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Our guarantee to the subscriber is that the material featured in the e-zine will not be published elsewhere for a period of at least 6 months after a new issue is released.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

Backward Trends?

Its always a happy day when we find an innovation that appears to go against the TRIZ Trends, because it allows us to challenge the models and – hopefully – help to make them more resilient in the future. The innovation in question is the range of solid shampoo products from the retailer Lush. The fact that we can describe it as a 'range' is already indicative of the product's success, but its only when we look at the figures that we start to see the magnitude of the step-change the Company has delivered. The great thing about making the product into a solid is that it eliminates a whole lot of packaging and therefore cost. Annual savings in water are 120,000 gallons, transportation costs are reduced by a factor of 15, there's a 100% reduction in the need for preservative chemicals necessary in liquid shampoos and, selling over three million of the soap bars a year means 3 million less plastic containers.

The problem from the TRIZ perspective is that a jump from the traditional liquid shampoo to a solid represents a significant backward jump along one of the key Trends, Object Segmentation:

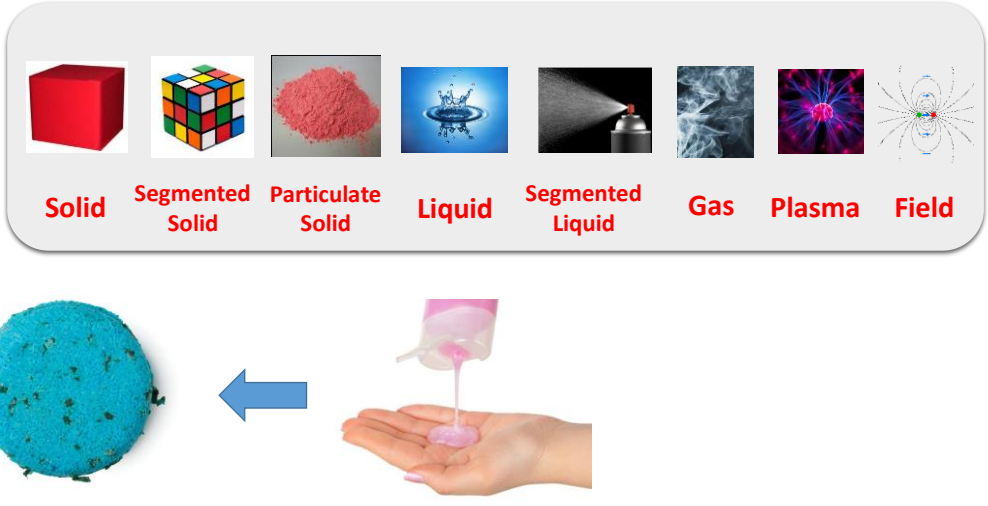


Figure 1: Solid Shampoo & The Object Segmentation Trend

The usual Trend rule is that innovation happens when solutions evolve from left to right and not right to left. So, what's going on?

Well, the first thing to bring to bear is the full version of the rule. The Evolution Potential version of the rule describes that innovation happens when we have at least one net positive Trend jump. It's okay, in other words, to travel backwards along one Trend so long as we make forward jumps along at least two others. And when we construct an Evolution Potential plot for the Lush solid shampoo (shaded orange) and overlay it onto a plot for a conventional liquid shampoo (shaded blue) we get the picture shown in Figure 2:

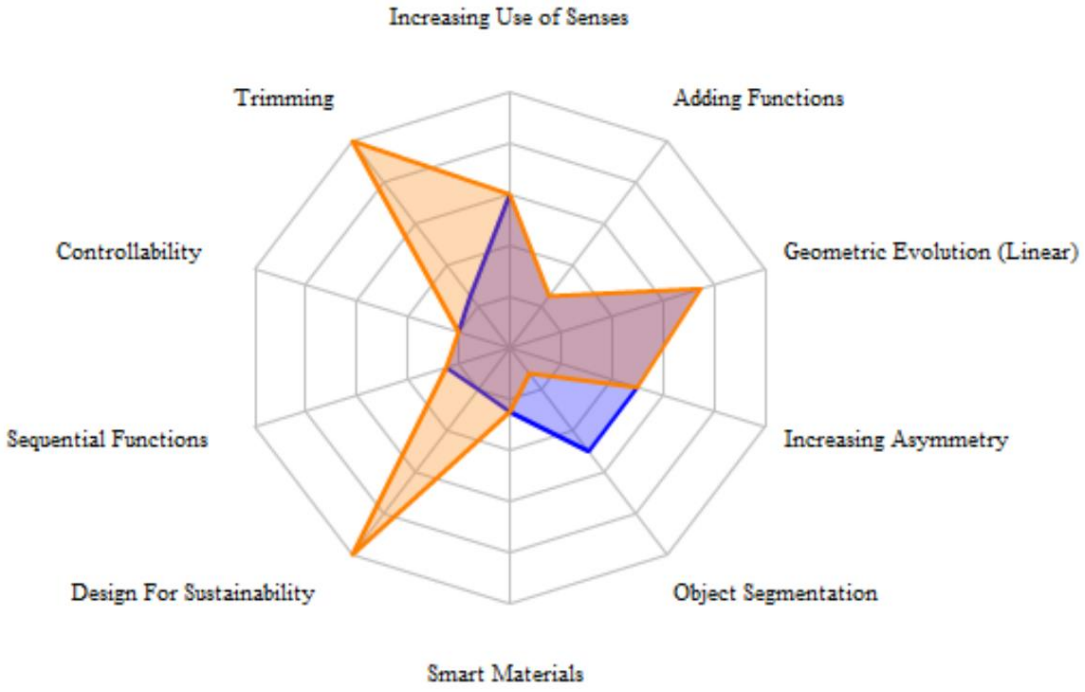


Figure 2: Evolution Potential Comparison Between Lush's Solid Shampoo and Liquid Equivalent

Now we get to see that although the solid shampoo has indeed gone backwards along the Object Segmentation Trend (5 o'clock position on the plot), it has made big forward jumps along both the Trimming Trend – in that all of the packaging has now disappeared – and along the Sustainability Trend – in that the whole business model has been re-thought by Lush.

So far so good. The original Evolution Potential 'one net forward jump' rule remains intact. The Lush solid shampoo looks like TRIZ would have predicted it.

But not quite. Think now about one of the most famous 'exceptions' to the TRIZ Trends – the smartphone handset we all increasingly carry around with us. The solid lump we now possess is a backward step along the Dynamization Trend: earlier phones contained one or more joints so that we could fold them and thus make them fit better in our pockets or bags. The rationale explaining the success of the solid-lump smartphone is that the handset had to (temporarily) evolve backwards in order that the keypad could advance from its 'multiple jointed' stage to become a (digital) 'field'. In this case a sub-system (keypad) Trend advance trumped a system level (handset) to create what many would say was a world-changing innovation. The thinking in justifying this situation was to recognize that a forward jump that was 'closest to the functionality the customer is looking for' trumped backward jumps that were further away.

This ‘rule’ (‘heuristic’ is probably a better word) doesn’t seem to apply in the case of Lush’s solid shampoo. The shampoo is the thing that is intimately connected to the customer in this case, whereas the sustainability and trimming ‘benefits’ are felt more by Lush. Recognising this, it becomes far less clear why the solid shampoo has been successful.

Another question to answer. And one that only begins to make sense when we think about the overall Value equation – Benefits-divided-by-the-sum-of-Costs-and-Harms – and Lush’s value proposition to their customers.

In the interests of research, I covered my nose, and braved a visit to my local Lush store to purchase one of the solid shampoos. Then I took the thing in the shower with me. I’d have to say that, although it did the job as well as my usual liquid shampoo, it definitely felt less easy to use. Rubbing a lump of soap over your head is definitely not as good as squeezing a liquid into your hand. The liquid spreads easily, but with the solid, I had to take more time making sure I lathered everywhere. I got the same Benefits ultimately, but I lost out on Cost (Lush is expensive!) and definitely lost out on convenience (Harm). It felt like I was down on the deal. Lush’s solid shampoo ought not to be an innovation in my selfish eyes.

But therein lies the solution to the problem. I’m not Lush’s typical customer. Lush’s typical customer likes spending lots of money on cosmetic products. And they like doing something to ‘Save The Planet’. For Lush’s typical customer, therefore, the solid shampoo represents a very definite ‘two steps forward, one step back’, Evolution Potential rule-obeying innovation.

It all comes down to context. Solid shampoo has been a massive seller – and thus a big innovation success story – for Lush and their customers. But the fact that I can’t go to my local supermarket and purchase a solid shampoo means that I can’t call them a success in the broader context.

We’ve spent the last fifteen years trying to find a universal hierarchy of Trends. It’s a question we get asked a lot by clients: ‘how do I know which Trends are more important than others?’ Our answer has always been, ‘it depends’. As far as we can see there is no ‘universal’ hierarchy. What there is instead are a whole series of domain specific hierarchies for each different industry. And now, what the Lush solid shampoo niche-success tells us, is that it is also dependent on the relative priority of the Benefit, Cost and Harm elements of the Value equation for each different cohort of customer types. Instinct probably tells us that this shouldn’t be a surprise. What’s nice now is that Lush has given us a very tangible example of what that means in practice.

Case Study: Frequent Callers

This is the story of NHS paramedic, Rhian Monteith. She was concerned about small numbers of Accident & Emergency ward patients who seemed to keep coming back to the hospital she worked in. So called 'frequent callers'. Frequent callers are classed as those who call at least five times a month or at least 12 times in three months. The paramedic's idea, now a year-old scheme called the High Intensity User programme, identified 23 patients in Blackpool who had visited A&E 703 times in the previous three months.

Here's what the problem to be solved looks like from a Contradiction perspective:

What we're trying to improve: Supply Cost (i.e. we're trying to reduce the cost of A&E service provision)

What stops us: 'frequent callers' sensing a lack of Autonomy

And then, here's how others have successfully challenged that conflict pair, according to the new Business Matrix (3.0):

33	Autonomy	13 24 10 1 6 7

And here's Rhian Monteith's solution:

"Frequent caller patients offered a coffee and a chat, personal mentoring and one-to-one coaching, became involved in community activities and encouraged to phone her and not 999."

Respectively, Principles 1 (Segmentation), 24 (Intermediary) and 7 (Nested Doll). Not to mention the overall concept of (Principle 13) turning the whole A&E model around 180degrees by pro-actively (Principle 10, Prior Action) approaching the patients rather than waiting for them to turn up at the hospital doors.

SYSTEM ATIC INNOVAT ION

Notice, too, how Principle 6, Universality (6B in the business version of the Principles, 'make use of universal behavioural traits (ABC-M)') is an integral part of the story: Ms Monteith's solution is all about teaching frequent callers how to take control (A), how to get involved in the community (B) and to feel competent (C).

The story continues:

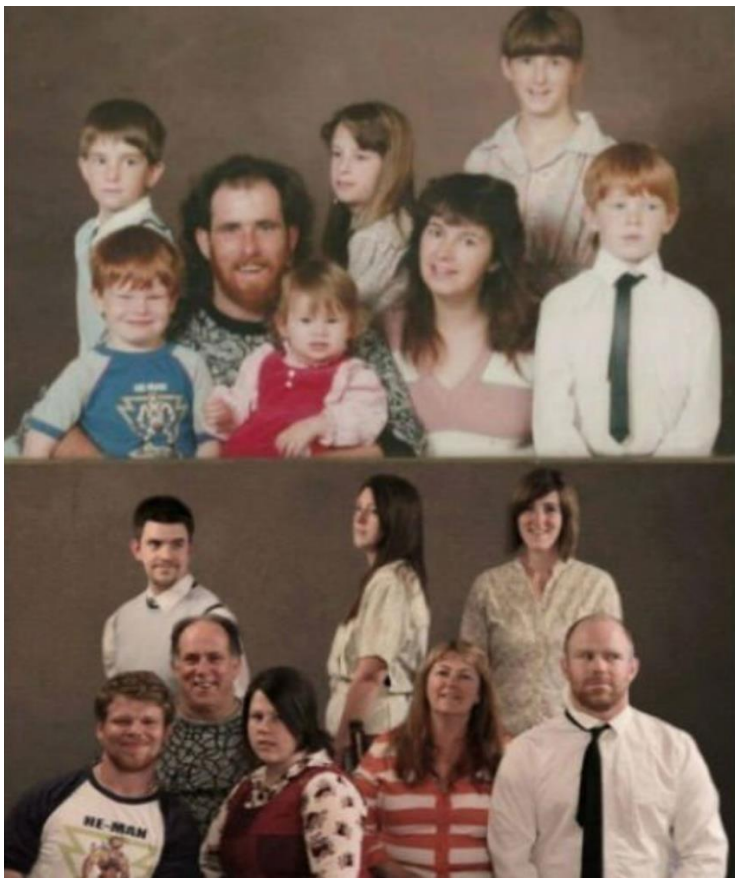
"Through the scheme Rhian helped A&E attendances, emergency calls and hospital admissions drop by around 90% among the group. The programme was then scaled up to cover around 300 patients in Blackpool over the next three years, saving the NHS more than £2 million, and has now been rolled out to around a fifth of the country. NHS England now wants all remaining clinical commissioning groups to take on the idea to make the NHS more efficient. Around 5,000 people visit A&E units more than 20 times each year, costing the NHS £53 million. Ms Monteith, who now works as the High Intensity User lead with the RightCare programme, said: 'This scheme is about making sure people are not left behind in society and not medicalised or criminalised.

'Every individual is put in contact with a person in their lives who cares about them, and stands with them in their time of need. 'I'm incredibly proud to see how my idea has grown and it shows how, if you are armed with a phone and a high level of emotional intelligence, and ask people "what matters to them" instead of "what's the matter" (Principle 13 again)*, the difference you can have to people who need a hand up in life.' Tessa Walton, director of NHS Delivery, said: 'The High Intensity User programme is a fantastic example of what we are trying to achieve – improving patient care while reducing some of the pressure on NHS services through new ways of working. 'We really want to see all local NHS areas using this idea to benefit their patients and services. 'The fact that it was an advanced paramedic working on the front line of patient care that spotted the potential demonstrates that, regardless of where in the health service someone works, a good idea can have a huge impact across the whole NHS.'*

Rhian Monteith's amazingly simple – 'if it's a great solution, it should very quickly look obvious' – innovative idea is now being rolled out across the country and looks set to save the NHS tens of millions of pounds a year.

There's always 'the next contradiction' to be solved, of course, and I imagine it won't take long for the new problems to emerge. Perhaps by way of anticipating one of the likely scaling problems ('we don't have enough people with high EQ like Rhian Monteith'), might we suggest Inventive Principle 25 as a long term strategy: frequent callers often call because they're lonely, so why not connect them to other frequent callers. Somewhat like the Alcoholics Anonymous model. We could call it Frequent Callers Anonymous.

Not So Funny – Discarding & Recovering



There is just something about the way kids take pictures that is pretty funny. The only thing that might be funnier is when adults decide they want to take those same pictures, decades later. As weird as kids look in some of these poses, they seem to be right at home in them. Then we discard childish things and grow up. Only to feel the strange, unworldly desire to recover what we once had. Something like Inventive Principle 34. Something like this…

For some reason the desire to recover former (Principle 38) super-powers is a strong one…

Or…

Sometimes, maybe, innocence is also a superpower….

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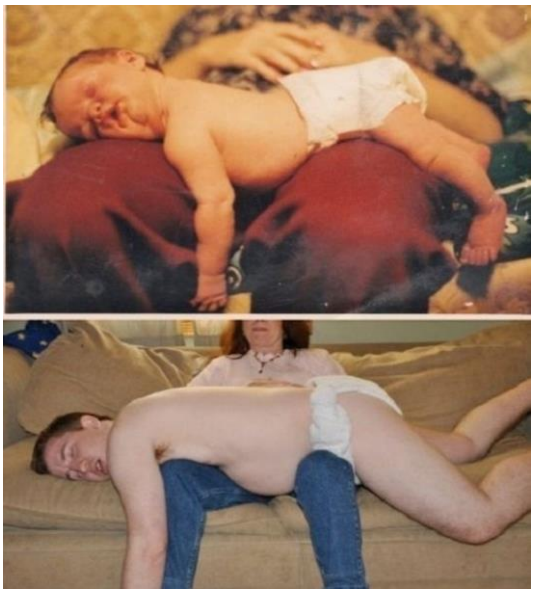
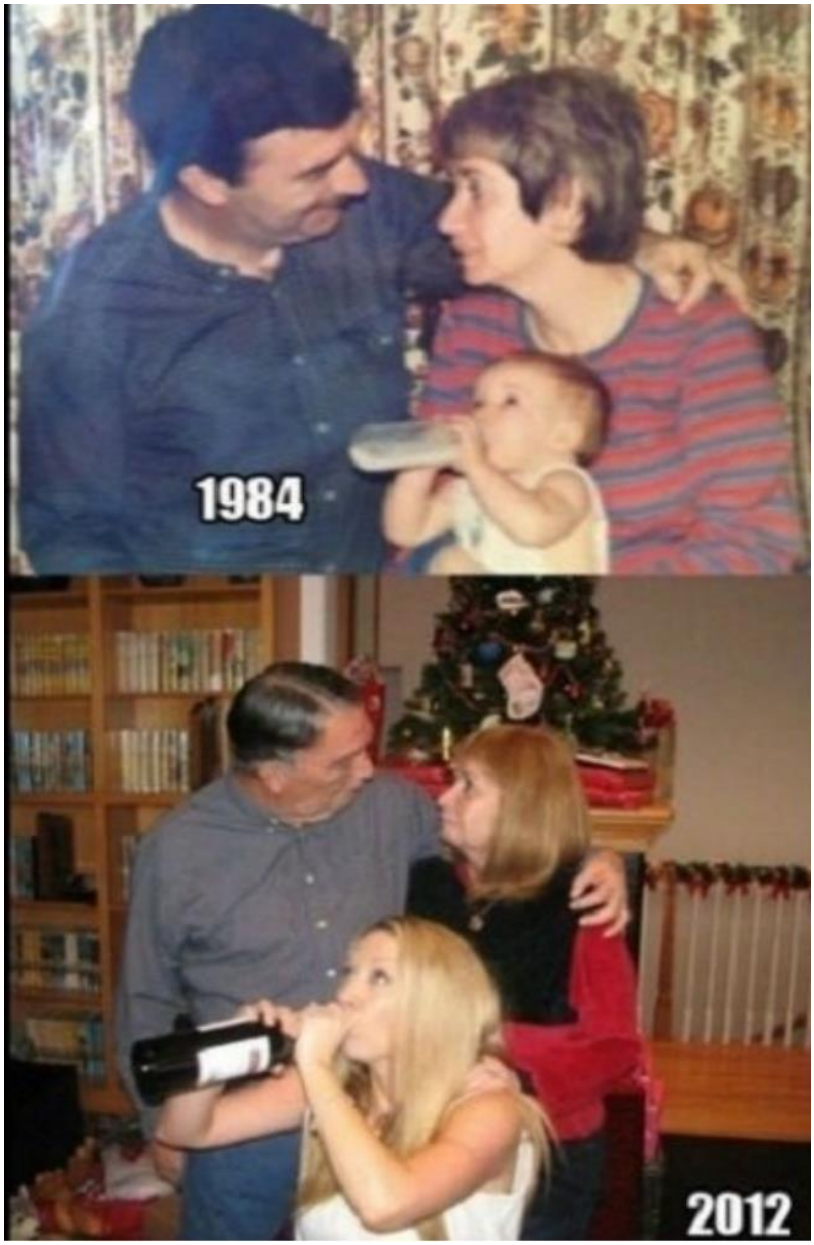
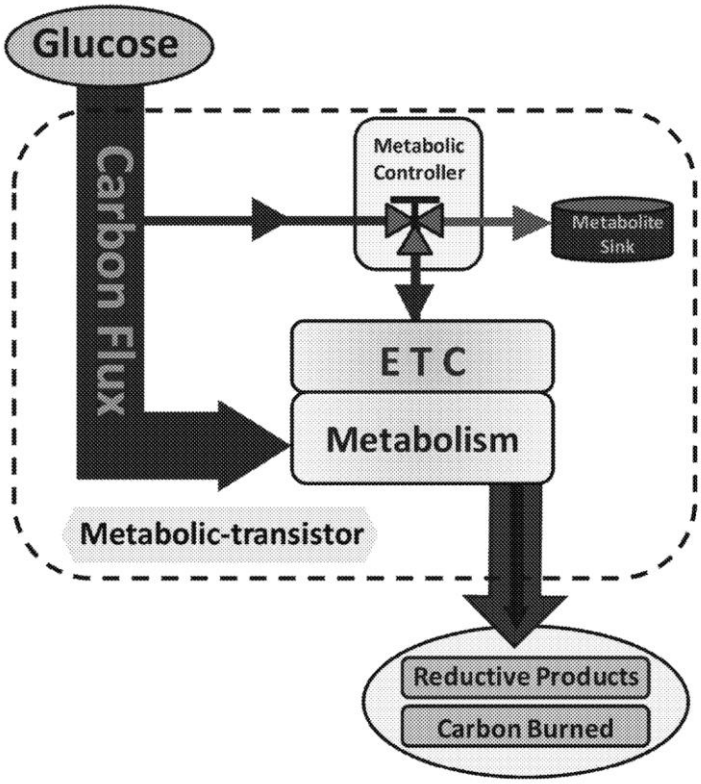


Finally, although the idea is to try and get back to what once was, sometimes the urge to reflect that perhaps not everything (Principle 35) stays the same…



Or not…

Patent of the Month – Metabolic Transistor In Bacteria



We head to Texas for our patent of the month this month, to a trio of inventors at William Marsh Rice University. Their invention was granted as US10,011,839 on July 3rd. Here's what they have to say about the problem to be solved:

All living creatures, be it man or the smallest bacteria have one function in common known as respiration. During respiration, two important functions are performed in living things. In the first, electrons that were generated during catabolism are disposed of and in the second, ATP (also known as adenosine tri-phosphate) is produced to provide energy for the cell.

There are two types of respiration: (i) aerobic respiration and (ii) anaerobic respiration. Aerobic respiration requires oxygen, but oxygen is not required for anaerobic respiration, often called "fermentation" in bacteria. Instead, other less-oxidizing substances such as sulfate (SO.sub.4.sup.2-), nitrate (NO.sub.3.sup.-), sulfur (S), or fumarate are used. These terminal electron acceptors have smaller reduction potentials than O.sub.2, meaning that less energy is released per oxidized molecule. Anaerobic fermentation is, therefore, energetically less efficient than aerobic respiration. Nonetheless, it has value and allows the cells to continue living even with no or reduced O.sub.2.

Anaerobic fermentation and aerobic respiration have been the two metabolic modes of interest for the industrial production of chemicals from microbes such as E. coli, Lactobacillus and yeast. Oxygen rich respiration offers very efficient cell growth (growth rate and yield) and converts a high percentage of the carbon source into carbon dioxide and cell mass (see Table 1). Anaerobic fermentation, on the other hand, results in poor cell growth and the synthesis of several fermentation products at high yields (e.g. lactate, formate, ethanol, acetate, succinate, etc.).

However, producing chemicals via oxygen rich processes costs much more than using anaerobic methods for two reasons. First, aerobic fermenters are more expensive to build, due to both the higher cost per unit and the need for smaller fermenters with reduced economy of scale. Secondly,

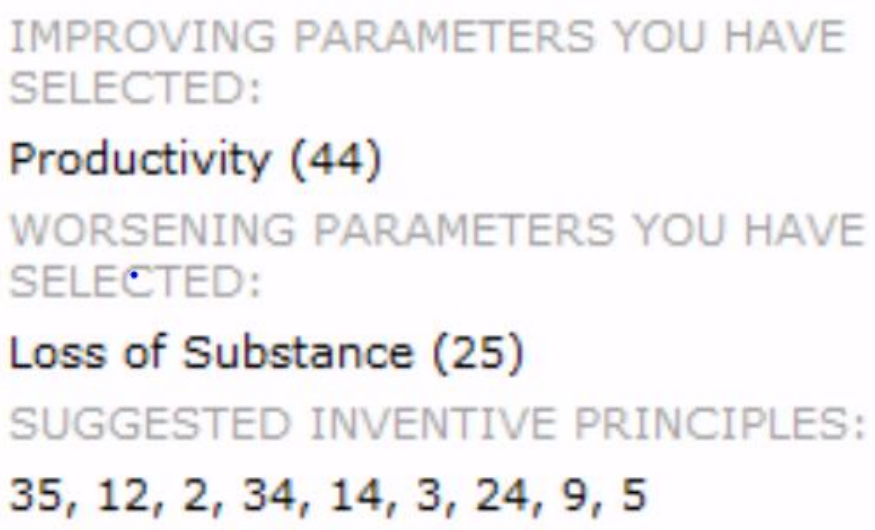
the aerobic fermenters are more costly to operate than their anaerobic counterparts due to low solubility of oxygen, which in turn requires high energy input to ensure appropriate supply of oxygen to the cells. This is especially relevant for the production of commodity chemicals, where fermentation costs can represent 50-90% of the total production cost.

RESPIRATORY VS FERMENTATIVE METABOLISM

Variable	Anaerobic Fermentation	Anaerobic Respiration	Aerobic Respiration
Growth Rate	LOW	Intermediate	HIGH
Cell Mass	LOW	Intermediate	HIGH
Product Yields	HIGH	High/Intermediate	LOW
Capital Cost	LOW	LOW	HIGH
Energy Input	LOW	LOW	HIGH

However, there is still a need to maximize chemical production, while maintaining robust cell growth, and optimizing production yields. One way of optimizing yield is to directly attempt to increase the genes resulting in the desired product. Another method, would be to directly downregulate a competitive pathway. However, direct methods have limitations, can be difficult to fine tune, and are often not satisfactory. We introduce herein indirect methods of influencing flux, which are amenable to fine tuning.

So, the desire here is to create a solution that maintains the main attractions of anaerobic production (low cost), whilst managing to overcome its primary drawbacks (low growth rates). Sounds like classic contradiction territory:



And here's how the inventors have solved the conflict:

We provide herein a completely novel strategy to finely control a metabolic flux in a microbe by using a "metabolic transistor" approach. In this new approach, the pathway of interest converts glucose or other carbon source into a desired product P. However, a competitive pathway C, that uses cofactor F, competes for the same carbon sources, thus reducing the level of P that can be produced when C is active. If we add in certain diverting genes [Principle 24] *to compete with the competitive pathway C, it will allow increased P to be formed. Generally speaking, the diverting gene(s) will either directly compete for F (degrading it or using it for its own reactions) or will utilize*

a precursor of F. Cofactor F thus becomes rate limiting, slowing the competitive pathway C, and allowing more carbon to flow to P, and resulting in increasing levels of P.

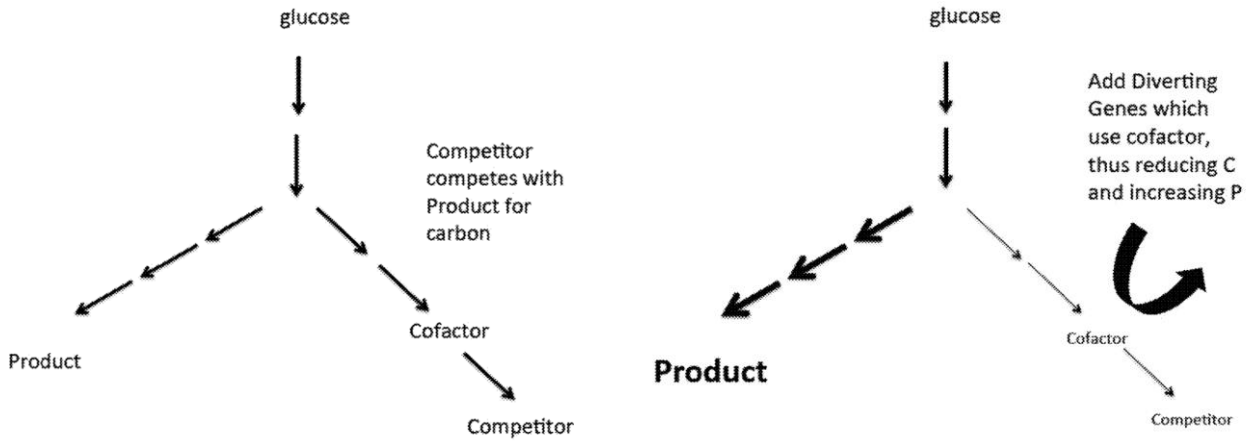
The competitor flux is dependent on the presence of a cofactor or other key intermediate that is required for the competitive pathway, but not for P. Since the key intermediate is normally present in large enough amounts and may even have redundant means for its biosynthesis or uptake, it is not generally considered a key control point. However, if controlled in a fine-tuned amount around a threshold level [Principle 12]*, dramatic effects may be seen with a very small perturbation of the available level of the key intermediate. Thus, the addition of diverting pathways for the cofactor can allow fine control over the product pathways.*

The principles of the current invention are:

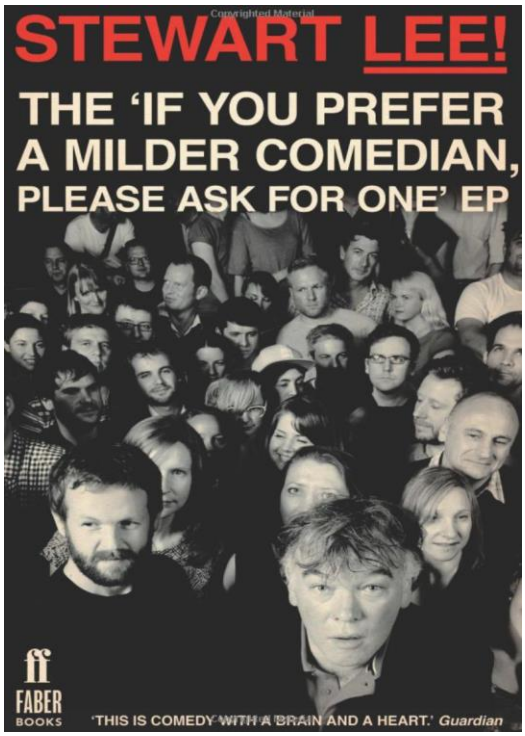
1) The metabolic transistor concept that a competitive metabolic flux can be controlled by small changes in the level or availability of a cofactor require for the competitive flux (but not for P);

2) Cofactor levels in the competitive flux can be modulated by adding an exogenous diverting reaction [Principle 9] *that either directly reduces available cofactor or indirectly reduces a needed precursor for the cofactor;*

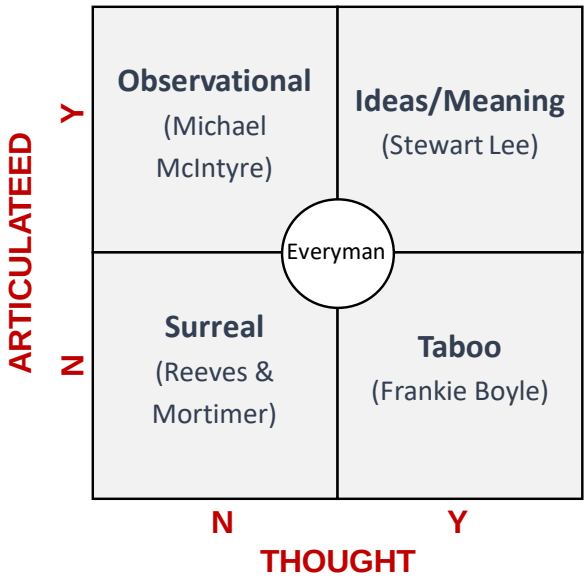
3) Controlling the level of a competitive pathway (by controlling cofactor levels) with the added diverting gene(s) allows increased carbon flow though the desired pathway to P.



Best of the Month – If You Prefer A Milder Comedian, Please Ask For One



A few weeks ago, I wrote a blog article about different types of comedy. If I failed to take the humour out of the subject there, I'm now going to take a second crack at doing it here. The gist of the blog centred around this 2x2 matrix:



As is the usual convention with these kinds of picture, the world usually finds itself in the top left or bottom right hand 'trade-off' corners of the matrix. What that means in the comedy story is that there essentially two kinds of comedian. The ones in the top left articulate things you hadn't previously noticed. This is observational comedy. The basis of the humour here is that the comedian spots something about our lives that you hadn't spotted until he or she revealed it. The revelation, 'oh yes, I'd never thought about that before' is where the laugh comes from. In the UK right now, this is where the bulk of comedians are to be found. And certainly the ones that sell out stadium-size venues. Not

far behind are the comedians in the bottom right hand corner. These are the comedians that articulate things that you'd probably already thought about, but were too afraid to say out loud. The laugh with these 'taboo' comedians comes from the surprise caused when they actually have the nerve to say it.

The main point of the 2x2 matrix then is to highlight the fact that there are also other ways to generate a laugh. The 'best' of which is the top-right hand corner of the picture. In theory, this is the quadrant where it is most difficult to evoke a laugh from an audience because the comedian is saying things that people already know and can already articulate. If humour is all about contradictions, with the comedian sending the audience in one direction and then revealing they had travelled a different direction, then it's difficult to see how to create such a tension in this scenario. Difficult but not impossible.

Enter comedian, Stewart Lee, who very much does live in that top right-hand quadrant. And our book of the month this month is his book 'If You Prefer A Milder Comedian…' In simple terms it is a transcript of one of his stand-up shows. Which makes it funny. What takes it to the next level, however, are Lee's cleverly interwoven comments revealing how and why he is doing what he's doing. These comments are also funny. Which makes for a one-plus-one-is-definitely-greater-than-two synergy. Which is probably what the top right-hand corner of my Matrix is all about.

What Lee's book offers, ultimately then, is the contradiction-solving innovator's version of comedy. It is possible to say things that people have already thought and already articulated and still create a contradiction. You do it by creating a higher level meaning as the performance travels full circle from its beginning to its end.

'If You Prefer A Milder Comedian…' then, pulls off the uncanny (contradiction solving) trick describing a master of his craft who can also describe the 'meta-craft'. And be funny.

And if that doesn't convince you, better yet, it does its work in 112 pages. If the success of a book was measured in terms of the maximum number of insights for the minimum word-count, this book is probably somewhere in the global top-five business books of all time. Which probably doesn't say much. But it does say something.

Wow In Music – The Downtown Lights

I'm writing this at 3am, soft rainfall and ambient lightning flashes outside suggesting, at last, a break in the unstoppable summer weather, and all I want to do is stroll down to the street corner in my local town to catch retreating car lights dance off scattered pools of rain water in the road. I never did this before I saw the video for The Blue Nile's "The Downtown Lights" in the early '90s, but I'm still stuck with the mental image of Paul Buchanan ambling through the neon-lit video set, singing those love-drunk opening lines:

> *Sometimes I walk away,*
> *when all I really wanna do is love and hold you right.*
> *There is just one thing I can say: Nobody loves you this way…*

Among post-punk and new wave bands, The Smiths are surely the most quotably incisive authors on the human condition, and I don't mean it as a condemnation when I say their music's often too busily inventive, the words too on-point, for them to be the band for all depressive seasons. I used to reference Morrissey's lyrics all the time, but his band doesn't always get pole position when melancholia strikes. The Go-Betweens wrote about love and love lost from an earnestly poetic, adult perspective, largely forsaking cinematic grandeur for indie guitar angularity. Both of these artists should fill any good, left-of-mainstream heartbreak playlist. But no-one matches peak performance Blue Nile, and few songs measure up to "The Downtown Lights" from their classic 1989, second album, Hats.

The opening passage is incredible. A shimmering fanfare that sounds like the moon bursting through the clouds. Simple keyboard strokes and measured percussion set to a walking gait. Gorgeous reverb accentuating the high-end – what Trouser Press aptly called the "pristine click" – while a ghostly, held keyboard chord glimmers throughout. There's not a hell of a lot of melodic detail, but the sum of parts makes for a beautiful, hopeful start. The (Principle 2) minimum number of notes to create the maximum emotional connection.

And then, Buchanan. They've compared him to Sinatra, you know. His tinder-dry, weary voice bends under the emotional toil, an everyman voice for the ages, taking the simplest of words and making them sound profound by dint of exquisite phrasing. The verse delivery is sublime, but to these ears the song's obsessive middle eight ("How do I know you feel it? How do I know it's true?) is the (Principle 18) hook. Behind Buchanan, the music ebbs and flows to match his wavering confidence, shading from a warm, fuzzy glow to spare, chilly uncertainty, but my God, man: when he bursts into that exultant (Principle 38) "yeah, yeah, yeahhh," I really do think the world's going to be alright after all. The song

breaks down and rebuilds towards the outro, a perfect four-and-a-half minute single, but it's sorely missing a phenomenal coda I need to tell you about…

…Just past the five-minute mark of the even-better album version, the incandescent swirl of synths evaporates as clipped, funk-style guitar drops in like an unwanted gust of cold air (Principle 17). Cue one of Buchanan's soon-to-be trademark impressionistic half-spoken, half sung tone poems, encroaching sobriety sparking a frustrated array of images pulled from his boozy stumble around town, neon-lit streets, rental cars, empty bars, chimney tops and trumpets, his voice growing ever-more exasperated while the music builds again, to peak with a magisterial shout:

I'm tired of crying on the stairs!
The downtown lights!

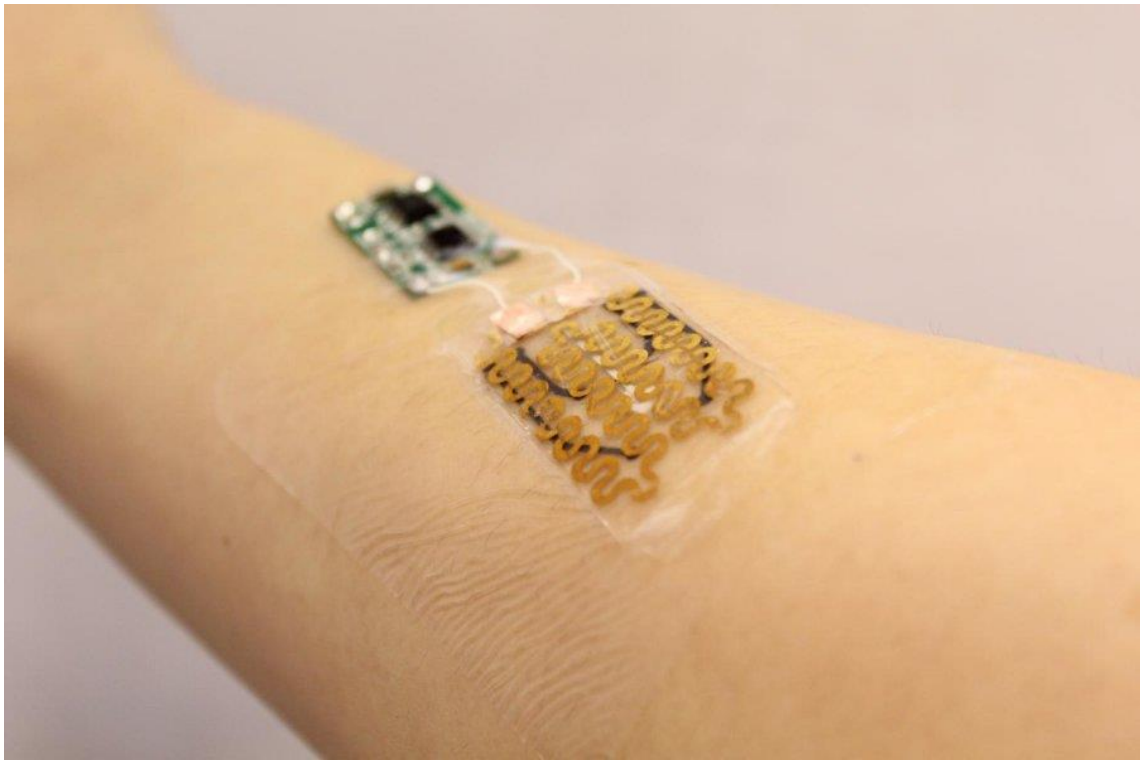
So beautiful. It gets me very time.

Next time the rain's splashed an impressionistic glow across your city streets, why don't you slip out and take a peek at the transformation of the downtown strip a few hours after the last bar's closed: a couple of taxis roaming for last fares, the hum and buzz of tired neon, the faint echo of yesterday's perfume, a sampling of lonely wanderers looking for answers to questions unasked, questions unanswered. See what Edward Hopper saw. Look up at the downtown lights…

Chimney pots and trumpets.

How do I know you feel it?
How do I know it's true?

Investments – Smart Bandage



Chronic skin wounds from burns, diabetes, and other medical conditions can overwhelm the regenerative capabilities of the skin and often lead to persistent infections and amputations. With the idea of providing an assist to the natural healing process, the researchers designed the bandages with heating elements and thermo-responsive drug carriers that can deliver tailored treatments in response to embedded pH and temperature sensors that track infection and inflammation.

Non-healing chronic wounds are a significant medical problem – nearly 15 percent of Medicare beneficiaries require treatment for at least one type of chronic wound or infection at an annual cost of an estimated $28 billion, according to research published in Value in Health. Patients are often older, non-ambulatory, and limited in their ability to provide self-care, yet non-healing wounds are typically treated in an outpatient setting or at home. The smart bandages could provide real time monitoring and delivery of treatment with limited intervention from the patient or caregivers.

"We've been able to take a new approach to bandages because of the emergence of flexible electronics," said Sameer Sonkusale, Ph.D. professor of electrical and computer engineering at Tufts University's School of Engineering and corresponding co-author for the study. "In fact, flexible electronics have made many wearable medical devices possible, but bandages have changed little since the beginnings of medicine. We are simply applying modern technology to an ancient art in the hopes of improving outcomes for an intractable problem."

The pH of a chronic wound is one of the key parameters for monitoring its progress. Normal healing wounds fall within the range of pH 5.5 to 6.5, whereas non-healing infected wounds can have pH well above 6.5. Temperature is also an important parameter, providing information on the level of inflammation in and around the wound.

While the smart bandages in this study combine pH and temperature sensors, Sonkusale and his team of engineers have also developed flexible sensors for oxygenation -- another marker of healing -- which can be integrated into the bandage. Inflammation could also be tracked not just by heat, but by specific biomarkers as well.

A microprocessor reads the data from the sensors and can release drug on demand from its carriers by heating the gel. The entire construct is attached to a transparent medical tape to form a flexible bandage less than 3 mm thick. Components were selected to keep the bandage low cost and disposable, except for the microprocessor, which can be re-used.

"The smart bandage we created, with pH and temperature sensors and antibiotic drug delivery, is really a prototype for a wide range of possibilities," said Sonkusale. "One can imagine embedding other sensing components, drugs, and growth factors that treat different conditions in response to different healing markers."

The smart bandages have been created and tested successfully under in vitro conditions. Pre-clinical studies are now underway to determine their in vivo clinical advantages in facilitating healing compared to traditional bandages and wound care products.

Read more:
Pooria Mostafalu, Ali Tamayol, Rahim Rahimi, Manuel Ochoa, Akbar Khalilpour, Gita Kiaee, Iman K. Yazdi, Sara Bagherifard, Mehmet R. Dokmeci, Babak Ziaie, Sameer R. Sonkusale, Ali Khademhosseini. Smart Bandage for Monitoring and Treatment of Chronic Wounds. Small, 2018; 1703509 DOI: 10.1002/smll.201703509

Generational Cycles – Who's Way?

In 1969, Frank Sinatra released the song, 'My Way'. Even though he was over twenty-five years into his career, it was to become the song that still today defines him. It also became the anthem (funerals, birthday parties, retirement celebrations) for a generation. To say the song hit a nerve is something of an understatement.

The song was written for Sinatra by Paul Anka. Anka was 25 years younger than Sinatra, and knew a thing or two about the changing demographic landscape. He'd heard what was to become My Way's melody in an original 1967 French pop song, Comme d'habitude (As Usual) performed by Claude François. He heard it while on holiday in the south of France. He flew to Paris to negotiate the rights to the song. In a 2007 interview, he said, "I thought it was a shitty record, but there was something in it." He acquired adaptation, recording, and publishing rights for the mere nominal, but formal, consideration of one dollar, subject to the provision that the melody's composers would retain their original share of royalty rights with respect to whatever versions Anka or his designates created or produced. Some time later, Anka had a dinner in Florida with Frank Sinatra and "a couple of Mob guys" during which Sinatra said "I'm quitting the business. I'm sick of it; I'm getting the hell out."

Back in New York, Anka re-wrote the original French song for Sinatra, subtly altering the melodic structure and changing the lyrics:

"At one o'clock in the morning, I sat down at an old IBM electric typewriter and said, 'If Frank were writing this, what would he say?' And I started, metaphorically, 'And now the end is near.' I read a lot of periodicals, and I noticed everything was 'my this' and 'my that'. We were in the 'me generation' and Frank became the guy for me to use to say that. I used words I would never use: 'I ate it up and spit it out.' But that's the way he talked. I used to be around steam rooms with the Rat Pack guys – they liked to talk like Mob guys, even though they would have been scared of their own shadows."

SYSTEM ATIC INNOVAT ION

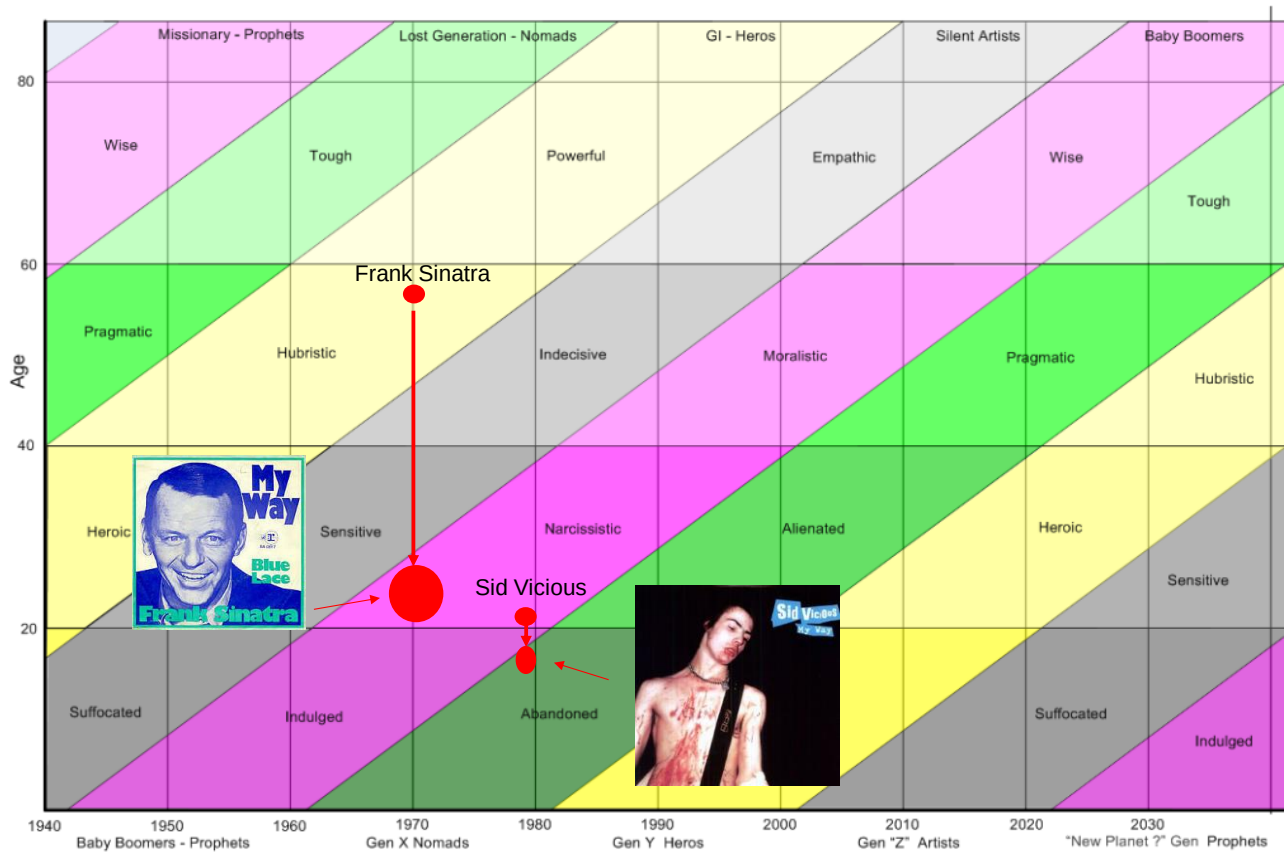
Anka finished the song at 5 in the morning. "I called Frank up in Nevada – he was at Caesar's Palace – and said, 'I've got something really special for you.'" Anka claimed, "When my record company caught wind of it, they were very pissed that I didn't keep it for myself. I said, 'Hey, I can write it, but I'm not the guy to sing it.' It was for Frank, no one else."

A few hours before going to celebrate New Year's Eve at the Casino SANDS, Frank Sinatra recorded his version of the song on December 30, 1968, which was released in early 1969 on the ‘’My Way’’ LP and as a single. It reached No. 27 on the Billboard Hot 100 chart and No. 2 on the Easy Listening chart in the US. In the UK, the single achieved a still unmatched record, becoming the recording with the most weeks inside the Top 40, spending continuous 75 weeks from April 1969 to September 1971. It spent a further 49 weeks in the Top 75.

Spool forward to 1978 and along comes the last gasp of the punk rock firework and a deliberately reframed rendition of the song by ex-Sex Pistol bassist, Sid Vicious. In Vicious’ version everything was turned around 180 degrees. It was the opposite of heart-felt. The opposite of sincere. The opposite of a celebration of the ‘me generation’ Anka had tapped into.

How come? What happened that made such an iconic song become the complete opposite of what it had stood for just eight years earlier?

To answer the question, we need to look at the My Way story from a Generations perspective:



Frank (born 1915) was right in the middle of the ‘Greatest Generation’ which is why Anka thought he was the perfect person so sing the ‘I did it my way’ lyric. But Anka also knew that it was going to be bought by the upcoming ‘me generation’ Narcissists. And indeed it

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was. (Although this work became Frank Sinatra's signature song, his daughter Tina says the legendary singer came to hate the song. "He didn't like it. That song stuck and he couldn't get it off his shoe. He always thought that song was self-serving and self-indulgent." Which also fits the Powerful Hero archetype.)

When the Sid Vicious version of the song was released, Vicious was precisely one of the Narcissist Boomers (he was born in 1957) Anka was thinking about when he wrote the song. But Vicious' young punk audience was precisely not. They were much younger. They were the first of the GenX Nomads and punk had been their rallying cry. Anything the Boomers liked was bad. Boomers were to be despised. And hence the vitriolic re-invention of the song and the 180-degree reversal of what it meant. Sid, of course, died in suitably tawdry circumstances soon after his version of My Way was a hit. And thus the joke became complete.

Biology – Cordyceps

So, picture this. You're a lowly fungus, Cordyceps, and you're looking to make lovely Cordyceps descendants, as is Nature's way. The only problem is that you're tiny and you live in low places, so your ability to spread your spores over large distances is pretty limited. What to do?

It's a common enough problem in Nature. One that might look something like this if we mapped it onto the Contradiction Matrix:

IMPROVING PARAMETERS YOU HAVE SELECTED:

Productivity (44)

WORSENING PARAMETERS YOU HAVE SELECTED:

Length/Angle of Stationary Object (4) and Trainability/Operability/Controllability (34)

SUGGESTED INVENTIVE PRINCIPLES:

7, 1, 14, 35, 28, 17, 26, 19, 24, 3, 10, 30, 25, 15

A conflict, in other words, between your desire to procreate and your lack of height above the ground and lack of any ability to control the dispersal of your spores.

Here, then, is Cordyceps remarkable solution to its problem…

SYSTEM ·ATIC INNOVAT· ION

The spores of Cordyceps, first up, invade an ant's body (Principles 24 and 7), where the fungus grows and consumes the ant's organs (Principle 25) while leaving the vital organs intact. The fungus then releases chemicals (Principle 28, 'chemical field') that cause the ant to (Principle 17) climb a tree and grip a leaf with its mouthparts. After emerging from the ant's body, the fungus releases spore-filled capsules (Principle 30) that explode during their fall, spreading the infectious spores over the ground below. By forcing the ant to climb a tree, the fungus increases the dispersal of the falling spores and the chance of infecting another ant.

Scary stuff. But even scarier, not so rare in Nature. Parasites that makes an animal change its habits, guard the parasite's offspring or even commit suicide. While mind-control may sound like something out of a science fiction movie, the phenomenon is very real — and has spawned a new field, neuro-parasitology. As outlined in an article published in Frontiers in Psychology, understanding how parasites "hack" their host's nervous system to achieve a particular goal could provide new insights into how animals control their own behavior and make decisions.

"Parasites have evolved, through years of co-evolution with their host, a significant 'understanding' of their hosts' neuro-chemical systems," explains one of the article's authors, Professor Frederic Libersat from Ben-Gurion University of the Negev in Israel. "Exploring these highly specific mechanisms could reveal more about neural control of animal behavior."

The article describes some of the sophisticated, cunning and gruesome ways that various parasites outwit and exploit their insect hosts. One method is to affect how an insect navigates. Similarly, a parasitic hairworm causes infected crickets to seek out water — where they drown. The cricket's suicide enables the worms to enter an aquatic environment for reproduction.

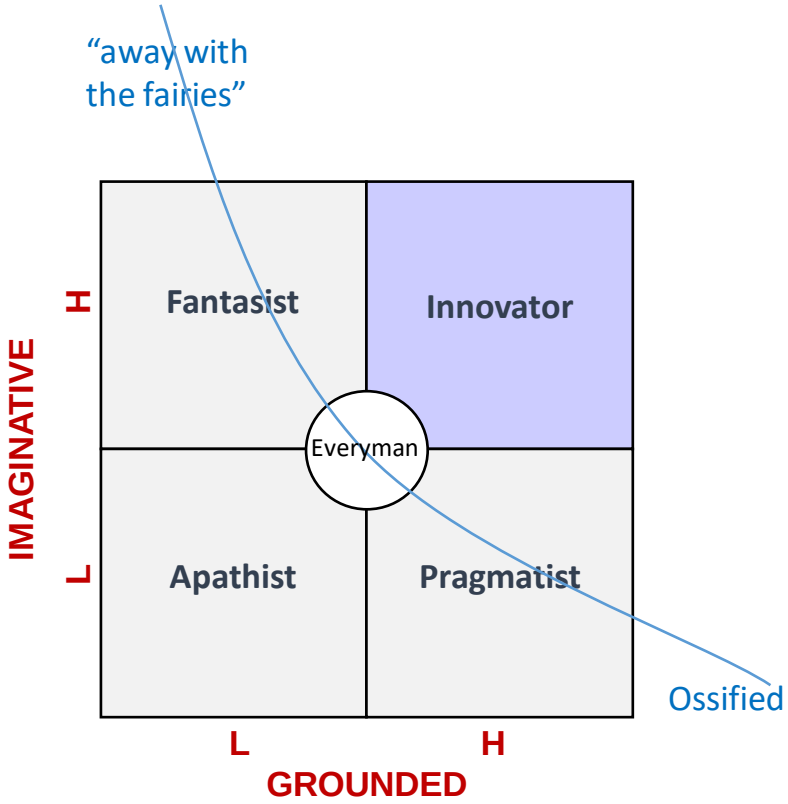
In another type of interaction, called "bodyguard manipulation," the parasite forces the infected insect to guard its young. One such parasite is a wasp, which injects its eggs into a caterpillar by stinging it. Inside the live caterpillar, the eggs hatch into larvae, which feed on the caterpillar's blood. Eventually, as many as 80 larvae emerge from the caterpillar's body before forming cocoons to complete their growth into adult wasps.

However, wasp larvae are vulnerable to predators in their cocoons. To scare potential predators away, one or two larvae remain in the caterpillar and control its behavior through an unknown mechanism, so that it acts aggressively towards predators — thereby protecting the cocoons.

Somehow Principles 7 and 24 are never quite going to make me think the same way again.

Short Thort

Innovation is done by pragmatic fantasists…



News

Big Data Analytics Workshop
Looks like we will finally get to do our BDA workshop for the Mining industry. Perth (Australian version) on August 30 is the place and time. And here is the place to register: https://www.surveymonkey.com/r/76SBBP7.

Video
Here's a paradox: the number of enquiries we receive for TRIZ/SI education continues to increase, but the number of public workshops we can fill continues to decrease. One result of our attempts to solve this contradiction is that nearly all of our face-to-face workshops are now done in-house. People want to learn the tools in the context of their real problems, and its usually not possible to do that in a public environment. The other way to solve it is to make more of our content available as distance-learning video and interactive materials. The first of which you should expect to start seeing on the SI website (and most likely our own YouTube channel) next month. For the first couple of months it will be free. After that, we will see.)

2x2 Matrices
Twitter followers might have seen a sudden surge of 2x2 Matrix tweets from Darrell (@darrellmann if you're not already following him). 2x2 matrices seem to be a simple way in to the contradiction story for many TRIZ newcomers. Part of the idea of the surge is that it only takes a few minutes each day to make one, so after a few months, maybe you end

up with a new book… not that we haven't already got too many 'in progress' book projects at the moment, but at least this one is feeling like it is super-easy to break down into tiny chunks.

New Projects

This month's new projects from around the Network:

Logistics – TrenDNA/PanSensic Study
HR – Senior Leadership Team Psychometrics Study
Agriculture – Turnkey Development Project
Agriculture – Innovation Centre Project
Agriculture – Knowledge Scouting Project
Entertainment – TRIZ Workshops
Automotive – Breakthrough Logistics Project
Retail – Innovation Strategy Workshop
Education – Creativity Assessment Psychometric Service
Education – Online BSc 'Innovation' Module Development