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Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.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

Looked at from the perspective of a single individual, the world can feel like an overwhelmingly complex place, one that is increasingly neither comprehended or comprehend-able by anyone, least of all governments and politicians. Depending on who you read, Internet content continues to double every 6, 9, 12 or 18 months. Whichever is correct, the immediate implication is that no-one can possibly keep up with even a tiny fraction of the flow. What TRIZ/SI tells us, on the other hand, is that a lot of this new information is noise rather than signal. And that if the noise is removed, the rate of arrival of new signal is actually very, very small indeed.

This is not to say that we have the ability to manage how the signal affects the overall systems of the world. Complexity is still complexity. And the problem comes not so much from the absolute amount of signal as from the myriad possible interactions between bits of signal. But knowing exactly how much signal there is out there is a pretty important contributor to our ability to navigate our way through the complexity towards successful outcomes.

One of the key tenets of the TRIZ story is that arrangement of knowledge in terms of function is a good way to distinguish between signal and noise. Function makes a very solid foundation because of its stability. The manner by which we deliver functions may well change over time, but the functions themselves remain almost completely constant. Only when human engineers and scientists uncover a new way of delivering a function, make a step change jump or solve a trade-off do we contribute new 'signal' to our understanding of the world. This is simply why the TRIZ 'databases' essentially distill down to function, trends and contradictions.

The fact that function remains nearly constant gives a solid foundation, but still leaves open the feeling for some that the world still looks pretty infinite. So, we thought to ourselves, a few months ago, let's see if we can set about mapping the total list of functions just to see how infinite things really are.

In the first instance, the job of functional classification is made somewhat easier by the existence of several TRIZ-oriented Function Databases. These databases very quickly inform us of the fact that, when looking at technical systems at least, the number of different functions is measurable in the tens rather than the hundreds or thousands. An equivalent exercise to classify the number of 'business functions', as was attempted in the Business and Management edition of the Hands-On Systematic Innovation series of books, still shows the numbers of 'management verbs' ('create', 'anticipate', 'transform', 'resolve', etc) to be measurable in the high tens rather than hundreds again.

Taken together, the technical and 'business' function lists give us a picture with around 200-250 different functions in it. Again, on some levels, this is a surprisingly small number, but on the other hand, it is still rather large when we decide we wish to actually 'do something' with the information. To help in this situation, we decided, wouldn't it be nice if there was some kind of a hierarchy of functions – such that we could at least begin to determine the relative importance of one function over another.

Thinking about this question lead fairly quickly to 'someone, somewhere' who might have done some hard work for us. That person turned out to be Abraham Maslow and his hierarchy of needs. Here is what we might think of as some kind of universal hierarchy of

the needs of people. People, being customers, and the customer being the person who ultimately drives the success or otherwise of an innovation attempt, we might hypothesise that Maslow's hierarchy gives us some kind of a ranking order of functions. Figure 1 represents an attempt to take the Maslow hierarchy of needs and to map to it the basic functions that each of the levels demand:

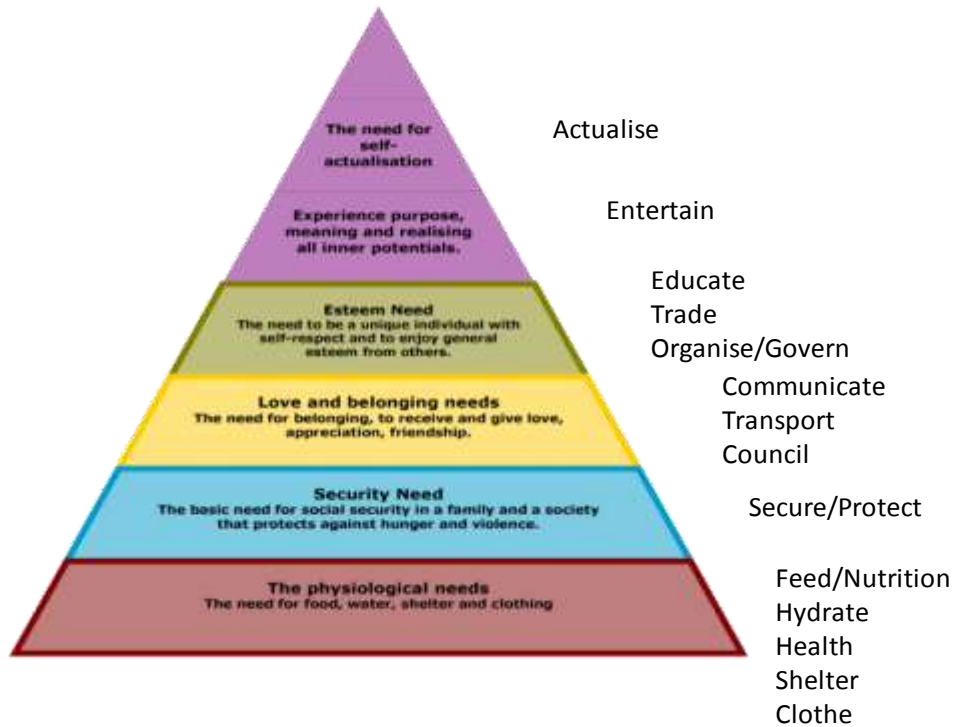


Figure 1: Different Base Functions At The Different Levels Of The Maslow Hierarchy Of Needs

From bottom to top, a failure to deliver these functions means a failure of society. As per Maslow's definition, unless we have enough of the things at one level, we cannot progress to the next level. Consequently, from a function perspective, feed, hydrate, health, shelter and clothe form the basic minimum set of global functions that need to be delivered.

Then, within each of these high level functions, we may begin to observe a host of sub-functions. In the domain of health, for example, there can be seen a hierarchy of lower level supporting functions as illustrated in Figure 2:

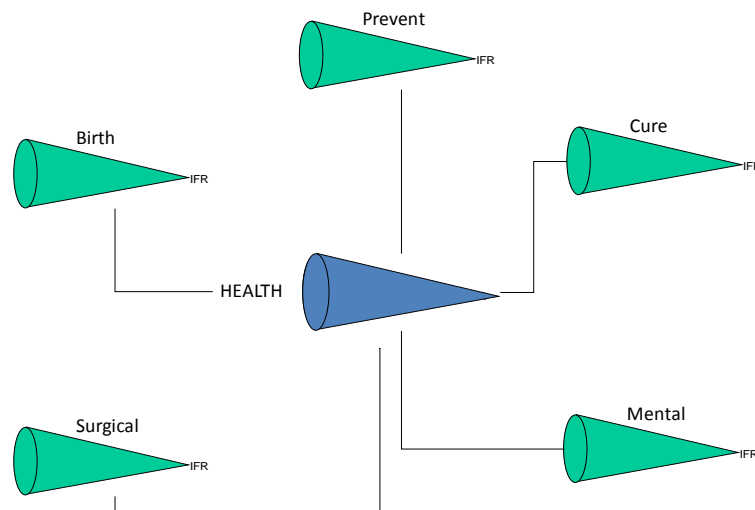


Figure 2: 'Health' Function And Supporting Functions

Also incorporated into this figure is the concept of convergent evolution within each function. This is a vital element of the function hierarchy story in that, if we consider for example, the ideal Final result end point of the health function – ‘the body grows, maintains, protects and repairs itself’ – then once this function has been reliably delivered (and the population has accepted that it is so), the need for the sub-functions will disappear. Thus, to take one such example, a self-repairing body no longer needs a function related to ‘surgical’.

As we’ve been thinking through the whole concept of a function hierarchy, the next thing that seems to be useful is a division into ‘primary’ and ‘supporting’ functions. Thus, to achieve the function ‘feed’, we also have to provide supporting functions like ‘plant’, ‘harvest’, ‘process’, etc in order that the primary function can be delivered. These supporting functions are best thought of as different to the sub-functions shown in Figure 2. The important difference between ‘sub’ and ‘supporting’ then is that a sub-function is directly concerned with an aspect of a primary function, whereas a supporting function delivers a function that merely enables one of the primary or sub-functions.

As an overall structure, therefore, the overall hierarchy of functions might look something like the template shown in Figure 3:

	Supporting function - technical				Supporting function - business		
	move	clean	heat	etc	coordinate	organise	etc
Feed - sub-function a (e.g. protein) - sub function b - etc							
Hydrate - sub functions							
Health - sub-functions							
Shelter -sub-functions							
Clothe - sub functions							
etc							

Figure 3: Primary/Sub and Supporting Function Structure

The main point being, the hierarchy of human needs ultimately defines function hierarchy. Function need, then, is driven by convergent evolution – the achievement of an ideal final result solution at a higher level in the higher, eliminates the need for lower level sub-functions and their associated supporting functions. Not simple. But hopefully, simpler.

Insight Mapping: Making Sense Of Raw Consumer Data

We love working on fuzzy, complex problems. Some of the fuzziest and most complex seem to exist in the weird and wonderful world of advertising. Quite possibly the ultimate test of making sense of very intangible, inexpressible things. Over the course of the next three months, we will be looking at the process we have been building to allow a structured approach to reliably create breakthrough advertising campaign solutions. In this month's article we explore that part of the process aimed at taking raw consumer/customer input and turning it into insight.

According to our research, an awfully large percentage of consumer survey work is a complete waste of time. The wrong questions get asked, the wrong answers get listened to, and the wrong insights get extracted. On one level, there appears to be little value in going to talk to the consumer at all. On another, there are things that can only sensibly be uncovered by talking to and watching consumers. What's needed, therefore, is a major overhaul of the consumer insight story.

The key to this overhaul seems to very clearly centre itself around the need to go and find the conflicts and contradictions being experienced by the consumer. Surveying someone to determine whether they prefer red or blue is, we propose, a complete waste of time. Surveying them to see whether they would find a solution in which colour is able to change more or less important than a solution where another attribute conflict is resolved (e.g. size change, shape-change, etc) might just reveal something useful.

Our process for doing this involves the three main steps as illustrated in Figure 1:

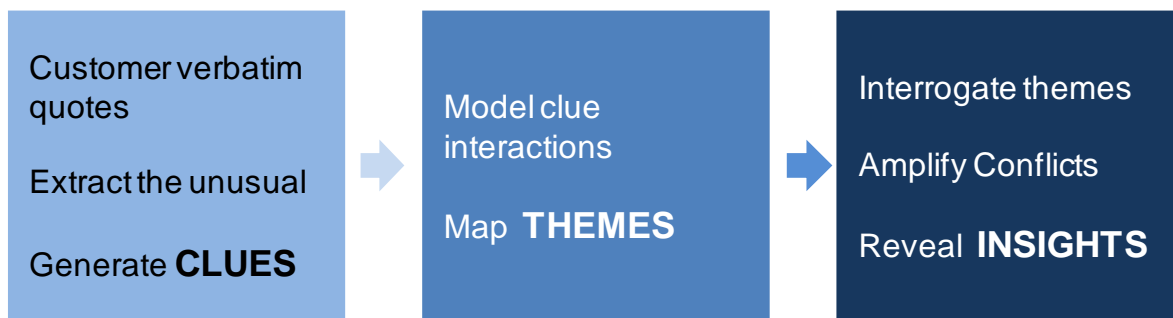


Figure 1: From Consumer To Insight

Generating CLUES

The first part of the process involves the part involving consumers. The key when trying to elicit any kind of information from people is to get beyond the obvious. Controversial consumer anthropologist Clotaire Rapaille effectively ignores everything a consumer says during the first three hours of an immersion session (Reference 1). He's trying to get to the 'real' reasons – the 'codes' in his words – that someone buys or doesn't buy something. He recognizes the likelihood that people don't necessarily wish to reveal these reasons. My friend Nick, for example, will happily tell anyone willing to listen, the reason he drives a Porsche is because of the unbeatable German engineering. Even after several hours, however, he's very unlikely to admit the real reason he drives a Porsche is the ability it

gives him to attract a certain kind of company from the opposite sex. Clearly, getting to the 'real' reasons why people do things can be quite an emotive issue.

There are several ways and means to acquire this kind of input without anyone feeling threatened or exploited. The skill really boils down to an ability to read between the lines.

Good things to go and look for between those lines are:

- Conflicts in the words spoken (listen for the 'buts' – "I love X, *but* sometimes it's so difficult because of Y")
- Conflicts between what is said and a behaviour
- Use of strong metaphors or analogies
- Strange statements that don't appear to have any logic at all

In the past few weeks, we've been running a workshop example on advertising of Doritos corn chips. In order to help make an exercise during the workshop, we went out and gathered a few consumer clues:

I eat mine as fast as I can so I can pinch hers
I like the blue ones; my other half is red
I share them with my partner
I snap the folded ones
I bite the points off first
I lick the flavour off first
I make them into a meal by melting cheese over them
I crush them into my sandwiches
I dip them, flat side first to get more dip
I love licking my orange fingers
I can't stop until they're gone
I snap them in two, like a biscuit
I pick the crumbs out of the bottom of the bag with damp fingers
I love the *really* coated ones; I make sure I get those ones
I crumble them on top of lasagne
I eat the broken ones first
I always tip them into a bowl
I eat a stack of three at a time
I chain eat them – putting the next one in my mouth before I finish the previous one
I let them melt in my mouth

At this stage, all of this input might appear nonsensical. We can call each statement a 'clue' but we're still a long way from anything that might be useful in helping us to construct the essence of our advertising campaign...

Map THEMES

...which then takes us to the second stage of the insight creation process. This one might look a little familiar. Another new application for the Perception Mapping tool. This time, we might re-label it as a Sense-Maker. Whatever it gets called, the essence of the process is nearly identical to the conventional way of using the tool, and really centres around the crucial 'leads to' question. The input data way well be somewhat less focused than under a normal Perception Mapping exercise because whereas normally we will have asked a specific question ('people don't buy into change because...'), here we have merely been listening to consumers talk in general about how they eat Doritos.

The only real difficulty this increased level of randomness gives is that the 'leads to' analysis can feel a tad less structured. It is important to remember, though, how good the human brain is at managing complexity when we try and work on parts of the overall picture rather than the big picture itself. When we've done the leads-to analysis on the

Doritos input, we've forced ourselves to make a leads-to connection for all of the input clues. In experiments with others, we've allowed groups to agree that a given clue may really not lead to any of the others. In which case, it may well turn out to be a theme in its own right.

Either way, here's the result of us conducting the sense-making 'leads-to' analysis for the raw Doritos clue input:

I eat mine as fast as I can so I can pinch hers	A	S
I like the blue ones; my other half is red	B	J
I share them with my partner	C	Q
I snap the folded ones	D	L
I bite the points off first	E	I
I lick the flavour off first	F	J
I make them into a meal by melting cheese over them	G	N
I crush them into my sandwiches	H	T
I dip them, flat side first to get more dip	I	L
I love licking my orange fingers	J	K
I can't stop until they're gone	K	A
I snap them in two, like a biscuit	L	J
I pick the crumbs out of the bottom of the bag with damp fingers	M	K
I love the <i>really</i> coated ones; I make sure I get those ones	N	J
I crumble them on top of lasagne	O	C
I eat the broken ones first	P	I
I always tip them into a bowl	Q	K
I eat a stack of three at a time	R	N
I chain eat them – putting the next one in my mouth before I finish the previous one	S	R
I let them melt in my mouth	T	L

And here's what the resulting sense-making map looks like, with, as ever, the 'leads to' connections drawn as arrow connections between clues:

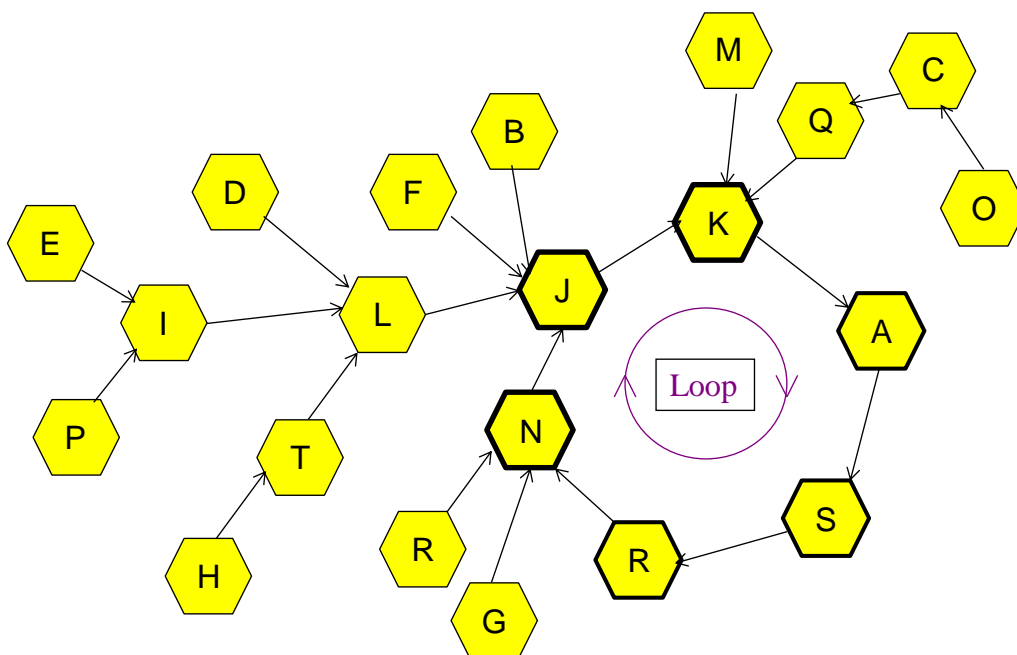


Figure 2: Doritos 'Sense-Maker' Map

This particular map features one clear loop. This loop represents a higher level meta-clue, or 'theme'. In the case of the map drawn here, looking at the constituent statements that make up the loop, the emerging theme seems to look something like 'shared addiction' or 'competition', with the licking of orange fingers being both in this loop and also a strong collector into which other clues have fed.

Reveal INSIGHTS

The themes emerging from the sense-maker map should already be at least intriguing, but they cannot quite be called 'insight'. Insight in our terms should comprise statements that inspire novel, step-change business ideas. Again conflict and contradiction are likely to be a central aspect of the output.

'Shared addiction' in itself is a theme rather than an insight, but on closer inspection seems to contain an internal conflict – addiction usually being a personal thing which, in the Doritos context, has also become a competition between two or more people.

In a related fashion, there also seems to be some insight in the 'orange fingers' clue. Corn chips are very definitely a convenience food and so mess should be seen as a negative, whereas the orange fingers statement appears to clearly suggest that the 'mess' is actually a good thing in this case. Perhaps the insight here is something to do with 'good mess' – people want convenience and no mess, but even the mess can be a part of the overall positive experience.

Next month we'll look at what we might do with these and other insights in the context of an overall process – the RIGHT process – in which the I-for-insight step we've just been looking at is the second of five overall steps.

References

- 1) Rapaille, C., 'The Culture Code: An Ingenious Way to Understand Why People Around the World Buy and Live as They Do', Broadway Books, 2007.

Humour – BPrepared

The BP catastrophe in the Gulf of Mexico is about as far away from being a laughing matter as it is possible to be. In theory, of course, the incident could have happened to any of the oil companies trying to extend the boundaries of technology. In theory, too, one would expect there to be a solid set of risk mitigation plans all set to be put into action should the unthinkable happen. In practice though, we get BP chief executive Tony Hayward suffering from one of the longest bouts of foot-in-mouth disease ever recorded. So bad in fact that the tragedy has almost turned itself into comedy. The latest coup-de-grace was the inspired Mr Hayward taking the day off to take his son out. Not such a bad thing on the face of things. Fairly terrible though when the day out involves a day's yachting in the comparatively un-polluted waters off the south coast of England. Great PR Tony.

Probably not totally his fault, but one of the next dumbest things perpetrated by the obviously paralysed BP officials was to put up a website asking for solution ideas from the public at large. Kind of a 'click here if you have any idea how to fix this problem' button. Honourable as the intentions might have been, the impression the site creates is one of clue-lessness. Worse still – if anyone from BP had thought this through to the next stage – has been the fact that at the time of writing close to 80,000 concerned citizens from around the planet had clicked the button and submitted their idea.

Even the most cursory look at some of these 'ideas' reveals, err, people don't really have a clue. Nothing wrong with that of course, since most people on the planet aren't experienced deep-sea oil drilling experts. The problem for BP is that, unfortunately, they now have to be seen to be doing something with all these ideas. Otherwise the company gets accused of 'ignoring the public', and thus puts several thousand other corporate feet inside their corporate mouths.

The game, it seems, has indeed already begun. You want crowd-sourcing, some bright spark thinks, I'll give you crowd-sourcing. Enter the latest on-line BP Open Innovation initiative. Well, probably not endorsed by Tony Hayward. The re-Design the BP logo competition appeared about the same time as Tony's day on his yacht and already has over a 1000 suggestions. We like this one:



Open Innovation fans keen to show everyone what they can do might like to look at some of the other entries and make their own at:

<http://www.logomyway.com/contestView.php?contestId=1746>

OI rules! Kind of.

Patent of the Month – Ceramic Aerogels

Patent of the month this month is US7,732,496, granted to inventors at the Ohio Aerospace Institute on 8 June, and assigned to NASA (usually a pretty good sign that this is an invention with some merit). The disclosure describes advances in Highly porous and mechanically strong ceramic oxide aerogels. As described by the inventors in the background to the invention:

Ceramic aerogels are among the most highly porous and lowest density materials. Their high porosity means that 95% or greater of the total bulk volume of a ceramic aerogel is occupied by empty space (or air), producing excellent thermal as well as sound insulating qualities. In addition, their high specific surface area (e.g. on the order of 600-1000 m²/g) should make them well suited for numerous applications, including as adsorbent beds for chemical separations, as catalyst supports, as platforms for solid state sensors, etc. Unfortunately, conventional ceramic aerogels are physically and hydrolytically very unstable and brittle. Their macro-structure can be completely destroyed by very minor mechanical loads or vibrations, or by exposure to moisture. In addition, over time, these materials tend to produce fine particles (dusting) even under no load. Consequently, there has been little interest in ceramic aerogels for the above-mentioned as well as other applications, despite their excellent properties, simply because they are not strong enough to withstand even minor or incidental mechanical stresses likely to be experienced in practical applications. To date, such aerogels have been used almost exclusively in applications where they will experience no or almost no mechanical loading.

The Achilles heel of aerogels, in other words, has always been their extremely poor strength characteristics. In conflict terms, the lack of strength is the main thing fighting the benefits of high surface area, good sound insulation and good thermal insulation. Here's what that conflict looks like when mapped onto the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Area of Stationary Object (6) and Temperature (22) and Loss of Energy (27) and Noise (29)

WORSENING PARAMETERS YOU HAVE SELECTED:

Strength (20)

SUGGESTED INVENTIVE PRINCIPLES:

35, 40, 2, 3, 17, 28, 26, 9, 31, 30, 5, 4, 14, 8, 36, 37, 10

The inventors make a step change advance in all aspects of the conflict by: providing a structure having a solid-phase three-dimensional network of ceramic oxide particles. The particles have non-hydroxyl functional groups bound to surfaces thereof, and the network of ceramic oxide particles is cross-linked via organic polymer chains that are attached to the particles via reaction with at least a portion of their surface-bound non-hydroxyl functional groups.

The recommendations provided by the Matrix appear to tally quite nicely with the strategies used. Namely, (most obviously) the incorporation of other elements ('non-hydroxyl groups') to make a composite (Principle 40), plus the less obvious use of cross-linking structures (Principle 17, Another Dimension) and incorporation of different structures and forms at different regions (Principle 3, Local Quality).

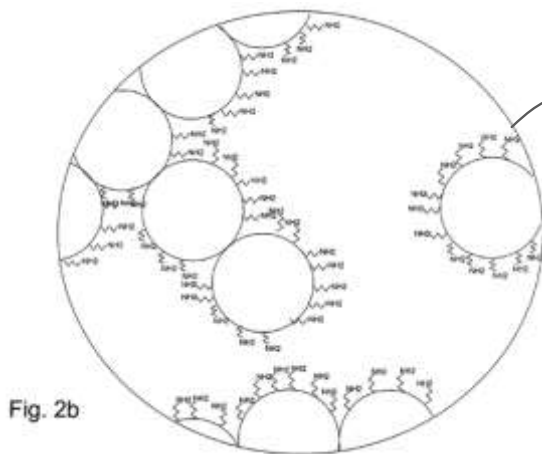


Fig. 2b

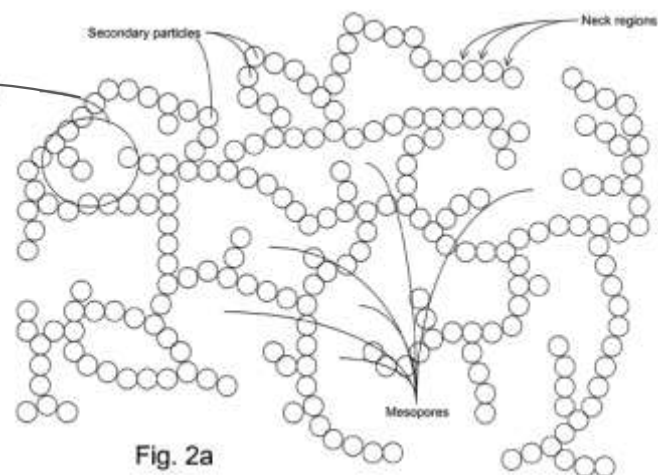


Fig. 2a

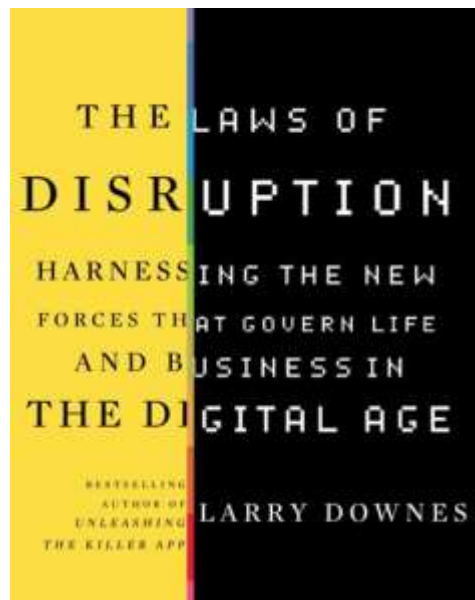
In terms of the benefits delivered by the invention, the disclosure claims a ‘two magnitude’ increase in strength for equivalent material density. Or, put in absolute terms:

Cross-linked vanadium aerogels proved to be tough relative to other types of crosslinked aerogels. FIG. 12 compares the stress-strain curve of a typical Desmodur N3200 diisocyanate cross-linked vanadia aerogel having a bulk density of 0.38 g/cc under compression testing, with the analogous curve of a Desmondur N3200 diisocyanate cross-linked silica aerogel of similar density (0.48 g/cc) under the same conditions. Compression tests were conducted according to ASTM D695-02a using .about.1/2 inch diameter by .about.1 inch long monolith samples of the respective aerogels. It is noted the cross-linked silica sample shattered at 77% strain under .about.25,000-30,000 psi stress, while the cross-linked vanadium aerogel remained in one piece (although it was nearly fully consolidated) even after more than 100,000 psi stress and more than 93% strain.

Which kind of sounds like the world now has a material suitable for use in a host of previously impossible roles. The aerogel curiosity finally, perhaps, gets its chance to be turned into practical reality. Fingers crossed.

Best of the Month – The Laws Of Disruption

Dedicated followers of Altshuller's original set of 'Laws' of technical system evolution will have a memory of the law of uneven development of the parts of a system, which states 'a technical system encompasses different parts, which will evolve differently, leading to the new technical and physical contradictions'. Our research has since expanded that idea to also encompass the business and social aspects of a system. At this point in mankind's evolution, indeed, it is increasingly the case that the technical evolution has advanced faster than the corresponding 'non-technical' elements, and as such a large proportion of attempted technical innovations are failing. Our book of the month this month adds a deal of flesh to this idea of mis-match between changes between technical and business/social worlds:



Larry Downes' 'The Laws Of Disruption' actually came out (in the US at least) at the end of 2009, so we're a little slow off the mark getting to it. Thankfully, however, we got there in the end. This is very definitely a book that sits in the top percentile of business texts. It features an elegant mix of case studies and well thought through theory. The start point of which is the basic Law of Disruption: 'technology changes exponentially, but social, economic and legal systems change incrementally'. This Law, along with two others – Moores Law (crudely, the doubling of processing power every 12-18 months at constant cost) and Metcalf's Law (the more people there are connected to a network the more exponentially valuable it becomes), Downes compelling argues is going to give rise to some enormous disruption on the social, economic and legal side of the equation in the coming years.

The book divides the story into nine main chapters: three each in the domain of private life, public life and information life. The latter trio of chapters in particular describe some profound implications for the evolution of copyright, patents and software which anyone working in and around the innovation domain needs to know about. Plus, given the fact that you can buy copies of the book from Amazon for a fraction of the original cover prices should be enough to say that this would be about your safest reading investment of the year... if only to give yourself an opportunity to get wound up about the law-makers and lawyers of the world and how they almost invariably end up doing the wrong thing, for the wrong reasons, at the wrong time. Brace yourselves, the next few years of extreme convergence could make for a bumpy ride for all of us.

Conference Report – German TRIZ Konferenz, Wolfsburg, 16-17 June

With a day and a half of presentations and just over fifty attendees, things didn't look too rosy for the main Germany TRIZ event of 2010. There was certainly little sign of a methodology riding the crest of a growth wave. In fact, it was touch and go whether the event would go ahead even two weeks before the announced dates. And yet another TRIZ event organiser found themselves in the unenviable position of herding late presentations and missing attendees.

That said, the 50 people who did turn up were a dedicated and knowledgeable crowd. And the Volkswagen Auto-University in (difficult to get to) Wolfsburg was as good a venue as anyone could have wished for. Yours truly was one of a very small number of overseas visitors. Indeed the revenue generated by Hannover and Berlin airports seemed to amount to one person from Switzerland, three from Austria, one from the US (the ever-entertaining Zion Bar-El) and me. And I flew in from Austria. Needless to say, anyone with limited German language skills was going to find the going a challenge.

With that said, my apologies to any of the other presenters that might eventually read this review, this included me. I can read enough German to get the gist of most things (all the difficult words are English with extra consonants!), but even the slowest spoken German sounds like a staccato, throat-clearing blur to me. If I missed anything important, therefore, I apologise. From where I sit, looking at the conference proceedings, though, I'm not sure there was too much that might be classed as 'earth-shattering'. Competent, yes. Interesting, usually. But 'new', almost nothing appeared on my radar screen. Which yet again isn't good news for anyone anywhere working in the TRIZ/Systematic Innovation arena. The downward spiral of no success stories leading to no papers leading to no attendees leading to no likelihood of future success stories is rapidly beginning to look like a tailspin.

The key moment of the event was a quite telling walk out of the lecture room down to look at what was described as the first physical implementation of a Volkswagen TRIZ solution into an actual vehicle. That it was an idea from 2007 and the vehicle in question was still at concept car (taxi, actually) stage sounded the first warning note. The fact that the idea looked decidedly non-TRIZ like (i.e. 50 people looked at it and collectively looked at each other and thought 'what kind of TRIZ have they been learning here?'... which was, thinking back, probably best answered as 'a very Soviet version of TRIZ'). If levels of anti-climax could be measured in horsepower terms, this was a turbo-charged, V12 version of anti-climax. And more than a little bit depressing.

Which shouldn't put too much of a damper on the event. The visit to the local science museum – opened especially for the delegates in the evening at the end of the first day – was a great place for a chain of hands-on TRIZ conversations. And, like in Korea back in March, there were clear signs of a dawning that technical-TRIZ was no longer enough. Actually, it was never enough. Now, the technical world is increasingly seeing what the managers and leaders realised a few years ago, no technical solution can ever be the right solution without due consideration of all of the non-technical, business and – even worse – intangible aspects of the innovation game. It will be interesting to see what progress gets made to bridge the gulf between now and the next Konferenz, scheduled for 2012. Fingers-crossed (why do I find myself using this expression a lot these days?)

Investments – Biodegradable Plastic



If you're a home gardener you may soon find that the pots you buy flowers and plants in are made from chicken feathers. Thanks to two Washington-area scientists, tons of feathers that go to waste every year can now be transformed into bio-degradable plastics.

Every year the U.S. poultry industry alone produces nearly 2,000 metric tons of feathers. Some are used to make pillows, coats and low-grade animal food. But about 80 per cent goes to waste. Re-use of this waste by turning into plastic could begin to make a serious dent in the plastic industry.

Chemist Masud Huda is with the Horticultural Research Institute.

"Here are the resin formulations, which is 100% feather base," said Masud Huda. "This is the basic material for any other applications not only the pottery containers but it can also be used in the automotive industry parts or any other applications."

A few years ago Huda joined forces with researcher Walter Schmidt at the US Department of Agriculture, who was working on practical uses for discarded chicken feathers. Together, they produced art paper, absorbents, water and air filters, and insulation materials - all made from feathers.

Schmidt says the chemical composition and strength of the feathers makes them a great material for many uses.

"Feathers are about eight times as strong as cellulose," said Schmidt. "By design, feathers are strong and durable. If feathers were twice as heavy or half strong then birds couldn't fly."

Later, Schmidt and Huda produced biodegradable plastics and started making plastic flower pots. While pots made from petroleum plastics can last indefinitely, Schmidt says most are never re-used because of concerns about contamination. The pots made from feathers, on the other hand, are designed to last from six months to a few years..

"Plastics from petroleum often stay around a couple hundred years; so why do you want a plastic that you use for a year to last a couple hundred years, make no sense, match the product with the use," he said.

The two scientists have also made prototype dash-boards for cars and other parts for the automobile industry. They say the possibilities for substitute plastics are great. To their biodegradable pots they are now adding other waste materials, which could also be beneficial to the plants.

"This is pelletized manure that we can actually add to the flower pots so they get nutrients from the pot themselves," said Schmidt.

The scientists hope that in a year or two their biodegradable flower pots will be on the national market, marking the beginning of the end for plastic pots.

What we like best about this story, above and beyond the obvious sustainability and re-use of resources aspects, is that the inventors have targeted a sensible niche application. In true Christensen and the innovator's dilemma fashion, they have targeted a product range that is amongst the least valuable to the incumbent plastics companies. Hence, there is every incentive for the incumbent companies to encourage the chicken-feather plastic rather than trying to kill it or dismiss it as a joke. Next up comes working out how to transfer the capability to other countries with lots of chicken feather waste. Which basically means, every country.

Generational Cycles – Double-Dip Recessions

Pretty much as rebel-economist Harry Dent predicted about a year ago, much of the Western media finds itself speculating on the likelihood of a double-dip recession. According to the very wise Mr Dent, the result is inevitable since the mass of government thrown at the 'last recession' did nothing to resolve the fundamental underpinning generational problem, but rather merely delayed the inevitable consequences.



Demographic trends come from generational DNA. And in a developed society that DNA dictates a periodic oscillation between generations that have lots of babies versus those that don't. When a large generation grows up and reaches their peak spending years (around 48 years old), the economy booms; likewise when a smaller generation grows up and reaches theirs, the economy busts. As Harry Dent is prone to saying, 'economics is people spending money'. Less people means less money in the economy. No matter how much the government encourages people to do otherwise.

The problem is exacerbated when the generation hitting that 48 peak spending age is a Nomad generation. The key driver for 40-60 year old (Generation X) Nomads is pragmatism growing out of alienation. Alienated people tend to have little faith in the establishment and what the establishment tells them to do. The more an alienated person is told by the government that they should keep spending money as they were in the UK by the just-disappeared Boomer generation government, the more they look around at the recession they're embroiled in and say 'you've got to be kidding'. In this way, perfectly logical and appropriate advice gets interpreted in exactly the ways the economy doesn't need.

The newly in post (pragmatic Nomad) UK Prime Minister, David Cameron and his (also pragmatic Nomad) deputy, Nick Clegg have just announced sweeping cuts to public spending in the UK. This is a very pragmatic thing to do – we're going bust, so we have to reduce spending. And so very likely – and predictably – triggering a downward overall spending spiral: alienated/pragmatic Nomad consumers still don't spend money; pragmatic politicians take more money out of the economy. Disaster ensues.

Funny how such a lot of impending trouble can start from something so simple as 'the way you were raised by your parents will in turn affect the way you raise your children'. That's complexity for you. And the veritable butterfly wing-flapping causing what looks like being not just a double dip recession, but a full blown recession-followed-by-depression in most Western countries. Time to look East methinks.

Biology – Yellow-Lipped Sea Krait



The yellow-lipped sea krait is one of the most poisonous of all snakes but it is still vulnerable to predators while it forages for food.

Scientists found the reptile tricks famished sharks, carnivorous fish and birds by rearing up its tail, which has the same black and yellow markings as its head.

Danish naturalist Dr Arne Rasmussen made the discovery while diving off Bunaken Island in Indonesia. He was surprised to see the snake twist its tail up every time it put its head into a coral crevice.

Studies of the reptiles in the Solomon Islands, Paris, Berlin and Copenhagen confirmed the discovery. Dr Rasmussen said: “The value of such an adaptation is twofold; it may increase the chances of surviving predator attack by exposing a less ‘vital’ body part, but more importantly it may deter attack in the first place if attackers perceive the tail as the venomous snake’s head.”

From a conflict resolution perspective, the sea-krait has evolved a very simple and effective solution to the classic fight between the parallel need to feed (‘productivity’) and the need to keep a look out for predators (‘safety/vulnerability’). Here’s what that conflict looks like on the Matrix:

IMPROVING PARAMETERS YOU HAVE
SELECTED:
Productivity (44)
WORSENING PARAMETERS YOU HAVE
SELECTED:
Safety/Vulnerability (38)
SUGGESTED INVENTIVE PRINCIPLES:
10, 39, 1, 18, 31, 24

Unfortunately, the Matrix doesn’t suggest Principle 26, Copying as one of its top 6 recommendations. Copying is probably the closest of the Principles to the solution evolved in the sea-krait. Both in terms of the two heads, and also the fact that the tail-head moves to mimic the movements of the actual head of the snake. Having said that, Principle 1, Segmentation, isn’t a million miles away from the two heads-are-better-than-one solution, so we shouldn’t think of the case study as a complete failure.

Short Thort

The Peter Principle...

...refers to the concept that within any hierarchy, people will be promoted to their level of incompetence, due to the fact that at each level before their level of incompetence, they will work well and thus be eligible for promotion.



As a result, over time, most posts become occupied by people who are not actually able to carry out their duties, with the actual work being done by employees who have yet to reach their level of incompetence.

First Tools & Methods Corollary to the Peter Principle

Every tool, method or process used within an organization is pushed and stretched to its level of incompetence.

Example: 6Sigma is a perfectly adequate toolset for continuous improvement. Some now advocate that the same toolset can be used for innovation. This is fundamentally not true since 6Sigma forces people to ask questions that are diametrically opposed to the questions needed for innovation to take place.

Over time, most tools and methods evolve to occupy roles they are not capable of fulfilling.



News

Beat The Budget

We will be running an exclusive senior executive 'innovating in difficult economic times' workshop on November 22 in the fair city of York. Home of the up and down troop marching Duke. No metaphor intended. Much.

Innovatrix

Is a new TRIZ-based management text book produced by our good friends Clemente Nobrega and Adriano De Lima in Brazil. A very readable tome primarily written for business leaders. And featuring slightly less readable a foreword from Darrell.



Check it out on Amazon....

Journeys Of Nothing...

...speaking of which, you will also find the last ever (ever) first edition copies of Edward Matchett's book 'Journeys of Nothing In The Land Of Everything' also on Amazon. And even also on the Products page of our website.

Matrix2010

Following a client request, we have printed up 500 additional copies of the new Matrix2010 fold-out sheet for people who want the sheet but don't need the whole book. Primarily, in other words, people attending workshops. With a generous discount for bulk-purchase, the big idea is to get as many people as possible able to use a Matrix that works, rather than (thinking about the Classical 1971 Matrix) one that doesn't. Email hannah@systematic-innovation.com for more details.

New Projects

This month's new projects from around the Network:

- Energy – workshop series
- Medical – new product ideation and development
- Automotive – voice of the customer study
- FMCG – IP bullet-proofing
- Construction – innovation culture initiative
- Automotive – asset-stepping project