Systematic Innovation



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Readers' comments and inputs are always welcome. Send them to <u>darrell.mann@systematic-innovation.com</u>

Defining Alignment (Forty Years Too Late)



According to a recent report (Reference 1) the annual losses associated with the misalignment between employees and the enterprises they are employed by amount to 6.9 trillion dollars. The number is almost as staggering as the half-science used to design and conduct the research.

That's not intended to be a criticism of the researchers. The problem is much bigger than their failure to understand via negativa. The problem, I propose, is global: No-one knows what alignment means. Or rather, everyone thinks they do, but in reality don't. Turns out it's another of those words – like 'creativity', 'innovation' and 'agile' – that can be interpreted so broadly their use quickly devolves into whatever anyone wants it to mean.

Worse still, after this happens, the world enters a phase where 'whoever shouts the loudest wins'. What that means in the case of 'alignment' is that when most people hear the word – like the aforementioned half-scientists – their default assumption is that we're talking about people. And how different people interpret the same instructions (most likely descending from above) in different ways.

Worst of all, once this kind of naïve convergence occurs, it still has a step to go before we reach the rock-bottom of dysfunction. Misalignment of employees sounds like a bad thing. Alignment sounds like a good thing. 'Consensus' then means something better. What leader wouldn't want 'consensus' across the team?

Consensus, which, granted is highly desirable in many situations, is not synonymous with alignment. Alignment, too, is highly desirable in many situations, but not all. Because the two words are different, just to make the whole dysfunctional alignment story a step more challenging to deal with in a meaningful fashion, the times when an organisation might need consensus are not necessarily the same times when the need for alignment is high.

So, what's the problem? The core of it starts with recognising that 'alignment' (or its opposite) is a goal, and because that's the case achieving the goal requires the existence of a system. And, because that's the case – regular readers will already know what's coming now – it is necessary to comply with the Law Of System Completeness.

That in turn means that should a leader determine that they need to achieve alignment – I assume to try and recoup some of that \$6.9T that's gushing out of the company – they



need to be thinking about and ensuring the presence and viability of the six minimum elements that will make up the necessary system.



From an overall level, the six will look something like this:

Let's examine each in turn:

Employee Alignment ('Tool') – the most obvious of the elements since the alignment challenge is inherently about ensuring 'everyone' in the enterprise is working together to achieve the desired 'alignment' outcome. Alignment is fundamentally a word concerned with 'betweens', meaning that we can only claim alignment to have been achieved when an A is aligned with a B. The easiest way to think about A and B is when both are individuals, whether that be boss-employee or peer-peer or team-team.

Customer Needs Alignment ('Interface') – customers are outside the direct control of any enterprise, but almost all enterprises recognise the need to listen to the so-called 'Voice of the Customer' and to try and ensure as best as possible that everyone and everything inside the realm of direct control – i.e. the other five parts of the system – is aligned with that Voice. The primary problem here, of course, is that customers don't always tell us the truth and, when it comes to innovation, usually have no idea what they want. The customer needs alignment challenge, in other words, usually comes down to two things: how to elicit information that the customer doesn't know they know and how to get the enterprise out of its innate desire for stability and into a customer view that acknowledges and actively seeks to understand the dynamic nature of the customers' world.

Strategic Direction Alignment ('Coordination') – in theory the high-level direction of the enterprise needs to be aligned to the above Voice of the Customer. In practice, there will always be tensions between what's ideal for the customer and what's ideal for the enterprise. This 'coordination' element of the alignment system is about ensuring everyone in the enterprise understands the long-term mission and vision of the enterprise and then understanding when these mis-align with the wishes of customers. Customers, for example, are driven by a 'free, perfect and now' ideal, whereas 'free' triggers existential challenges for the enterprise. And the above mentioned drive for stability that has been a big part of the ethos of any business as a result of F.W. Taylor's 'scientific management' work, rarely aligns with a desire to ensure the enterprise is antifragile. Enterprise directionality that seeks stability as a long-term management goal is inherently also going to be one that is fragile... as evidenced by the 50+% of Fortune 500 companies that have disappeared from the year 2000 list so far this century.



Metric Alignment ('Sensor') – as mentioned regularly in the SIEZ, most enterprises are guilty of measuring what's easy rather than what's important in order to provide the data required to keep steering the ship in the right direction. 'The most important numbers are unknown and unknowable' said W. Edwards Deming, referring to all the qualitative 'people' stuff that transforms most business challenges out of complicated and into the sea-change world of the complex. Measuring what's important gets us to the heart of this element of the alignment system. Recognising that what we measure and how we measure it is also likely to be dynamic also plays a role in the design and capability of the way the enterprise designs and manages the data it inputs and outputs.

Process Alignment ('Transmission') – staying with the theme of dynamic things that tend to get treated as stable, this element of the viable alignment system is usually invisible or disconnected from the alignment goal in most organisations. Processes in the alignment context are the protocols and procedures intended to ensure that all the people inside the organisation know what to do in any given situation. The problem when dealing with complex systems in which no-one can ever step in the same river twice, is that the creation of 'Standard Operating Procedures', while they might be great for getting new employees up to speed with job requirements with minimal training, are a major hindrance when the work context has shifted from the one that existed when the SOPs were painfully created.

Change Alignment ('Engine') – if process alignment is invisible in most enterprises, it is rare to find any organisation that is even aware of the need for 'change alignment'. This means that most alignment systems are equivalent to a car with the engine taken out. The core issue here comes back to the overriding desire of most enterprises to seek 'stability'. Once everything is perfectly optimised and stable, the default Taylorist-thinking says, then management can be said to have fulfilled their purpose. In today's omni-crisis world, of course, the whole premise is beginning to look and sound ridiculous to even the most naïve manager. Tragically, the premise has presented a serious mis-direction for at least the last seventy years. Change alignment, then, is all about how the overall alignment systems looks for and deals with change within the enterprise or its surrounding enterprise. In TRIZ/SI terms it is the contradiction-finding and solving capability of the enterprise. The real challenge is that it requires people to be able to look at all the 'betweens' and know what to do when they become misaligned with one another. 'All' here means looking at the spectrum of hierarchical interfaces across the business. Reference 2 talks about alignment at the person-to-person level. The core premise of the book is that there are two types of work, 'red-work' and 'blue work'. Red work – closely linked to our frequent discussion of 'Red World' – is all the rote work that has been optimised and proceduralised and just needs to get done, preferably without too much, if any active thinking. As Taylor said to his clients, 'I've done the thinking so the workers don't have to'. In a military submarine, per the Reference 2 author's experience, there are procedures for everything, but at the same time, the surrounding world is inherently complex and dynamically shifting and so there are times when simply following the SOPs are going to get everyone killed. Blue work is the work that needs to be done to when signs that the 'right' way of doing things may no longer be appropriate. Blue work is thinking work. When red work is happening, consensus is crucial; when blue work is happening, consensus is likely fatal, and the real need is for diversity, focus on difference and challenging the current ways of doing things. The fact that L. David Marguet gets to write a best-selling book on the subject is probably as good an indication that most leaders don't recognise even the existence of these two kinds of work. Safe to say, that being the case, most leaders are also blind to the change-alignment challenge at the higher strategic level of the enterprise. At this level, the need is to examine the shifting relationships between the



other five elements of the overall alignment system, and, once these misalignments are recognised, to know what to do to re-align them. The key challenge at this point – as discussed with the 17 all-failing UNESCO Strategic Development Goals (Reference 3) – is the need for meta-level contradiction-solving capabilities and protocols that enable people in the various mis-aligned parts of the system to escape from the problem of oscillating between solutions that fix one problem only to create another. People, in other words, need to know what to do when one organisational goal or target conflicts with other goals and targets. Especially when the conflict occurs between different silos of the enterprise.

Hopefully now having presented a more coherent picture of what alignment 'actually' means, the \$6.9T waste introduced at the head of this article is likely but a drop in the ocean relative to the overall waste caused by misalignment inside every organisation on the planet. If I were looking for a better misalignment metric than the HR-based (immediate alarm bells!) one used by the Reference 1 researchers, it probably comes from the 'failure demand' work of ('whole-scientist')John Seddon (Reference 4). By John's reckoning, close to two-thirds of all the work done in every enterprise on the planet – private sector, public sector, NGO, government – is work that's only happening because the system wasn't aligned well enough to do it right the first time.

As of 2024, the global gross domestic product (GDP)—which represents the total market value of all final goods and services produced worldwide in a given year—is estimated to be approximately \$110 trillion USD. 66% of this number is a shade over \$73 trillion. Or just over an order of magnitude greater than the Reference 1 finding. I have more confidence in this number and the method of reaching it than I have in the Reference 1 authors.

If the actual alignment prize is \$73T, recouping any of it starts with a new definition of what alignment is. According to this article, that definition builds from the recognition that alignment is a system. The next step is to then be able to measure each of the six elements contained within that system ('what gets measured gets done'). That measurement might look something like this...



...something that the Serena agents (Reference 5) are already being equipped to do. Once we're able to measure the relative strengths of each part of the system within, say, an enterprise, we're then able to start implementing plans to get the overall alignment – let's, for the sake of argument, then call that Deep Alignment – moving in the right direction.

Deep Alignment Index (DPI) begets Deep Alignment step-change evolution.



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The Hunt For Hidden Risks



One of my clients was bitten quite hard by a pair of problems last year. Expensive outside agencies were brought in to try and diagnose what was happening. People lost their jobs. Morale took a nosedive that still hasn't bottomed out. And the tangible costs alone managed to cancel out any hope of a year-end surplus. During the After-Action Review, one of the most noticeable things was that neither problem had been identified in what had been described as an 'exhaustive, organisation-wide' risk assessment. Neither problem was to be found in the organisation's Risk Management Plan.

A subsequent search outside the organisation revealed that their situation was depressingly typical. Studies and industry data suggest that a significant portion of project failures occur due to unidentified risks—those that were not anticipated in the Risk Management Plan. Here are a few key headlines:

- Gallup (2012) found that 57% of failed projects were derailed by risks that were either poorly identified or completely overlooked.
- A KPMG study (2013) on project governance found that 70% of organizations reported project failures due to "unknown unknowns"—risks that were not accounted for in their initial planning.
- The Standish Group's CHAOS Report consistently finds that over 50% of failed IT projects suffer from scope changes or external disruptions that weren't anticipated.

In effect, the average Risk Management Plan will miss over half of the risks that will eventually manifest themselves.

When we dig deeper to identify what these missing risks are we find a combination of:

- Black Swan Events: Unexpected high-impact risks (e.g., COVID-19, geopolitical shocks, financial crises).
- Emerging Technologies & Market Disruptions: New competitors, regulatory changes, or sudden shifts in customer demand.
- Human & Organisational Factors: Leadership changes, miscommunication, or hidden cultural resistance.



• Compounding Risks: Multiple low-impact risks that combine into a significant issue but were not seen as a systemic threat initially.

Each may be seen as a sub-category of 'unknown unknowns'. Per the now famous Rumsfeld Matrix, Risks that leaders 'couldn't' have anticipated in advance:



Rumsfeld's Matrix

In what seems to be an iconic illustration of the Law Of Unintended Consequences, since the idea of 'unknown unknowns' was articulated, I see a lot of managers that actually take comfort in this quadrant of the matrix. To the extent that it has become some kind of 'Get Out Of Jail Free' card – 'well, of course, we couldn't possibly have known about that'. Like some kind of risk-based unaccountability machine.

Here's the problem. While some risks are genuine unknown-unknowns, a significant percentage of "unidentified" risks are actually known but unspoken—often due to political, cultural, or psychological barriers.

Both of the risks that bit my client fell into this category. They were known by some in the organisation, but none of them felt safe enough to verbalise them. I'm tempted to go a step further and say that almost everyone in the organisation knew about them, including everyone in the senior leadership team, but no-one was willing to start the necessary 'difficult conversation'.

Which begs the question, how typical is this of other organisations? How many "unidentified" risks are were actually known but not written down in the Plan?

- McKinsey (2016) found that up to 60% of major project failures were due to risks that were already known to at least some team members but were not formally acknowledged.
- A Harvard Business Review study (2017) showed that in corporate failures, over 50% of employees reported knowing about serious risks beforehand but felt "unable to speak up."



• The International Project Management Association (IPMA) found that 35-45% of risks in large projects were either politically sensitive or seen as career-limiting to raise.

Then, when we ask why are these risks left out of the plan, we find:

- Political & Organisational Pressure senior leaders may discourage "negative thinking" or refuse to acknowledge risks that conflict with corporate goals (for example, in our recent podcast with leadership-guru, Hilarie Owen, (Season 2, Episode 16) she revealed that the UK Government were interested in 'management education', but that 'leadership' was a 'political hot potato' that would have to remain off the agenda).
- 2. Personal & Career Risk individuals may fear being blamed, marginalized, or seen as not a "team player" for raising difficult issues.
- 3. Optimism Bias & Groupthink Teams often convince themselves that risks are less severe or unlikely to occur to maintain momentum.
- 4. Sunk Cost Fallacy Once a project is underway, people are reluctant to surface risks that could justify a costly pivot or cancellation.
- 5. Lack of Psychological Safety If organisations don't reward honesty about risks, people stay silent.

In my mind, once these factors are taken into account, the proportion of genuine 'unknown unknown' risks ends up being one or two percent of the total. If we then add some TRIZ thinking – particularly the directionality knowledge found in Ideal Final Result thinking and the Trends of Evolution – that number falls into the fractions of percent.

Even knowing these facts, I'd have to say that it continues to be rare for clients to ask us to help them conduct such a search for unknown unknowns that might actually be known.

In theory, knowledge of the problem should produce some fairly obvious solutions:

- Anonymous Risk Reporting: encourages honesty without fear of backlash.
- Red Teaming: appoint a group to challenge assumptions and expose hidden risks.
- Pre-Mortems: force teams to imagine the project has failed and identify what caused it.
- Leadership Role Modeling: if executives admit to mistakes and discuss risks openly, it sets a cultural precedent.
- AI & Predictive Analytics: More organizations are using machine learning to detect hidden risks in large datasets.
- Scenario Planning & Monte Carlo Simulations: Helps identify less obvious but highimpact risk factors.

I've heard some or all of these strategies talked about. I've even heard teams say that they're actively doing some of them. And yet, we still see the needle on the 'missed risks' dashboard remain essentially unchanged.

This implies the presence of a missing problem. One that I think takes us back to one of our frequently used aphorisms: people make decisions for two reasons, the good reason and the real reason. Adapted to the subject of risk, we might modify this saying to say something like, 'people fail to think about risks for two reasons, a good reason and the real reason'.

Same client, new situation. During a Board presentation of the latest annual figures, the CFO came out with a number of (to me) alarm-bell-ringing statements conveying the message that they were confident that their 'proven' models – 'three to five year rolling averages', 'within normal variation', etc – were indicating good health and low



organisational risk. When I suggested that perhaps we were now living in very non-linear times and therefore relying on very linear projections might be risky, it quickly became apparent that the CFO didn't want to explore what that might mean. So I tried the 'tried and tested models' argument for some of the scenarios we have run for other clients. That only seemed to make the situation worse. Then I shut up and emailed the CFO after the meeting, offering to come and sit with him to talk through what we'd done. Needless to say that offer thus far hasn't been taken up either. I don't think it ever will be. His 'good reasons' for not wanting to discuss the subject were that he was too busy, and that his models had served him well all through his career. I get it. But if I wished to pursue my desire to really understand the risk to the organisation of these (in my mind, dangerous) preconceptions, I would have to find the real – and therefore fundamentally unspoken – reasons for the CFOs reluctance.

A good start point in such situations is to the think about the universal ABC-M emotional drivers:

AUTONOMY – by inviting me to come and talk to him, he potentially lost control of 'the way things were going to be done'

BELONGING – he belongs to the tribe of professional accountants, a tribe that, as suggested earlier, has grown accustomed to accepting that the world was full of 'unknown unknowns' and that it is in the profession's interests to keep things that way – because if, heaven forbid, such risks did manifest themselves, they can say with certainty to the CEO that, 'no-one could have known that'. What they would actually mean, of course, is 'no-one in our wilfully half-blind industry could have known that.'

COMPETENCE – by listening to me talking about a way to deal with non-linearities that have not previously played a role in their job, or their education for that matter, they are likely to now feel incompetent.

MEANING – by revealing a potentially existential threat to the organisation, I make the CFO aware that in the extreme case his livelihood might be at stake.

I might have a chance of engaging on the basis of this fourth element, but I'm definitely losing on the other three. Again, awareness of the problem is half the solution. I could and probably should find a way to approach the CFO in a manner that helps switch his A, B and C feelings from negative to positive.

More importantly, though, I probably need to be thinking about a Root Contradiction. A Goldilocks Curve I believe looks like this for every immutable human:





Acquiring new knowledge (i.e. 'learning') *only* occurs when we're able to escape from our comfort zone. The question is how far outside that zone do we have to get before the required change in thinking is required? Not far enough and we remain entrenched in our current ways of thinking; too far and we risk a form or panic-driven paralysis.

This is the contradiction needing to be managed.

Or, better yet, solved:



I wonder if anyone else might have solved the breakthrough-versus-fear problem before? Hmm. Every innovator or entrepreneur maybe? Let's see how the CFO gets on with that idea...



Not So Funny – All The Right Notes, But Not Necessarily In The Right Order



The legendary Morecambe and Wise sketch featuring world renowned musician and conductor, André Previn (mistakenly called "Andrew Preview" by both Morecambe and Wise) was first broadcast on 25 December 1971, as part of the Morecambe and Wise Christmas Show on the BBC. I was nine. I've probably watched it every year since. It is still the funniest thing I've ever seen.

In the sketch, a straight-faced André Previn arrives to conduct Grieg's Piano Concerto, only to find Eric Morecambe as the soloist. After missing his cue several times, Morecambe eventually starts playing, flailing at the piano and essentially not playing Grieg's Piano Concerto. When Previn criticises his playing and declares, 'you're playing all the wrong notes', Morecambe famously grabs him by the lapels and declares:

"I'm playing all the right notes... but not necessarily in the right order."

The sketch is a masterclass in comic timing, character clash, and deadpan delivery, perfectly blending high culture with slapstick brilliance. It remains one of the most beloved British comedy moments of all time. If you haven't seen it, you can catch up here: <u>https://www.dailymotion.com/video/xds7am</u>

It's hilarious because it's absurd. But in the world of innovation? It's painfully familiar.

History is littered with inventions that had all the right components — cutting-edge technology, brilliant teams, clear use cases — yet still failed spectacularly. The reason? Timing. Context. Sequence.

Take Apple's Newton: a visionary device that introduced the world to mobile computing and touchscreens — over a decade before the iPhone made them ubiquitous. Or Webvan, whose logistics model foreshadowed Instacart, but crumbled under premature scale. Xerox PARC invented the GUI, mouse, and more — but failed to play their commercial hand when the market was listening.

Like an orchestra misfiring despite playing from the same sheet music, these innovations missed their moment not for lack of ideas, but for lack of rhythm.

In innovation, it's not enough to play the right notes. You have to know when to play them — and who's ready to hear the tune.



Here's a government version of the same basic problem:



With the Donald Trump global tariff lottery ongoing at the time of writing, I'm not sure whether the US counts as an exemplar of this non-fried egg problem. He's a big fan of Robert Cialdini's 'presuasion' concept, of course, so maybe the will-he-won't-he '90-day hold' chaos is a deliberate strategy? Maybe we'll all be looking back on as complete genius in a few years' time. I'm not holding my breath.

Meanwhile, I quite like this Best Buy all-the-right-words salad:





This one's a little more abstract. I'm still not quite sure there is a logical sequence that allows these six words to make sense:



Not to mention this one, which is kind of like the sort of wordsearch puzzle teachers give to students on the last day of term when no-one has any interest in learning anything much:





Talking of which...



Much more serious, ultimately, is the all-the-right-ingredients Cream Tea war between Devon and Cornwall. Should the jam go on first? Or the cream?

Maybe this is the sort of thing we need to get the politicians involved in? Something more befitting their level of competence?



Just so long as we keep the engineers and - worst - project managers out of the loop...





All the right people, not necessarily in the right order? The story of the 98% innovation attempt failure problem, perhaps?



Patent of the Month – Geomagnetic-Aided Passive Navigation



Our Patent of the Month this month takes us to a pair of inventors at Embry-Riddle Aeronautical University in Daytona Beach, Florida. US12,265,162 was granted to the pair on psychologically suspect, 1 April. Here, in super succinct form, is the problem under consideration:

Recent advances in commercial and military technologies have increased the dependence on precise positioning and navigation data usually provided by a Global Navigation Satellite System (GNSS) (e.g., Global Positioning System (GPS) or other satellite-based navigation system). However, threats to these systems (e.g., signal obstruction, drop-outs, erroneous data, jamming, or spoofing) are constantly evolving. This can result in in lost or inaccurate signals, even preventing airborne and maritime systems from nominal navigation. Alternative systems utilizing other GNSS, Iridium®, or Starlink® satellite systems exist but are also susceptible to similar threats or other denial attacks.

A simple to state conflict between the desire for precise measurement and the possibility of loss of information. Here's what that pair looks like mapped onto the Contradiction Matrix:





And here's how the inventors have solved the problem, a described in the invention summary:

Localization techniques using [Principle 6] the Earth's magnetic field can provide an alternative or augmentation to other navigation approaches (such as GNSS, optical odometry, or inertial navigation approaches). An "anomaly" field defined by, for example, variations in the crustal magnetic field relative to a main geomagnetic field can provide navigation capability independent of weather or time-of-day. Such an approach can be referred to as [Principle 25] "passive" because it does not require transmitting system elements unlike terrestrial and satellite-based active navigation systems such as LORAN, VHF Omni-Range (VOR), or GNSS, as illustrative examples...

Generally, geomagnetic map data sets are aggregated from multiple survey missions, such as multiple satellite missions. Such map data sets can be mathematically generated, such as aggregating data from multiple sources and applying a [Principle 37] spherical harmonic analysis using coefficients provided from the multiple sources. The present inventors have recognized, among other things, that generally available geomagnetic maps may be produced having lower spatial resolution that is desirable for use in geomagnetic-aided navigation... [however] The present inventors have recognized, among other things, that a machine learning approach can be used such as to synthesize geomagnetic maps having enhanced resolution versus lower resolution survey data. For example, a Generative Adversarial Network (GAN) neural network topology can form a generator neural network. The generator neural network can receive first geomagnetic map data corresponding to a first spatial resolution (e.g., lower resolution), and can [Principle 37 again] output second geomagnetic map data having a spatial resolution that is higher than the first geomagnetic map data. Such an approach can be referred to as a "Super-Resolution" GAN (SRGAN) generative framework for artificially-generated geomagnetic mapping.

In another aspect of the present subject matter, an indicium of a position of a vehicle on a [Principle 24] artificially-generated geomagnetic map can be used along with other sensor data to provide an enhanced position estimate (or more generally, a state variable estimate) using a [Principle 1] particle filtering technique supported by a [Principles 7, 37] deep reinforcement learning approach.

The research underpinning the invention was the MSc thesis of one of the inventors (<u>https://commons.erau.edu/cgi/viewcontent.cgi?article=1554&context=edt</u>). The thesis references a 2020 published piece of research on the use of geo-magnetics by multiple lifeforms (think Monarch butterflies). On one level, therefore, we might, conclude that the invention has taken the same start point as Nature – the necessary navigation data is 'already there', and 'just' needs to be tapped into. However, what the 2020 paper makes clear is that Nature, too, has discovered how noisy the geomagnetic information is. Nature, therefore, has tended to combine magnetic data with other sources of information (e.g. visual terrain, stars). What the inventors here have done, then – perhaps 'going beyond Nature? – is to use maths to better extract the geo-positional signal from the geomagnetic noise.

GPS has been a life-altering technology for almost every human on the planet, so it is difficult to denigrate the hard work required to make it possible. On the other hand, from a purely TRIZ 'start with the IFR and work backwards' approach, US12,265,162 seems much closer to the optimal strategy. In true, 'someone, somewhere already solved your problem' manner, Nature had already solved the geolocation problem using existing resources and therefore without the need for thousands of artificial satellites. We could've done the same. The resources were already there. Including the maths necessary to remove the noise from the signal. Maths is free. Satellites are expensive.

(Check out <u>https://journals.biologists.com/jeb/article/223/18/jeb164921/225807/Animal-navigation-a-noisy-magnetic-sense</u> to read more about Nature's solution to the problem... we might come back to this one in a future Biology section of the ezine)

Diverse organisms use Earth's magnetic field as a cue in orientation and navigation. Nevertheless, eliciting magnetic orientation responses reliably, either in laboratory or natural settings, is often difficult. Many species appear to preferentially exploit non-magnetic cues if they are available, suggesting that the magnetic sense often serves as a redundant or 'backup' source of information. This raises an interesting paradox: Earth's magnetic field appears to be more pervasive and reliable than almost any other navigational cue. Why then do animals not rely almost exclusively on the geomagnetic field, while ignoring or downplaying other cues? Here, we explore a possible explanation: that the magnetic sense of animals is 'noisy', in that the magnetic signal is small relative to thermal and receptor noise. Magnetic receptors are thus unable to instantaneously acquire magnetic information that is highly precise or accurate. We speculate that extensive time-averaging and/or other higherorder neural processing of magnetic information is required, rendering the magnetic sense inefficient relative to alternative cues that can be detected faster and with less effort. This interpretation is consistent with experimental results suggesting a long time course for magnetic compass and map responses in some animals. Despite possible limitations, magnetoreception may be maintained by natural selection because the geomagnetic field is sometimes the only source of directional and/or positional information available.



Best of the Month – Champion Thinking



To be honest, I'm not sure whether this is a book review or an attempt to write what feels like the missing final chapter. The book is "Champion Thinking: How to Find Success Without Losing Yourself," by Simon Mundie. It was published in 2024 and embarks on an exploration of success, identity, and fulfilment through the lens of sport. Drawing from always-entertaining interviews with world-leading athletes and thought leaders, Mundie presents eight chapters, each delving into themes that resonate with systems thinking principles:

1. Thoughts Are Not Facts

This chapter focuses on cognitive delusion — the idea that the mental chatter in our heads is not objective truth, but a stream of internal narrative shaped by emotion, memory, culture, and identity. Mundie uses stories from elite performers to show how mistaking thoughts for facts often leads to unhelpful behaviours like overidentifying with self-doubt, perfectionism, or obsessive control.

2. Relax, You Are Not In Control

Deepens the themes from the opening by shifting the lens from inner narrative to our relationship with control itself — a central paradox in both high performance and systems thinking. The core message of the chapter is that while the title sounds like a surrender, it's actually about letting go of control in order to gain influence — a nuanced but critical shift. Mundie argues that real mastery comes not from obsessively trying to control outcomes, but from learning how to dance with uncertainty. This is echoed in the behaviours of top athletes, entrepreneurs, and thinkers he interviews — those who perform best tend to trust the process, not the outcome.

Complexity ≠ Controllability: In systems terms, we often confuse complicated with complex. You can control a complicated system (e.g., an engine), but a complex one (e.g., an organisation, a mind, a football match) has too many interacting variables to predict or micromanage. This chapter makes it explicit: what matters most is often out of your hands. Here's the contradiction: the more we try to control a system tightly (over-scheduling, over-thinking, over-managing), the less adaptive and more fragile we become. Letting go of



control doesn't mean apathy — it means releasing attachment to specific outcomes so you can better respond to what's actually emerging. Think of it as moving from a command-and-control model to a sense-and-respond approach.

Mundie pulls from elite sport where peak performance requires letting go, entering flow, and allowing years of training to emerge spontaneously. It's not woo-woo — it's a complex adaptive system in action. You don't control every element of a race or a match; you navigate it. The chapter also touches on what Daniel Kahneman called "narrative fallacy" — our post-hoc stories that pretend we were always in control. Mundie points out that real peace comes not from being in control, but from being in tune. "Relax" here isn't about giving up — it's about stepping back from the illusion that we can bend reality to our will, and stepping into a wiser kind of participation.

In true systems fashion, control is the goal that defeats itself. The harder you squeeze, the less room you leave for emergence, feedback, and adaptation — the very things you need for success. Chapter 2 invites us to abandon the engineer's mindset in favour of the gardener's. You don't grow a flower by pulling on it.

3. The Power Of Me, Not We (The Myth of Self-Made)

The key theme of this chapter is that high performance isn't a solo act — it's a dynamic system of interdependence. The central idea Mundie spotlights is a cultural myth: that elite performance is a product of lone genius or iron-willed grit. In reality, sustainable excellence is distributed — a function of relationships, environments, teams, and context. The best don't go it alone; they design systems of support, whether they're athletes, entrepreneurs, or creatives. Moving from "me" to "we" is moving from ego-system thinking (linear, isolated, zero-sum) to eco-system thinking (emergent, relational, collaborative). This is straight from the complexity playbook: the individual is not the system. Champions know that the quality of connections shapes the quality of outcomes. There's a baked-in Western contradiction here. We're told to be independent, self-motivated, relentless — but the reality is, relying on others makes us stronger, not weaker. Mundie doesn't just say "collaborate"; he shows how elite performers actively design interdependence into their routines. Think mentor relationships, inner circles, high-trust teams, feedback-rich environments — all systems within systems. Importantly, "we" doesn't just mean being nice or having people around. It means structuring for tension and trust. Great systems enable constructive friction — challenge, iteration, growth. Lone heroes stagnate. Systems thinkers build spaces where new information can enter.

This chapter loops recursively with Chapters 1 and 2. If thoughts aren't facts and control is an illusion, then it makes perfect sense that insight, stability, and adaptation must come from outside the self as well as within. You are not an island. You're a node.

The "Power of We" scales. It applies:

At the individual level (mentorship, coaching)

In teams (trust, vulnerability, feedback)

In society (community, culture, collaboration)

Even cognitively (multiple mental models = better decisions)

Each layer influences the others — this is holonic performance thinking.

Individual brilliance is overrated. It's the system that delivers, not the node. Want to go faster? Go alone. Want to go further? Build a high-functioning ecosystem. "We, not me" isn't a moral point — it's a performance strategy. If you're designing for greatness, stop idolising the hero and start cultivating the system.

4. Acceptance

The key Theme of this chapter is stop fighting the system and start flowing with it. Mundie builds on the themes of cognitive detachment and relinquishing control. If the first three chapters ask us to see our thoughts as stories (not facts) and embrace uncertainty (not



control), this chapter introduces the practice of acceptance — not as passivity, but as strategic alignment with reality.

From a systems Thinking perspective this means:

- a) Leverage Over Force: in systems terms, resistance increases friction. The more you try to overpower a system — be it your mind, a team, or an unpredictable world — the more the system resists. Acceptance, on the other hand, is the art of leverage: finding where the system already wants to go and working with it. This is non-linear strategy — think aikido, not armwrestling.
- b) Contradiction: Acceptance vs. Agency. One of the most counterintuitive contradictions in high performance is this: to have more influence, you must accept what you cannot influence. Mundie shows that genuine agency — the kind that endures — comes after acceptance. Not before. First, you see things clearly. Then, you act wisely. Fighting reality wastes energy; working with it compounds it.
- c) Negative Capability: the chapter aligns with what Keats called negative capability: the ability to remain "in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason." Mundie reframes acceptance not as giving up, but as engineering psychological antifragility the capacity to thrive in volatility.

The Link to Previous Chapters: Chapter 1 (Thoughts Aren't Facts): Acceptance begins with not identifying too tightly with internal chatter. Chapter 2 (You Are Not In Control): Control is replaced by clarity. Chapter 3 (The Power of We): Acceptance makes room for others — it clears ego out of the way so help can enter. Each step is recursive — revisiting previous insights at deeper levels of system alignment. Mundie's "acceptance" isn't a static end-state. It's a feedback-informed process: you tune into the system (internal or external), receive information non-judgmentally, and adjust course. This is real-time adaptability — not resignation. Think of a high-performance athlete not panicking when plans change mid-game. They accept, adapt, and flow.

Acceptance is not surrender. It's strategic realism. It's how systems thinkers keep momentum without burnout — by recognising that you can't control the ocean, but you can learn to surf. The illusion of control is comforting but brittle. Acceptance is uncomfortable — but antifragile. It's not the end of ambition. It's the start of intelligent action.

5. Doing Does Not End In Being

The key theme of this chapter: you can't "achieve" your way into inner peace. Mundie challenges the default belief system of high achievers: that external accomplishments will eventually convert into internal fulfilment. In systems terms, this is a classic false causality loop: mistaking a proxy variable (doing) for the actual outcome (being). The core contradiction being high achievement ≠ deep contentment. The more intensely you pursue "doing," the more elusive "being" becomes.

From a systems thinking view:

- a) Confusing Means and Ends: modern culture often treats doing (career, goals, hustle) as the vehicle toward being (peace, purpose, presence). But Mundie flips this: being is not a reward at the end of doing it's a precondition for doing well. From a TRIZ contradiction standpoint: we want achievement to yield fulfilment but the more we pursue the outcome, the less fulfilled we become. And Mundie's interviewee resolution strategies? Principle 13, reverse the logic. Prioritise state of being, and let doing emerge from that.
- b) System Mismatch: you're running the wrong operating system for the result you want. It's like trying to use a financial spreadsheet to measure love.



Mundie argues that the internal system (awareness, presence) must drive the external — not the other way around. This echoes Stafford Beer's Viable Systems Model: the system must monitor itself as it operates, or it becomes blind to its own collapse.

c) Contradictions in the Wild: Striving vs. Arriving: Many burn out chasing a version of success that was never designed to deliver peace; Planning vs. Presence: "Doing mode" obsesses over control. "Being mode" thrives in uncertainty; Achievement vs. Identity: When identity is over-invested in doing, failure anywhere becomes existential.

Emergent Insight: when being drives doing, energy flows sustainably. When doing tries to produce being, it becomes brittle and ego-driven. Mundie invites us to rewire the system, shifting from "what am I getting from this?" to "what am I bringing to this?" This echoes the Taoist principle: action from alignment, not anxiety.

This chapter is in effect a systems upgrade. Mundie exposes a hidden contradiction baked into our cultural firmware: that accomplishment will deliver peace. It won't. Being is not the end of the line — it's the launchpad. You don't do your way into being. You be your way into better doing. Solve the contradiction at the source, or you'll spend your life climbing ladders that were leaning on the wrong walls.

6. Don't Let Unconscious Beliefs Trip You Up

This is where Mundie subtly shifts from behavioural awareness to cognitive system debugging. In the language of systems thinkers (and with our contradiction-crunching hat on), this chapter tackles the hidden rules of the game you're playing without knowing you're playing it. The key theme: you are being governed by mental scripts you didn't choose — and until you surface them, they run the show. We are not just thinking — we are being thought by our beliefs. And many of these beliefs were inherited, absorbed, or assumed long before we could evaluate them. This is a latent constraint system: rules that operate without us knowing they're rules. Belief \neq Truth. But belief feels like truth, which is the dangerous part.

Through a systems thinking lens:

- a) Unconscious Rules = Hidden Levers. Most people try to change outcomes (behaviours, habits) without investigating the belief architectures beneath them. In TRIZ terms, this is trying to solve a surface contradiction without addressing the root contradiction. Want more confidence? You might be held back by an unconscious belief: "If I shine, I'll be rejected." Want success but keep sabotaging it? Could be running the hidden belief: "Success = loneliness." Contradiction map: We want to progress, but are bound by internal scripts that interpret success as threat. Resolution? Reveal → Reevaluate → Rewrite.
- b) Feedback Loops and Frozen Filters: unconscious beliefs act like filters that shape what data even enters your system. This is dangerous in dynamic environments (like life, work, or leadership), because you're not adapting you're confirming. It's the confirmation bias trap inside a homeostatic belief engine: You get what you expect... because you only see what matches your expectations. From a systems viewpoint, it's a self-sealing loop — no new inputs, no evolution.
- c) Surfacing Beliefs = Systems Transparency. Mundie advocates for inquiry, therapy, journaling — all of which are methods of increasing transparency in the cognitive system. That's Viable Systems 101: if the system can't see itself, it can't self-correct. He's not just suggesting reflection; he's



encouraging intervention at the level of assumptions. That's where the real leverage lives.

d) Key Contradictions: Control vs. Surrender: You think you're choosing your behaviour — but your behaviour is choosing you; Self-awareness vs. Selfprotection: Seeing your limiting beliefs means admitting past errors — which the ego resists; Change vs. Familiarity: We crave growth but cling to beliefs that maintain old patterns.

The emergent insight: the real work isn't to become someone new — it's to stop letting inherited beliefs define your limits. Unseen, they are fate. Seen, they are a choice. Chapter 6 thus confronts one of the deepest structural issues in human systems: invisible governance. Mundie's call to examine unconscious beliefs is a call to audit the system from the inside. Until you know what assumptions you're running on, you're not in control — you're just playing out pre-programmed loops. Most project failure, burnout, and stagnation trace back to one cause: people trying to optimise the outputs without questioning the operating assumptions. Debug those, and the system transforms. Throughout "Champion Thinking," but never more so than in this chapter, Mundie navigates the intricate web of factors contributing to true success and fulfilment. By (unwittingly?) integrating systems thinking principles, he reveals the contradictions in traditional success narratives and offers a more interconnected and holistic approach to achieving personal and professional satisfaction.

7. There Is Nothing Fixed About You But Awareness

The core premise of Chapter 7 is that the self isn't a thing, it's a process — and the only constant is the faculty that observes it all: awareness. Looked at through a systems thinking lens:

- a) Dynamic vs. Static Systems: The chapter busts one of the deepest-rooted human fallacies: that identity is fixed. Mundie challenges the classical view of "self as noun" and instead embraces self as verb a dynamic system continually adapting, interacting, and evolving. In TRIZ terms, it's the contradiction between Stability (we crave consistency and coherence in our identity) and Adaptability (our survival depends on change and learning). And the resolution? Anchor in awareness, not personality. Awareness becomes the stable platform from which to observe the system evolve... which then leads to the next contradiction: "I want to grow" vs. "I don't want to change."
- b) Feedback Loops, Not Labels: Mundie implicitly leans into a cybernetic model of the self — where inputs (experiences, thoughts, feelings) loop through awareness and feed back into beliefs, behaviours, and identity stories. Most people freeze that loop with self-labelling: "I'm bad at X." Or, "I've always been this way." These are frozen narratives, not facts. And they break the adaptive cycle. In complexity terms, we're trying to impose linear structure on a non-linear system — a surefire way to introduce error and brittleness.
- c) Awareness = Meta-System: if personality traits, preferences, emotions, and beliefs are subsystems, awareness is the meta-system. It's the only element that doesn't change and isn't reactive. From the Viable Systems Model perspective, awareness is akin to the Coordination function that reflects on the identity and purpose of the whole. Without awareness, the system is blind. With it, the system can observe itself in motion and make real-time course corrections. Practical Implications: don't cling to who you think you are it's already outdated; don't get lost in every passing emotion it's just an output of the system; develop the skill of meta-cognition (thinking about thinking) that's how systems learn to learn.



d) Key Contradictions Highlighted: Self-definition vs. Self-discovery: the more tightly we define ourselves, the less space we give ourselves to evolve; Certainty vs. Curiosity: we want firm ground underfoot, but transformation only happens in the unknown; Judgement vs. Observation: Judging our thoughts and emotions keeps us stuck; observing them sets us free.

The emergent insight: Mundie is pointing us to a subtle but radical truth: the "you" you think you are is just a snapshot in a fast-moving film. The only consistent feature is the one who's watching the film. That's where your leverage lives — in becoming more aware of how your inner system works. Or, in my terms, this chapter reframes identity not as a product but a fluid interaction of contradictions, influences, and adaptations. The challenge is to stop solving the wrong problem — "how do I become my best fixed self?" — and start solving the real one: "how do I expand the capacity of my awareness so I can let the system evolve wisely?"

8. The Joy Of Losing Yourself

The core premise of the final chapter: transcendence and peak performance often arise not from intense self-focus, but from self-dissolution. Paradoxically, we become most ourselves when we forget ourselves. Looked at through a systems thinking lens:

- a) Paradox of Presence: at the heart of this chapter is the contradiction, 'to fully express your capabilities, you must forget that you're doing so.' This aligns with flow state theory (Csikszentmihalyi) and ideas from complexity science: tightly controlled systems resist emergence. To allow emergence (e.g. creativity, insight, innovation), the system must relax control and enter a phase of high connectivity and low ego. Ego = rigidity. Flow = flexibility.
- b) Reduction of Self = Expansion of System: Mundie nudges us to de-centre the ego

 to shift from seeing the self as the primary agent, to the self as one node in a
 larger system (team, environment, task). This resonates again with the Viable
 System Model: individual components operate best when subsumed within, and
 responsive to, the whole. The contradiction here being: I want to achieve something
 great, but my self-conscious striving is the very thing blocking it. And the possible
 resolution: dissolve the ego temporarily become the conduit, not the centre.
- c) From Control to Coherence: the chapter proposes that loss of self-awareness doesn't equal chaos — it equals coherence. The system (body, mind, emotions) is no longer micromanaged by the ego, so it can self-organise optimally, like a murmuration of starlings. In complexity terms: we trade command-and-control for distributed intelligence. The key contradictions highlighted: Mastery vs. Forgetfulness: The more you master your craft, the more you can afford to forget vou're doing it. Achievement vs. Surrender: Letting go of your identity as "the doer" allows higher outcomes to emerge; Self-expression vs. Self-erasure: You express most deeply when you're not trying to. The implications of which are that the best performances, decisions, and ideas emerge when self-awareness fades. The workshop of high-functioning teams and peak players isn't "how do I shine?" but "how do I become so integrated I disappear?" The system thrives when its parts are fully engaged but not self-absorbed. Awareness as Meta-Stability - just as in Chapter 7, awareness remains the stable observer. But now, even that awareness is allowed to soften. The system trusts itself to act wisely without constant observation. That's maturity: a system that can safely dissolve parts of itself to become more than itself.

In TRIZ/SI terms, this chapter resolves the central contradiction of the book: to lead, perform, and grow — stop trying so hard. Peak states are emergent outcomes of harmonised systems, not brute-force effort. When you "lose yourself," what's really lost is friction — and what's gained is flow.



Okay. So now let's step back and think of the Champion Thinking System as a cyclical loop — not a ladder — with each one resolving a key contradiction in our relationship to control, identity, and performance. Here's a breakdown:

Chapter	Core Insight	Contradiction Resolved
1. Thoughts Aren't Facts	Your inner narrative isn't	"I think it, therefore it's true" vs.
	reality	"Thoughts are mental noise"
2. Relax, You Are Not In	Let go of outcomes	"I must control success" vs. "Control
Control		is an illusion"
3. The Power of We, Not	We thrive in connection	"Independence = strength" vs.
Me		"Interdependence = resilience"
4. Acceptance	Resistance creates	"Pushing harder helps" vs. "Letting
	suffering	go frees energy"
5. Doing Does Not End in Being	You are not what you do	"Productivity = identity" vs.
		"Presence = worth"
6. Don't Let Unconscious	Hidden programs drive	"I know why I act" vs. "I'm shaped
Beliefs Trip You Up	behaviour	by blind spots"
7. Nothing Fixed But	You are change	"I need to find myself" vs. "I'm
Awareness	_	always becoming"
8. The Joy of Losing Self-tran	Self-transcendence	"I must strive" vs. "I must discolve"
Yourself	unlocks peak states	

Now imagine a spiral, with each chapter resolving one layer of control, illusion, or ego:



Each (blue dashed line) pair is a polarity:

Mindset shift on the left,

Behavioural shift on the right.



The spiral tightens as you evolve, peeling back deeper layers of conditioning and contradiction — from letting go of false thoughts to letting go of the self altogether.

The book could thus be seen to function (although, again, I'm not sure Mundie is consciously aware of it) like a human operating system update — reconfiguring the feedback loops between awareness, identity, and agency. Champion Thinking is ultimately a process for identifying and removing delusions.

It breaks down the traditional linear model of success (strive \rightarrow achieve \rightarrow be happy) and replaces it with a recursive, adaptive loop:

 \rightarrow Notice \rightarrow Let go \rightarrow Connect \rightarrow Act \rightarrow Reflect \rightarrow Evolve \rightarrow Transcend \rightarrow Repeat.

Easy when you know how.



Wow In Music - Raye



Those moments when the hairs on the back of your neck stand up. Those rare moments of transcendence. Of 'wow'. For me, they almost always happen during concerts. And then almost always when someone on stage does something beyond expectation. Often theirs as well as mine.

Imagine my surprise then, when I find myself sitting at the desk in my office, listening to something that's only there because I allowed YouTube to make a random choice for me, when the hairs on my neck start doing their thing. And to cap the experience, the wow isn't even originating from the stage.

The performer was John Splithoff, playing a solo show at SJQ in London last year. The recording looks like it was made by someone in the audience. Splithoff has sat down at the piano to sing a long, drawn-out version of one of his most beautiful songs, Raye.

By drawn-out I mean we're nearly five and a half minutes into the song before the wow starts. Splithoff finishes a piano solo and heads back into a chorus. Only to be audibly joined by one or two members of the audience. Splithoff looks at them encouragingly. More audience members join in. Some of them start harmonising. Then Splithoff let's them off on their own. We all go to church. Then everyone's back together. Then – unprompted again – the audience lets Splithoff sing the last couple of lines himself.

I'm not sure what Inventive Principle adequately describes what happens when the artist and the audience transcend like that. I'm going to go with Principle 6, Universality. Its humans coming together to do what humans do best. Unity is the fastest way to the light.

Check it out here: https://www.youtube.com/watch?v=_pAULDk7Upg



Investments – Asymmetric Graphene



For decades, researchers have sought alternatives to conventional metallic magnets solutions that are lighter, resistant to corrosion, and free from supply-chain vulnerabilities associated with rare-earth elements. While the idea of carbon-based magnets has been theorised since the 1980s, practical limitations in spin magnitude and stability have kept them from becoming a viable option. That is, until now.

A collaboration between Kyoto University's Institute of Advanced Energy, the National University of Singapore, and the University of California, Berkeley, has delivered a breakthrough: the successful synthesis of graphene nanoribbons (GNRs) with asymmetric spin localisation—materials now recognized as Janus GNRs. Named after the two-faced Roman god (the god of contradiction?), these structures exhibit a directional magnetic property that offers a potential step toward the development of carbon-based magnets.

The Challenge: Overcoming Spin Cancellation

Magnets derive their properties from electron spin. If the number of upward and downward spins in a material is balanced, magnetism is neutralised. This fundamental principle has been the Achilles' heel of carbon magnet research. While theoretical studies suggested that zigzag-edged graphene nanoribbons could possess magnetic characteristics, experimental attempts consistently resulted in spin cancellation. The spins at both ends of the GNRs were opposite in orientation, effectively neutralising their magnetic potential.

To achieve functional magnetism, an asymmetric structure was needed—one where localised spins would exist only on one side of the nanoribbon. The problem was not just conceptual but methodological: how to synthesise such a structure with precision and stability?

The Solution: Asymmetry by Design

The Kyoto University team, led by Professors Hiroshi Sakaguchi and Takahiro Kojima, took a structured problem-solving approach. The key lay in designing a Z-type asymmetric precursor molecule capable of producing the desired one-sided spin localisation. By applying a unidirectional surface synthesis method—a breakthrough technique from 2023—they successfully controlled the assembly of these molecules into a novel asymmetric zigzag-edged GNR structure.



Key to this success was the ability to guide molecular linkage in a strictly isotactic fashion (linking molecules in a single, uniform direction). Traditional synthesis approaches often resulted in syndiotactic (alternating) or atactic (random) arrangements, both of which would have undermined the desired asymmetry.

Validation: From Theory to Empirical Proof

Once synthesised, the Janus GNRs were rigorously analysed. The National University of Singapore team used scanning tunnelling microscopy and atomic force microscopy, confirming the physical structure and spin localisation at the atomic level. The University of California team conducted theoretical calculations on electron spin density, matching their predictions with experimental data. The results were conclusive: the synthesised GNRs exhibited controlled magnetism, and, critically, the level of magnetism could be tuned by adjusting the spacing of spin projections along the nanoribbon.

The Future: Towards Practical Carbon Magnets

Despite this milestone, challenges remain. The current Janus GNRs are unstable outside their ultrahigh-vacuum synthesis environment. Professor Sakaguchi's team is now focusing on stabilising these materials by introducing protective substituents, ensuring their viability beyond controlled laboratory settings. Additionally, they are exploring weaker carbon magnets to further demonstrate that Janus GNR magnetism can be precisely engineered.

The long-term vision is clear: lightweight, rustproof, rare-earth-free magnets. While replacing neodymium-based magnets entirely remains a distant goal, this breakthrough represents a critical step forward in material science and magnetism. The principles established here pave the way for future innovations—not just in magnets, but in the broader field of carbon-based electronic materials.



Generational Cycles – Generational (Hype) Cycles

Here's one of those occasional blinding flashes of the obvious that somehow manage to take a couple of decades to appear. The intriguing conceptual correlation between generational cycles (especially as described by Strauss & Howe's "Fourth Turning" theory) and the Gartner Hype Cycle. While they're designed to explain different phenomena (societal behaviour vs. technology adoption), they both follow a cyclic pattern of optimism, disillusionment, and eventual maturation:

Generational Cycle (Strauss & Howe)	Gartner Hype Cycle Stage	Explanation
High (post-crisis era; rebuilding institutions, high optimism)	Innovation Trigger → Peak of Inflated Expectations	A period of collective belief in progress and big visions (e.g. post-WWII Boom = Baby Boomers). Technologies and institutions are embraced enthusiastically.
Awakening (spiritual rebellion, questioning the system)	Trough of Disillusionment	Youth begin to challenge the very institutions they inherited (e.g. Gen X's coming of age in the 70s/80s). Like disillusionment after tech fails to meet early hype.
Unraveling (fragmentation, rising individualism, distrust)	Slope of Enlightenment	Society starts to navigate complexity, but consensus weakens. Innovation matures, but skepticism remains. Gen X and early Millennials dominate culture.
Crisis (disruption, system reset, new order emerging)	Plateau of Productivity	A reckoning occurs (financial crises, climate urgency, pandemics). Society consolidates around what works just as mature tech becomes mainstream (e.g. cloud, mobile)

The integration makes sense because both models are driven by human psychology and collective behaviour. Just as each generation responds to the world they inherit, each wave of adopters (innovators \rightarrow laggards) responds to the perceived success or failure of technology. Hype cycles happen within generational cycles. For example, Gen Z has grown up watching crypto and AI hype cycles come and go — and may build the productive layers of those technologies.

We might think of Gartner's Hype Cycle as the micro pattern (for specific technologies), and generational cycles as the macro background pattern (shaping trust, risk appetite, and societal priorities). The two don't always align perfectly in time — but when they do, you often see big, society-altering transformations.



If nothing else, it helps explain why (GenX) Nomads are the most downbeat and sceptical of the four generation archetypes – they're the generation being raised after the peak of inflated expectations ('you've never had it so good' British Prime Minister, Harold MacMillan, 1957) and through the trough of disillusion.

And possibly why the positive sounding 'plateau of productivity' is actually the primary Crisis mechanism – the time when society begins to hit the top of its s-curve, the contradictions start appearing, and frustrations rise to their eventual boiling point.





We first featured the subterranean wonder-mammal, mole, back in September 2018 (Issue 198). The focus then was the mole's extraordinary earth-moving capability. Now, thanks to research completed in 2022, we also know another of the mole's (almost) unique contradiction-solving capabilities...

In the depths of winter, European moles face an existential problem. Their metabolisms close to the upper limit of any mammal—require more food than is available during the coldest months. This is a simple energy-versus-power conflict: the total amount of energy required to survive is insufficient because the rate of energy consumption (i.e. power) is too high. Here's what that problem looks like when mapped onto the Contradiction Matrix:



Instead of solving this seasonal dilemma through migration or hibernation, moles have dug into an unusual energy-saving tactic: shrinking their brains. In a 2022 study, a team led by Dina Dechmann from the Max Planck Institute of Animal Behaviour reports that European moles reduce their brains by 11% in time for winter then and regrow them by summer. Which together looks pretty much like the first three Principles on the Matrix recommendations list:

Principle 19, Periodic Action – shrink the brain when the weather is colder.

Principle 34, Discarding & Recovering – shrink the brain, then grow it again.

Principle 37, Relative Change – knowing that the brain consumes a much higher percentage of the available energy than other parts of the body, shrink the brain in



preference to those other parts of the body... a rationale being that there's less for the brain to have to do during the winter when finding a mate, breeding, looking out for predators are all likely to be off the cards.

Moles, it turns out, represent a new group of mammals known to reversibly shrink their brain through a process known as Dehnel's phenomenon. The phenomenon takes its name from Professor August Dehnel, who first observed the process in Polish Sorex shrews back in 1949. His discovery? The skulls of these tiny mammals shrink in winter and then regrow as conditions improve. A radical shift, yet one with clear survival benefits.

Since then, similar seasonal shrinkage has been identified in other small, high-energy mammals like stoats and weasels. The key factor? These animals don't hibernate. Instead, they remain active throughout the winter, making any energy-saving adaptation a potential advantage.

But energy savings come at a cost. Dr Dina Dechmann, one of the leading researchers in the field, points out that previous studies link the phenomenon to changes in cognitive function. The most extreme cases occur in shrews, where the skull can shrink by up to 20% before their first winter. Unlike some other species, shrew skulls never fully regain their original size—though in certain mammals, regrowth can surpass the previous maximum.

The implications extend far beyond zoology. Scientists are increasingly interested in what Dehnel's phenomenon can teach us about skeletal plasticity. If fully developed animals can shrink and regrow bones, what might this mean for human medicine? Researchers hope that insights from this process could inform treatments for osteoporosis, neurodegenerative diseases, and other conditions affecting bones and organs.

Dina highlights a growing interest in broadening the scope of research: 'By exploring Dehnel's across multiple species, we increase the chances of uncovering medically relevant mechanisms—maybe even for human applications.'

Despite the progress made, there's a limitation: shrews, with their 13-month lifespan, only undergo the process once, making it hard to assess environmental impacts over time. To counter this, researchers have turned their attention to moles, which live longer and might offer fresh perspectives.

Moles, on the other hand, tend to live for three or more summer/winter cycles and so skull shrinkage is potentially more interesting because the shrink/gore cycle needs to occur several times. Two species have drawn particular interest: the European mole and the Spanish mole. Given their differing climates, researchers hypothesized that while European moles would experience winter shrinkage, Spanish moles—facing extreme summer heat—might instead shrink in hotter months.

To test this, they analysed skulls from museum collections in Spain and Czechia. The results were clear: European moles' skulls shrank by 11% by November of their first year, regrowing by 4% in spring and summer. The cycle repeated, though less dramatically, in subsequent years. Spanish moles, on the other hand, showed no significant seasonal changes, reinforcing the idea that Dehnel's phenomenon is primarily linked to cold temperatures rather than resource availability.

Interestingly, these changes appeared independent of biological age—moles of different ages exhibited the same pattern when exposed to cold. This raises further questions about how environmental pressures influence skeletal remodelling.

Looking ahead, researchers aim to study the phenomenon in living animals. Dina is particularly keen to conduct recapture studies on moles, tracking how brain regions change over time. Alongside genetic and biochemical research, this could unlock deeper insights into the mechanics behind the phenomenon.

'I still want to understand in greater detail how behaviour and energy use are affected by skull shrinkage—and, crucially, how climate change will alter this dynamic,' Dina concludes. The work continues.



Short Thort

The ('the'!) archetypal movie Hero's Journey – Luke Skywalker – as mapped onto the Complexity Landscape... start in Simple-Simple; find yourself in Chaos-Chaos; work your way back to Simple-Simple...



(Red = Ordinary World; Green = Special World between the old S-Curve and the new.)

News

Workshops

The next of our online workshops, NEPTUNE/Seven Habits Of Highly Effective Innovation Project Managers scheduled for 13 and 20 May already has a critical mass of participants and so will proceed as planned. Anyone interested in registering, or finding out about any of the other titles on offer this year will find details in the shop – <u>https://si-shop.org.uk/workshops-and-training/</u>.

TRIZ Mastery Hub

Hopefully, this issue of the ezine will be published in time for Darrell's next session at the online TRIZ Mastery Hub on 28 April. He'll be doing a prelude to the forthcoming Hero's Intrapreneur Journey book: "all innovation involves a step-change from one paradigm (s-curve) to the next. These paradigm shifts demand a Hero's Journey. The steps these Journeys demand are simultaneously universal and unique. Most successful Journeys occur outside large enterprises, but increasingly business leaders have realised that they need to improve entrepreneurial skills within their already large and mature organisations. The intrapreneur has to follow all of the rules of the universal Hero's Journey, but also cognisant of the specific constraints imposed by the structures and protocols of large organisations. This session will focus on the key attributes of a successful intrapreneur, with a particular focus on the need to develop political acumen."



Register for the Hub and Darrell's session here: https://www.triz-consulting.de/offers/triz-course-booking/?course=TRIZ+Mastery+Hub&lang=en

DangerMouth

Check out the latest podcast with prolific leadership author, Hilarie Owen - <u>https://www.dangermouth.org/is2e16-in-search-of-leaders/</u> - and keep an eye out for her new Institute for Future Studies For Leaders, launching in early May.

US Tariffs

It is with regret that we are no longer able to ship our books to the US. Frustratingly, the problem is not so much the arrival of tariff charges, or the threat thereof, but that none of the UK shipping companies seems to know how to deal with whatever the new system is. We hope this problem is a temporary blip. As soon as we get clarity we will hopefully be able to restore the service. These things sometimes come to try us.

New Projects

This month's new projects from around the Network:

FMCG – Patent Valuation Capability Building Project FMCG – Knowledge-Mapping Project FMCG – Brand Innovation Strategy Projects Medical Devices – Tech Scouting Project Education – Serena AI-Agent Integration Agriculture – Business Model Innovation Project HR – Psychometric Tool Development Project eCommerce – Innovation Project Mentoring Government – Public Consultation Perception Mapping Project

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