves. As our bodies holistically respond to music, this information could be used to select what we will hear next, be it a song from our iPod library or a completely new music automatically generated and customised to our needs. If it's done right – a pretty big assumption right now, admittedly! – it could have a whole series of implications and opportunities for our Wow in Music project. Let's see what the future has in stock for us.

Generational Cycles – Not Selling Out & The Spice Girls

One of the fastest ways to improve a model of the world is to look for things that don't look like they fit. 'How come', people sometimes ask us when we're talking about the 'Not Selling Out' meme at the core of Generation X Nomads, 'you get bands like the Spice Girls?'

It's a good question. All five of the Spice Girls are Nomads. And to most people – especially those that love their music – they represent the very antithesis of authenticity in the music business. They were a band that was totally manufactured. All they stood for – 'Girl Power' – was also totally manufactured. So how is it possible to justify Posh, Scary, Sporty, Baby and Ginger (totally fabricated names) as members of the Nomad cohort that 'didn't sell out'? Surely they're the very definition of selling out?

The answer to the did-they-didn't-they debate, however, is not quite so simple. According to Joe Pine in his book on Authenticity (a previous 'Best of the Month' book choice here in the SI ezine), we need to take in to account two orthogonal dimensions when we're looking to assess the authenticity or otherwise of an entity. Here's the 2x2 matrix Pine used in the book:

	Is NOT true to itself	IS true to itself
IS what it says it is	real-fake	real-real
Is NOT what it says it is	fake-fake	fake-real

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'Not selling out' in the Nomad sense of the world is all about being true to oneself. The right hand side of the matrix.

Having made a choice to be true to yourself, there are then two options in terms of how you present your product, service, company or, in the case of the Spice Girls, band, to customers: Firstly what you're offering can be exactly what it says it is. A Rolls-Royce for example. Secondly, what you're offering can be clearly not what it says it is. Think Disneyworld. Disneyworld is a deliberately constructed fantasy world for kids. There is no such thing as a Magic Kingdom in the 'real world'.

Disneyworld is fake-real. Walt Disney was a (late) Nomad. The Spice Girls are fake-real too. Zigazig ha.

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Biology – Krill

The lowly krill is not the first creature we tend to think about when it comes to solving contradictions. A typical krill averages only about two inches (five centimeters) in length, and its main role in life seems to be playing a giant-sized link in the global food chain. The small, shrimp-like crustaceans are essentially the fuel that runs the engine of the Earth's marine ecosystems.
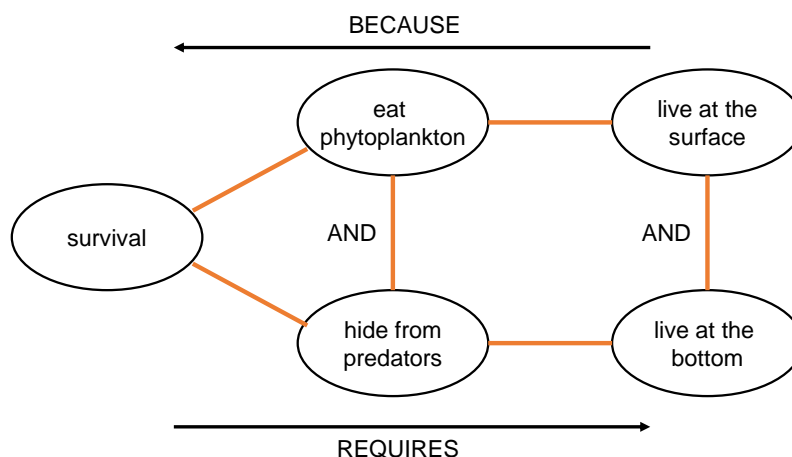
Krill feed on phytoplankton, microscopic, single-celled plants that drift near the ocean's surface and live off carbon dioxide and the sun's rays. They in turn are the main staple in the diets of literally hundreds of different animals, from fish, to birds, to baleen whales.

Simply put, without krill, most of the life forms in the Antarctic would disappear.

Pink and opaque, Antarctic krill are among the largest of the 85 known krill species. Their estimated numbers range from 125 million tons to 6 billion tons in the waters around Antarctica. During certain times of year, krill congregate in swarms so dense and widespread that they can be seen from space.

Antarctic krill can live up to 10 years, an amazing longevity for such a heavily hunted creature. How do they manage that feat?

Here's how we might map their life contradiction:

Here's one of those contradictions where the answer emerges from the right problem definition. And specifically the formulation of the physical contradiction: both predators and prey of the krill live close to the surface of the ocean. Hence the solution is the krill spend their days avoiding predators in the cold depths of the Antarctic Ocean, usually some 320 feet (100 meters) below the surface. Then, during the night, they drift up the water column toward the surface in search of phytoplankton. Call it a 'separation in time' solution. All we need to do now is work out how their exo-skeleton survives the immense pressures found 100m below the ocean surface.

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Short Thort

"Heroes know that things must happen when it is time for them to happen.
A quest may not simply be abandoned;
unicorns may go un-rescued for a long time, but not forever;
a happy ending cannot come in the middle of the story."
Peter S. Beagle, *The Last Unicorn*

"You didn't get the quest you wanted, you got the one you could do."
Lev Grossman, *The Magician King*

News

IMechE
The first of the 2015 dates for public 'Introduction To TRIZ' workshops for the Institution of Mechanical Engineers in the UK have been announced as 2 June and 4 November. Both will be held at the Institutions headquarters at One Birdcage Walk in London.

Taiwan
Darrell will be returning to Taiwan in April 2015 to conduct 4-days' worth of SI-related workshops. Mainly in relation to strengthening and inventing-beyond patents. Dates are 23-26th of the month. More details on the Calendar page of the website shortly.

Buckingham Lean Masters
The new MSc cohort begins in January 2015. Darrell will be teaching on the launch-week on the 14th of the month.

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Only 10weeks after their final promise date, but frustrated (and patient… thankyou) readers waiting to get hold of a copy of the book will be relieved to know they are now back in stock. All overdue orders have now been shipped.

TrenDNA.com

The new website is up and running. Separate from SI and yet part of the same family.

New Projects

This month's new projects from around the Network:

      Construction – 'invent to order' IP generation project
      FMCG - PanSensic-driven consumer insight project
      Transport – 'challenge harvesting' PanSensic project
      Transport – ICMM Journey-mapping programme
      Energy – SI workshop/project
      FMCG – PanSensic market assessment project
      Tourism – PanSensic consumer insight study
      Financial Services – PanSensic study
      Healthcare – PanSensic dashboard
      Healthcare – innovation strategy project
      Design – SI workshops
      Semi-conductor – SI workshops
      Automotive – SI Certification programme