

COMPASS

The Global Voice of Professional Futurists



**WILD CARDS, BLACK SWANS
AND DRAGON KINGS**

MAY 2026 - JUNE 2026



ASSOCIATION OF
PROFESSIONAL
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COMPASS MAGAZINE

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FUTURE OF HEALTHCARE AND MEDICINE
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About Compass: Compass magazine strives to be the global voice of professional futurists and foresight practitioners. As an official publication of the APF, our mission is to bring out the voices of foresight professionals of all ages and all backgrounds to create opportunities to advance the foresight profession and enhance the knowledge, wisdom and insight of our members, who serve as ambassadors for the profession wherever they are.

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ABOUT THE APF

The Association of Professional Futurists (APF) is a global community of futurists, dedicated to promoting professional excellence and demonstrating the value of strategic foresight and futures thinking for their clients and/or employers.

The APF equips professionals to anticipate and shape alternative futures in the face of technological breakthroughs, environmental challenges, geopolitical shifts, and societal transformations. Through advocacy, education, research, and community building, the APF not only promotes the integration of futures thinking into various sectors but also sets professional and ethical standards for the practice of foresight.

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EDITOR'S NOTES

LETTER FROM MINNEAPOLIS

Dear Fellow APF Members and *Compass* Readers,

Living in Minneapolis-St. Paul, Minnesota (USA), it has felt at times this winter and spring that we are living on the knife's edge of change. If you're not aware of what happened here, do a Google Search for Alex Pretti or Renee Good.

A few weeks ago, my wife, Rebekah, and I joined more than 200,000 Minnesotans in a No Kings rally at our state capital.

You literally could feel the energy coursing through the crowd. Buoyed by celebrity activists such as Bruce Springsteen and Joan Baez, waves of emotion swept through the crowd – anger, joy, sadness, fear, inspiration, dismay, hope, frustration, confidence.



P.S. With this issue, we have started a "Letters to the Editor" section. Tell us what you think of *Compass* and drop us a letter at compass@apf.org.

And these feelings are not just about what's happening in the streets of Minneapolis and to our neighbors, it's also about what is happening around the world.

So, it's with this issue, that we are exploring disruption, from the perspectives of wild cards, black swans and dragon kings.

As I read through the submissions for this issue, it occurred to me: is there such a thing as a wild card or a black swan anymore?

Let me ask it in another way. What would truly shock you?

Growing up, I used to think the disclosure of aliens would truly be shocking (I attribute this to reading the *National Enquirer* at the lunchroom table in my local supermarket where I worked as a stocker). But with all that has occurred in the past year alone – I'm not quite sure that even a full disclosure, with aliens meeting the president at the White House, would be all that shocking anymore.

We may not be able to do much about aliens, but when it comes to creating spaces where we invite all voices to the table to respectfully talk about OUR futures, that's another matter.

What I've learned this past spring is that my neighbors matter more than ever and that the glue that binds us all together is trust and empathy. More than ever, it's become clear to me, we don't have to let the future happen to us; we are all on Spaceship Earth – we can shape the direction of where we're going. If we want to.

We do have agency. As futurists, let's use it to get into some good trouble.

Please join me in thanking **Harmanjot Kaur**, our design director, in once again creating a visually compelling design for this issue of *Compass Magazine*.

With kind regards,
Stephen Dupont
Editor, *Compass Magazine*

LETTERS TO THE EDITOR



Editor's Note: We invite readers of *Compass* magazine, APF members and non-members, to share their comments on content published in *Compass*. The opinions and insights shared in Letters to the Editor, like all articles, do not necessarily reflect the views of the APF. If you have a Letter to the Editor to share, please send to Compass@APF.org. Please keep your submissions to 750 words or less. All letters must be signed. The editor reserves the right to edit letters and/or reject letters.

FEEDBACK ON SOMATIC FUTURES WORKSHOP

Dear Editors and Readers,

I am a racialized nonprofit practitioner, a facilitator, and a believer in foresight as a tool for collective liberation. I attended the APF-OCADU Conference in August 2025. I did not speak up at the time. I am speaking now because Rodney Frederickson recently tagged me on LinkedIn linking to his account of the workshop in *Compass* Magazine — and reading it, I realized no one else knows what was happening in my mind and body that day. This is my story.

I attended Rodney's workshop, "Tulips They May." Rodney and I were the only visibly racialized people in the room. I name this not to assign responsibility to him, but because rooms carry that texture whether or not anyone names it — and this one did.\

The workshop opened with genuine warmth and two scenarios describing immigrants made invisible and villainized. My body responded. I felt seen. Finally, someone else saw what I saw and wasn't afraid to name it. I let my guard down. Then participants reflected from a position of palpable distance — with compassion for the immigrants, from the comfortable vantage point of not being them. My body recoiled. I stayed anyway. I found something real in the somatic practice that followed. But what came after erased it.

Content note: The following references a gesture associated with sexual violence, corporal punishment, and slavery.

Near the end of the workshop, a senior white professor stood at the front of the room and announced his gesture: “Debeltification.” He mimed removing his belt, grunting and reddening with each notch, then declared that if his body could make room for his fat belly — gesturing to his lower half — there was room for immigrants in Canada too. The room applauded.

Let me be direct about what happened: a white man stood in a room full of people who had just been asked to hold space for the humanity of immigrants, and used his body to make himself the metaphor. The room responded with applause - perhaps approval. The gesture of removing a belt is not neutral. Its archive includes corporal punishment, domestic abuse, slavery, and sexual assault. These associations do not disappear even if we offer compassion and curiosity about intent. Intent does not outweigh impact.

The morning after, I approached Rodney. He was generous with his time and the conversation cracked something open in me. I want to be clear: this is not an indictment of him. Facilitators cannot script every participant's choices. What I am pointing at is structural. When harm enters the room, what does this field do? What does it look like to name it in real time, before people carry it home in their bodies? And what is the cost — to participants, to the credibility of a field where some claim to be building toward justice — when no one does?

Reading Rodney's article, I recognized a pattern I have seen before and, honestly, one I have probably reproduced myself: a retelling that centres the facilitator's learning and notes that some participants may have felt awkward. What it does not account for is what participants carried out of that room. I am naming it now.

I am not asking for punishment or for anyone to be made a villain. I am asking this field to hold, with genuine humility, the power it wields when it invites people to open their bodies and their imaginations. That is not a small ask of participants. It should not be a small responsibility for practitioners. Future gestures carry the weight of past meanings, we cannot pretend that we can transform gestures by erasing the past. But we can build the conditions where that weight gets named honestly — in the room, in real time, by the people with the power to do it.

I have written about this more fully — including a commitment to my own practice — in an open letter to foresight practitioners titled “We Are Building Futures We May Never See. The Least We Can Do Is Be Honest About the Present Room.”

Jenn Chan

Co-Founder & CEO, Department of Imaginary Affairs
Toronto, Ontario

SECTION:

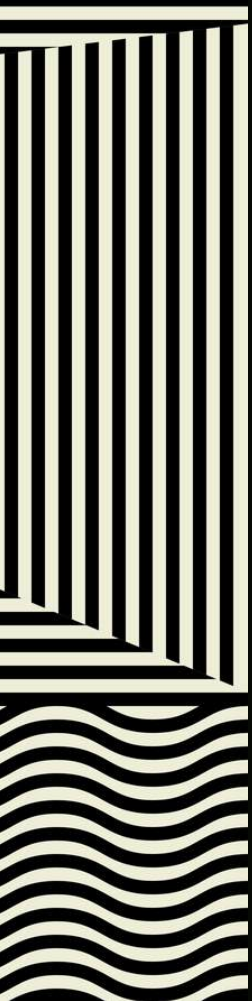
WILD CARDS AND BLACK SWANS

EMBRACING CHAOS:

Rethinking Foresight in an Age of Nonlinear Futures

By Akash Das





Futures thinking has long sought to model uncertainty, but many mainstream foresight practices often underestimate the volatility inherent in complex systems. Chaos Theory — the mathematics of deterministic unpredictability — offers critical insights into why small shifts can branch radically different futures, and why scenarios often do not resemble adaptive complexities.

Systematic engagement with chaotic systems remains rare in foresight, despite its relevance to climate, economy, geopolitics, and social systems characterized by feedback loops and tipping points. Embracing Chaos Theory offers an opportunity to improve predictive capacities and intelligences. It allows us to explore integrating principles of Chaos-aware anticipation can enhance scenario robustness, expand imagination beyond linear trajectories, and equip organizations with frameworks to navigate the fractal futures that increasingly define our interdependent realities.

NAVIGATING THE *PERMACHAOS*

Since Collins Dictionary¹ named *permacrisis* as 2022's word of the year, our world has observed a continued intensification in overlapping, unrelenting instability.

However, *permacrisis* describes a quantitative escalation of challenging dynamics that's set against a background of relatively recognizable order. What we are witnessing now however, is distinct; alongside increasing frequency and intensity of global challenges, there are compounding consequences and stressors, driven by high interdependencies between systems.

The evidence of amplifying severity is not hard to notice.

The PRI Oslo and Uppsala Conflict Data Program recorded 61 state-based violent conflicts in 2024 – the highest since 1946.² Global military spending reached \$2.7 trillion that same year, its steepest single-year rise in a decade of consecutive increases.³

WMO confirmed that 2024 as the warmest year on record,⁴ with extreme weather events generating more than \$120 billion (US) in insured losses⁵ and accelerating ecological degradation that the UK government assesses, with high confidence, has placed every critical ecosystem on a pathway toward collapse.⁶ The WEF Global Risks Report 2025 ranks misinformation and societal polarization among the top near-term systemic risks,⁷ a finding reinforced by the 2026 Edelman Trust Barometer's identification of rising insularity⁸ as a structural driver of institutional trust erosion.

1. Sherwood, H. (2022, November 1). 'Sums up 2022': Permacrisis chosen as Collins word of the year. *The Guardian*.

<https://www.theguardian.com/culture/2022/nov/01/sums-up-2022-permacrisis-chosen-as-collins-word-of-the-year>

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<https://www.prio.org/publications/14453>

Individually, each of these signals represent a serious crisis. But what's essential to note is not their *occurrence magnitudes* – but their *relational dynamics*.

While these may appear as a succession of isolated issues spread around the world, they are instead expressions of global systemic strains reverberating across a dense web of domains and environments. Consequences in one space increasingly spill over, compound, and mutate across others – challenging illusions of non-proximal insulation, as the boundaries of ripple effects no longer remain contained to directly impacted regions.

For instance, along with ecological degradation spilling into adjacent bioregions,⁹ the Russia-Ukraine War triggered major food and energy price shocks globally,¹⁰ while trade restrictions on wheat and fertilizer surged shortages across the world.¹¹ Similarly, extreme weather events triggered by climate change are degrading soil systems, intensifying migration pressures, and straining the fiscal capacity of countries, which eventually strains national security and societal equilibriums. Misinformation accelerates polarization, eroding solidarity and trust needed for cooperative solutions, which in turn, drives protectionist policies, trade barriers and social volatility.

These suggest our conditions are potentially transitioning from an environment shaped by prolonged “crisis,” to intrinsic “chaos:” which does not refer to disorder, but the tendency for systems to: 1.) become overtly intertwined, 2.) behave unpredictably despite being inherently deterministic, and 3).their source triggers and shifts increasingly hidden and subtle. Under these conditions, the relationship between cause and consequence is harder to perceive, characterized by seemingly minor disruptions becoming magnified through feedback-rich networks, triggering threshold effects and generating consequences far beyond their apparent scale.



Not only is the potential for turbulence to leap boundaries much higher, the resulting fragility can propel conditions for systems to collapse, especially if they are functioning in duress.

The sandpile model¹² in complexity science captures this well: as stress accumulates, the system moves closer to a critical threshold at which even a single additional grain can trigger an avalanche. This resembles the modern global risk architecture: systems veering towards critical carrying capacity, wherein a seemingly negligible incident can induce outsized second and third order consequences.

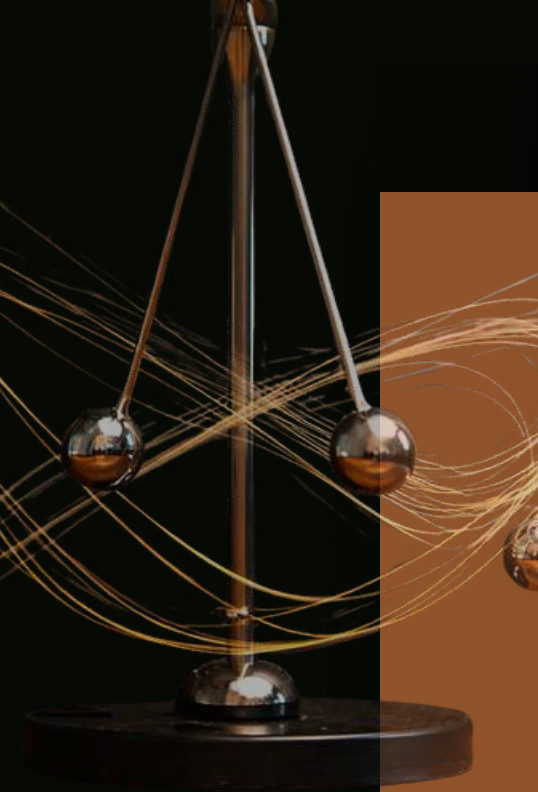


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The unique capacity of small perturbations to provoke large changes is studied by the interdisciplinary field of Chaos Theory.¹³

Developed by meteorologist Edward Lorenz, Chaos Theory posits that deterministic systems may become unpredictable over the long run, due to their sensitivity to micro-changes in initial conditions.

Essentially, we can predict how nonlinear complex systems behave in the short-term, but accuracy reduces exponentially over time.

This *deterministic-unpredictability* paradox manifests most clearly in weather patterns, but can also be observed in Earth systems, gene expressions, the human brain, financial markets and social networks. Most recognized by the metaphor of the “Butterfly Effect,” Chaos Theory explains how complex systems may trigger transboundary consequences, exhibiting how seemingly inconsequential shifts in the present, may branch radically different futures.

EMBRACING DETERMINISTIC UNPREDICTABILITY

Although long-range unpredictability remains a defining feature of chaotic systems, researchers are increasingly testing those limits, especially around anticipating and possibly preventing extreme events.

Researchers found *dragon-king* events in chaotic systems may be predicted and prevented through interventions – with potential applications for financial markets, energy, and climate.¹⁴ A 2020 study, published in the journal *Chaos: An interdisciplinary Journal of Nonlinear Science*, demonstrated that the prediction of extreme events need not depend on full system visibility. By constructing nonlinear models from partially observed time series, the authors showed that hidden drivers of extreme behaviour can be (somewhat) inferred and anticipated.¹⁵

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Reservoir Computing (RC), a class of recurrent neural networks, has emerged as one of the more promising approaches in stretching predictive horizons of Chaos. A 2020 *Physical Review Research* paper explains that real-time data updates can dramatically extend the prediction horizon of chaotic systems.¹⁶ A recent article in *Nature Communications* noted that RC has shown real promise for higher-precision prediction in chaotic systems, even as substantial research is still needed before broad industrial-scale adoption becomes realistic.¹⁷ In climate predictability studies, RC has been shown to outperform traditional linear inverse modelling in forecasting North Atlantic sea-surface temperatures.¹⁸ Earth systems scientists are using supercomputer modelling to run *ensembles* of simulations, experimenting with slightly different initial conditions to improve prediction accuracy and limit the influence of chaos.¹⁹

These advances represent a meaningful expansion of what is knowable in chaotic systems. However, it's essential to recognise that while predictive accuracy can be somewhat extended, mathematical constraints render long-range prediction of chaotic systems fundamentally impossible. Essentially, even if our tools get exponentially better, and we possess data about “everything,” the horizon of future certainty will still remain finite – the thought-experiment *Laplace's Demon* proves this through Heisenberg Uncertainty Principle, Chaos limits and “Undecidability.”²⁰ The goal is then, to reliably identify precursor conditions, infer hidden drivers, and extend predictability horizons enough to improve collective preparedness.

Emerging fields of studies such as Complexity Economics²¹ and Cliodynamics²² offer another way of looking at Chaos Theory. They integrate Chaos Theory into model nonlinear dynamics underlying economic and historical change, in recognition that prediction is not the end goal, but building scenarios that tackle multiple facets of complexities are. Business scholars have argued that industries should be considered dynamic systems, and strategic plans must be weighed simultaneously against both unpredictability and order, also called the “Edge of Chaos” as coined by physicist Norman Packard – to enhance long-term resilience. David Levy's 1994 paper argued that chaos theory offers an effective framework for understanding the evolution of industries, emphasizing the importance of identifying emergent patterns, and maintaining adaptive flexibility to engage multiple possible futures.²³

What interweaves these approaches is a shared epistemological migration away from prediction dependency, towards *pattern recognition, phase space identification, and adaptive preparedness* as its core aim.



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This is where the field of Foresight can collaborate and meld with Chaos Theory to increase its effectiveness.

TOWARDS CHAOS-AWARE FORESIGHT

While foresight, at its best, has always sought to widen apertures of perceptions, interrogate assumptions, and explore implications of multiple futures rather than foster illusions of certainty forecasts to which to adhere – mainstream practices continue to underplay the volatility inherent in complex systems. A International Science Council and UNEP working paper stated, “the integration of complexity and uncertainty in scenario planning” is still a frontier in mainstream foresight.²⁴

Foresight often under-represents “chaotic” uncertainty, discontinuity, and nonlinear change, preferring instead continuity-biased, tractable, and familiar futures. Raskin and Swart argue that

major global scenario assessments “tend to focus on a narrow bandwidth of possibilities: futures that unfold gradually from current patterns and trends.” They call this a “continuity bias” that downplays the possibility of structural discontinuity.²⁵ The critique is extended and deepened by Rothman, and colleagues in *Global Discontinuity: Time for a Paradigm Shift in Global Scenario Analysis*, stating plausible discontinuous futures have not been adequately represented in mainstream scenario work.²⁶



As the dominant tools of professional foresight were largely developed for complex, but rather stable environments, sufficient structural continuity allowed bounded scenario spaces and probability-weighted planning to resemble a reasonable approximation of reality.

But that degree of structural integrity has waned. And, while conditions have exponentially shifted and now register markedly more chaotic, foresight continues to model uncertainty as *probabilistic* rather than *chaotic*. The former refers to a set of possible, plausible, probable and preferable potentials drawn from a knowable distribution, while the latter specifies potentials based on sensitive dependence, feedback amplification, and threshold dynamics that no distribution can adequately represent. Therefore, while *probabilistic uncertainty* considers futures to be governed by stable underlying parameters from a moderate to a large degree – *chaotic uncertainty* states futures are a product of randomness wherein small, relational data is intrinsic to the system itself.

The underlying assumption is that no amount of information eliminates uncertainty.

Chaos-aware foresight builds on it by integrating nonlinearity into the structural layer of methodological inputs, to ensure outcomes align with the nature of:

- Deterministic unpredictability
- Sensitivity to micro-changes in initial conditions.

In practice these principles can be organized around *seven operative shifts and twelve methodological structures*: three of each, are described briefly on the next page.

SHIFTS

From Probabilistic Certainty to Instability Sensing: In chaotic environments, assessing linear trajectories of change becomes less useful than monitoring the conditions under which instability thrives. This means tracking fragility, feedback intensification, threshold pressures, and coupling across systems rather than overcommitting to precise measurements of futures. Organizations that understand nonlinearity of change orient themselves toward the structural conditions that generate outcomes, rather than the outcomes themselves – leading to greater degree of preparedness and agility.

From Trendlines to System Dynamics: Traditional trend-driven approaches often privilege directionality: more digitization, heightened warming, less polarization, increased demographic fragments. Chaos-aware foresight asks what interactions sit beneath those trajectories, because trajectories can shift unpredictably. It emphasizes identification of *leverage points* – the places in a system where a small shift produces large changes – and asks, Which reinforcing loops are accelerating change? Where are causality blind spots visible? Where are path dependence narrowing options? and, Where might regime shifts occur if existing stabilizers fail?

From Bounded Scenarios to Branch Paths: Chaos-aware foresight replaces the static end-state scenario – a snapshot of a possible world in 2050 – with dynamic pathway models built around triggers, cascades, reversals, and tipping events. In chaotic systems, path matters as much as the destination. Branch pathway scenarios model the *decision nodes and trigger events* at differing moments systems could shift trajectory – the moments of bifurcation where small differences in conditions produce different futures. This can strengthen scenario robustness and augment capacities to gauge both the granularity and breadth of potential changes.

STRUCTURES

Weak Inconsequentialities

"Little things are infinitely the most important." — Sherlock Holmes

One of Chaos Theory's most counterintuitive implications is that the most consequential inputs to a system are often those that currently appear insignificant, negligible and inessential.

The methodology may seem similar to scanning for weak signals but that is not the case. Weak signals represent documented early-stage indicators of emerging change.

The operating thinking is broadly probabilistic, and the underlying driver is linearity, as they are treated as *something* expected to grow or diminish. The foresight task is accordingly to detect and assess their potential evolution trajectories, instead of tracking their capacity to influence other (adjacent or non-adjacent) systems.

On the other hand, weak inconsequentiality is not about early detection of something that may develop into significance. Instead, it is about identifying determinants that *never become independently consequential*, but whose interaction with a system at a specific threshold moment may produce outsized, irreversible consequences.

Kokura's Luck illustrates it best: the 1945 nuclear bombing mission targeting Kokura was diverted to Nagasaki because cloud cover made the primary target invisible – highlighting how seemingly inconsequential conditions can catalyse radical new courses of history. And so, the history of unpleasant surprises is, in some respects, a history of signals that were dismissed as noise. The 2008 financial crisis embodies this.

Another key element to consider is to systematically include small data and warm data – as coined by Nora Bateson – the relational, contextual, qualitative information that exists *between* domains rather than *within* them, into foresight methods to capture the texture and quality of relationships between systems, and the emergent characteristics they spawn, to enhance uncertainty tolerance.

Critical Slow Downs

"Every catastrophe contains its own announcement." — Paul Virilio



Dynamical systems approaching a tipping point exhibit a measurable precursor phenomenon known as *critical slowing down*: as the system nears a threshold, it takes progressively longer to recover from small perturbations, its variance increases, and its internal correlations strengthen.

This is observable in advance of tipping events across ecological, climate, financial, and social systems – effectively providing a statistical early warning signal that a threshold is approaching, even when the system's surface behavior appears relatively stable.

For foresight practitioners, this means developing monitoring frameworks that track recovery rates and variance across key systems – not just the indicators, but their *behavior* over time. The determinant is not stored in the outcome but in the recovery time towards stability and homeostasis. A 2023 study²⁷ on temporal network sociomarkers, published by the journal *Information Sciences*, extends this logic to social systems, showing that before social emergencies, group-level interaction structures can display critical-slowness-like early warning signals and bifurcation dynamics.

Using the Enron email and transnational terrorism datasets, the authors found that these network signals could detect approaching social emergencies and identify the sensitive groups likely involved in the transition.

Contingent Convergences

“Nothing about a caterpillar tells you it is going to be a butterfly.” —
Buckminster Fuller

Contingent convergence contrasts with deterministic convergence, referring to scenarios where outcomes (convergence) arise from independent or unpredictable historical paths (contingency). In other words, futures are often shaped by seemingly minor, random events rather than inevitable, predictable outcomes. This foresight method focuses on identifying events and conditions where multiple unrelated or weakly related developments align in ways that create disproportionate outcomes that may push systems towards tipping points.

Often, what appears surprising is visible retrospectively, after one identifies the patterns of convergence. The method thereby aims to spot them by intentionally channeling attention to intersections: zones where distrust meets automation, where climate stress meets political volatility, where debt pressure meets societal fraying, or where biological risk meets AI acceleration. It is often at these intersections that futures begin to bend. In this methodological context, the emphasis is both on spotting irregularities such as “dragon kings” or wild cards, as well as identifying conditions that give rise to them.

Photo Credit: Raul Kozenevski, Pexels Licence,
Downloaded on 27th March, 2026

Building Chaos-led Resilience

Chaos Theory may not offer the field of Foresight what it has historically sought – a reliable map of the future.

But, what it does offer, is a rigorous account of why the future resists mapping, and a set of tools for operating with greater intelligence within that constraint. Deterministic Unpredictability can be an opportunity to embed strategic humility. It posits that futures inherently are unknowable beyond an extent – and therefore, underscores the value in developing systems that are less brittle and more adaptive, and scenario architectures that are less tidy and more equitable.

In a time of increasing pressures across systems and domains, it is critical to sense instability before it peaks. Chaos-aware Foresight hopes to strike a distinct balance between observing the 'edge of chaos' for greater sensemaking of plural futures, and a methodological rigor informed by the recognition that the most consequential futures in the making, may also be the most invisible.



Akash Das is a futures researcher, policy analyst, holistic designer, and educator based in Toronto with more than a decade of multidisciplinary experience in strategic foresight, speculative design, scenario planning, market and consumer intelligence, strategy and policy making. He has worked at the intersections of futures, design and systems thinking, decoding behavioural complexities across cultural industries like food, fashion, media, art, automotive, beauty, luxury & jewelry; and sharing intelligence to mitigate risks and identify implications across sectors such as, technology, economics, climate, agriculture, healthcare, education and work. Akash specialises in horizon scanning, cross-connecting socio-cultural signals to emergent shifts, identifying drivers of change, and articulate trends (micro to macro) and their impacts with potential opportunities, blindspots and risks.

Akash has applied long-term thinking and systems methods to public policy oversight as the Senior Policy Advisor, Ministry of Health in Ontario Government, Canada. As the futures strategy director of MeWeStudioX, he's worked with The Future Laboratory, Deloitte, EDHEC, WGSN, Mars, SOON Futures; Nike, OnRoad; McDonald's, The People; Protein, SPACE10 x IKEA; Fashion Revolution, among others. With Andthen, he has worked with the Government of UK (Department of Food, Environment and Rural Affairs) to identify long-term drivers of change and shifts impacting future operating environments. He has applied futures thinking towards building emergency management and disaster risk resilience capacity building strategies for First Nations communities in Canada. Akash has spoken at leading platforms such as the Dubai Future Forum, UN Summit of the Future: Building Hopeful Futures, SIDS Futures Festival (4th UN Conference on Small Island Developing States) — and has mentored in global institutions including Toronto Metropolitan University, Parsons School of Design, Royal College of Art, Marangoni, and London College of Contemporary Arts.

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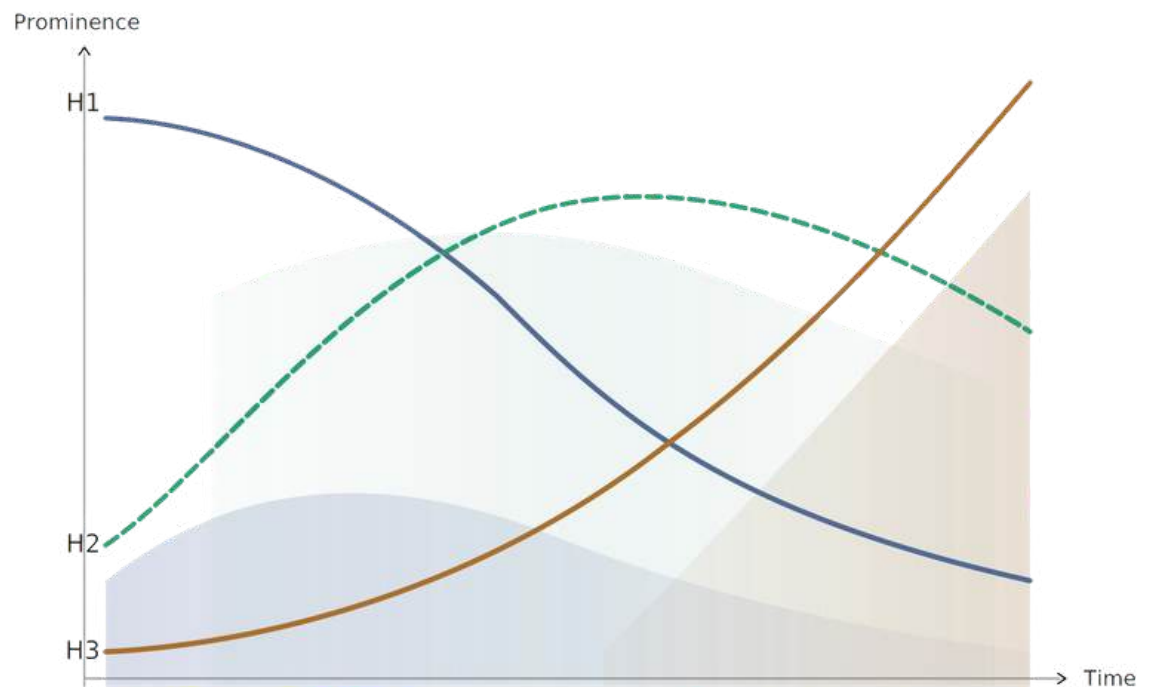
USING FORESIGHT TO ACTIVELY RESHAPE AND TRANSFORM ORGANISATIONS ACROSS THREE HORIZONS



By Katy Cooper

The futures field has long grappled with a persistent challenge: how do we translate compelling visions of possible futures into strategies that organisations can actually implement?

Bill Sharpe's Three Horizons framework offers a multi-perspective response to this challenge. Rather than treating "the future" as a preferred destination to be reached, or a single trajectory to be predicted, horizons thinking provides a map of how systems transform over time.



UNDERSTANDING THE THREE HORIZONS

At its core, the Three Horizons framework recognises that multiple states/patterns coexist within any system at any given time.

H1

Horizon 1 (H1) is the dominant present: the established ways of doing things, the incumbent business models, the prevailing systems. H1 systems are typically mature, optimised, and deeply embedded in institutions, supply chains, regulations, and culture.

Yet even as H1 dominates the present, it typically shows signs of decline not always as collapse, but as erosion; diminishing returns, fragility, growing externalities, increasing cost of control, talent loss, change debt, or misalignment with shifting values. The very optimisation that made H1 successful is a source of rigidity, reducing adaptability as things change.

H3

Horizon 3 (H3) is the emerging future system: fundamentally different ways of creating value, organising, or solving problems. H3 is the realm of new logic, including shifts in ambition and impact, governance models, business architectures, or epistemologies.

H2

Horizon 2 (H2) sits between them: the transitional and liminal space of innovation, experimentation, entrepreneurial activity, and disruption. H2 is where speculative investment is made, feasibility tested, where scaling hurdles appear, failures are made, and where strategy becomes concrete decisions: what to fund, what to stop, what to protect, what to challenge, and what to build.

Three Horizons is often introduced as a neat timeline. In practice, it is better understood as a pattern map: a way to hold multiple realities in view at once. The incumbent strength and decline (H1), transition states (H2), and emergent possibilities (H3).

THE POWER OF SIMULTANEITY

What makes Three Horizons thinking strategically useful is its recognition that these horizons are not sequential stages. They overlap. They coexist at all times. A H3 will appear as a signal in H1 or as a disruption in H2.

This matters because often organisational transformation fails where there is a misalignment of these timelines. Different functions and different leaders, live in different timeframes:

- Operations and finance often anchor in H1 (reliability, cost, risk, performance).
- Innovation teams and research groups often anchor in H3 (novelty, optionality, reframing).
- Strategy, product, partnerships, and transformation offices often work in **H2** (scaling, integration, adoption, disruption management).

These orientations are not personality quirks. They are legitimate perspectives shaped by incentives, responsibilities, and professional cultures. The conflict is predictable: H1 experiences H3 as unrealistic or distracting; H3 experiences H1 as defensive or obsolete; H2 experiences both as under-supportive, asked to deliver change without the authority, resources, or runway to do it well.

We need to take a portfolio view of the horizons:

Organisations that over-invest in H1 optimisation may achieve short-term efficiency gains but become vulnerable to disruption. On the other hand, organisations that chase H3 novelty without sustaining H1 performance run out of resources, credibility, or trust before innovations mature.

The art is not picking one horizon. The art is managing the transitions: how resources, attention, and legitimacy move over time from H1 to H2 and, eventually, to H3 becoming the new H1.

A THEORETICAL LENS: SYSTEMS, REGIMES, AND TRANSITION DYNAMICS

Three Horizons is often described as a “simple” framework. Its simplicity is deceptive; it carries an implicit theory of change that aligns with systems thinking and transition studies.

From a systems perspective:

- **H1** is established: stabilised feedback loops, dominant metrics, and infrastructure that “locks in” existing behaviour.
- **H3** is emergent: new feedback loops forming, new meanings and capabilities, new narratives developing.
- **H2** is the contested zone: the messy middle where experiments confront reality, where alternatives compete, where adaptation and disruption occur.

Three Horizons asks you to both imagine futures **and** it asks you to understand how futures become viable. It is a framework for translation: how ideas move from possible to implementable, and from interesting to part of the way we do things around here.

H3 rarely wins by being right. It forms by continuously responding to the lessons, nudges, conditions and impacts, and shaping the “how” of the ambition.

Working with a not-for-profit health insurer who had a significant ambition to affect whole systems change in the health care system of a place. H1 called for them to be established as a trusted player in the health care system. Whilst H2 experimentation and learning enabled them to trial the delivery of community-based health interventions not traditionally delivered by a health insurer. They've invested and they've learned how to engage with the “system” as well as the humans within it which enables permission to start to shape the wider system.

Three Horizons maps the dynamics of these system transformations. It acknowledges uncertainty while giving structure to strategic conversation. It asks:

- What is the current dominant system, and where is it weakening? (H1)
- What transition dynamics are underway – what experiments, disruptions, and adaptations are competing? (H2)
- What future system is trying to emerge, and what would make it viable? (H3)

This is a shift from prediction to pattern recognition and intervention design. In complex environments it supports strategic competence. It shows up as a dynamic capability to sense emerging patterns, seize opportunities, and reconfigure resources as conditions evolve.

It also makes agency visible. H3 possibilities do not become reality automatically; they require champions, resources, and enabling conditions. H1 systems do not fade politely; they adapt, resist, and sometimes successfully reinvent themselves. H2 is where these dynamics play out, and where strategic interventions can accelerate desirable transitions or protect valuable aspects of existing systems.

A practical benefit is its ability to create shared language across diverse stakeholder groups. In multi-stakeholder contexts, participants often talk past one another because they are implicitly oriented toward different horizons. Some stakeholders focus on immediate operational concerns, whilst others on long-term transformation. Some see disruption as threat; others as opportunity.

Horizons provides a neutral structure for surfacing these perspectives. By mapping various stakeholder concerns and priorities, the framework makes differences visible without demanding immediate resolution. It allows multiple “truths” while creating a container for dialogue about how to navigate transition collectively.

I took a senior executive team through a three horizons mapping activity and then asked them to identify the leadership behaviours required to support each transition point. What they learned and understood about themselves enabled a conversation about ways of working and relating with each other that allowed for perspective taking on major decision points such as business cases, budget planning etc. whilst remaining on track towards delivery.

FROM ANALYSIS TO ACTION: STRATEGIC IMPLICATIONS

- **Strategy is transition management, not destination selection.** Organisations often frame strategy as choosing a target future state and plotting a path to reach it. Horizons thinking suggests a more realistic approach to manage a portfolio across horizons, adjust continually as patterns evolve, and build capabilities for navigating transition.
- **H2 is where transformation succeeds or fails.** Many organisations under-invest in H2 because it's inefficient: experiments are messy, scaling is hard, and transition work creates friction with the core business. Yet H2 capability is often the difference between successful transformation and perpetual pilot syndrome.
- **Both/And thinking beats Either/Or in uncertainty.** Horizons thinking legitimises the need to defend and optimise H1 while exploring H3 and building H2 pathways. The point is not to do everything. It's to make the trade-offs explicit.
- **Transition is cultural and political, not just technical.** Movement between horizons changes power, identity, and meaning. H1 often controls resources and legitimacy; H3 often carries energy and potential; H2 is often where people experience loss, ambiguity, and role uncertainty.

Horizons thinking helps teams see these dynamics without reducing them to resistance to change. It reframes resistance as a predictable response to threatened value, identity, or stability and invites more skilful transition leadership.



LIMITATIONS AND CONSIDERATIONS

Horizons thinking is powerful, but it's not magic.

- **Simplicity can mislead.** Real transitions are nonlinear; horizons blur; multiple futures compete. Treat the map as a working hypothesis, not a truth.
- **Power dynamics matter.** Dominant actors can label their preferred future as inevitable H3 while dismissing alternatives. Facilitate to ensure kingdoms aren't built from it.
- **It is not an implementation plan.** It is excellent for shared understanding, direction-setting, and portfolio logic. It should be complemented by execution tools: organisational design, program governance, benefits realisation, risk management, capability roadmaps, and change leadership.

Used appropriately, the framework does not replace detailed strategy. It improves the quality of strategic choices by making time, transition, and tension explicit.

BRIDGING VISION AND ACTION

The persistent challenge in organisations is translating futures into strategies organisations can implement amid the pressures of daily operations. Horizons thinking provides a practical methodology for navigating the space between present and future.

It reframes foresight from a speculative exercise into a disciplined practice of intervention: deciding what to preserve, what to let go, what to build, and how to bridge between multiple potential futures, all here in the present.



KATY COOPER

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SCIENCE FICTION NOVELLAS:

ANTICIPATING WILD CARDS AND BLACK SWANS

| By Michael Rostek

[1] Dupont, Stephen, Ed. (2025). Welcome to the Poly Crisis. Compass Magazine. <https://www.apf.org/c/compass/welcome-to-the-polycrisis>.

The 21st century continues to bear witness to the development of an international environment marked by considerable uncertainty, volatility, and increasingly rapid change. Indeed, we have begun to witness the emergence of an environment characterized as a global polycrisis: [1]

A global polycrisis occurs when crises in multiple global systems become causally entangled in ways that significantly degrade humanity's prospects. These interacting crises produce harms greater than the sum of those the crises would produce in isolation, were their host systems not so deeply interconnected.[2]

[2] Lawrence, Michael, Scott Janzwood, and Thomas Homer-Dixon. (2022). What is a global polycrisis? And how is it different from a systemic risk? Technical Paper #2022-4, Version Number: 2.0 September 16, 2022: p. 2. <https://cascadeinstitute.org/technical-paper/what-is-a-global-polycrisis/>

As a result, familiar “rules of the road” have faded, new ones continue to emerge, and events and crises unfold at an accelerating rate. Attempts to understand, and if possible, anticipate, future challenges are essential for effective organizational planning.

[3] Wild Card: An unforeseen or uncertain factor that could potentially disrupt or significantly impact a situation or scenario. This term can encompass various types of unexpected events, including black swans (low probability, high-impact events), as well as other emerging trends or developments that were previously unforeseen. UN Global Pulse. (2023). Strategic Foresight Glossary. <https://foresight.unglobalpulse.net/wp-content/uploads/2023/03/UGP-GLOSSARY.v04.pdf>.

Organizations are increasingly influenced by artificial intelligence, automation, virtualization, demographic change, and the climate crisis, among others. The use of strategic foresight and futures analysis aims to understand these changes, many of which are external to organizations (inbound change), and leverage this understanding to create change that influences the world within which organization functions (outbound change).

[4] Black Swan: rare and unexpected events with a significant impact that are difficult to predict. These events are characterised by their extreme rarity, their unpredictable nature, and their significant impact on individuals or systems. UN Global Pulse. (2023). Strategic Foresight Glossary. <https://foresight.unglobalpulse.net/wp-content/uploads/2023/03/UGP-GLOSSARY.v04.pdf>.

A future focused science fiction narrative developed using strategic foresight tools and techniques can facilitate deeper analysis, innovation and understanding of the global environment which may assist an organization in anticipating Wild Cards[3] and Black Swans [4].

STRATEGIC FORESIGHT [5]

[5] For a detailed overview of strategic foresight guidelines see Hines, Andy & Peter Bishop. (2015). Thinking about the Future: Guidelines for Strategic Foresight. Houston: Hindsight.

The complexity and uncertainty of today's global environment has created a bewildering array of interactions and interdependencies across all societal sectors. Increasingly, strategic foresight is being used to respond to this new environment.

“Foresight is the ability to see developments before they become trends, to recognize patterns before they emerge, and to grasp the

[6] Rohrbeck, René & Jan Oliver Schwarz. (2013). The value contribution of strategic foresight: Insights from an empirical study of large European companies. *Technological Forecasting and Social Change*. Volume 80, Issue 8. p. 1593.
<https://www.sciencedirect.com/journal/technological-forecasting-and-social-change/vol/80/issue/8>

features of social currents that are likely to have an impact; it is not the ability to make predictions".[6] The term strategic foresight is used in this context to acknowledge the close association between strategic foresight and strategic planning.

As such, strategic foresight is a growing international discipline designed to critically examine the difficulties associated with making decisions with long-term future consequences in conditions of uncertainty. In addition, strategic foresight provides methods through which these difficulties can be minimised and a creative approach to the future adopted.

One of these approaches is the development and use of imaginative, future-oriented stories based on a systematic and an empirically grounded study of the future and is a unique approach to organizational planning that embraces uncertainty and emphasizes adaptability and action.

FUTURE NARRATIVE – NOVELLA

Methods and tools used for the conduct of a strategic foresight project are numerous (e.g., framing, stakeholder analysis, environmental scanning, trend analysis, driver mapping, futures wheel, alternative futures, and scenarios, etc.). Of these, the use of science fiction represents one, within a range of options, that has recently drawn considerable attention as an instrument of analysis. While results of strategic foresight analysis are typically communicated through plausible scenarios, complimentary forms of communication include anthologies, novellas, or books aimed at visualizing future environments.

Jules Verne (submarines and helicopters), Arthur C. Clarke (satellites for communications), and several other examples have their roots in science fiction.[7] These forms of communication can also focus on answering key questions about a rapidly changing security environment (e.g., implications of AI, autonomous systems, robotics, et cetera) by stretching plausibility. Indeed, the Canadian Army has used this approach through the production of two science fiction novellas to illustrate implications of strategic foresight and the use of future narratives:

[7] Zaidi, Leah. (2019). Worldbuilding in Science Fiction, Foresight and Design. *Journal of Futures Studies*. June 2019, 23(4), p.16.
<https://jfsdigital.org/articles-and-essays/vol-23-no-4-june-2019/worldbuilding-in-science-fiction-foresight-and-design/>

[8] Schroeder, Karl. (2005). *Crisis in Zefra*. Kingston: Canadian Army Land Warfare Centre. https://publications.gc.ca/collections/collection_2011/dn-nd/D2-172-2005-eng.pdf.

[9] Schroeder, Karl. (2013) *Crisis in Urlia*. Kingston: Canadian Army Land Warfare Centre. https://publications.gc.ca/collections/collection_2014/mdn-dnd/D2-324-2013-eng.pdf.

- [Crisis in Zefra](#) (2005). The narrative focuses on potential future military technologies and Canadian peacekeepers caught in battle in a failing African state;[8] and
- [Crisis in Urlia](#) (2013). The narrative focuses on command processes and procedures involved in meeting armed conflict given changes in organizational culture and government cooperation and collaboration.[9]



At the same time as a warning indicator flashed across his Head Mounted Display, Sergeant Campbell heard a voice, "Patrol, be advised that the threat assessment has increased to level three." The voice wasn't Warrant Officer Desai's, but that of a Command computer located at Canadian Task Force Zefra Headquarters (CTFZHQ). The same message would be flashing out to every other patrol simultaneously.

Corporal Blackmore was speaking but Sergeant Campbell waved him silent. "What's up?"

"Recon shows heightened activity," said the computer. "Be alert to friendlies leaving your vicinity and anyone else arriving." Campbell frowned and turned to look behind the vehicle. Two sweating men were carrying a load of boards across the street amid the usual swirl of burkas and long modest dresses. Everything looked normal.

"Patrol, dismount," he ordered. "We'll take it on foot from here." Campbell reached for the door handle-

And back at Ops, Warrant Desai's eyes widened as the mission aerostat's profile signature software found a match. "Sergeant!" she began-

As the figure of a man above the patrol holding a shoulder-mounted grenade launcher reared up next to a chimney-

And Campbell's HMD flickered. His eyes interpreted the flicker as a shape diving on him from the upper left so he instinctively ducked, and then there was light and noise everywhere and the dashboard came up and hit him in the face.



CRISIS IN ZEFRA

***Crisis in Zefra* is a fictional narrative designed to illustrate emerging concepts and technologies that could become part of Canada's Army of the Future. Set in 2025, this story follows what starts out as a routine patrol mission through the streets of war-torn Zefra, but the situation quickly degrades into a 'three-block-war' scenario.**

The aim of this publication is to stimulate both interest and debate on the conceptual development of Canada's Army. Readers are encouraged to refer to the Canadian Army publication *Future Force* when reading *Crisis in Zefra*, although it is not required to enjoy this publication.

This publication presents a fictional scenario only and should not be quoted as an authoritative source for any detail of policy, doctrine, technique or procedure in the Canadian Army.

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DLSC



Science fiction novellas are designed to stretch plausibility in order to better anticipate and navigate the speed and uncertainty of which change is experienced. However, to be useful, the process of developing a plausible science fiction novella must be rigorous and detailed as narratives about the future can be powerful tools in understanding and anticipating future challenges and proactively mitigating risks.

Indeed, science fiction novellas can be used to anticipate and visualize Wild Cards and Black Swans. From this perspective, the following represents the methodological approach to develop a strategic communication tool based on a futuristic plausible scenario designed to promote and foster creative thinking. The science fiction novella is derived from strategic foresight analysis (techniques and tools) in order to proactively address future organizational development and planning.

Aside from the use of science fiction novellas as a strategic communication tool, their careful construction can offer insight into how to anticipate Wild Cards and Black Swans. The growing awareness of the fragility of the increasingly integrated globalized world allows for increased impact of a single Wild Card or Black Swan as noted above. As a result, the study of Wild Cards and Black Swans has become increasingly important. Approaches exist to better understand these phenomena such as brainstorming, expert interviews, surveys, historical analogies and science fiction.[10]

Certainly, within science fiction works, there can be a multitude of Wild Cards and Black Swan ideas presented. The following represents one approach to developing a science fiction novella through a strategic foresight methodology in order to better understand and perhaps anticipate Wild Cards and Black Swans.

[10] See Petersen, John L., Karlheinz Steinmuller & Hanna Adeyema. (2009). Wild Cards. In Jerome C. Glenn and Theodore J. Gordon (Eds.), Futures Research Methodologies 3.0. The Millenium Project. <https://www.millennium-project.org/publications/futures-research-methodology-version-3-0-2/>

METHODOLOGY

The initial step is to undertake a strategic foresight project using an accepted strategic foresight methodology. An adaptation of University of Houston’s Framework Foresight approach (see Figure 1) will be used to demonstrate the process.

Mapping			Influencing		
Framing	Scanning	Futuring	Visioning	Designing	Adapting
Scoping and current assessment	Searchng for signals of change and future inputs	Identifying alternative futures	Exploring Implications of the Futures	Crafting Options and an integrated strategic approach	Communicating the response, ongoing monitoring and implementation

Figure 1: The Framework Foresight Process. (Adapted from Hines and Bishop, 2015)

The team undertaking the strategic foresight project works through the Mapping component of the approach as they would for any strategic foresight project. Framing and Scanning are conducted as described in the framework.

During the Futuring step, using a 2x2 matrix the team identifies and positions two critical uncertainties as intersecting axes resulting in four quadrants each representing an alternative future. These critical uncertainties represent the driving forces of change that have been determined to be the most impactful but also contain a high degree of uncertainty.

Having established the axes of the 2x2 matrix, objective statements for each quadrant are developed reflecting trends and drivers from the scanning library framed by the two critical uncertainties. Having developed objective statements describing each quadrant (about 10-12 statements), the science fiction novella is ready for development.

Any one of the four alternative futures can be used to develop a science fiction novella. The team will decide which quadrant reflects the message and ideas they wish to convey in relation to their project. Once decided, the team will develop storyboards which are graphic representations of a plot based on an issue or crisis framed by the alternative future. Insight and imagination will be required to enable the team to effectively stretch the plausibility of the events, societies, characters, technology, and themes for the novella.

In essence, the team is “world building” and should be always asking “What if?” “What’s next?” or “What outcomes can arise from this?” [11]

This is an exploratory brainstorming process built around a plot and sub-plots that contain varying degrees of plausibility. While the representation of the plot is graphical in this approach, there remains a requirement for detailed notes to capture the essence of the events, the societies, characters, technology, themes and the problem or crisis represented by the storyboard.

Once the story boards are complete, a science fiction writer is employed to bring the ideas embedded with the storyboards to life through a science fiction narrative. [12]

[11] See Zaidi, 2019.

[12] The Science Fiction writer Karl Schroeder was contracted to bring the story boards to life in the form of a science fiction novella for both *Crisis in Zefra* and *Crisi in Urlia*. For more on Karl Schroeder, see <https://www.karl-schroeder.com/>



Figure 2: Graphical Story Board Representation



WILD CARDS AND BLACK SWANS

There should be no illusion that the development of the science fiction novella will explicitly identify Wild Cards or Black Swans. However, from experience, this process engenders an ability to sense potential Wild Card or Black Swan indicators that may eventually manifest themselves as weak signals.

It is possible with recent technological advancement to develop an early warning system in the form of signals and signposts that will help the team identify the issue and events that may resemble potential Wild Cards or Black Swans. In effect, this process can assist in overcoming blind spots about the future which extend beyond the traditional trend and driver driven foresight outcomes. This process also helps to better understand dramatic change and discontinuities that go far beyond gradual change.

As the intention of this methodology is to aggressively stretch plausibility from a traditionally developed alternative future, it is extremely difficult to draw definitive conclusions about the future from the science fiction novella. However, working through a strategic foresight process and then extending creativity and imagination beyond the alternative future in the form of a science fiction novella, allows for the development of an agile and innovative planning capability, one which can effectively address Wild Cards and Black Swans.

BRINGING THE NOVELLA TO LIFE

The strategic foresight team uses a science fiction writer to bring the story to life. The resultant print and electronic publication of the novella serve primarily as a strategic communication tool intending to draw attention to, and discussion of the strategic foresight project, from which it was conceived.

While the novella is not designed to identify Wild Cards and Black Swans per se, working through the development of the novella as described above acts as a catalyst for creativity and inquiry allowing the team to think the unthinkable and explore complex issues from a safe fictional distance. Further, using generative AI, it is now possible to create a video from the novella providing an alternative and rapid visualization of stories that challenge traditional thinking.

Still, everything looked controllable until Harman's strategic overlay—an inverted map of the city hanging, or so it appeared, in the sky far above the city—began turning red. The neatly carved-up sectors of the city, which had been coloured according to the military-civilian councils that had been keeping peace in each one, were all flipping over to yellow, orange and even red. Suddenly, Harman received a message, "Sergeant, your tactical situation is being re-evaluated through simulation. Make for the safe position indicated on your AR display and wait for new orders." Harman looked around, over the pall of IR blocking purple smoke and through the buildings themselves. Bernardes was already pulling his section out of the neighbourhood, and was on his way to the port lands. There, a single strip of blue indicated the new tactical waypoint: in the warehouse district that nestled under the high concrete walls of the city's vortical farms.

The futuristic scenario elaborated in Crisis in Urlia derives from broader Army work aimed at characterizing the nature and scope of uncertainty facing global societies in general—and Canada in particular—out to the 2040 timeframe. The process involved the development of several alternative futures that Canada's Army could conceivably confront.

The aim of this publication is to stimulate both interest in and debate on the conceptual development of Canada's Army.

CRISIS IN URLIA

Canadian Army
Land Warfare Centre



National
Défense

Défense
nationale

Canada

CONCLUSION

Events and crises are unfolding today at an accelerating rate and are marked by considerable uncertainty and volatility. Increasingly we are witness to multiple crises intersecting and producing unexpected harms that are greater than the sum those crises would produce in isolation. These can often be characterized as Wild Cards or Black Swans. While the use of strategic foresight and futures analysis aims to understand change and leverage this understanding to create change for its organization, Wild Cards and Black Swans represent discontinuities or blind spots whose impact goes beyond gradual change.

To understand this type of change, strategic foresight methodologies can be complemented with the development of a science fiction novella that stretches plausibility to extended imaginable consequences. While it's very difficult to foresee Wild Cards and Black Swans, developing a science fiction novella allows a team to further develop its agile and innovative planning capability necessary to address the effects of Wild Cards or Black Swans.

In essence, a future-focused science fiction novella complimenting strategic foresight tools and techniques can facilitate deeper analysis, innovation and understanding of the global environment which may assist an organization in anticipating and potentially staving off the worst effects of Wild Cards and Black Swans.



Michael A. Rostek, CD, PhD, APF is a veteran of the Canadian Armed Forces. He has held several leadership, academic and research positions in the military, public service and academia. He has been practicing strategic foresight since 2006 and has led several strategic foresight teams including the development and management of a strategic foresight think tank and teaching strategic foresight at the undergraduate and graduate university levels. He is currently employed as a Defence Scientist with Defence Research and Development Canada – Toronto Research Centre and continues to employ strategic foresight in his day-to-day research. He is currently the strategic foresight lead for a new science fiction novella developed by Director General Military Personnel Research and Analysis of the Canadian Armed Forces using the process described herein.

COMPASS

MAY 26- JUN 26

HUMAN TO HUMANOID

By Richard Botelho

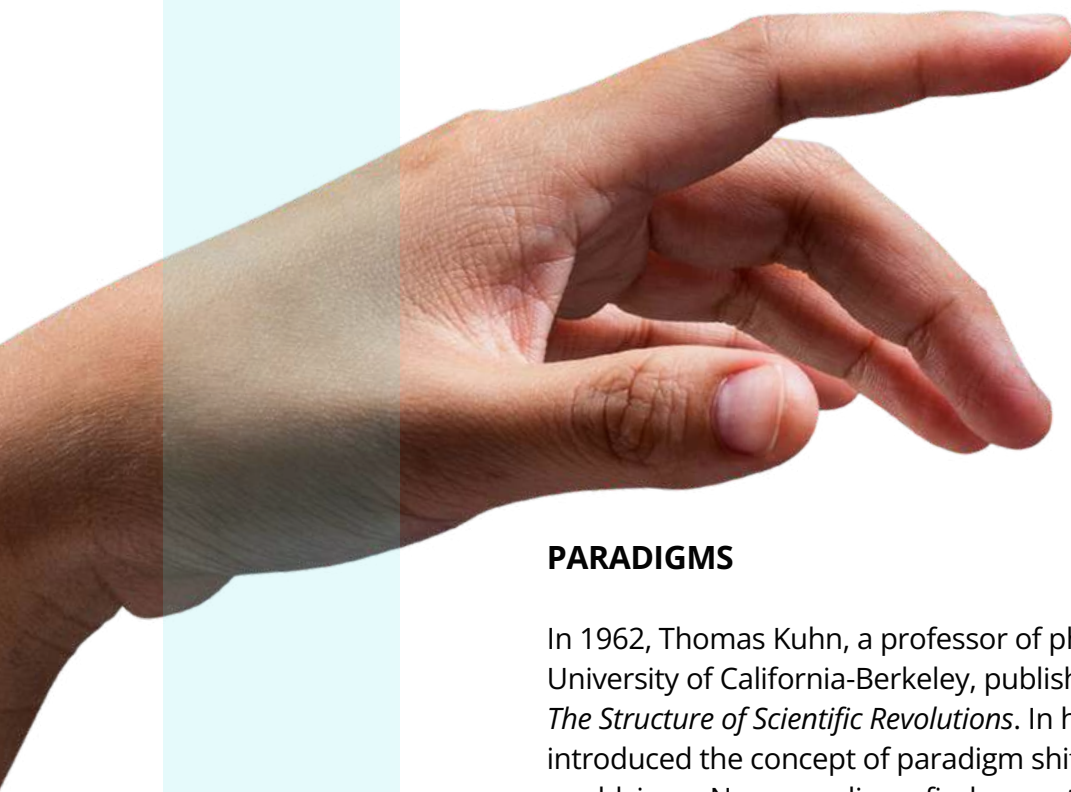


The universe is a big place. Our galaxy alone has hundreds of billions of stars and an even larger number of planets and moons. Over four hundred billion galaxies fill the universe. To think we are alone is preposterous; only our anthropocentrism, man at the center of everything, accounts for such hubris.

Contact with other non-human civilizations would immediately relegate humanity into a sense of inferiority; our belief system and social order would likely disintegrate. In short, our self-concept would be crushed. Thus, a new worldview will be required to assess our place within the galactic hierarchy and an expanded sense of self.

I believe this is the issue of the future.

Contact with other non-human civilizations would immediately relegate humanity into a sense of inferiority; our belief system and social order would likely disintegrate. In short, our self-concept would be crushed. Thus, a new worldview will be required to assess our place within the galactic hierarchy and an expanded sense of self.



PARADIGMS

In 1962, Thomas Kuhn, a professor of physics and philosophy at the University of California-Berkeley, published a masterpiece of thought, *The Structure of Scientific Revolutions*. In his magnum opus, Kuhn introduced the concept of paradigm shift, a transformation of worldviews. New paradigms find a way to replace their predecessors; the implications of extraterrestrial contact would radically change our worldview and our understanding of ourselves.

We must also integrate other unconventional elements of reality. This includes the possibility of other dimensions and realms. Cosmology is suggesting these other domains exist; hence, we are relatively ignorant of the actual complexity of the universe. Extending this framework, extraterrestrial “science” is undoubtedly more integrative than ours, as every major discovery in cosmology reveals increasing universal complexity. In short, extraterrestrial knowledge includes a larger totality.



As a result, our emerging new paradigm must expand epistemologically (knowledge) and phenomenologically (experience) once extraterrestrial contact is confirmed and relations established. Our knowledge limitations may not even be realized until contact with other, more advanced civilizations. Whatever expertise they possess must be absorbed into our society. The time savings alone is enormous, as their experience reduces by potentially millions of years our accrue ment of knowledge and civilizational progress.

To expand our perspective, we should first begin with an examination of the possibility of extraterrestrial life.

CIVILIZATIONS IN THE UNIVERSE

The single greatest theoretical underpinning for the possibility of extraterrestrial life is known as the *Drake Equation*. Formulated by astronomer Frank Drake, it is a probabilistic calculation that ascertains the number of intelligent civilizations in the galaxy. Intelligence is defined as being technologically communicative.



The equation is:

$$N = R_* \cdot f_P \cdot n_e \cdot f_l \cdot f_i \cdot f_c \cdot L$$

N = number of civilizations with which humans could communicate

R_* = mean rate of star formation

f_P = fraction of stars that have planets

n_e = mean number of planets that could support life per star with planets

f_l = fraction of life-supporting planets that develop life

f_i = fraction of planets with life where life develops intelligence

f_c = fraction of intelligent civilizations that develop communication

L = mean length of time that civilizations can communicate

The Drake Equation is a winnowing process, reducing from the total number of stars down to planets with technological civilizations. When first formulated, the Drake Equation surmised about 3,500 intelligent civilizations in the Milky Way Galaxy alone. To illustrate the magnitude of the possibility of extraterrestrial life in the entire universe, we can perform a simple calculation. We should be conservative-in fact, preposterously so-say, ten intelligent civilizations per galaxy. Here is the next question: How many galaxies exist in the universe? The consensus answer is about 400 billion. So, the following equation gives us an extremely conservative number of intelligent civilizations in the universe.

Ten civilizations per galaxy · 400 billion galaxies = 4 trillion civilizations in the universe.

That is an astounding number of civilizations! *We cannot be alone.* This naturally brings us to the UFO (UAP) phenomenon. Interestingly, the official acknowledgment of the UFO phenomenon occurred only in 2017 with the release of some UFO videos by the United States Navy. We should note that carefully researched books such as *Clear Intent and Above Top Secret* have demonstrated the UFO phenomenon to be real, but the government has taken an inexcusable amount of time to concede the truth. The reason might be the preposterousness of what we will discuss next.

One of the more bizarre aspects of the UFO phenomenon concerns its ability to affect both physical reality and apparent spacetime. This has been noted by a number of prominent UFO researchers, including Jacques Vallée and Jenny Randles. Witnesses report it as a distortion of reality. Randles termed this the “Oz Factor.” Remarkably, individuals in the surrounding area (who should see something) often report observing nothing. Thus, it appears there is a “sphere of effect” proximate to the UFO. This is likely caused by either a physical force or a mental projection.

Perhaps even more bizarre are the particulars of the abduction aspect of the UFO phenomenon. The definitive work in this area was done by Harvard professor John Mack, and his book *Abduction* astonished both believers and critics for its controversial findings. Specifics include descriptions of the Beings, the equipment and instrumentation inside the craft, the conduct of the abductors, the physical design of the UFO, and the methods of abduction. The conclusion reached by Mack was that abductions violated precepts of classical physics and material science, with our methods of understanding wholly insufficient for the subject. His subsequent conference noted evidence pointed to the abduction experience as incontrovertibly real.

In any case, the UFO phenomenon substantially informs us about the possibility of extraterrestrial life.

Disclosure, The End of Anthropocentrism, and Ontological Truth

The official confirmation of extraterrestrial life is inevitable, and when it comes, humanity will face an identity crisis. The reason is simple; humanity believes it is special. The confirmation of extraterrestrials and their superior capabilities destroy that self-conception. Immediately, we transform from *one to one of many*. Suddenly, we are not so magnificent, and comparisons naturally follow.

Given that the UFO phenomenon has impinged on human consciousness for thousands of years, it is doubtful that aliens want to exterminate us or acquire our planet. Galactic federations of intelligent beings may already exist, but membership likely includes both the cessation of hostilities within the native culture and certainly among other civilizations. Our history and our nature are indictments against us.

Thus, humanity requires a new identity. We must become one people. On Earth, this task (forming alliances and integrating different cultures) is facilitated by being members of the same species, although we have been tribalistic. In the galaxy, the challenge is exacerbated, as we must engage different genotypes and phenotypes, and our commonality is either *humanoid or sentience*. The basic biological connection (same species) is obviously vastly different between diverse galactic beings, each with their own DNA and civilizational histories. Naturally, trust is even more difficult to achieve.



When humans are contrasted to extraterrestrials, the tribal instinct expands to include our entire species. That may be a good thing if tempered by galactic awareness. *From a basic biological standpoint, it is literally us against them, humans versus aliens.* We may finally agree we are one human race. President Reagan suggested as much in 1987 at the United Nations. Yet, from a galactic perspective, this comes with a cost. Human is just the next larger tribe. Obviously, biologically based identity may prove problematic for association into a possible federation of beings who have accommodated it. That is where the temperance comes in. We must be united but welcoming of others.

A further complication exists. Antithetical to the above discussion, however, is that humans naturally defer to superiors. The vast majority of humanity are followers, not leaders. If biology mandates same species identification as natural, it also predicts submission to dominance as a survival strategy. This proclivity is exacerbated if the superiors are also benevolent. Malevolence or abuse, however, causes resistance. Think abduction phenomenon. So, our self-concept relative to aliens will be partially formed by their intentions and agendas.

ONE WORLD OR A SEPARATING CIVILIZATION

Unfortunately, the human effort to manage the extraterrestrial situation is both secretive and challenging. Logically, an elite must control human relations with whatever non-human intelligence is behind the UFO phenomenon, this cabal possessing not only incredible knowledge but also substantial privilege. UFO secrets are both powerful and delineating, essentially separating humanity into two groups: the largely unaware public and national security insiders comprising a UFO control group. Obviously, such secrecy is not conducive to building a unified culture.

History, however, clearly demonstrates that anytime a technologically inferior civilization confronts a superior one, the former is either exterminated or loses its way of life. Elites are mindful of this fact. Possibly a determination was made to gradually educate the public regarding non-human intelligence. This desensitization program would include books, articles, movies, whistleblowers, controlled editorials, and chosen academic research. Information can either be accelerated or decelerated contingent upon public response. Independent investigators ahead of the controlled narrative would be intolerable. To the UFO control group, countervailing facts to the official narrative are a national security threat. How this societal preparedness is calculated is difficult to determine.

Equally likely, however, is that the public was deemed incapable of ever grasping such a complex issue. If correct, a dual system society results, where elites manage human interface with extraterrestrials and the public remains largely uninformed. These elites, specifically the UFO control group, are, in essence, separating civilization. All knowledge and benefits derived from communication with extraterrestrials remains in their province. This requires significant orchestration from those in command. Measures to control events might include ridicule, threats, fines, imprisonment, and even silencing.

Lastly, the advantages accrued by a UFO control group would be enormous. This could extend past hardware and materials to include cosmological, biological, philosophical, and spiritual knowledge. The dilemma arises from how much of this knowledge could be introduced into society without revealing its extraterrestrial origins. In short, introductions into human culture must appear organic.

No doubt the original human interface with extraterrestrials was altruistically motivated, designed to preserve our species and our civilization. The problem arises with human nature. For every good intention, there is a bad intention. So incredible technology may have been kept hidden for selfish reasons. Steven Greer and others have claimed this is the case. If true, the public has needlessly suffered. Such greed and self-interest would clearly signal to extraterrestrials that we are not a credible species.

In short, a separating civilization assures that humanity is divided. We cannot become one people, one world, until the public is educated and our elites are trusted.

HUMAN TO HUMANOID

We are on the precipice of a massive paradigm shift. Confirmation of non-human intelligence will be the biggest reveal in history. As a result, we must be prepared. As the truth eventually emerges, official disclosure should happen within twenty years. We must expand our perspective. Further, self-concepts are perhaps the toughest to change, for any species, since they are fundamentally essential and require true integrity to amend. Nevertheless, the time is upon us to enlarge our perspective and alter the trajectory of our society. This includes considering contact with extraterrestrial beings while simultaneously improving the guardianship of our home. Moreover, it is advisable for futurists to transcend the “veil of ridicule” surrounding the UFO phenomenon and lead humanity into our new cosmic perspective. In fact, such leadership should be a prime mission of futures studies.

We are on the precipice of a massive paradigm shift. Confirmation of non-human intelligence will be the biggest reveal in history. As a result, we must be prepared. As the truth eventually emerges, official disclosure should happen within twenty years. We must expand our perspective.

An appreciation for all life naturally leads to a new perspective: human to humanoid. The point is that our worldview must be expanded to include being humanoid, as a master category encompassing both humans and aliens.

Logically, sentient life would anatomically resemble humanity since our form provides evolutionary advantages (Darwinian) such as a varied diet, adaptable physiology, larger brain, and environmental flexibility. If we were created in the image of God, then our figure is nearly divine. So, this “human” structure of ours is rather microcosmic, resulting from a larger macrocosmic template. Our bodily configuration is also the preferred shape for artificial intelligence and advanced robotics.

Curiously, virtually all UFO experiencers report other beings as humanoid in appearance, with some phenotypic differences; often, larger size typically connotes increased presence and commanding authority. Obviously, that is quite human.

Understanding ourselves is essentially fractal, human informing on humanoid and humanoid informing on human. This alone should provide some commonality for relations between ourselves and other beings.

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Richard Botelho is an author, thinker, philosopher, and social critic. His previous books include gold award winner *The New Individualism: Personal Change to Transform Society*, *Leah's Way*, and *Reason for Existence*. His works are used in hundreds of colleges and universities and have been featured in *The Midwest Quarterly*, *Library Journal*, *The Review of Metaphysics*, *Fate Magazine*, *Acta Theologica*, *Alternate Perceptions*, and *The Journal of Personal Transformation*. He is a professional affiliate of the Galileo Commission, MUFON, Society for Psychical Research, UNESCO, Open Sciences, and World Futures Studies Federation.

WHEN THE GROUND SHIFTS:

HOW FUTURISTS
GUIDE LEADERS
THROUGH SHOCK
EVENTS

| By Steven Fisher

The call came at 7:43 a.m. A client, the CEO of a mid-sized manufacturing firm, began with a question that revealed both clarity and confusion: "Our largest customer just announced they're moving to a completely different supply model. We have six months. But here's what I don't understand. My leadership team is split. Half are in crisis mode. The other half thinks this is just a negotiating tactic. And our CFO told me he saw this coming two years ago, but nobody wanted to hear it. How can we all be looking at the same situation and seeing completely different realities?"

This wasn't a request for crisis management. This was a question about why shock events hit different people at different times. And it gets to the heart of something most strategic advisors miss – disruptions don't arrive the same way for everyone, because we're not all living in the same future.

This is where professional futurists become essential. Not to predict which future will win, but to help leaders navigate colliding temporal realities and build capacity to adapt as the ground shifts.



WHY SHOCK EVENTS FRAGMENT REALITY

Multiple potential futures exist simultaneously, each with varying probabilities and constituencies already inhabiting them. This is what we call Spectrum Foresight. Backed by more than 20 years of application, it maps stakeholders across three critical dimensions:

1. **Temporal Position** measures where leaders are anchored, from past-rooted to future-oriented.
2. **Signal Literacy** assesses capacity to detect and interpret weak indicators.
3. **Temporal Distance** reveals the gap between current reality and where disruption is pulling them.

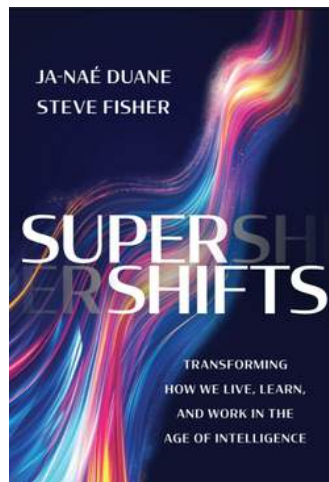
The CFO who "saw it coming" was living in a future where supply chain models were being reimagined. He was scanning signals that made this shift feel inevitable. The crisis-mode executives lived where the current model would remain stable. Their planning and identity were anchored there. The announcement shattered their temporal reality. The wait-it-out camp inhabited yet another future where relationships would override market forces.

The same event elicits different responses because we disagree about which future we already inhabit.

THE FUTURIST'S ROLE IN CRISIS IS NOT WHAT YOU THINK

In our book, *SuperShifts*, we explore nine deep structural transformations reshaping society, each involving shock events we experience as individuals, organizations, and society. Take IntelliFusion: the merging of human and artificial intelligence into new forms of collaboration and capability. When organizations face such shocks, they typically turn to crisis management experts who focus on damage control and rapid response.

The futurist's role is different. We help leaders navigate the deeper transition shocks triggered: the shift from one operational reality to another. We bridge temporal realities rather than align everyone on "the facts."



THREE PHASES LEADERS NAVIGATE (AND WHERE FUTURISTS ADD VALUE)

Shock events unfold in three distinct phases, each requiring different capabilities and representing opportunities for futurist intervention.

PHASE ONE: DISORIENTATION AND SIGNAL SATURATION

In the immediate aftermath of a shock, leaders face overwhelming, often contradictory information. The instinct is to gather more data, convene more meetings, and demand clearer answers. But this compounds the problem, creating analysis paralysis when decisive action is needed.

The futurist's first intervention is to help leaders distinguish signals from noise by asking better questions: "What patterns were already forming that this event has now revealed?" and "What assumptions have we been operating under that this shock has just invalidated?"

PHASE TWO: THE IDENTITY TRANSITION

The deeper challenge isn't operational. It's existential. Organizations face questions about who they are when the structures that defined them no longer hold. Futurists create structured spaces for reflection and reimagination. We employ tools such as Future Personas to help teams explore who they might become. Narrative foresight techniques enable them to write stories from the future that transform abstract possibilities into tangible visions.

PHASE THREE: BUILDING ADAPTIVE CAPACITY

Once the immediate crisis passes, the third phase begins: building systems that are flexible and adaptable. Most leaders want a new plan. But what organizations need is adaptive capacity: the ability to sense emerging changes, evaluate implications, and respond coherently without waiting for perfect information.

THE NERVOUS SYSTEM OF STRATEGY

One practice I've found essential is what I call nervous system work: helping leaders recognize and regulate their physiological responses to disruption. This isn't peripheral. It's foundational. Under chronic stress, leaders default to familiar patterns when those patterns no longer work. They become rigid when flexibility is needed. The body's stress response hijacks cognitive capacity exactly when leaders need it most. I teach executives simple practices: recognizing early signs of activation, creating deliberate pauses before major decisions, and building recovery into schedules. These aren't wellness luxuries. They're strategic necessities.

YOUR MOVE: THE FOUR INTERVENTIONS TO SHIFT WITH THE GROUND

THE FIRST MOVE: TEMPORAL MAPPING

With the manufacturing CEO facing his fractured leadership team, our first intervention was diagnostic. Before we could bridge temporal realities, we needed to make them visible through a structured session where the team mapped their temporal positions. Each leader answered: "Where is your attention anchored?" What timeframe shapes your planning? What signals are you tracking? The CEO discovered his CFO was scanning competitor bankruptcies and trade policy shifts while his VP was optimizing current production schedules. They weren't disagreeing about facts. They were operating in different temporal zones.

This revealed not just where people were, but why alignment felt impossible. When temporal distance is wide, consensus-seeking wastes time. The intervention shifts from "let's agree" to "let's understand where each person stands and what they see from there."

THE SECOND MOVE: SIGNAL ARCHAEOLOGY

Once temporal positions became visible, we analyzed the signals that formed each position. This change turned conflict into curiosity.

I led the team through a practice I call "Tension to Hypothesis." Every disagreement contains a signal. When the VP of Operations insisted that the contract loss was a negotiating tactic, that wasn't denial. It was a hypothesis based on 15 years of relationship patterns. When the CFO predicted this two years ago, he was tracking signals about manufacturing reshoring and supply chain diversification.

We documented these signals, tested their validity, and asked: What pattern is each person detecting? What would have to be true for their position to be correct? This archaeological work surfaced assumptions operating below conscious awareness. It also identified which signals the organization had been systematically ignoring.

For the manufacturing firm, this revealed a critical blind spot. Nobody was tracking their customer's customer. The ultimate end user was shifting preferences in ways that made the entire supply chain vulnerable. The CFO caught the proximate signal. But the deeper pattern was invisible to everyone.

THE THIRD MOVE: BRIDGING REALITIES

With temporal positions mapped and signals excavated, the third step established a structured space for exploring implications across different futures using the Scenario-to-Strategy Matrix, which stress-tests current priorities against multiple plausible scenarios.

We didn't try to pick the "right" future. We designed strategies that would hold up in several. For the manufacturing firm, this meant identifying investments to strengthen its position, regardless of whether the contract loss was temporary or permanent and whether reshoring accelerated or stalled.

This shifted the conversation from "who's right about the future" to "what actions give us the most optionality." The team identified three no-regret moves: diversifying their customer base, developing capabilities for smaller batch production, and building relationships with regional distributors. Consensus emerged not because everyone agreed about the future, but because they found coherent actions that respected multiple futures.

THE FOURTH MOVE: INSTITUTIONALIZING FORESIGHT

The final step with the manufacturing firm established foresight as a continuous practice rather than a reaction to crises. Shock events serve as opportunities to implement systems that help organizations adapt.

I helped the team establish three interconnected practices. First, monthly signal scanning sessions where cross-functional groups share weak indicators they track, spreading sensing across the organization. Second, quarterly scenario pulse checks where teams review strategic assumptions and test them against emerging conditions, preventing strategies from becoming fixed. Third, an experimental portfolio approach: teams conduct multiple small experiments to quickly generate insights.



For the manufacturing company, these practices transformed how it operated. Six months after our initial engagement, they had successfully onboarded three new customers, launched a custom production line, and began tracking 15 signals that provided early warnings of industry shifts. The CFO's insights were no longer isolated warnings; they became part of a collective sensing system.

Futurists support leaders in developing this ability through interconnected practices. We create signal scanning systems to monitor weak indicators. We facilitate scenario rehearsals, allowing teams to practice responses before future events occur. We establish feedback loops that help organizations learn from experiments and adjust strategies in real time. This forms a continuous cycle: sense, interpret, rehearse, respond. We help leaders develop qualities that promote wise decision-making in uncertain environments: cognitive flexibility, comfort with ambiguity, and emotional resilience.

WHAT SEPARATES EFFECTIVE FORESIGHT INTERVENTION

Three qualities distinguish transformative foresight work from interesting reports:

1. **Timing matters:** The window for intervention is narrow. In the immediate aftermath of a shock, leaders are most open to questioning assumptions.
2. **Integration:** Embedding foresight practices into existing decision-making structures, not treating them as separate exercises.
3. **Follow-through:** Where most work fails. Transformation happens when leaders act on foresight insights and learn from results.

THE DEEPER GIFT OF SHOCK EVENTS

Shocks are unwelcome surprises. They break inertia, keeping organizations stuck in outdated patterns. They clarify priorities with blunt efficiency. Organizations that come out stronger use disruption to become more aligned, adaptable, and purposeful.

Our role is to hold space for both grief and genuine possibility while offering frameworks that respect complexity without causing paralysis.

Shocks don't just break systems; they shatter illusions, creating room for transformation.

The ground will shift again. With proper guidance and practice, leaders learn to adapt rather than be toppled. The next disruption is forming now. The question isn't whether it will arrive, but whether the leaders you work with will navigate it with wisdom, courage, and grace.



Author's Note:

SuperShifts: Transforming How We Live, Learn, and Work in the Age of Intelligence, is available at Amazon, Barnes & Noble and other online book retailers.

*Steve Fisher, Managing Partner at Revolution Factory and Chief Futurist at the Human Frontier Institute (HFI), is a futurist, innovation leader, and strategist with 30+ years of experience driving transformational change. He's the author of *The Startup Equation* (McGraw-Hill, 2016), *SuperShifts* (Wiley, 2025) and the upcoming *Designing the Future* (Wiley, 2026). Steve is committed to democratizing futures thinking, helping organizations navigate complexity with strategic foresight and Generative AI. His prior work, co-founding McKinsey's and FTI Consulting Futures Practice, pioneered approaches that enable leaders to anticipate challenges and confidently seize future opportunities. His thought leadership includes speaking, writing his popular newsletter "Future Proof," and hosting the podcasts *Think Forward* and *Going Off World*, exploring innovation, AI, and humanity's future beyond Earth.*



SEVEN ESSENTIAL SWAPS FOR COLLAPSE-AWARE FUTURISTS

By Maya Frost



Foresight is ripe for creative disruption in 2026.

It won't arrive as a shinier tool. It won't be solved by better slides, tighter scenarios, or more confident predictions.

Collapse awareness has changed the emotional landscape of leadership, and futurists are increasingly being pulled into conversations that are raw, charged, and unresolved. Detachment no longer reads as professionalism. Silence is no longer neutral.

What emerges is a different role entirely.

The work becomes less about influence and more about integrity. We become less visible but more impactful.

Calm, humor, and grounded presence are no longer "soft skills" – they're required professional competencies.

The ability to lower the temperature in a room becomes as valuable as pattern recognition.

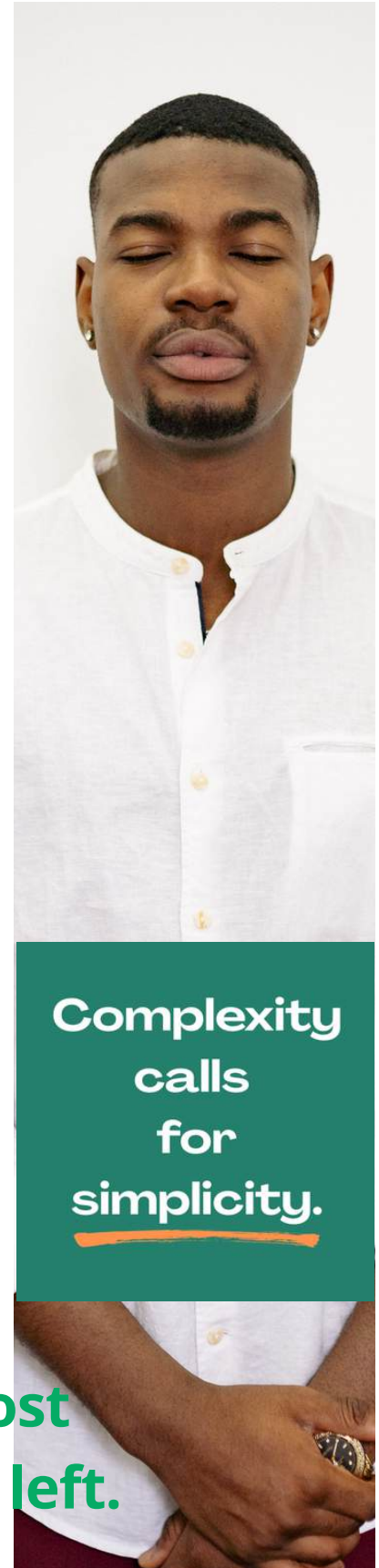
What matters now is how we show up, what we prioritize, and what we are willing to hold when the meeting gets contentious.

We are no longer the future expert with all the answers, but a capacity builder, a companion, and a steward of shared sensemaking who can translate awareness into imaginative action.

The most sought-after futurists recognize that calm is contagious, experimentation beats certainty, and staying human may be the most radical foresight skill we have left.

The "Good News:" reframing is already our superpower.

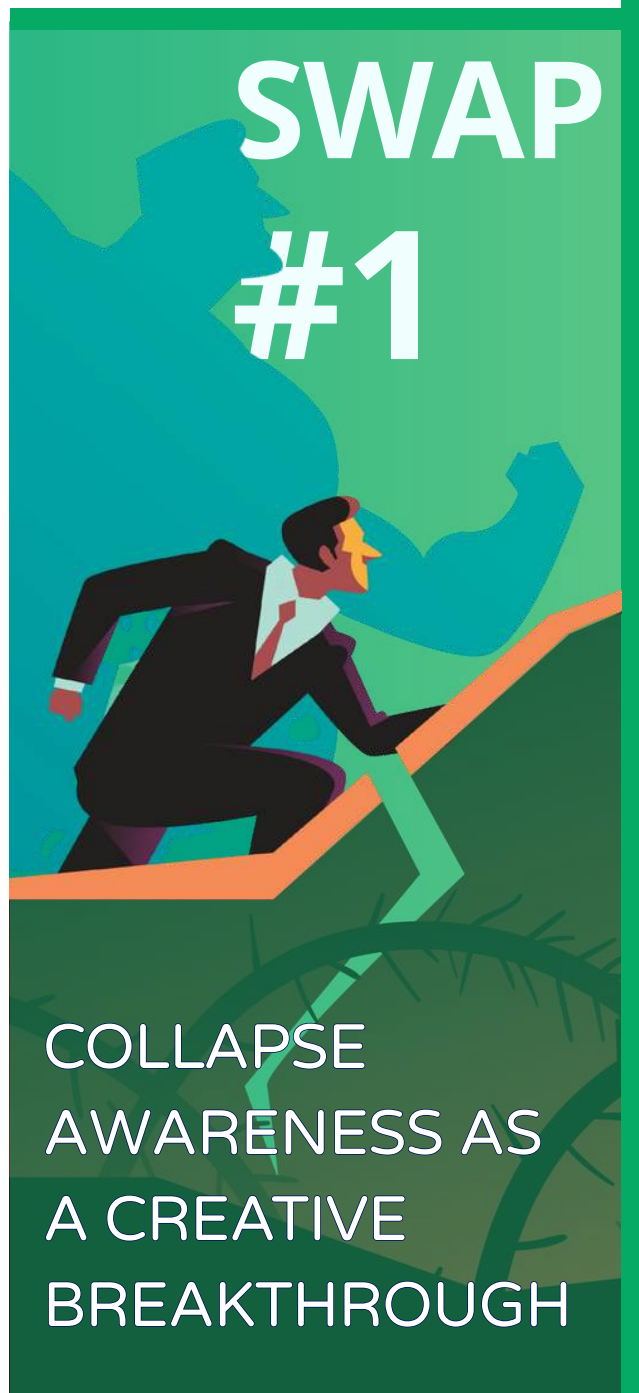
Staying human may be the most radical foresight skill we have left.



**Complexity
calls
for
simplicity.**

So, here are seven essential swaps to help you move from impartial prognosticator to visionary companion.

Make these changes, and you will transform yourself from reasonably adaptable to downright indispensable.



My training as a creative breakthrough coach allows me to recognize something about collapse awareness that most people do not:

It has all the hallmarks of a creative breakthrough.

*The old framing cracks and falls away, opening space.
This can bring grief, anger, and fear.
We become aware of what is lost,
and choose to let go of our longing.*

*That's when there is a physical shift in our energy.
Our attention reorganizes.
New questions emerge that invite exploration.
This rewilds our imagination.*

*Wonder electrifies us.
Our sense of time expands.
We swim in flow states.
We feel an irrepressible urge to PLAY.
Clarity sharpens.
And suddenly, we feel compelled to act,
to create,
to birth our new notion of
what is possible.*

A creative breakthrough brings coherence after fragmentation. It is an awakening that leads to further exploration and discovery.

Help your clients see collapse awareness as a springboard for breakthrough thinking.

SWAP #2

PRESENCE OVER PROGNOSTICATION



Futurists are trained to map what's coming. Now we must also hold what's happening.

Yes, signals and scenarios still matter, but so do emotional regulation, sensemaking, and the ability to sit with uncertainty without rushing to fix it.

Our work now begins well before the futures slide deck.

We lead conversations that include grief, conflict, and honest reckoning.

The challenge now: to show up as a steady presence with the capacity to let the room breathe.

What makes this possible? Our emerging role as companion.

Top-down expertise falters in uncertainty. No one has the answers, and pretending otherwise erodes trust.

Companioning means standing beside rather than above. Together, we name what's real and discover what's doable.

No false reassurance. Just clarity, humility, and courage.

In a fragmenting world, the most valuable expertise is the capacity to stay human together, even when it's messy.

Become the one in the room modeling that.

SWAP #3

CALM AS ACTIVISM

Presence only helps if it soothes rather than spikes anxiety.

I use what I call somatic practivism (practice + activism), which gives us tools to stay grounded while absorbing hard truths.

Breath. Sensation. Awareness. Nervous-system literacy. This isn't just self-care. It's leadership.

Instead of feeding collective panic, we can interrupt it. We soften the edges, stand steady in the storm, and give permission for pain and truth to surface.

Regulated futurists regulate rooms. Show up as a catalyst for calm, and your clients will scramble to have you by their side in precarious times.

SWAP #4

CREATIVE DISRUPTION OVER CONTROL

Creative disruption is a lever futurists rarely pull. It breaks habits, destabilizes assumptions, and pushes us into unfamiliar terrain.

It may be beyond our comfort zone, but it is exactly what this moment demands.

When control is failing, and the old strategies become less reliable, creative disruption becomes the most compelling option.

One place to start: embracing the idea of rewilding our imagination.

This is an intentional leaning into imaginative futures, loosening our grip on optimization. We begin to usher others toward what they collectively long for rather than what used to work.

You know the 4 Ps (Possible, Plausible, Probable, Preferred) of futures thinking. Add this one: **Painterly**.

SWAP #5

DISRUPT DESPAIRALYSIS



Painterly conjures the image of an airy studio space for experimentation without commitment. It allows us to make quick bold brushstrokes and then step back for perspective.

Rewilding imagination is a way of reclaiming creativity as a survival skill.
Show your clients that this can be a transformative advantage.

Despairalysis is what develops when grief freezes action. Feelings of anger, sadness, anxiety, fear, and hopelessness about the state of the world can trigger a response that leaves us even more isolated.

We tune out. We wait. We hope someone else will save the day. (Friendly reminder: that's how we got here.)

As a child and teen facing relentless loss and despair, I learned that simple actions could tilt my grief toward joy.

But most of us grow up with the belief that grief takes a long time to heal and there's nothing we can – or even should – do to change that.

However, for many, what helps most is less silent time spent processing and more inspired action.

Grief metabolizes when it is focused. It revs energy and can lead to impassioned action.

There is a long history of grief-powered actions started by a single individual overwhelmed by loss. Many turn into effective movements with life-saving impacts, such as MADD (Mothers Against Drunk Driving) in preventing tragedies caused by impaired driving.

Another example: Halo Innovations invented sleep sacks that prevent Sudden Infant Death Syndrome.

SWAP

#6

SMALL IS STRATEGIC

People fueled by grief can heal themselves by protecting the people and places they value most.

Your collapse-aware clients will be experiencing a range of emotions related to loss. They may be waiting for someone to help them turn their grief into inspired action, too.

Your presence – and your role as trusted companion rather than neutral expert – may be the spark.

When the future is foggy, big moves carry greater risk.

What works now: starting small.

In a bigger-is-better world, that would feel like losing before we even start. But as we step away from “wow” worship, the allure of the quirky, inventive tiny shines bright.

Think micro-movements. Hyper-local projects. Small actions with disproportionate impact.

Even major organizations can benefit from this shift. As massive rollouts become untenable, intentionally limited, low-cost tests provide valuable insight.

Small experiments allow us to learn, adjust, retry, and improve in human time rather than organizational time. We make progress faster due to shorter feedback loops. This gives us what we need now: innovative quests that offer real-time results.

Small isn't just strategic – it is revolutionary in a world hollowed out by unlimited growth. Mandates won't move us, but small actions that are collaborative, agile, and exhilarating will.

Make your clients excited about what they can create.

Small isn't just strategic – it is revolutionary in a world hollowed out by unlimited growth.

SWAP

#7

JOY OVER RESILIENCE



Building personal resilience must be our focus before we can begin to address organizational resilience. Fortunately, this can be done quickly and easily through the varied choices that somatic practivism offers.

So, we can skip now to the next level: seeking and celebrating joy.

When we talk about the need to build resilience, it feels like homework. But when we shift to seeking joy, it becomes a party invitation.

Truth: Joy is the most reliable (and the most fun!) form of resilience for myself and my clients.

Not because everything is fine, but because joy reminds us that not everything is constrained by collapse.

There is beauty! Love! Color! Humor! Connection! Wonder!

These are not luxuries. They are human necessities.

By seeking, noticing, and appreciating them, we are restoring ourselves. And when we feel restored and inspired, we share that with others. It becomes contagious.

I'll take viral joy over a doom loop any day. (You, too?)

When the future looks frightening, joy feels like a warm, weighted blanket. It reminds us that we are still here, still capable of rest and love and taking care of each other.

Remember that choosing joy is not ignoring collapse. It's refusing to let collapse be the only story.

Joy-as-resilience — meet Joy-as-resistance.

Seek joy in your work. Look for ways to help your clients do the same. Choose the swaps and words that work for you.

Look for what makes you feel awake, aligned, and engaged as a human first, and you will become a better futurist – no matter what wild cards and black swans may lie ahead.

Joy reminds us that not everything is constrained by collapse.



Maya Frost, founder of Collapse Forward, is an imaginative futurist and collapse companion for those seeking meaningful ways forward as systems crumble. With clients in 20+ countries, she has sparked and mentored over 200 small projects that protect people and places. An American author, artist, educator, and grandmother who has lived on four continents, Maya brings her signature Collapse Companioning™ process to those in the barrios, the boardroom, and beyond. Learn more at MayaFrost.com.

A SIMPLE FRAMEWORK TO USE NOW

What kind of futurist would I be without leaving you with a framework?

Here's my cheat sheet to help you remember what matters most in these messy times.

C — Calmly Clarify Reality
L — Leverage Grief as Energy
E — Expand Imagination
A — Add Small Action
R — Reclaim JOY

Complexity calls for simplicity.
 Now is the time to define and refine.

Here is an image to hold:

Like many futurists, you may be feeling like you're dragging two overstuffed suitcases behind you.

Bag #1: packed with experience and standards you have relied upon for a sense of comfort and control.

Bag #2: heavy with the awareness of all that is no longer relevant or possible in the face of our colliding crises.

I invite you to consolidate these two heavy bags into one sleek, lightweight, roly carry-on. Picture it gliding beside you, pushed along by your fingertips wherever you choose to take it.

It is perfectly packed with a capsule of only your most versatile go-to skills and the new collapse-aware accessories that keep you updated and ready for anything.

Collapse-aware futurism asks more of us:

More honesty, more humanity, more imagination.

But we can keep it simple. Choose to be among those who accept the challenge before us and lead with clarity, courage, creativity, and yes, joy.

FORGET BLACK SWANS, WATCH FOR FLOCKS:

MAPPING POLYCRISIS
CASCADES WITH
POLYCRITICAL
FORESIGHT



By Jesse Damiani



The “black swan” has long haunted futures vernacular – a reliable metaphor to describe “highly improbable,” high-impact events that catch institutions off-guard. But as we enter the second quarter of the 21st century, the term has all but lost its explanatory power.

Outside of genuinely exogenous cosmic or geophysical phenomena, most modern black swans function less as acts of nature than as emergent byproducts of a technoindustrial civilization.

The discovery and exploitation of fossil fuels globally distributed godlike powers (if unequally), granting humanity a cheat code to bypass ecological constraints. Any complex system operating on surplus energy produces externalities; as Ilya Prigogine observed, “entropy is the price of structure.” In thermodynamics this is a physical law – in civilizational systems, it describes how extraordinary order is achieved through deferred and displaced disorder. Since the onset of the Industrial Revolution, humanity has harnessed the ancient sunlight accumulated across half a billion years to compress time, scale productivity, and accelerate feedback across every domain of life.

The term *black swan* asserts the impossibility of prediction – that only hindsight reveals how they formed within the system. But many of these events are now disturbingly easy to anticipate in outline, even if their precise triggers remain opaque. We now possess a vast body of historical research and insights, coupled with mature methodologies from futures studies, threat modeling, and systems thinking. We can identify black-swan conditions with startling precision – and in many cases, we already have (cue William Gibson’s famous adage that the future is already here, it’s just not evenly distributed). Structural drivers such as wealth consolidation, inequality, and institutional fragility recur with such consistency that, as existential risk researcher Luke Kemp argues, they function as reliable precursors to systemic collapse – patterns we already see playing out around us.

Where rubber meets road for futurists is not in identifying the single shock, but in preemptively charting cascade paths. These inciting shocks are often described as wildcards: high-impact events that are improbable but imaginable in advance. A pandemic, a sudden leap in AI capability, a major grid failure, a unilateral geoengineering deployment – none of these are unknowable in principle. Wild cards, in other words, are the seeds from which black-swan-like conditions emerge when systems couple.

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What defines this era is *entanglement*, the polycrisis condition in which disruptions collide, reverberate, and mutually reinforce across ecological, technological, geopolitical, and psychological domains. Wild card-spotting is no longer a secondary foresight activity; it's table stakes. Financial meltdowns, climate catastrophes, and social unrest are not remote, unpredictable possibilities; they're near certainties.

The value of foresight now lies in tracing how wildcards collide, synchronize, and cascade and in building living maps of interdependence that reveal compounding consequences. As my colleague Leah Zaidi often reminds, any foresighter not *already* factoring black swans and “dark futures” is not doing rigorous work.



**Any foresighter not *already* factoring black swans and “dark futures” is not doing rigorous work.
– Leah Zaidi**

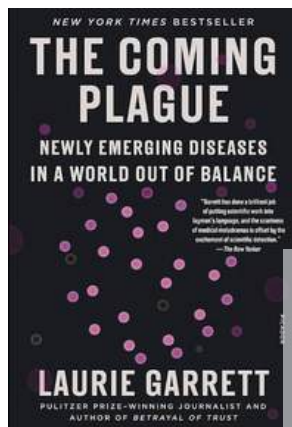
Instead, futurists must start seeking out black swan flocks: clusters of disruptions whose behaviors only come into view in relation to one another.

In this framework, wild cards trigger cascades, cascades generate flocks, and the cascade reflex is the skill required to track their evolution. This is the heart of what I call polycritical foresight (PF): an approach that treats cascading, cross-domain interaction – not isolated risk – as the primary object of analysis, integrating futures studies, threat modeling, and systems thinking.

Polycritical foresight (PF) treats cascading, cross-domain interaction – not isolated risk – as the primary object of analysis, integrating futures studies, threat modeling, and systems thinking.

Futurists often claim they cannot predict the future, and while this helps manage expectations and frame the nature of the work, in aggregate, it starts to feel like a cop-out. Rigorous foresight today necessarily entails mapping systems.

FROM ISOLATED SHOCKS TO INTERLINKED CASCADES



The Covid-19 pandemic revealed how outdated our models of disruption have become. A global outbreak was predicted for decades by public health experts, and books from *The Coming Plague* (1995) to *Station Eleven* (2014) popularized the scenario.

What caught governments and institutions flat-footed – and shouldn't have – was the cascade it induced: polarization amplified by digital systems, strained supply chains, deepened inequity, long-tail economic disruptions, and a crisis of institutional legitimacy. Zaidi, for example, mapped many of these systemic interactions in March 2020, long before they came to pass, demonstrating what was possible had more futurists adopted similar methods.

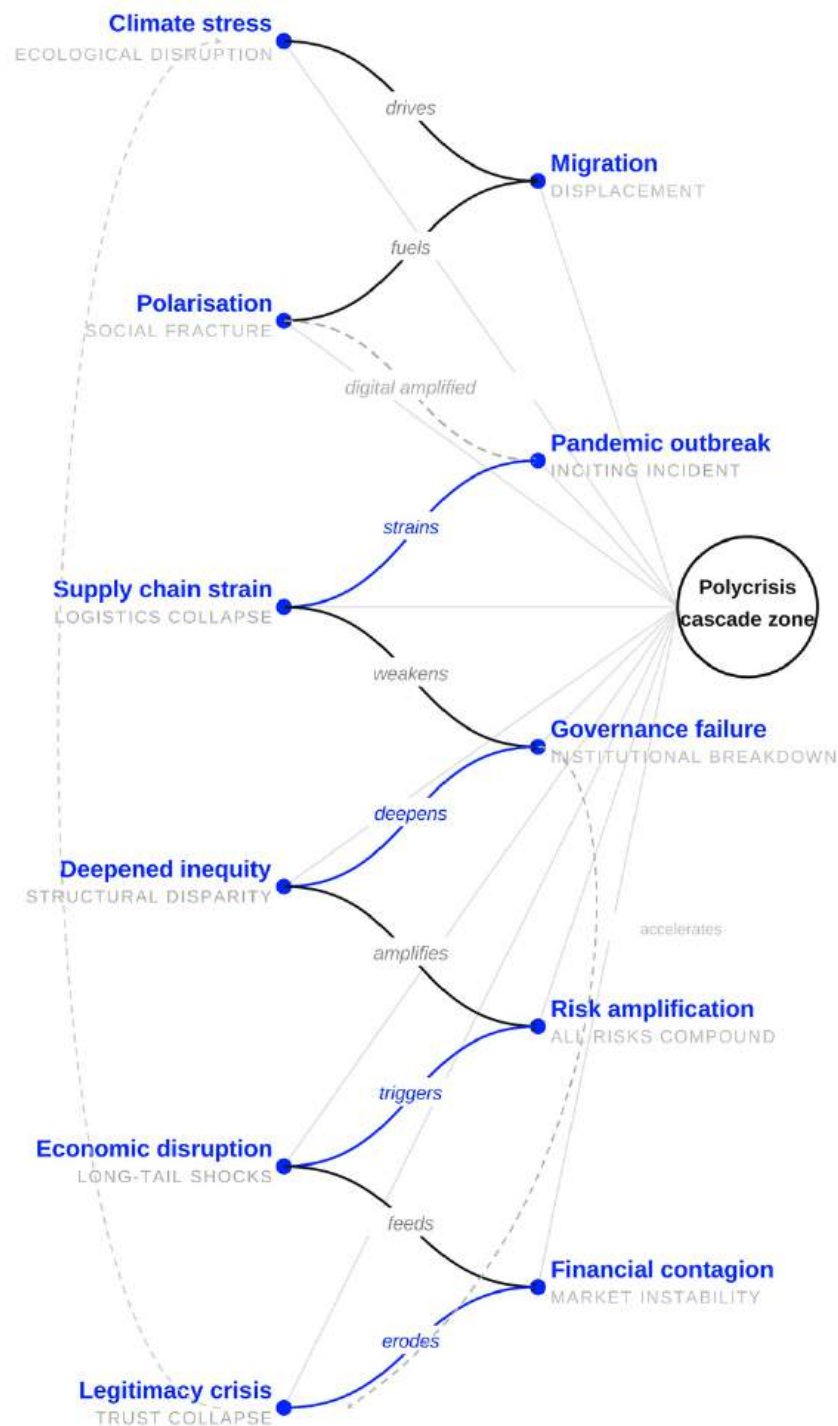


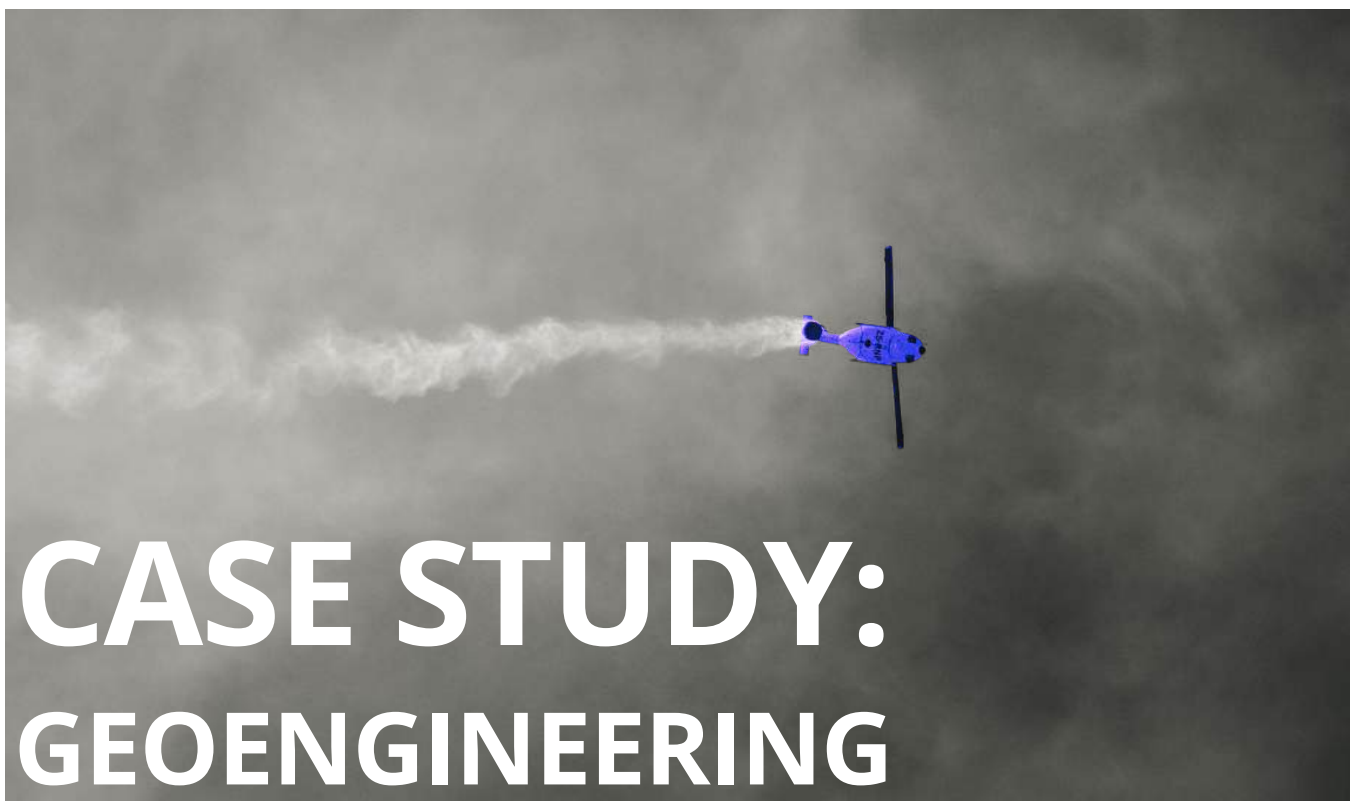
Polycritical foresight begins from this premise: the inciting incident is only the opening move. Climate change, artificial intelligence, financial fragility, and information disorder are not separate threat domains. They form a single, tightly coupled planetary system. Each accelerates the others, and each reshapes the context in which the next unfolds.

POLYCRITICAL FORESIGHT

Polycritical foresight combines futures studies, threat modeling, and systems thinking. Threatcasting made a pivotal contribution by applying threat modeling – born in cybersecurity and defense – within foresight practice. Threat modeling asks: What assets must be protected? Who or what might exploit their vulnerabilities? How could that exploitation propagate? Importing this approach shifts foresight from abstract extrapolation toward systemic stress-testing. We move from simply imagining what might happen to interrogating how vulnerabilities interact, who benefits, and most critically – where intervention is possible.

Polycritical foresight widens the aperture of threatcasting to meet the realities of the polycrisis. Where threatcasting might center on a single threat, polycritical foresight examines multiple threats and their interactions simultaneously. Supply-chain fragility, information disorder, and institutional mistrust are not new. Instead, they're recurring fault lines that manifest differently under shifting conditions. Polycritical foresight draws on historical pattern recognition and contemporary data to reveal when old patterns reassemble into new forms, following Mark Twain's quip that "history does not repeat itself, but it often rhymes." Rather than isolating domains (e.g., STEEP), it maps feedback loops among them. That is how we begin to see flocks rather than fixating on lone swans.





CASE STUDY: GEOENGINEERING

Geoengineering sits at the fraught nexus of climate strategy and geopolitics, encompassing interventions from stratospheric aerosol injection to marine cloud brightening and direct air capture – each carrying profound scientific and governance risk.

Geoengineering is a classic wildcard: low-probability, high-impact, entirely imaginable in advance and therefore uniquely suited to cascade pre-mapping. It illustrates why black swans are no longer the central metaphor; flock dynamics are.

Imagine unilateral deployment of solar geoengineering: blasting sulfates into the stratosphere to reflect sunlight back into space to artificially suppress temperatures, even as carbon emissions continue. Facing crop failures and political pressure, a nation makes the risky decision to initiate aerosol injection (this is the inciting incident of Kim Stanley Robinson's popular 2020 cli-fi novel, *Ministry for the Future*). The intervention shifts regional hydrological cycles, disrupting traditional rainfall patterns and weakening the monsoon system, threatening water security for billions. Other states accuse the geoengineer in question of "weather warfare." Diplomatic tensions spike; satellite data becomes contested; militaries update posture; and retaliation becomes thinkable in a matter of weeks.

Geoengineering's complexity makes it fertile ground for disinformation. Atmospheric anomalies such as redder sunsets and altered rainfall flood social media. A drought that scientists attribute to natural variation becomes "proof" of sabotage. Public trust in climate science erodes further, undermining the prospect of multilateral coordination. Financial systems entangle as well. Insurance markets recalibrate risk models as climate patterns shift. Capital flees into "geoengineering hedge" instruments.



Policy reversals trigger asset write-downs and regional market shocks. Market turbulence feeds political opportunism, accelerating further rushed deployments.

If aerosol injection later halts abruptly, due to sabotage, economic action, or conflict, termination shock could trigger rapid warming and nonlinear ecological collapse. Migration surges, with border destabilization and extremist mobilization to follow. Governance structures, already frayed, struggle as feedback outruns institutional decision cycles.

In isolation, geoengineering might be framed as a technological or environmental risk. In polycritical terms, it is a cascade accelerator: binding atmospheric physics to political psychology, digital information ecologies to food systems, and climate governance to financial stability. If such an intervention were deployed, many would label it a black swan. In foresight terms, it would be a fully legible wildcard whose black-swan consequences arise only through cascade interaction.

In their 2025 book *The Long Heat*, scholars Andreas Malm and Wim Carton argue that the United States currently concentrates both the infrastructural capacity and systemic incentives for such unilateral action. Whether or not one accepts that specific attribution, polycritical foresight insists on prioritization: examining those actors with the greatest combined capability, leverage, and stakes. The objective is not prediction of the actor but advance mapping of the cascade.

Mapping these cascades reveals leverage points: deterrence frameworks, treaties, monitoring regimes, escalation thresholds, and communication architectures capable of slowing or interrupting chain reactions. Whether deployment arrives in two years or twenty, this work equips institutions for irreversible interdependence.

THINKING IN FLOCKS

Crises do not move independently. They never have, but digital acceleration now compresses time and space so tightly that feedback becomes nearly instantaneous. The same networks that transmit information now transmit biological, financial, and ideological contagion. Climate stress drives migration. Migration fuels polarization. Polarization weakens governance. Governance failure amplifies every other risk.

Polycritical foresight treats this synchronization as the defining feature of modern risk. It trains practitioners to build adaptive governance: institutions able to reconfigure strategy and action as cascades evolve rather than collapse under rigid assumptions. PF demands a continuous practice of scanning, modeling, testing, and revision. Signals become indicators, which become early warnings. These early warnings in turn trigger predefined response protocols; governments can establish cascade “gates” that activate coordinated interventions; firms can stress-test cross-sector dependencies and build redundancy where failure would propagate fastest.

This approach shifts foresight from imagining discrete futures to mapping relational ones. Instead of asking “What if?” it asks, “What connects?” The futurist becomes a cartographer of interdependence, tracing how vulnerability in one domain intersects with resilience (or lack thereof) in another. This approach necessarily demands transdisciplinary collaboration – economists with climatologists, technologists with sociologists, strategists with media theorists. As such, it cultivates critical pluralism: integrating multiple epistemologies and recognizing the limitations of any single lens.

Polycritical Foresight shifts foresight from imagining discrete futures to mapping relational ones. Instead of asking “What if?” it asks, “What connects?”

THE CASCADE REFLEX

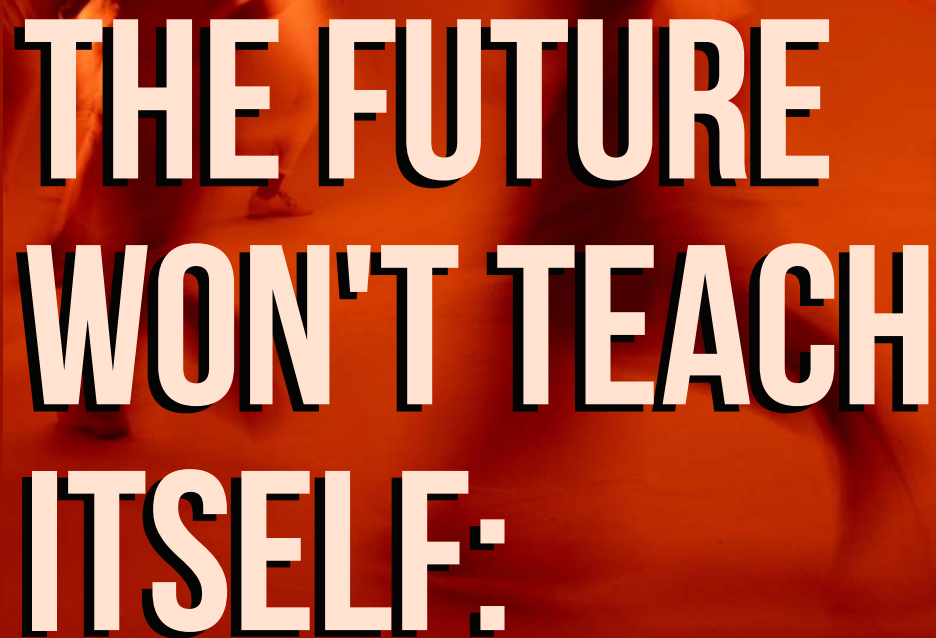
Futurists must develop a cascade reflex, the instinct to ask: When a new signal appears, what else might it set in motion? How might it interact with ongoing shifts? Which systems would it stress? Under the polycrisis, this is essential.

The task is not to merely chase wild cards, but to illuminate the webs of interdependence through which wild cards mutate into systemic shocks. Polycritical foresight is my proposal for moving the field from reactive crisis management toward anticipatory resilience – a pragmatic science of systemic vigilance.

We will never predict every member of the flock, nor should we try. The goal is to sense when systems have coupled, when feedback are tightening, when small disturbances may cascade. For much of the industrialized world, the late 20th century offered the illusion of stability. Few now enjoy that luxury. The flocks are in motion. The work of futurists now is to track them – and, where possible, to bend their trajectories toward durable planetary futures.



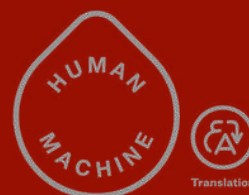
Jesse Damiani is a writer, curator, and foresight strategist. He is Communications Strategist at Metaculus, a leading forecasting platform, and the founder of Postreality Labs, a foresight and sensemaking consultancy, where he helps organizations navigate the polycrisis through resilience, adaptation, creativity, and futures literacies. He writes the best-selling Reality Studies newsletter and hosts the Urgent Futures podcast. Jesse is also Adjunct Professor in the NYU Tandon School of Engineering's Integrated Design & Media Program and Adjunct Assistant Professor USC's Media Arts + Practice program, Senior Curator and Director of Simulation Literacies at Nxt Museum, and an Affiliate of the metaLAB at Harvard and Institute for the Future. His writing appears in Architectural Design, Flash Art, NBC News, WIRED, and The Yale Review. Curated exhibitions include SMALL VOICE at Honor Fraser Gallery, Lilypads: Mediating Exponential Systems at Nxt Museum, and PROOF OF ART at Francisco Carolinum Linz. For many years he edited the Best American Experimental Writing anthology (Wesleyan University Press). He has served as Arts and Culture Advisor for Protocol Labs, XR Curator at the Games for Change Festival, and Host of Adobe's Taking Shape, a hub for 3D art and design. He was formerly Director of Emerging Technology and Insight at Southern New Hampshire University, where he led the Future of Work initiative.



THE FUTURE WON'T TEACH ITSELF:

**RIEL MILLER ON CULTIVATING
COMMUNITIES THAT DANCE WITH
UNCERTAINTY**

By Albéric Maillet



Over the past few decades, Riel Miller, former Head of Foresight and Futures Literacy at UNESCO, has been invited by people from all around the world to collaborate on thinking about the future.

What he discovered is that there are many different kinds of futures, generated in many different ways of imagining what does not yet exist, with a lot of other consequences.

The future might seem like some “later-than-now” place that just needs to be explored, so get your map and your gear and go poke around. Or maybe just ask an expert. The trouble is our imagination doesn’t quite work that way, nor does our universe. It is constantly creating the conditions for the emergence of new, surprising, unfamiliar, creative situations.

Futures Literacy:

Shaping the Present by Reimagining Futures

This is where futures literacy comes in – it is a competency, like any other, that cultivates a better grasp of the theory and practice of anticipation (Miller, 2018), making it easier to distinguish different kinds of futures, provide methods for imagining them, and then apply these different imaginaries in different circumstances.

Futures literacy, a concept spearheaded by Miller, takes advantage of the diversity of sources and uses of imagined futures to empower people to see themselves and the world in new ways.

Like with reading and writing literacy, a better grasp of the reasons and methods for imagining the later-than-now, enhances people’s perceptions of the world around them, alters their understanding of their role in the world, and puts the power of decision-making in a more humble perspective.

Once people are more futures literate, they find it easier to identify where their imagined futures come from – the sources of their hopes and their fears. They also become better able to invent their own imaginaries and distinguish different kinds of futures, instead of lumping them all together into one basket of predictions and bets on winning tomorrow.

Futures literacy facilitates sensing and making-sense of the present, recognizing that the creation of a menu, the emergence of novel phenomena, is not the same as choosing an item on the menu. It means accepting that new menus, impossible to imagine in advance, are constantly emerging and that just making bets on the basis of imaginaries arising from existing perception obscures the richness of the present. As Miller recounts his experiences, when people become *more familiar with the diversity of purposes, sources, and consequences of imagined futures, they gain a radically different view of the present* (Miller, 2018).

During a December visit to Montréal, I met with Riel Miller to discuss the challenges of "learning about the diversity of human anticipation." Our conversation focused not only on specific foresight methods meant to improve our capacity to plan the future, but on the mindset, skills, and conditions exhibited by hundreds of communities around the world that are cultivating futures literacy.

Learning and Unlearning:

**Letting Go of
the Illusion
of Control**

The first part of our conversation, which focused on what we need to learn and unlearn, quickly landed on

an uncomfortable truth: even with our best efforts, our relationship to the future remains shaped by a fear-driven obsession, a need to somehow control what happens in the future.

As a result, there is a kind of desperate effort to improve prediction – to know the future as if it already existed and to conquer tomorrow by what we do today. From this perspective, the big enemy is uncertainty, and we try everything we can to tame it, banish it, or ignore it.

Only it won't go away. Planning, along with the expertise of planners, including those who bring foresight to the mix, ends up dominating why and how the future is imagined. This is a monoculture of the imagination, and it interferes with our ability to perceive – to sense and make sense – of changes, novelty, the potential of the present that does not arise out of the search for 'credible' prediction.



“For millennia, we’ve lived in hierarchical contexts where truth comes from above, and obedience is required. We don’t cultivate our emergent imagination; we only develop our planning imagination. We need to work on competencies related to not-knowing, emergence, transience, and improvisation.”

– Riel Miller

Miller argues that we must first abandon the pursuit of certainty, which he deems neither achievable nor beneficial. He asserts that the "*desire for certainty is toxic*," explaining that it is reductive, disabling, and paternalistic.

Instead, we need to accept that we are making bets without knowing the outcomes and recognise that most of the time those bets reflect culturally and historically specific consensus on what is legitimately credible prediction. At different times and places, a bet may be deemed a "safe" or correct because the Delphic Oracle or the patriarch "said so."

Today, in most parts of the world, at least in overt or explicit terms, legitimately credible predictions that justify decisions are those that are proven by evidence. The problem here isn't the superiority of evidence-based extrapolations over random or irrational assertions, it is the extension of the search for credible certainty to all aspects of the world around us. This is a bias that reinforces existing forms of legitimate credibility. These authority systems may pay lip service to the unknowability of the future, but ultimately, this fixation limits our imagination to what seems probable, leaving us unable to perceive novel, unknowable in advance phenomena that are constantly emerging.

Futures literacy calls for a different posture: humility toward the unknown, comfort with not-knowing, and confidence in continuously experimenting in a world where outcomes cannot be predefined. Improvisation and ephemerality become as legitimate as planning and continuity.

Like a teenager going to a party, Riel explains, it is crucial to realise that the "sheltered" control of outcomes that protect vulnerable children no longer apply. Success at a teenage social activity, like a dance party, is impossible to determine in advance or control. Improvisation, openness to discovery – the recognition that you do not know, becomes essential to take advantage of contextual and fleeting novelty. Of course, bets and predictions do not disappear, but the context and expectations, the arrogance and search for proof in advance become less all-consuming.

Miller stresses that "*we are trapped in systems that prioritize control over imagination and creativity*." The intent is not to abandon planning, which is also impossible, but to restore the balance between knowing and not-knowing, to be able to grasp the extent to which a monoculture of extrapolatory predictive planning can obscure the richness of our ever-changing emergent reality while also inducing toxic fears and hopes.



“The goal is to be less arrogant, more humble, and better balanced between emergence and planning.”

– Riel Miller

BUILDING LEARNING COMMUNITIES OF FUTURE PRACTITIONERS

The second part of the conversation explored what it might take to diffuse futures literacy more widely. Drawing upon Miller’s decades of experience designing and facilitating Futures Literacy Labs in diverse contexts, one insight stood out: people’s inherent anticipatory systems and processes offer an effective and efficient foundation for cultivating a more explicit awareness of the different reasons and methods for imagining the later-than-now. Furthermore, like wisdom, futures literacy develops through accumulated experience over time.

Looking across patterns of experience, both my own and those of Miller, there are four conditions that repeatedly prove essential for members of a community, or employees of an organization, to learn together how the future shapes their thinking and action. These include:

1. DESIRE:

● ACTIVATING THE WILL TO ENGAGE WITH THE FUTURE

First, the initiative must begin from a genuine desire for learning about the future. People are naturally inclined to think about the future through their daily decisions. However, anticipation is universal, but meaningful future thinking is not automatic. What prevents people from doing so in a more comprehensive way is not a lack of interest, but fear. This might be the fear of getting it wrong, of being judged, or of confronting futures that feel too close, too consequential, or too overwhelming.

Futures Literacy Labs consistently start by identifying questions that matter enough to engage but are distant enough to feel safe. Rather than beginning with personal or organizational survival (“Will I still have a job?”), labs often explore shared, indirect topics (e.g. health, food, mobility, culture, etc.). These topics act as entry points, allowing curiosity to surface without triggering defensiveness. Thus, desire emerges not because people are told the future matters, but because they experience that their questions already do.

"Start from where people already are. Find a topic that will motivate people without intimidating them."

– Riel Miller

Invitation to Notice: What are topics where questioning assumptions won't be too disruptive or dangerous?



2. CONTEXT: **GROUNDING FUTURES IN LIVED REALITY**

Second, the practice of futures thinking must be contextualized. One of the central lessons from Futures Literacy Labs is that the frames people use to imagine the future are diverse. Why and how they imagine is shaped by their cultural histories, social conditions, political experiences, and collective memories – including trauma.

Rather than treating the future as a goal, it becomes an attractor - drawing out the sources, patterns, narratives that people use to imagine. The invitation to imagine collectively sets in motion a learning process that reveals why and how anticipation is

shaped by specific social and cultural contexts. The learning voyage of futures literacy engages people in exploring how their expectations are influenced by where they live, the stories they inherit, the media they consume, and the power structures they navigate.

This grounding serves two purposes: it flags the reference points that make it easier to identify different categories of imagined futures and makes clear that this diversity of imaginaries also diversifies perception in the present.

“Everywhere, there are different ways of relating to time, different ways of imagining. The sources, the structures, the sharing of power connected to imagination, what is credible, what is legitimate. All of that is very specific to the context.”

– Riel Miller

Invitation to Notice: Whose histories, lived experiences, or collective memories shape how the future is imagined, and whose are missing?

3. LANGUAGE:

CREATING SHARED WAYS TO EXPLORE THE DIVERSITY OF IMAGINED FUTURES

Appreciating the diversity of reasons, methods, and sources of our imaginaries helps to explain why we perceive the world in different ways at different moments and when we belong to different histories. Futures literacy that is built upon a clear theory of anticipation offers a shared framework for both exploring our imaginaries and sharing what we find.



One of the most significant barriers to deepening and diffusing futures literacy is the lack of a common framework. Even though everyone is using their anticipatory systems and processes all the time, it is very difficult to become more aware and to share that awareness without a shared theory and practice for analysing anticipatory diversity.

Futures Literacy Labs function as initiation spaces where participants are introduced to simple, non-technical ways of naming how anticipation works. The intent is not to enforce uniformity or expertise, but to nurture the recognition of reference points that enable people recognize that they are engaging with the future for different reasons, in different ways, in different contexts.

In this sense, futures literacy and the theory of anticipation offer an infrastructure for learning together. It enables sensing and sense-making beyond individual initiatives and allows communities to sustain knowing and not-knowing over time.

“Futures literacy is not about uniformity, but about having shared vocabularies that allow us to learn together.”

– Riel Miller

Invitation to Notice: How do people in your community already engage with time and place, continuity and discontinuity, hope and fear, risk and uncertainty?

4. REFLECTION:

QUESTIONING THE OBVIOUS TOGETHER

Finally, a fourth critical condition for fostering deeper connections within a community is reflection. In learning environments such as Futures Literacy Labs, reflection happens by inviting participants to examine their anticipatory systems and processes – those largely unseen structures through which images of the future shape present perception and behavior. This can begin with deceptively simple questions: What are the origins of our current expectations? Why do certain future scenarios appear self-evident while others seem completely beyond consideration?

Such learning voyages provide perspective and an appreciation of differences. It allows members to see that their images of the future are not neutral facts, but constructions shaped by culture, power, and habit. This recognition opens space for both seeing and doing differently.

“Learning journeys must be built on sensitivity to the importance and power of the future, by creating environments where people feel comfortable enough to engage in dialogue with themselves.”

– Riel Miller

Invitation to Notice: Which futures feel unquestionable or inevitable in your community, and who benefits from that inevitability?

NURTURING LEARNING FOR TRANSITIONAL CHANGE

Transformation is unknowable in advance, but transitions – leaving what we know and experimenting with what might be different – are what learning is all about. The transition from not-knowing to knowing, and back again. Futures literacy facilitates such experiences, and like the power of any commons, a shared resource, it must be practiced, refined, extended, and deepened. This is what it means to “change the conditions of change.”

One of the major obstacles to breaking out of the vicious circles of human conquest and colonization is cultivating the capacity for collective learning that enables us to thrive with uncertainty – embracing the agility, creativity, and joy that occurs when we are comfortable constantly searching for the balance between betting and improvising, planning and experimenting, knowing and not-knowing.

"The future is not something that happens to us, it is something we carry within our minds and shapes first of all what we can see and then, sometimes, what we decide to do."

– Riel Miller



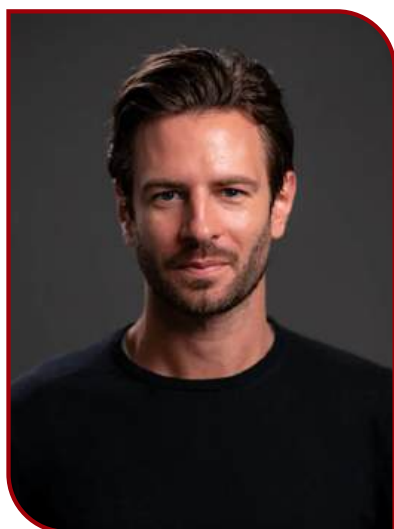
Editor's Note: To learn more about Riel Miller's approach to futures literacy, consider exploring these resources:

Video: Futures Literacy Lab -- <https://www.youtube.com/watch?v=Dm46g7XYWxE>

Article: Futures Literacy: Imagining an Alternative to Obedience and Authority, Compass magazine, Association of Professional Futurists, October 2023 -- [link](#).

Researchgate: Liberating the Human Imagination: Futures Literacy and the Diversification of Anticipation Riel Miller -- [Liberating the Human Imagination](#)

LinkedIn post: Distinguishing Futures Literacy, Futures Studies, and Foresight (with post-scripts on Futures Literacy Labs and Strategy) -- [link](#).



Albéric Maillet is a transformation strategist, systems thinker, and futures literacy advocate with over a decade of experience supporting companies, communities, and cultural organizations in navigating uncertainty and evolving responsibly. His work focuses on helping leaders and teams adapt to rising complexity, rapid technological change, and deep cultural shifts.

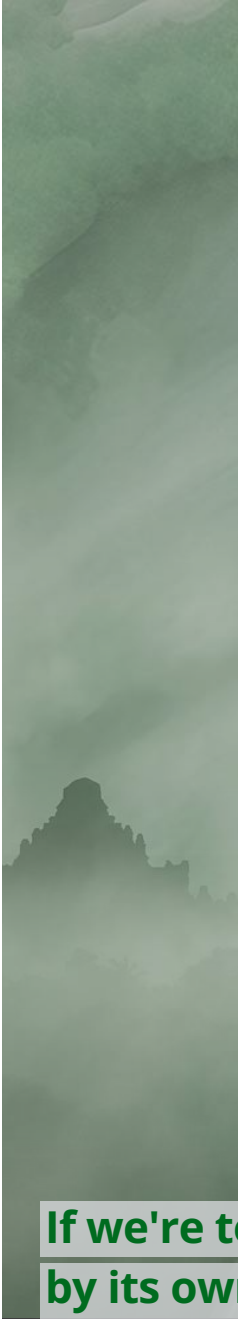
Albéric is currently Director of Business Innovation at Nurun, part of Publicis Group. Drawing inspiration from emerging practices in the creative and cultural sectors, he explores a central question: How can we design organizations that are more human, viable, and resilient at scale? He has previously collaborated with organizations including Dark Matter Labs, Design Futures Initiative, Chemins de Transition, and EIT Culture & Creativity. He also serves on the boards of MUTEK, UKAI, and the University of Plurality, three not-for-profit organizations using the power of future thinking to support cultural, ecological, and social transformation.

TOWARDS A THEORY OF SURPRISE

WHY ARE WE CONTINUOUSLY
SURPRISED THAT WE ARE
REPEATEDLY BLINDSIDED?

By Richard David Hames





From the vantage point of a futurist living in a Buddhist kingdom, educated in an Anglocentric empire, and working inside a civilisation captured by industrial neoliberalism, surprise is no longer a trivial psychological quirk. It's become a structural condition; the air we breathe. We wake into it each morning: a new war, a new technology, a new climate record, a new scandal, a new meme.

It is tempting to regard this as a temporary turbulence on the way to some more settled order. But what if surprise is not a passing storm, but a property of the ocean itself?

That's the question capturing my attention when I think about wild cards, black swans, and the enduring human fascination with the unexpected.

We adore the plot twist and dread the ambush. We pray for the miracle and fear the catastrophe. We tell ourselves that we're rational creatures planning sensible futures, yet we're repeatedly seduced, disarmed, and sometimes destroyed by events we insisted could not, or would not, occur.

If we're to evolve beyond a civilisation permanently startled by its own consequences, we need a theory of surprise. Not a theory that pretends to abolish surprise, but one that reveals why we are repeatedly blindsided; why we cling to fragile certainties; and how we might cultivate a different relationship with the unpredictable.

If we're to evolve beyond a civilisation permanently startled by its own consequences, we need a theory of surprise. Not a theory that pretends to abolish surprise, but one that reveals why we are repeatedly blindsided; why we cling to fragile certainties; and how we might cultivate a different relationship with the unpredictable.

THE CULT OF THE NORMAL

Every culture teaches its children what counts as “normal.” Those lessons are seldom explicit. They seep into the psyche through routines, rituals, timetables, news cycles, examinations and contracts. The industrial worldview – the one that now wraps itself around the planet more tightly than any empire before it – has a particularly narrow sense of normality. In this metaphysic, the world is a warehouse of resources. Time is a ledger. Life is a race between engineered scarcity and manufactured demand. Growth is sacred. The rest is just noise.

From within that frame, we cultivate a particular flavour of probability. We expect that next quarter will look roughly like this quarter. That citizens will behave as “consumers.” That energy will flow when we flick a switch. That institutions, although occasionally embarrassing, will for the most part muddle through. We treat continuity as the default and disruption as an aberration. We call that assumption “stability” and congratulate ourselves when the numbers don't deviate too far from their projected range.

Most of the tools we use to peer into tomorrow are complicit in this cult of the normal. Economic forecasts, corporate strategies, government budgets, climate scenarios – all model the world as if it were a domesticated landscape with the occasional unruly season. Even where they admit uncertainty, it's usually confined to well-behaved probabilities. Systems that metastasise, cascade, and leap – the financial system before 2008, digital networks before social media, viruses before global air travel – are pressed into the shape of linear predictions.

[This is the first pillar of any theory of surprise: we live in civilisations that worship routine while inhabiting a biosphere – and a techno-sphere – that's anything but routine.](#)

Surprise is therefore not an interruption.

Surprise is what reality looks like when it refuses to fit our habits.

THE ECOLOGY OF THE UNEXPECTED

Wild cards and black swans, terms from futures studies and Nassim Nicholas Taleb's financial philosophy respectively, are shorthand for those events that sit outside the horizon of respectable expectation yet reshape the terrain when they occur.

Some, such as a pandemic or a successful fusion breakthrough, are imagined in advance yet trivialised.

Others erupt from beyond the edge of our formal models and are only rendered intelligible retrospectively, woven into narratives that make them seem obvious after the fact.

What matters for our purposes is not the label but the ecology that gives rise to such events.

Surprise doesn't come from nowhere.

It breeds in the gaps between how systems actually behave and how we prefer to imagine them.

It thrives in entanglements no single discipline sees in full: the way a shift in arctic ice patterns can redirect migration, which shapes electoral sentiment, which influences a trade war, which triggers capital flight, which stops a factory in a distant province, which pushes families into precarity. Somewhere along that chain, a trader, a minister, an activist, or a parent will report being surprised.

Under conditions of high connectivity, tight coupling, and chronic optimisation, small impulses can turn into tidal forces. Our supply chains are tuned to eliminate slack. Our hospitals run near capacity. Our digital platforms concentrate influence into a handful of opaque algorithms. A single ship jammed in a canal; a software vulnerability exploited at scale; an unexpected shift in sentiment amplified by bots – these are no longer local disturbances. They propagate.

In other words, while individual shocks might be unpredictable, the “presence” of surprise in such an environment is not. Complex adaptive systems – ecosystems, financial markets, human societies, interlocking infrastructures – generate fat tails: extremes more frequent and more consequential than our linear imagination allows. A theory of surprise must therefore begin by acknowledging that the improbable is not, in fact, rare. It only appears rare from within a mindset that edits out everything that doesn't serve industrial routines.

THE SEDUCTION OF THE PLOT TWIST

If surprises are structurally baked into our world-system, why do we also pursue them in story and sport, art and spirituality? Why do we queue for films whose marketing material promises an “unexpected twist?” Why do we mythologise the genius who “saw what no one else saw,” the prophet who called the crisis, the entrepreneur who caught the wave?

Here we move from the ecology of surprise to its psychology. We carry nervous systems honed over millennia in environments where sudden change could mean feast or famine, predator or partner. In those landscapes, noticing any slight deviation was a matter of survival. It's plausible, given research in cognitive science and evolutionary psychology, that we evolved to privilege the anomalous over the routine. Ordinary events pass like background noise. Irregularities are charged with significance.

Surprise, then, is a kind of cognitive highlighter pen. It tells the organism: Wake up! Pay attention! Update. It compresses meaning into a moment. The unexpected win, the unanticipated loss, the sudden revelation in a relationship or a public scandal – they all carry disproportionate emotional charge. Our memories cling to them.

We have built entire cultural industries on that neurological predisposition. Religion offers miraculous outbreaks of the sacred into the mundane.

News media trumpet the exceptional, the scandalous, the “unprecedented conditions,” because that’s what draws the eye. Markets lionise the outlier trade. Even the daily weather forecast, once a sober utilitarian service, is now routinely dramatised. The routine becomes invisible while surprise becomes the story.

[This is the second pillar of our theory: surprise is not just something that happens to us.](#)

We seek it. We curate it. We monetise it. We imagine ourselves through it. And so, we’re caught in a paradox: we design systems as if surprise were an enemy to be minimised, while arranging our symbolic lives in ways that continuously amplify it.



THE ARCHITECTURE OF BLINDNESS

If surprise is unavoidably baked into both the world and the mind, why do particular events catch us off guard so comprehensively?

Why did so few institutions prepare properly for a pandemic that epidemiologists had been warning about for decades?

Why do organisations repeatedly declare each financial, political, or climatic shock “unprecedented,” as if history began last Tuesday?

Part of the answer lies in how we compress reality into workable stories. We have a limited cognitive budget. We can’t attend to every variable, or every distant correlation. So, we filter. We construct patterns that give us a sense of control and coherence. That filtering is not an error; it’s necessary. But the patterns harden into dogma. The story then becomes a cage.

Industrial economism, with its obsession on quarterly performance, targets, measurable outcomes, competition and growth, has developed particularly brittle cages. Risk is treated as a set of quantifiable fluctuations around a stable mean. Anything that resists quantification is routinely discounted. Qualitative scouting – listening to artists or teenagers at the margins of fashion and code – is dismissed as soft. Silence, which often carries the first signals of change, is ignored because it doesn’t yet speak the language of metrics.

This produces three predictable weaknesses:

1. We underestimate extremes. Our models of climate, for example, have repeatedly been overtaken by reality: permafrost thawing faster, temperatures exceeding prior records, coral bleaching at scales once thought unlikely this century.

2. We oversimplify causality. Once a shock has occurred, we build a post hoc narrative that makes it appear inevitable, thereby inflating our sense of foresight.

3. We confuse familiarity with safety. A risk we see every day – road traffic, polluted air, junk food – is taken as normal, while obscure possibilities are derided as “doom-mongering” or “science fiction” until they hit.

At the individual level, these structural tendencies manifest as habitual thinking errors. We recall vivid incidents and assign them exaggerated probability. We imagine that tomorrow will be much like today and next year like this one. We place unwarranted faith in “expert” predictions, even when the experts admit the limits of their models. We attach to roles – professional, national, religious – that quiet our curiosity and licence us to ignore evidence that contradicts our identity.

[Here then is the third pillar of a theory of surprise: blindness is not primarily a failure of intelligence.](#) It's a side-effect of the stories we tell to save ourselves from feeling overwhelmed. Those stories are institutionalised into governance, economics, education, religious doctrine and media, where they become self-reinforcing. The more uncertain the world becomes, the more insistently those systems promise certainty.

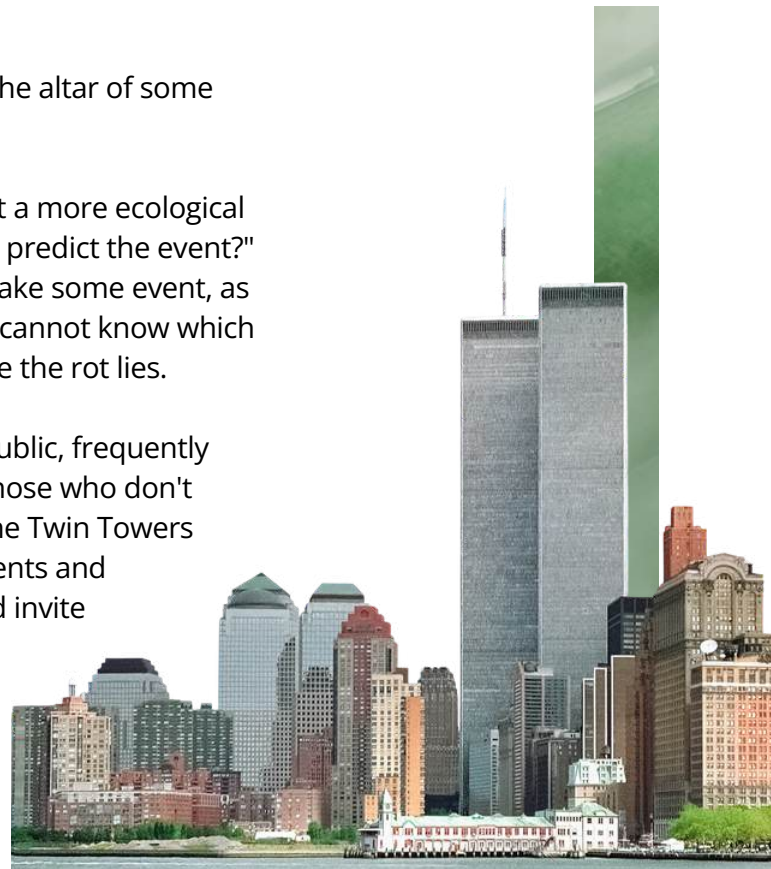
ANTICIPATION WITHOUT PROPHECY

If surprise can't be exorcised, what does it mean to “anticipate” wild cards and black swans?

Can we do more than wring our hands, or worship at the altar of some new predictive algorithm?

We need to drop the fantasy of clairvoyance and adopt a more ecological understanding of foresight. The question is less: “Can I predict the event?” and more: “What is the structure of fragility that will make some event, as yet undefined, disproportionately consequential?” We cannot know which tree branch will break in a storm, but we can see where the rot lies.

For over four decades I have tested that discipline in public, frequently enough to attract accusations of occult powers from those who don't understand how pattern literacy works. Long before the Twin Towers fell I was warning, in print and in briefings to governments and corporations, that the theatre of Western power would invite asymmetric strikes on iconic symbols, and that intelligence architectures obsessed with known enemies would miss the composition of loosely-coupled networks.



Three years before the global financial crisis I was arguing, again on the public record, that a culture of leveraged speculation built on opaque instruments and ideological faith in deregulated markets would eventually collide with its own fictions.

None of that required clairvoyance. It emerged from a marriage of art and science: sensing weak signals, studying anomalies, listening to those at the edges, and then tracing recurring motifs across history and system dynamics until the outlines of potential rupture became visible enough to warrant a warning.

This reframing matters. Once we look for fragility we see it everywhere. Single points of failure; communities dependent on one employer or one crop; nations dependent on one export; households one pay-check away from eviction. We encounter systems running “lean” in the name of efficiency, yet so taut that any disruption produces a crisis. We find political orders so polarised that a minor scandal becomes an existential meltdown. We discover software architectures so entangled that a single security flaw can ripple across continents.

Anticipation then becomes a kind of craft. We're not guessing the precise shape of tomorrow's shockwave. We're mapping where shockwaves, whatever their origin, will hurt most; where they might open unexpected possibilities – where they might reveal hidden capacity for solidarity and renewal.

In this sense, surprise can be domesticated without being neutered. We can run exercises that ask: if, ten years from now, our efforts have failed disastrously, what kinds of developments might have contributed? We can examine technological disruptions, but also shifts in ethics, demography, ecology, spirituality. We can look not only for threats but for improbable breakthroughs: new social movements, novel forms of cooperation, the quiet emergence of different economic logics in community land trusts, cooperatives, and indigenous governance.

Anticipation then becomes less about assigning precise probabilities and more about expanding the field of the plausible. The more worlds we can imagine inhabiting, the fewer events will be truly unthinkable. That doesn't dissolve surprise, but it does blunt its power to paralyse.



LIVING WITH, AND FROM, SURPRISE

If surprise is structural and psychological, ecological and narrative, what kind of civilisation could take it seriously without becoming paranoid or fatalistic?

One obvious implication is that our systems need more slack. In an age of shocks, our obsession with "just-in-time" everything is a kind of collective self-harm. Redundancy – in things like energy, food, skills, information and care – is not wasteful; it's the precondition for responsiveness.

Biologically, we know this: ecosystems with diverse species, overlapping niches and multi-layered feedbacks are more resilient to disturbance. The same intuition must find its way into our infrastructures and institutions.

Another implication is that learning must shift from rote to reflexive. Education in many countries still trains young minds to master inherited answers rather than to dwell in uncertainty. Yet the capacity we most need is not the ability to recite facts but the courage to interrogate our own assumptions, to listen across boundaries, to remain alert to signals that don't fit. In every community on Earth, there are young people who already practice this in their music, their social media experiments, their hybrid identities. The question is whether our elders and institutions are willing to learn from them.

At the level of leadership – understood not as heroic individuals but as collective agency – the theory of surprise suggests a different ethos. Instead of projecting certainty, authentic leaders would normalise not-knowing. They would cultivate spaces where dissonant information is welcomed rather than admonished, where outlandish possibilities can be safely aired, and where failure is mined for insight rather than hidden from view. They would champion preparations that are dull when nothing happens – stockpiles, drills, mutual aid networks, flexible regulations – knowing that when something does happen such “unnecessary” efforts can save lives and livelihoods.

More radically, we may need to reframe what we take to be security. In many countries, security is still imagined as a fortress mentality: walls, surveillance, armaments, competitive advantage. But in a world whose surprises are often systemic – pandemics, climate feedbacks, financial contagion – the fortress is a fantasy. No nation can wall itself off from atmospheric chemistry or viral evolution. The only realistic security under such conditions is ecological: robust public health systems; trusted channels of information; shared protocols across borders; habits of mutual aid that cross religion, class, and colour.

There's also a more intimate dimension.

**On a human scale, surprise is how we know we're still alive...
we yearn for the unexpected encounter, the unsolicited
kindness, the unforeseen possibility.**

A life with no surprises would be a life ossified into routine – a factory line existence in which each day is a carbon copy of the last. We crave enough stability to raise children and bury elders, to plant rice or wheat or maize and trust it will ripen; but we also yearn for the unexpected encounter, the unsolicited kindness, the unforeseen possibility.

Any theory of surprise worth having must therefore admit its ambivalence. The same volatility that enables ecological collapse also enables social transformation. The same unpredictability that terrifies investors allows new stories to take root. Every major spiritual tradition on this planet began as an improbable deviation from accepted norms. Every movement that expanded human dignity did so by disrupting what had been taken as given.



SURPRISE AS TEACHER

In the end, I have come to suspect that surprise is not just a feature of complex systems, or a quirk of neural wiring, but a kind of teacher. It punctures arrogance. It reveals where our models are thin. It exposes the gap between what we proclaim and how the world responds. It interrupts the complacency of success and the despair of failure. It invites us to pay closer attention.

A civilisation that reveres growth above wisdom will interact with surprise mostly through crisis and denial. Each wild card will be treated as an accident, an anomaly, an intrusion. Blame will be assigned. Committees will be formed. Normality will be urgently restored, often at the cost of further fragility.

A civilisation that aspires to wisdom would respond differently. It would use each surprise as a diagnostic. What did we fail to see? Which voices did we ignore? Which assumptions proved brittle? Where did unexpected resilience emerge? What new questions have now become possible?

Such a civilisation would not abolish wild cards or black swans. It would, however, deepen its intimacy with uncertainty, and in doing so loosen the grip of fear. It would accept that to be human in the 21st century – in a world of planetary boundaries, digital sorcery, and colliding worldviews – is to dwell in a perpetual rehearsal for the unanticipated.

From the balcony of my home in Thailand, I watch storms build over the Gulf, veering off course in ways local fishermen say they have never quite seen before. On my screen, another index reaches another record. In communities I work with, people oscillate between resignation and quiet resolve. The old certainties no longer hold, yet the new philosophies have not quite taken form.

In that liminal space, surprise is both threat and invitation. Threat, because many more will be hurt by disruptions they did not cause. Invitation, because disruptions also crack open the possibility of different arrangements, different ethics, different ways of inhabiting this astonishing planet.

A theory of surprise, then, is not an abstract intellectual toy. It's a lens for re-reading the present, a discipline for loosening the straitjacket of industrial expectations, and a reminder that the future, however carefully we plan it, will always arrive bearing gifts and dangers we did not specify. How we respond to those things – whether with impulsive defence of the familiar, or with a more considered curiosity – will determine whether surprise remains simply a series of shocks or matures into a companion in our collective evolution.



Richard David Hames is a world-renowned polymath, philosopher-activist, and strategic foresight practitioner described by Forbes Asia as one of the smartest people on the planet. With an unusual academic background featuring doctorates in music, medicine, and computer science, Hames has spent his career at the intersection of business, politics, and society. He first gained international acclaim as a "catalyst of change" by transforming the nearly bankrupt media corporation AMI into a dynamic success, a feat driven by his early mentorship under the legendary quality management expert Dr. W. Edwards Deming.

Throughout his career, Hames has served as a high-level strategist for governments and multinational corporations across the globe. He founded the Chicago-based think-tank The Hames Group and has held influential roles including most recently Chairman of the Asian Foresight Institute. His advisory work is particularly notable in China, where he was one of the first Westerners to work directly with senior leadership on environmental sustainability. He is most celebrated intellectually for pioneering Deep Design, a regenerative approach to organisational change, and for his advocacy of humanitarian governance models.

What sets Hames apart is his ability to anticipate global disruptions years in advance. His track record includes forecasting the business impact of the climate crisis in 1987, the 9/11 attacks in 1998, and the 2008 financial crisis. Today, he remains a critical voice on modern existential threats, ranging from the unregulated development of artificial general intelligence to the shifting power dynamics of the Westphalian nation-state. As an elder statesman of foresight, he continues to bridge the gap between complex systemic theory and practical, real-world leadership.

Q&A

WITH
**ROGER
SPITZ**

THE COMPLEX FIVE OF UNCERTAINTY

Conversation with
**Stephen Dupont,
Editor, Compass**

COMPASS

MAY 26- JUN 26



To help organizations navigate and achieve success in an uncertain and unpredictable world, futurist Roger Spitz wrote [Disrupt with Impact](#), which was published in 2024 (Kogan Page Publishing). Within his book, Roger took a deep dive into the world of wild cards and black swans and created an approach, The Complex Five of Uncertainty, as a way of identifying and comprehending various uncertainties. For this issue of Compass, we invited Roger to go deeper in explaining the Complex Five approach and how futurists and strategists can apply it in their work.

Q1

WILD CARD VS BLACK SWAN

What's the difference between a Wild Card and a Black Swan, which are often conflated?

Wild cards and Black Swans are often conflated, but they differ in an important way: **wild cards are low-probability, high-impact events that can be imagined, while Black Swans are “unknown unknowns” that lie outside our expectations.**

Wild cards are unlikely but plausible events. They can arise quickly and may not have strong signals immediately preceding their arrival, yet they are generally **within the realm of what we can conceive**. Considered individually, specific wild cards may seem improbable; considered collectively, they occur with some regularity. Their impacts can be profound and sometimes irreversible. Importantly, wild cards are not only negative - they can also include positive breakthroughs, such as the discovery of a cure for an incurable disease or cost-effective regenerative energy. Examples might include global pandemics or the collapse of the European Union.



By contrast, Black Swans, as described by Nassim Nicholas Taleb, are **events that we do not know we do not know**. [1] They are rare, high-impact, and fundamentally unpredictable because they fall outside existing models and assumptions. Black Swans are typically only explainable in hindsight, sometimes with narratives that create the illusion that they were foreseeable. They are frequently associated with complex adaptive systems and cascading, nonlinear effects. Events such as World War I, 9/11, or the rapid, transformative rise of the internet are often labeled Black Swans – though this classification is debated.

The distinction lies in the interplay between **signals and imagination**. Wild Cards often broadcast weak or ignored warning signs that can be captured through horizon scanning; they can be surfaced by asking "*What if?*" When a Wild Card seems to appear out of nowhere, it is usually because signals were dismissed and imagination left untapped. Black Swans, by contrast, offer no recognizable signals – they exist entirely beyond the horizon of our current awareness.

This ambiguity is why interpretation varies so widely. Many argue that Covid-19 fails the Black Swan test because the global scientific community had issued decades of warnings; it was, instead, a Wild Card that was insufficiently heeded. Similarly, while 9/11 is often cited as a Black Swan due to its sheer shock value, critics point to "broken" intelligence loops and prior terrorist indicators as evidence that it was a failure of signal integration – such as a Wild Card where we simply failed to connect the dots.

Ultimately, the difference lies not only in the nature of the event, but in our **perspective, preparedness, and the breadth of our assumptions**. Wild cards test whether we act on risks we can imagine but tend to discount. Black Swans expose the limits of our imagination itself. As extreme events appear with greater frequency, the challenge for foresight is not only to detect weak signals, but also to continually expand what we consider possible. [2]



Figure 1. Black Swans & Wild Cards



Q2

WHAT ARE THE COMPLEX FIVE AND WHY THEY MATTER

*In your book, **Disrupt with Impact**, you speak about the Complex Five – Gray Rhino, Black Elephant, Black Jellyfish, Black Swan and at the heart of these, the Butterfly Effect. Could you explain your system and share why futurists should consider using these points of reference in their work (and in their interactions with their clients).*

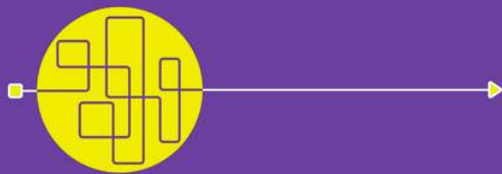
I'm originally from South Africa, where the big five in safaris (buffalo, leopards, lions, elephants, and rhinos) are dangerous because of their strength and size. In our world of metaruptions (complex, self-reinforcing forces that go beyond trends, driving unpredictable nonlinear shifts that can redefine industries and rewrite rules), the smallest changes can cause large impacts.

We are today in a deeply uncertain environment, and the Complex Five provides a filter for the degrees of unpredictability. In the Complex Five, all five animals represent a matrix of highly impactful events according to their degrees of uncertainty; namely Black Elephant (Known Unknown), Black Jellyfish (Unknown Known), Black Swan (Unknown Unknown), Gray Rhino (Known Known), and the Butterfly Effect.

The swans, jellyfish, and butterflies can be more dangerous than elephants and rhinos. And while certain big-five safari animals are endangered, our "Complex Five" of metaruptions are increasingly prevalent, spreading, and growing. Paradoxically, this does not always make them easier to spot.

DISRUPT WITH IMPACT

Achieve business
success in an
unpredictable world



Roger Spitz



So, as we move from thinking in terms of probabilities to magnitude of outcomes, and appreciate that rare is becoming less rare, we need new filters to the world.

In 1921, economist Frank Knight drew a foundational distinction between *risk* and *uncertainty*. According to his writing in *Risk, Uncertainty, and Profit*, risk pertains to situations in which “the distribution of the outcome in a group of instances is known.” In contrast, uncertainty arises in contexts that are, to a significant extent, unique, making it difficult or impossible to assign probabilities to potential outcomes. [3]

In an era defined by metaruptions, radical unpredictability, and the rapid evolution of artificial intelligence, the [classical distinction](#) between risk and uncertainty – first articulated by Frank Knight and John Maynard Keynes – demands urgent reexamination. [4]

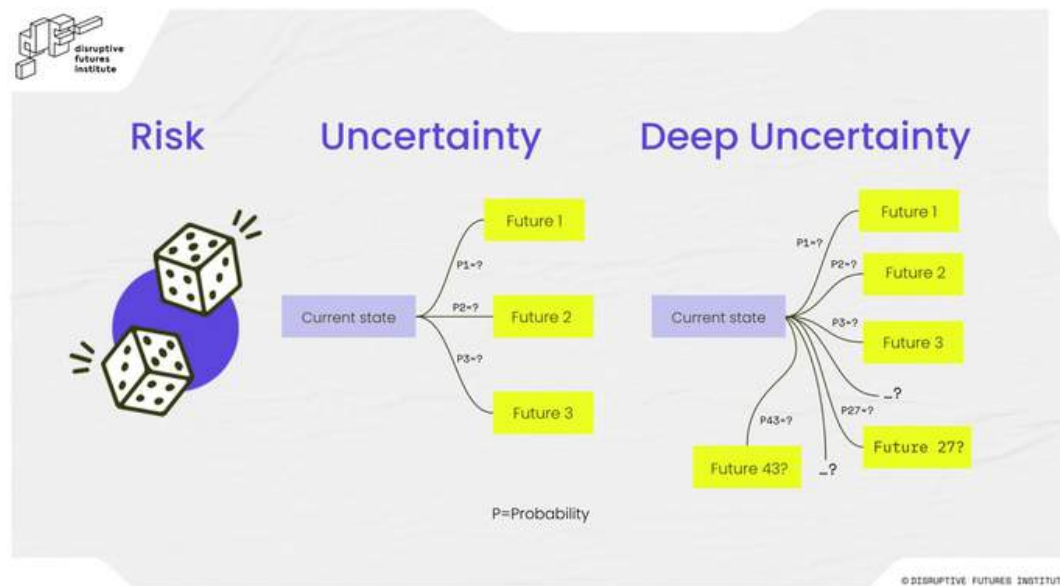


Figure 2. Risk, Uncertainty & Deep Uncertainty

What happens when uncertainty cannot be quantified and outcomes unknown?

Deep uncertainty – where even the nature or likelihood of future states is contested – emerges in nonlinear systems shaped by complexity, unknowability, and interdependent dynamics. In such asymmetrical environments, shocks can accelerate through feedback loops and cascade systemically.

Two key dynamics undermine predictability under conditions of deep uncertainty. First, incomplete understanding of future events and their probabilities. Second, unpredictable interactions between unfolding scenarios.

When parameters are known, we can venture into meaningful modelling and predictions. In deep uncertainty, countless, dynamic, and interacting unknown variables hinder predictability.

As famously articulated by former U.S. Secretary of Defense Donald Rumsfeld (President George W. Bush Administration, 2001-2006), we constantly need to assess what is knowable (what could be known but is currently unknown) and what is unknowable (what cannot be known at all).

To address complex dynamic environments of deep uncertainty, we must recognize the different types of uncertainty. For this, we use our Complex Five as a matrix framework from the Disruptive Futures Institute.

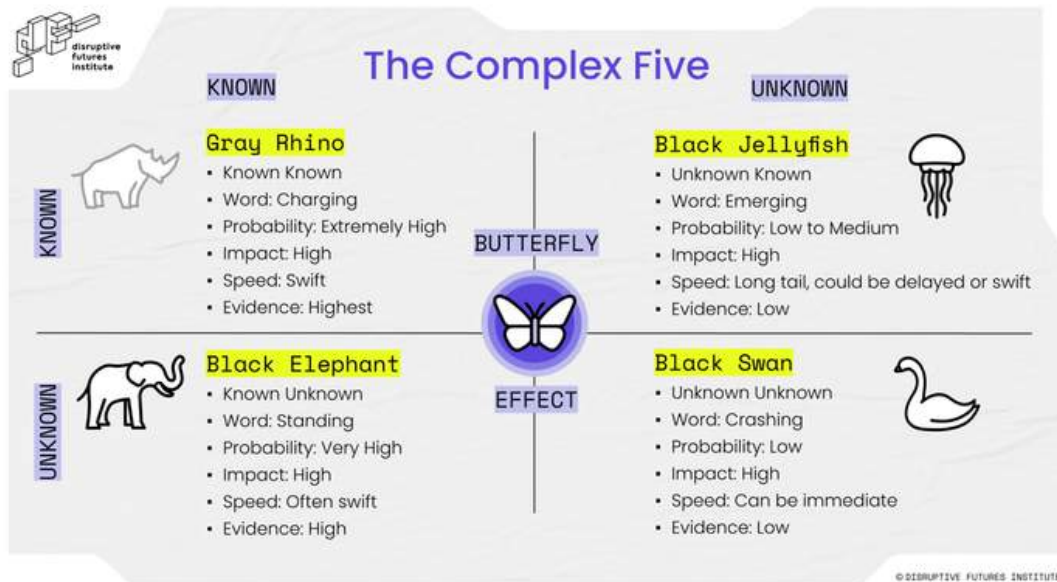


Figure 3. The Complex Five

Known Knowns: Gray Rhino Things we know that we know, like “*the sun rises in the morning and sets at night.*” For these, we use [Michele Wucker’s definition](#) of “Gray Rhino.” [5] There is no uncertainty with Gray Rhinos; we might treat them as unknown, but they are certain. To avoid being trampled, anticipate the impacts, rather than muddling along and panicking when the rhino charges.

Unknown Knowns: Black Jellyfish Things we think we know, but we find that we don’t understand them when they manifest. For example, increasing ocean temperatures and acidity levels prompted [perfect conditions](#) for jellyfish population growth. [6] This increase then forced shutdowns from jellyfish clogs in the cooling systems of nuclear reactors around the world. Here, situations we believe we initially understand can become complex, as small changes drive larger, less predictable impacts. To describe such unknown knowns, *Postnormal Times* and [Sardar and Sweeney](#) use the term “Black Jellyfish.” [7] To respond to Black Jellyfish, we need to consider snowballing effects by asking how these reverberations could cascade further.

Known Unknowns: Black Elephants Things we know we don’t know, including new diseases, impacts of climate change, and mass human migration. These are obvious, highly likely events, but few acknowledge them. We call these known unknowns “Black Elephants,” based on a term attributed to the *Institute for Collapsonomics*. [8]

Addressing Black Elephants requires coordinated action, stakeholder alignment, and a systemic perspective attuned to complex interdependencies. In context-specific cases, proactive responses are essential. Failing to do so may allow Black Elephants to evolve into Gray Rhinos – visible, charging crises that can no longer be ignored.

Unknown Unknowns: Black Swans Things that we don't know that we don't know. For these unpredictable outliers, we use [Nassim Nicholas Taleb's](#) "Black Swans." Responses to Black Swans include building resilient foundations and paying attention to rare events with profound impacts. However unpredictable Black Swans are, we can still be anticipatory, while implementing guardrails for the randomness of our world. Look for the nonobvious. Accept randomness. Be aware of cognitive bias as the modern world becomes dominated by very rare events. When Black Swans appear, rise up from the devastation.

Butterfly Effects The flapping wings of one majestic insect brings these animals together. The "Butterfly Effect," defined by meteorologist Edward Lorenz, describes how small changes can have significant and unpredictable consequences. To illustrate, Lorenz described a butterfly flapping its wings influencing tornado formation elsewhere.

Ultimately, all such manifestations of uncertainty share a crucial commonality: **ignorance, or a lack of evidence, does not constitute evidence of absence.**

Q3

APPLYING THE COMPLEX FIVE TO AI

Can you apply The Complex Five to a concrete example – such as the emergence of AI – exploring its implications and possible responses? In other words, what can leaders actually do about The Complex Five?

The most important aspect is that this filter on the world forces us to challenge the assumptions we hold about how the world works. It shifts the emphasis from answers to questions, from prediction to exploration, and invites a deeper curiosity around "What if?" and, more critically, "So what?" – what are we going to do about it, and when?

Applied to AI, this perspective moves us beyond the limiting dichotomies of dystopia or utopia. Instead, it allows us to engage with AI as a complex, evolving set of dynamics - nonlinear, interdependent, uncertain, fractal, and defined by persistent tensions.

Through this lens, we are better equipped to imagine, anticipate, and respond to a spectrum of possibilities. Decision-makers can then design anticipatory strategies that are not anchored to forecasts, but to adaptability - building the capacity to navigate ambiguity, adjust to emerging signals, and remain relevant as the conditions around AI continue to shift.

1. BEWARE OF CHARGING RHINOS (KNOWN KNOWN)

Imagine Wucker's Gray Rhino: What probable, visible, and high-impact AI outcomes do we ignore, despite the evidence they are already charging at us?

Let's take disinformation, where AI-powered deepfakes and misinformation are rapidly growing, threatening facts, democracies, and mental health. Brexit, elections, the Covid pandemic, and recent world events have already demonstrated how social media can dent democracy.

Or skills and reskilling, where today, routine cognitive tasks are already being automated. Artificial narrow intelligence already has incredible capabilities which excel at precisely defined tasks, outperforming humans in specialized areas. To build skills that machines cannot quickly emulate, we must replace mechanical transfers of knowledge with human-centric capabilities like critical thinking and emotional intelligence.

With Gray Rhinos, responses often fall short because decisions come too late. The rhino charges in plain sight, yet we turn a blind eye to it. To avoid being trampled, be first to point out its existence (don't assume someone else will). When taking action before getting trampled, consider the speed of development, the degree of consensus on root causes and possible solutions, and the size and complexity of the problems. As Wucker points out, Rhinos can be anticipated, rather than denying, muddling along, and panicking when it is too late.

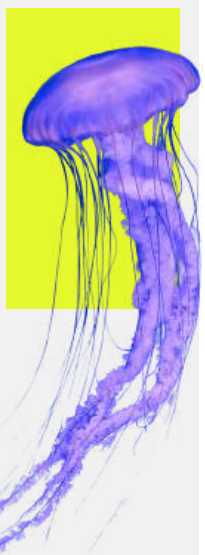
2. DON'T GET STUNG BY THE JELLYFISH (UNKNOWN KNOWN)

Black Jellyfish, used by *Postnormal Times*, indicate hidden, low probability events that have a high potential impact. While the initial situation may seem predictable, Black Jellyfish grow into something that defies our imagination.

To illustrate, look at "Info-ruption" – What will be the cascading effects of information's disruption? How do weapons of mass disinformation threaten society's cohesiveness? Info-ruption could be the primary weapon in future wars, determining the future of humanity. AI's wholesale amplification of discrimination through bias can reverberate across society. Info-ruption is an arms race. As technology amplifies inaccurate information and bias, we must develop equally powerful tools (and mindsets) to fight these.

Or the **fusion of AI and BioTech**, the intersections of AI, biology, and technology could challenge the status of humans as dominant beings. What defines sustainable humanity?

To respond to AI's Black Jellyfish, we need to consider snowballing effects by asking how these reverberations could cascade further and even become irreversible. Ask: "What if this expanded larger than expected?" and "What else might this impact?"



3. ADDRESS THE ELEPHANT IN THE ROOM (KNOWN UNKNOWN)

Black Elephants are obvious threats, but few are willing to acknowledge them. These are similar to Gray Rhinos, but for now the elephant is standing, versus the imminent charging rhino. When Black Elephants are discussed, conflicting views translate into confusion and inaction.

For me, two elephants in the room – and there are many! – include education and decision-making.

Our knowledge-driven education models will produce a massive number of people who won't keep up in our nonlinear, ever-changing world. The current AI debate neglects the critical need to reimagine education. AI threatens not by its existence, but by our education systems failing to adapt to the reinvention they require.

As we delegate to AI systems, our decision-making capacities erode. This deskilling causes us to lose the habit of making decisions ourselves. As algorithms increasingly impose their decisions on us, we lose opportunities to exercise agency.

Today, humanity faces both technological and existential conditions that can no longer be separated. We define this phenomenon as *"Techistentialism."* [9]

Through AI, technology is challenging us in strategic decision-making, a realm historically specific to humans. Here, technology confronts the existential dimension, as we stand on the edge of our free will.

Reinventing education, from the playground to the boardroom, is now an existential priority. Erase outdated elements and rewrite programs: learn, unlearn, and relearn to constantly adapt. We need to form new relationships with inquiry, experimentation, failure, and creativity to help us problem-solve out of the existential risks we face.

Black Elephants require mobilizing action, aligning stakeholders, and understanding the changes throughout our complex systems. Own your response. Don't let Black Elephants blindsides you, or they will morph into Gray Rhinos and charge.

4. BUILD RESILIENCE FOR BLACK SWANS (UNKNOWN UNKNOWN)

Taleb's Black Swans are unforeseeable but extremely high-impact events. The issue is that we don't know what we don't know. Even for AI, the odds of these rare events and their runaway chain reactions aren't computable.

Could cross-impacts stemming from interacting AI systems lead to drastic and irreparable outcomes, to unimaginable extreme catastrophic failures?





Responses to Black Swans involve building resilient foundations while paying close attention to the outsized “fat tail,” where rare events carry disproportionate consequences. Even as Black Swan outliers resist prediction, you can remain anticipatory by recognizing that the modern world is increasingly shaped by very rare events with profound impacts. This calls for guardrails that account for the randomness inherent in complex systems, alongside an attentiveness to the nonobvious and an acceptance of deep uncertainty as a constant condition.

Be aware of cognitive bias as you interpret these dynamics, especially when facing domains where singular, high-impact occurrences dominate outcomes. Ask not what AI might do to humans, but what humanity will choose to do in relation to AI and use that framing to orient decisions under uncertainty. When Black Swans arise, they function as game changers – requiring adaptation, integration, and the capacity to rise up from the devastation while continuing to operate with resilience and clarity.

5. EXPECT THE UNEXPECTED FROM OUR MAJESTIC BUTTERFLY

The butterfly effect is liminal: It can mutate into the other animals. How do the Complex Five snowball as they collide?

Systemic disruption is a breeding ground for Butterfly Effects. Not preparing comes at a high cost. Our global systems, from food to energy, are interdependent. Impacts are not siloed; likewise, neither should our approach to assessing AI risks and future-preparedness.

AI is developing quickly, and the goalposts to remain relevant are constantly moving. Anything we think we know today in relation to AI will change tomorrow.

The best response to AI's Butterfly Effect is to build resilience, action adaptive strategies, and expect the unexpected.

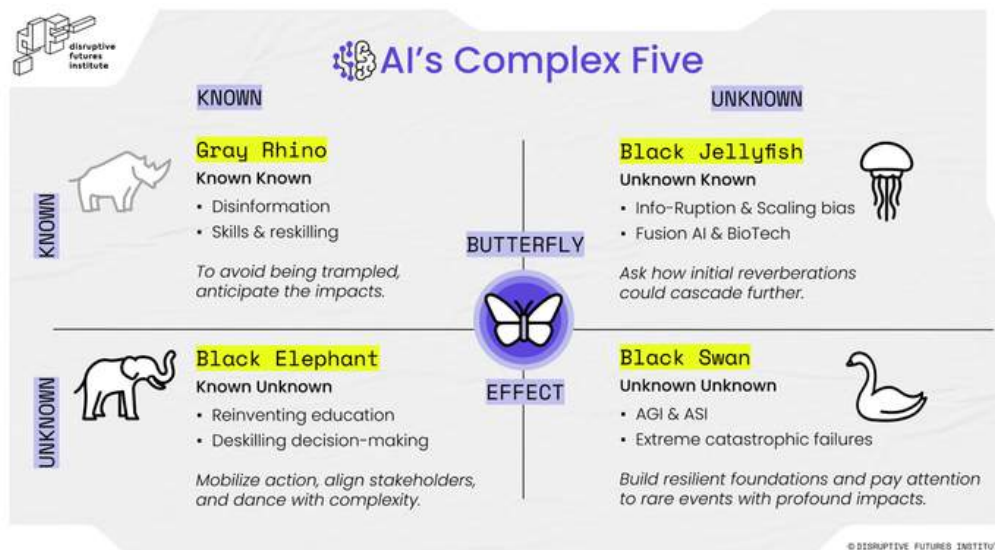


Figure 4.
AI's Complex Five

Applying our Complex Five matrix to AI can help us plan possible responses. By recognizing the degrees of uncertainty, we can better prepare for a range of unknown futures and surprises ahead.

IS EVERYTHING A BLACK SWAN?

Q4

In your book, on page 103, you note "Surprise is often the result of not listening well enough." One of the biggest "black swans" in recent history was the Covid-19 pandemic. But was it really a black swan? Scientists were warning us for two decades that a large-scale pandemic was on the horizon. And yet, if China were to invade Taiwan or Russia collapses or elections in the U.S. are cancelled -- those events, which are all foreseeable, would still be shocking. So how do we define black swans when we can imagine an increasing number of "unimaginable" scenarios?

That is a key question in our hyper-noisy world, where the tidy taxonomy of Possible, Plausible, Probable, and Preferable futures is increasingly blurring – as the “impossible” manifests with greater frequency. This challenges not only how we define Black Swans, but how we interpret surprise itself. **Knowing that the degree of surprise or shock you experience from metaruptions correlates to your perspectives, your level of preparedness, timing and nature of any response.**

Some define Black Swans as events that arise without prior signals. Views remain divided. Others argue that many such events were, in fact, anticipated - but insufficiently heeded. This distinction matters. It shifts the focus from unknowability to perception, from absence of signals to failures in listening.

In that context, Covid-19 sits uncomfortably within the Black Swan category. Pandemic risks had been articulated for decades. **The issue was less one of imagination than of attention, prioritization, and preparedness.** Similarly, many so-called “post-pandemic shocks” - from inflationary pressures following prolonged monetary expansion, to asset valuation corrections, to systemic fragilities in supply chains and energy markets - were preceded by visible signals, even if their precise timing and interaction remained uncertain.

“Black Swans” have, at times, become a convenient shorthand for surprise - particularly where surprise is rooted in constrained assumptions, selective attention, or deferred investment in resilience. The designation can obscure the extent to which underlying vulnerabilities were already present and, in some cases, well understood.

This is where the distinction between Black Swans and other members of the Complex Five (Black Elephants, Gray Rhinos, Black Jellyfish, and Butterflies) becomes less about classification and more about context: the breadth of our assumptions, the diversity of signals we are willing to engage with, and the scope of our imagination. The boundaries between these categories are inherently liminal.

In an environment where increasingly many scenarios can be imagined, the challenge is not to catalogue every conceivable disruption, nor to retrospectively validate foresight with “I told you so” narratives. The purpose of scenario development remains preparation, not prediction. Its value lies in stress-testing assumptions, exploring second- and third-order consequences, and building capacity to navigate a range of futures - including those that resist neat categorization.

This shifts the emphasis toward resilience, and ideally antifragility - the concept articulated by [Nicholas Nassim Taleb](#). [10] Antifragile systems are not merely robust to shocks; they adapt and strengthen through volatility. This requires designing for optionality, cultivating redundancy to avoid single points of failure, and resisting over-optimization for efficiency at the expense of adaptability. Redundancy, slack, and overlap are not inefficiencies; they are enablers of continuity under stress. **The trade-off between efficiency and resiliency is a trade-off between fragile and antifragile...** This asymmetry means that the fragile suffers a disproportionate amount of downside from shocks.

Equally important is alignment through “skin in the game,” ensuring that decision-makers are exposed to both upside and downside. Without such alignment, incentives tend to favor short-term optimization over long-term resilience.

Ultimately, whether an event is labeled a Black Swan is less consequential than how we prepare for the conditions under which surprise emerges. Surprise is often less a feature of the external world than a reflection of the assumptions we embed, the signals we discount, and the preparedness we defer.

THE DUALITY OF CHANGE

Q5

Many futurists deal with organizations – corporations, governments, nonprofits, etc. – whose leaders see foresight as a complementary approach to mitigating risk. Do you believe futurists should seek to develop a new narrative – of inspiring hope and looking at disruption and uncertainty as a positive opportunity rather than a negative?

Many leaders see foresight as a complementary tool for mitigating risk, but treating foresight primarily as a defensive shield is a failure of imagination with a steep opportunity cost. Risk mitigation protects the known, while our world is now driven by **metaruptions**: self-reinforcing, nonlinear shifts that redefine industries, norms, and assumptions. Unlike terms such as “polycrisis” or “permacrisis,” which frame the future as perpetual disaster, metaruptions are value-neutral. They describe the raw mechanics of systemic change. Whether those dynamics lead to collapse or breakthrough is not fated; it depends on our **agency, mindset, and preparation**.

Metaruptions will redistribute trillions of dollars, presenting opportunities for immense value creation, while those clinging to business as usual face growing risks of value destruction.

Charles Richard Snyder, a pioneer of positive psychology, [identified two components](#) that move us toward our goals: pathways - the ability to imagine alternative routes - and agency - the will to pursue them. Counterintuitively, it is the **uncertainty** of the futures that makes agency possible. If the future were predetermined, we would be spectators in our own story. As Jean-Paul Sartre noted, “*existence precedes essence*,” meaning freedom emerges through choice. [11] In that sense, agency is a strategic option - if you don’t exercise it, it expires, and someone else shapes your future for you. To drive change, we must first regain the confidence that we are builders and makers, moving from a defensive crouch to an active stance that leverages metaruptions as an inflection point for reinvention.

Futurists should help organizations make that same shift - from insulating against risks to transforming through metaruptions. This requires **informed optimism**, following the Stockdale Paradox: **confronting brutal realities while maintaining confidence in our capacity to reshape them**. We are not seeking blind hope, but a deeper systemic understanding - so that we can trigger virtuous tipping points, those nonlinear moments when collective actions converge into large-scale transformation. [Research suggests](#) that when around 25% of a population commits to a new behavior or belief, the entire system can shift.

The narrative must evolve from *surviving* the future to building it. Storytelling and visioning are not decorative - they are strategic levers of change that build the connections and trust - the neurochemistry of cooperation - necessary for collective action. By framing uncertainty as a catalyst for agency rather than a threat to be managed, foresight becomes an act of empowerment. The role of futurists is not to predict the next crisis, but to help ignite the virtuous tipping points that pull preferred futures within reach. The highest opportunity of our time is choosing how we respond to our challenges.

Q6

MEGATREND REPORTS

Many organizational futurists find themselves in the position of identifying megatrends and creating annual reports, which they use to increase futures literacy within an organization. But what they really want is to see the value of their work translate into tangible action. What recommendations would you give them to drive more action within their organization based on the uncertainties that they are identifying and the scenarios that are creating?

Identifying megatrends or compiling annual reports often comes with the hope that they will inspire action. But trend analysis too often anchors us to the past. Trends describe patterns of continuity, not discontinuity. The world, however, is shaped by metaruptions - our nonlinear, cascading shifts whose consequences amplify through interconnection. Reports extrapolating old data forward offer a false sense of stability; the real learning lies in how systems behave when assumptions break.

METATRENDS	METARUPTIONS
Known, Prediction	Unknowns, Foresight
Determinate, Assumptions	Indeterminate, Uncertainties
Data, Analysis	Novel, Synthesis
Expected	Surprise
Continuous, First-order consequences	Discontinuous, Next-order impacts
Extrapolation, Fixed	Imagination, Emergent
Isolated, Combine	Systemic, Collide

PAST

PRESENT

FUTURE

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Figure 5. Metatrends vs Metaruptions

Relying on extrapolating trends, megatrends, or metatrends is dangerous:

- They compound flawed assumptions; with time, assumptions magnify; wrong assumptions cascade and blow up.
- The greater the pace of change, the harder it becomes to understand the long-term trajectory of a Metatrend by looking in the rearview mirror.
- They are derived from the past, extrapolating history towards the future.
- They present unrelated shifts as if they interact predictably with each other.

- They seldom account for second- or third-order consequences, implying continuity and a lack of spillovers.
- They over-index technology as a driver of change.
- They create a false sense of comfort, reliance, and knowability.

With Metaruptions we must ask: What are the higher-order implications? What lies beyond what we can currently see?

To move from insight to impact, foresight must focus on agency - translating futures intelligence into choices made today. Information alone does not transform systems; decisions do. The aim is not to predict what will happen, but to cultivate the readiness to act under conditions of deep uncertainty. This is where the AAA Framework - Antifragile, Anticipatory, Agile - becomes practical: build enhanced resiliency and foundations, stay alert to weak signals and next-order effects, and ensure decisions made in the present align with long-term aspirations. [12]

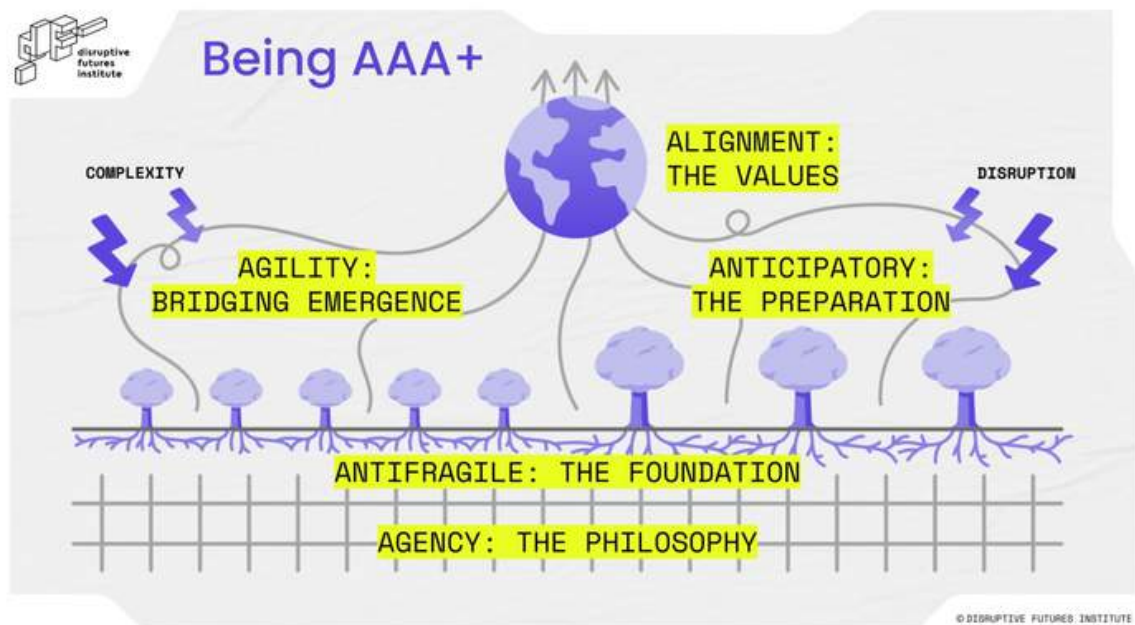


Figure 6. AAA Framework - Being AAA+

With metaruptions, we must move beyond future-preparedness and cultivate resilience. The AAA Framework [offers tools and mindsets](#) to build *Antifragile* foundations, develop Anticipatory capabilities, and apply Agility [13].

In the age of metaruptions, agility is indispensable. A defining feature of metaruptions is emergence - by which novel phenomena arise from interactions. Metaruptions demand three-dimensional agility:

- **Emergent agility** - engage adaptively with whatever futures arise.
- **Strategic agility** - reconcile preferred visions with today's unpredictability.
- **Cognitive agility** - solve challenges and unlock possibilities.

Cognitive agility is transversal: fluid thinking enables us to experiment with the unfamiliar and flow across disciplines. In a world where patterns are hard to interpret, this ability to synthesize and adapt is vital.

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Author of five bestsellers, including the four-volume series *The Definitive Guide to Thriving on Disruption* and the multi-award-winning *Disrupt With Impact: Achieve Business Success in an Unpredictable World*, Spitz's frameworks are adopted by organizations worldwide. He coined the term Techistentialism, founded the Techistential Center for Human & Artificial Intelligence, and contributes an AI column for MIT Technology Review Brazil. He is a venture partner at Berkeley SkyDeck and Vektor Partners, advising and investing in AI and deep tech startups. Spitz also serves on the AI Council of the Indian Society for Artificial Intelligence and on the World Economic Forum's AI Global Alliance, publishing extensively and speaking globally about the intelligence shift: exploring the future of AI and decision-making.

Previously, Spitz led Global Technology M&A at BNP Paribas, advising on more than 50 transactions valued at \$25 billion. Bilingual English and French, he has lived in 10 cities across three continents.

THE SPARE LUNG:

WHY RESILIENCE
DEMANDS STRATEGIC
INEFFICIENCY

By Jack Uldrich



You have two kidneys and two lungs.

By the logic that governs most modern organizations – lean operations, optimized supply chains, quarterly performance metrics, etc. – this is an extraordinary waste of resources.

And yet here we are – the product of 3.8 billion years of merciless selection pressure –walking around with backup systems that most of us will never consciously use.

I've spent the better part of my career as a futurist helping organizations prepare for what's coming, but I've come to believe something that may sound like heresy from someone in my profession: the most valuable thing I can offer is not a prediction. It's a framework for thriving when the prediction turns out to be wrong.

This framework begins with a lesson nature learned long, long ago: the systems that endure across long time horizons look wasteful on short ones.

What follows is an argument for what I call strategic inefficiency – and why the future belongs not to those who can see what's coming, but to those who've built the capacity to respond to what they never saw coming.



1. THE PREDICTION TRAP

I'll confess something. There is a gravitational pull in my profession toward forecasting. Clients desperately want to know what's coming next and conference audiences tend to reward those speakers who offer the boldest predictions.

But the deepest insight of black swan thinking is not about any particular prediction. It is that the most consequential events are the ones nobody predicted. And this pattern is remarkably consistent.

In 1998, the global economy nearly collapsed because of a little-understood algorithm at Long-Term Capital Management. In 2001, an unforeseen terrorist attack reshaped world politics and economics overnight. The financial crisis of 2008 and ensuing global recession? It escaped the collective attention of virtually every known economist. And COVID-19 accelerated trends that were already quietly reshaping the world, but in a timeframe few anticipated.

Most of these scenarios were not on anyone's five-year strategic plan. Each was, in its own way, a black swan – an event that lived outside the distribution of what experts considered possible.

This creates a paradox I think my fellow futurists need to sit with: if the events that matter most are the ones we cannot foresee, then the highest-value work we do may not be offering the scenario that turns out to be correct but, rather, helping organizations build the capacity that makes the specific scenario irrelevant.

Here's a thought experiment I sometimes use with clients. Imagine four radically different disruptions arriving in the next decade: a severe solar storm that cripples the electrical grid and renders our electronic infrastructure useless, an AI breakthrough that displaces most knowledge work, a global financial collapse, or a geopolitical conflict that fragments the global supply chain.

I then ask what would help in all four scenarios, and the answers converge fast: liquid reserves, diversified supply networks, empowered local decision-makers, strong community bonds, cross-trained people, and leaders practiced at making calls with incomplete information.

Ironically, none of the capabilities require the organization to know which future is coming. Instead, each one requires that they make an investment before knowing the future.

I call this "the shift from prediction to preparation," and it demands that we unlearn one of our profession's most deeply held assumptions: that our job is to tell people what's coming.

Instead, our job is to give our clients the language and legitimacy to defend investments that only pay off in futures they can't yet see.

2. THE WISDOM OF WASTE

If preparation matters more than prediction, then we need a vocabulary for the kind of preparation that works. The term I want to propose is "strategic inefficiency" – the deliberate maintenance of spare capacity, redundancy, and slack which appears wasteful under normal conditions but becomes essential when conditions change. Nature offers a master class in this way of thinking.

A wild grassland carries enormous genetic variation, most of which is "underperforming" at any given moment compared to a monoculture optimized for yield. But what is hidden in plain sight is that this variation offers a reservoir of potential responses. When a novel pathogen arrives, some variant is already adapted. The Irish Potato Famine (1845-1852) stands as the tragic human-scale example of this thinking: a nation fed by a single cultivar had optimized for yield and, sadly, eliminated the redundancy that might have spared millions of lives (reducing Ireland's population by an estimated 20-25%).



The human body immune system works on the same principle. It continuously produces a vast diversity of antibodies, most of which will never encounter their matching pathogen. Spectacularly wasteful by any efficiency metric. But the tiny fraction that does match a novel invader can be the difference between a mild illness and death. The system works precisely because it does not try to predict which threat is coming, rather it maintains a broad, expensive, apparently pointless portfolio of responses.

The lesson is consistent across every scale of biological organization. Redundancy is not a waste. It is the price of continued existence. Put it in more stark terms: no one has ever regretted having a spare lung.

3. STRATEGIC INEFFICIENCY IN PRACTICE

The business world offers its own case studies, though they are rarer because the dominant management culture actively selects against strategic inefficiency. One example of a company that bucked this tendency was Toyota.

After the massive 2011 earthquake and tsunami that struck Japan, the company quietly began maintaining strategic stockpiles of critical components – particularly semiconductors. This strategy broke with its decades-long policy of “just-in-time” thinking, but when the global chip shortage hit in 2020, Toyota weathered it far better than competitors who had optimized more aggressively. They had accepted a known, ongoing cost to hedge against an unknown, intermittent risk.

Warren Buffett’s Berkshire Hathaway has similarly been criticized for decades for holding what analysts call “excessive” cash – often tens of billions of dollars in Treasury bills earning modest returns. In any given quarter, this drags on performance. But when crises hit, Berkshire has the liquidity to act decisively while others scramble for survival. In this way, the company’s cash isn’t idle, it’s a purchased option on an unknown future.

What unites the two examples is a willingness to pay an ongoing, visible cost for a capability whose payoff is intermittent and unpredictable. Each organization looks slightly foolish in calm times, but it is that apparent foolishness that allows them to thrive when the storm arrives.

4. THE UPSIDE OF THE UNKNOWN

Here is something we need to unlearn about black swans: they are not all bad. There is a natural tendency, when discussing uncertainty, to focus on catastrophe – the financial collapse, the pandemic, the geopolitical rupture. But black swans cut both ways. The internet, penicillin, mRNA vaccine technology, the smartphone were



all largely unforeseen, massively consequential events that created enormous value for those positioned to act on them.

This matters because strategic inefficiency is not only a defensive posture. The same slack that allows an organization to absorb a negative shock also allows it to seize an unexpected opportunity. Berkshire's cash reserves don't merely protect the company during downturns – they allow the company's management to buy aggressively when markets panic. Toyota's supply chain flexibility doesn't just prevent production stoppages – it allows faster pivots when demand shifts in unforeseen directions.

If resilience is presented solely as insurance against disaster, it will most likely lose the budget argument. But if resilience is understood as the capacity to capture positive disruptions as well as survive negative ones, the calculus changes entirely. The organization with slack, optionality, and adaptive speed is not merely safer – it is better positioned to seize windfalls that rigid competitors can't even recognize until the moment has passed.

5. RISK IS NOT UNCERTAINTY

I'd like to challenge an assumption that runs deep in corporate planning, in the insurance industry, and in much of the futures profession itself.

We treat the future as though it can be modeled probabilistically. We assign likelihoods to scenarios, price insurance premiums based on historical loss distributions, and stress-test portfolios against defined shocks. These are powerful tools. But they also share a critical limitation: they work only when we have reliable historical data.

True black swans, however, live in the domain of uncertainty, not risk. It is not a low-probability event on a known distribution; it is an event from outside the distribution entirely.

This distinction has profound consequences which we routinely ignore. The 2008 financial crisis was not a failure of risk models in their own terms. It was a failure of imagination – an inability to conceive that the models' assumptions could be wrong in ways the models themselves could not detect. The same pattern recurs with every true black swan: the tools built for calculable risk break down precisely when they are needed most.

I like to think in what I call “cones of possibility” – the gray shades of probability rather than the black-and-white world of certainties.

Probabilistic risk tools remain essential for the predictable portion of the future. But they must be complemented by the kind of structural resilience I've described – the strategic inefficiency, optionality, and adaptive capacity that do not depend on correctly modeling what is coming. The first protects against known risks. The second protects against the unknown ones. And any organization that relies only on the first is precisely as fragile as its models are incomplete.

6. THE DISCIPLINE OF NOT KNOWING

Here's an uncomfortable truth.

Strategic inefficiency is easy to understand intellectually but it is extraordinarily difficult to put into practice. The obstacle is less about logic and more about psychology.

Human beings are spectacularly bad at sitting with genuine uncertainty. We compress it into false confidence – overconfident forecasts that feel better than admitting we don't know.

We also retrofit tidy narratives after the fact, convincing ourselves that what happened was obvious all along. Often, after a black swan event, a consensus will form around the idea that the event was "obvious in retrospect." After 9/11, for instance, countless experts claimed the intelligence communities should have seen it coming. After the 2008 crisis, analyst after analyst lined up to explain why the housing bubble was always destined to pop. And, after COVID, we heard endlessly that a pandemic was "predictable."

This false "retrofitted clarity" reinforces the belief that the next disruption will also be foreseeable – that the future problem will be a failure of analysis rather than a feature of genuine uncertainty. The unfortunate result is that organizations over invest in better predictive tools such as artificial intelligence and under invest in the adaptive capacity that would serve them regardless of what might happen.

7. BETTER QUESTIONS, NOT BETTER ANSWERS

There is a conventional expectation of leaders – and of futurists – that we provide answers, clarity, direction, and a confident vision of what lies ahead. But in the domain of genuine uncertainty, this expectation or burden of always having to have the answer(s) becomes a liability.

A leader who feels compelled to have answers will, in the absence of real knowledge, manufacture false ones: a confident forecast, a decisive-sounding strategy anchored to a single scenario, a reassuring narrative that mistakes conviction for competence. I have seen this happen in boardrooms more times than I can count.



The more honest and, ultimately, more useful posture is one that prizes better questions over premature answers. What assumptions are we making that we haven't examined? Where are we most concentrated, most dependent on a single point of failure? What are we optimizing for, and what are we sacrificing to get it? And perhaps most importantly: what are we not seeing?

These questions do not predict black swans. They reveal the structural vulnerabilities that black swans exploit.

The organizations that weather black swans best are rarely the ones that saw them coming. They are the ones that have been asking the right questions long enough to build the reflexes, relationships, and structural flexibility that no forecast can substitute for.

8. BUILDING FOR WHAT YOU CANNOT SEE

If these ideas share a common thread, it is this: the systems that survive across long time horizons – biological, organizational, social – share a set of features that look like defects under the lens of short-term efficiency. Redundancy, slack, diversity, distributed authority, and the tolerance of apparent waste are not bugs in resilient systems. They are the architecture of resilience itself.

Nature figured this out a long time ago. The question – and it is a question, not an answer – is whether we are willing to learn from it before the next black swan forces the lesson upon us.



Jack Uldrich is a well-recognized global futurist, speaker, and the author of 14 books. He is a frequent speaker on technology, change management and leadership and has addressed hundreds of corporations, associations and not-for-profit organizations on five continents.

Jack is a former naval intelligence officer and Defense Department official. He served as the director of the Minnesota Office of Strategic and Long-Range Planning under Minnesota Governor Jesse Ventura. His books *Business as Unusual: A Futurist's Unorthodox, Unconventional, and Uncomfortable Guide to Doing Business* and *The RE Generation: How Today's Agents of Change Are Creating a New Business Ethos* have helped many navigate trends that emerged and converged during the past five years. His most recent book is *A Smarter Farm: How AI is Revolutionizing the Future of Agriculture*.

Uldrich also teaches a course on strategic foresight at the College of Saint Benedict and Saint John's University and is the futurist-in-residence at the Steger Leadership Center in Ely, Minnesota.



THE ALGORITHM WAR:

THE WORLD
BENEATH
THE WORLD

By John Threat



Editor's Note: This is the first article in a three-part series. The next article will explore how algorithmic warfare is reshaping institutions, economies, and governance worldwide and some frameworks and systems we can use to dream up a new direction for these technologies.

In September 2025, Benjamin Netanyahu admitted something remarkable on live television: Israel was losing the social media war. Not a military war. Not an economic war. The *algorithm war*.

Leaders from the most powerful nations on earth involved in conflicts aren't mentioning troop movements or the amazing new munitions like drones and robots: they are concerned with the algo war. The war for perception.

The Algorithm war determines geopolitical leverage internationally, and controls morale at home which in turn determines political will. Every major nation state is working to enter this emergent battlefield with new weapons, techniques, intelligence offices and military units. The algo war will shape geopolitical futures for the next 100 years.

Marshall McLuhan (Medium is the Message) quipped: "We don't know who discovered water, but we're pretty sure it wasn't a fish." The same applies to algorithmic infrastructure. We're all swimming in it, shaped by it, but most institutions still can't see it operating. This invisibility is algorithmic warfare's primary advantage – the battlefield is everywhere and nowhere, the weapons are engagement metrics and recommendation systems, and most decision-makers don't even know they're under attack.

From our complex connected world, the algorithm has emerged as a new domain, a substrate in our society to fight over – for hegemony. It may just determine who controls this planet.

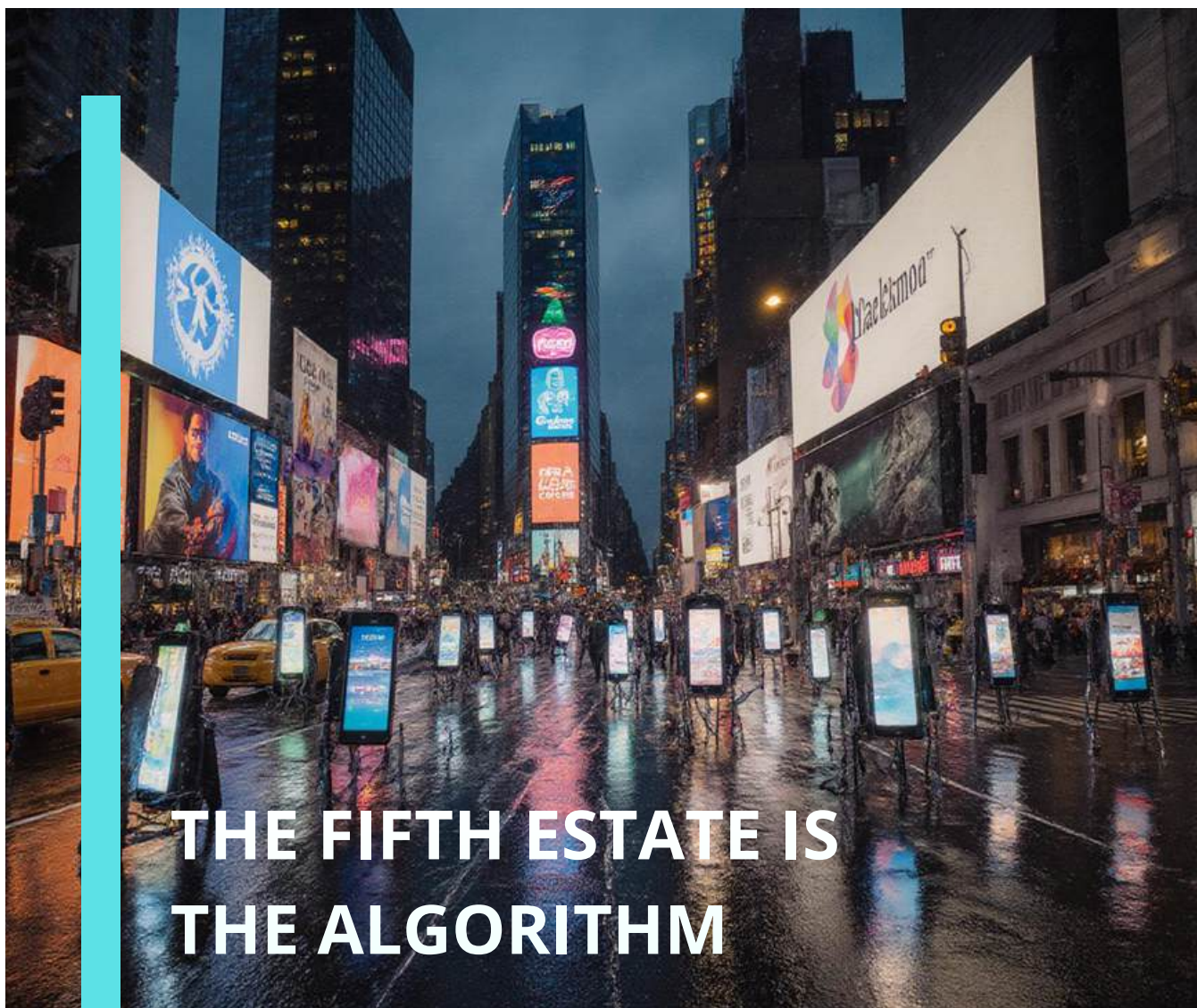
This is the world beneath the world. The unseen war.

THE TIK TOK DOCTRINE

Never have two superpowers publicly battled for control of an algorithm. The multi-year TikTok fight ended in an unprecedented arrangement: shared custody between rivals. The USA didn't want to ban it, they wanted IN on the data so badly they let China keep a slice, as long as they gave America a cut.

Compare this to the last great weapon system that proliferated. The nuclear bomb sparked elaborate games of espionage, sabotage, and resource denial, all behind the scenes over decades. The TikTok battle happened in public, with bipartisan crowds in the streets demanding access to their feeds.

China requires U.S. products to reveal their algorithms in full before market entry into their country. The U.S. does the opposite: algorithms aren't questioned as long as you pay enough to the Congressional lobby apparatus. The algorithm has become a geopolitical lever, its data a global resource.



THE FIFTH ESTATE IS THE ALGORITHM

We have a new mature domain of power. The four estates: leaders, elites, the people, the press have been disrupted. At the turn of the century, some tried to assign the fifth estate to bloggers, but they've simply merged into the fourth. Bloggers are journalists now, and journalists are podcasters. The actual fifth estate is the algorithm: the new power dynamic in geopolitics.

Historical leaders kept wizards and alchemists to navigate foreign affairs; advisors who saw patterns invisible to others. Today, the missing position in most cabinets and institutions isn't the social media manager or CIO (though institutions often confuse the two for this praxis). It's the **Algorithmist**: someone who understands the emergent field now controlling the fate of nation-states, companies, societies and culture.

THE DATA THAT BINDS



This battlefield emerged from tech utopianism. Pitched as the medium for global democracy and understanding, it became one of the most powerful asymmetries since the nuclear bomb. Runaway surveillance capitalism that weaponizes global connectivity itself. A Jevons paradox of data: instead of clarity between nations, confusion. Instead of understanding, manufactured consent at the press of a button.

In Myanmar, Facebook's recommendation engine amplified genocidal content against the Rohingya. UN investigators concluded the platform played a "determining role" in the violence. Not contributing. Determining. [1]

In Ukraine, the information war runs parallel to the kinetic one. The Delta battlefield management system collapsed targeting cycles from 72 hours to 2 minutes; but the war for narrative moves even faster. TikTok targeting drone strikes. Telegram resistance channels. Algorithms deciding which atrocities trend and which disappear, and amplifying for example video game footage of a jet fighter called the Ghost of Kiev that fooled some air force vets, built morale for Ukraine and suppressed that of Russia. The Arab Spring was celebrated as a Twitter revolution.[2]

A decade later, the same platforms that enabled organizing now enable surveillance, manipulation, and suppression. The tools didn't change. The understanding of how to weaponize them did.

[1] Source: Marzuki Darusman, Chair of the UN Independent International Fact-Finding Mission on Myanmar, briefing to the UN Human Rights Council, March 12, 2018. Darusman stated social media had a "determining role" in the conflict, adding "as far as the Myanmar situation is concerned, social media is Facebook, and Facebook is social media." (Reuters, March 12, 2018.)

[2] Source: Philip N. Howard et al., "Opening Closed Regimes: What Was the Role of Social Media During the Arab Spring?" Project on Information Technology and Political Islam, University of Washington, 2011. Plus Clay Shirky, Foreign Affairs, "The Political Power of Social Media," January/February 2011 — the canonical "Twitter revolution" framing.

AI: THE WEAPON FORMED FROM THE ALGORITHM



Everything dangerous about algorithmic warfare is now accelerating exponentially. Every new domain: outer space, underwater, cyber, brings new tools and weaponization. AI is born from the digital realm's infrastructure, literally made from algorithms. It's the perfect weapon for this domain.

Deepfakes that once required specialist teams can now be generated by a teenager with a laptop. Sentiment manipulation that needs vast troll farms can be automated at scale. The friction that once limited propaganda; human labor, production costs, distribution time, has collapsed.

Systems that learn, adapt, and scale faster than any human institution can respond are already online. They've calculated your potential response and challenged it before it becomes policy.

Technology is moving faster than ethics and governance. Open source, corporate extraction, state hegemony, everyone is racing. Even tech-forward institutions lag behind, convening AI ethics conferences while pushing policy for products that have evolved multiple iterations by the time the law passes a year later. And who's implementing anything? This domain hides in the infrastructure of global commerce, governance, and communications, running on mobile nodes that can exist anywhere. Institutions have to adapt by being in front of the change and not chasing it from behind.

DATA COLONIZATION

The superpowers are also exporting the tools for the algo war to extend their hegemony. Data colonization through infrastructure.

The U.S. has Palantir, now embedded in allied nations' intelligence systems, their data flowing back to American servers. China has Mininglamp, selling social credit and predictive policing to countries but the architecture feeds Beijing. Saudi Arabia's HUMAIN: \$100 billion in AI initiative branded as "smart cities," and exported to neighbors. [3]

Venture capital is pouring money into corporate click farms recognizing what first started as hidden cell phone racks in basements in countries most people can't find on a map, that power should be up for sale on the stock market as a SaSS and receive government contracts. [4]

[3] Sources: NYT investigation, Paul Mozur, Muyi Xiao, John Liu, "An Invisible Cage: How China is Policing the Future," June 25, 2022 (Mininglamp / predictive policing architecture feeds Beijing). Atlantic Council, "The West, China, and AI surveillance" (December 2020) — export pattern through Belt and Road. Reuters / Arab News, May 13, 2025 — HUMAIN launched by Saudi Arabia's Public Investment Fund as a \$100B sovereign AI initiative including data centers, the ALLAM Arabic-first LLM, and AI infrastructure for NEOM "cognitive cities," with declared regional export ambition by 2030.

[4] Source: NCRI / Rutgers, "America Last: How Fuentes's Coordinated Raids and Foreign Fake-Speech Networks Inflate His Influence," Network Contagion Research Institute, December 2025 — documents foreign bot-farm amplification of US political discourse, the SaaS-ification of inauthentic engagement, and platform algorithmic interpretation of synthetic engagement as organic legitimacy.

Nations without resources to build their own systems are giving up their data sovereignty, products sold to them as a way to shape their societies by surveillance capitalism. Either way, their data enters another nation's data dark pool, their citizens profiled by someone else's algorithm, their sovereignty quietly captured through the infrastructure they thought they purchased.

Traditional geopolitical frameworks assume sovereignty is defended through borders and military force. Algorithmic infrastructure don't see borders; it flows through them like water through sand. The defensive advantage that defined centuries of warfare has inverted: a well-coordinated campaign using open-source tools costs thousands, while defending against it costs billions.

Switzerland's military formally rejected Palantir after a security audit concluded that U.S. intelligence agencies could access sensitive Swiss defense data through the CLOUD Act – regardless of where servers physically sit. The Swiss report warned that data leaks from Palantir systems “cannot be technically prevented.” For a neutral nation outside NATO, trading sovereignty for efficiency was unacceptable, for now this is an outlier and not a trend.

DATAFASCISM



A consequence of the algorithm war is the decline of democracy globally.

The algorithm is weakening all institutions because they fundamentally don't currently have the ability to understand or respond to the algorithm. The internet was supposed to bring openness. Instead, countries are scrambling to maintain digital sovereignty through firewalls while surveillance capitalism hands governments the tools to control their populace, and non-state actors the ability to destabilize nations with a room full of cell phones. We live in a post-truth world where manufactured consent went from taking years to minutes.

Democracy requires informed consent.

Voting means nothing if the beliefs that drive votes are manufactured. A click farm can suppress a nation or galvanize it, microtarget a district, and turn neighbor against neighbor. It's the Twilight Zone episode where aliens flip lights on and off until everyone turns on each other with suspicion, except now you don't need a spaceship, just a social media page plugged into the algo.



Elections are swayed by algorithmic amplification. Public health undermined by recommendation engines boosting anti-vaccine content for engagement. Communities radicalized not by charismatic leaders but by feeds that learn what makes people angry and serve them more.

The mechanics are now documented. Researchers from NCRI traced the amplification pattern of some extreme political pundits in the U.S.: sixty-one percent of early retweets came from coordinated repeat accounts, nearly half the viral engagement originated from foreign bot farms in India, Pakistan, and Nigeria. Media coverage of one of the individuals receiving this amplification increased threefold as platforms interpreted synthetic engagement as organic legitimacy. Artificial visibility became real political influence – and most institutions still cannot detect the manipulation even when shown the evidence.[5]

Geopolitical diplomacy becomes impossible when populations believe incompatible realities; some leaders have even fallen for their own propaganda and begin making decisions based on it. Every aspiring authoritarian is watching closely. The playbook is being written in public. The tools are for sale on the open market - just add it to your cart, install, and control.

[5] Source: Same NCRI "America Last" report (Network Contagion Research Institute, December 2025, networkcontagion.us). Direct cite to this study — it contains all three statistics: 92% of earliest repeat retweeters from coordinated networks, ~50% of viral engagement from overseas clusters in India/Pakistan/Nigeria/Malaysia/Indonesia, and the 3x increase in media coverage as a result.

THE DARK POOL

Every data breach, every web scrape, every dataset sold between private and state data brokers feeds the same reservoir. Most people have no idea the scale of this unseen data market with all the databases from their nations for sale. This is the fuel for the algorithms.

Once data hits the pool, scale becomes irrelevant. The algo can zoom out to manipulate populations or zoom in to target a single person. A billion users or one user, same infrastructure, same tools.

The destination doesn't matter. Dark web dumps, broker markets, state acquisition. It all ends up in the same place: training sets, targeting databases, manipulation engines, surveillance systems, fraud, wealth extraction tools, geopolitical intelligence operations. Capitalism and statecraft drink from the same well. The distinction between advertising and influence operation is just who's paying. You are already in the pool.

Most people have no idea there's a shadow version of themselves distributed across databases in countries they've never visited, held by companies they've never heard of, feeding systems they'll never see to be used for targeting. Maybe you'll get an ad today, a drone strike tomorrow. [6]

[6] Source: General Michael Hayden (former NSA Director), public remarks at Johns Hopkins University, April 2014: "We kill people based on metadata." Plus The Intercept, Jeremy Scahill and Glenn Greenwald, "The NSA's Secret Role in the U.S. Assassination Program," February 10, 2014 — documenting how NSA metadata directly enables drone targeting.

ALGO-POLITICAL

The reactionary response is to build digital walls. GDPR. Social media application bans. Russia's RuNet. China's Great Firewall. Internet ID schemes. But walls don't contain algorithms, they just reshape the battlefield.[7]

Algorithmic control destabilizes the wielder too. These weapons are cheap and accessible. Similar to how drones have proliferated globally, now every state and non-state actor has access to the most effective physical and digital battlefield weapons ever created. Color revolutions that once took months now take hours, a few agents, a social media campaign, a march on the capital.

AI surveillance capitalism became the dominant mechanism for eroding sovereignty without firing a shot.

[7] Source: Margaret E. Roberts, *Censored: Distraction and Diversion Inside China's Great Firewall* (Princeton University Press, 2018) — empirical study of how the Firewall reshapes rather than contains information flows. Plus ECFR, "Get Over Your X: A European Plan to Escape American Technology," Tobias Gehrke and José Ignacio Torreblanca, December 10, 2025 — on GDPR + EuroStack as reshaping rather than containing the algorithmic battlefield.

THE ASYMMETRIC CYCLE

Every dominant weapon system in history has generated its own countermeasure rendering it useless. Naval blockades ruled the seas until submarines made surface fleets sitting ducks; suddenly a handful of U-boats could sink entire armadas, rendering centuries of naval supremacy obsolete overnight.

The naval blockade was brought back in 2025 against a country that didn't have submarines, but they miscalculated that the cheap drone technology found its way to non-state actors and quickly sent the naval blockade (dumping millions of dollars of jet planes into the ocean on the way) back into the historical bin of ineffective geopolitical tools.

What would happen if we engaged the asymmetric cycle paradigm?

I challenge futurist and foresight thinkers to explore how to use this substrate, could it be used for peace? For enacting climate change futures now? Or tackling the other facets of the polycrisis we are currently in and new ones we will be facing soon.

SOURCES/ FURTHER READING

"Netanyahu Acknowledges Israel Losing Online Propaganda War" — *Times of Israel*, August 10, 2025

[Link](#)

"UN: Facebook Had a 'Role' in Rohingya Genocide" — *Al Jazeera*, March 2018

[Link](#)

"Palantir Sues Magazine That Revealed Switzerland Rejected Its Approaches" — *Financial Times*, February 2026

[Link](#)

"America Last: How Fuentes's Coordinated Raids and Foreign Fake-Speech Networks Inflate His Influence" — *Network Contagion Research Institute / Rutgers University*, December 2025

[Link](#)

"How Thomson Reuters Powers ICE and Palantir" — *Joseph Cox / 404 Media*, April 2026

[Link](#)

Author's Note: This article was drafted in late 2025, during a period when the Datafascism framework and Algorithm War thesis were still emerging. As of publication, many of the patterns described here have moved from prediction to documented reality. The next piece in the series will map these dynamics and address these new major events, and the emerging counter-infrastructure of democratic intelligence. Visualizing not only the architecture of the algorithmic battlefield but possible solutions and frameworks for organizations that want to navigate beyond it.

John Threat is a hacker, futurist, professor and global security advisor. He's lectured at the Kennedy Center on AI and University of Chicago, appeared on the cover of *Wired* and on *60 Minutes*, and been featured in *The Washington Post*. He founded *RIP SPACE*, an AI-native art/tech/culture studio in Los Angeles and recently produced the *Vibe Code Jam* in collaboration with *Rhizome* and *Anthropic*.





STEALTH SWANS, WRAITHFUL ALARMISTS, AND PREPOSTEROUS COMICS

| By Jim Dator



This issue of Compass features articles about Black Swans, Wild Cards, and other futures that lie outside the popularly accepted cone of “possible, plausible, probable and preferable futures” that long has been accepted as a trusty staple in many futurists’ quiver of reliable arrows for piercing the bullseye of “the most likely future.” There is overwhelming agreement among all authors here that if “predicting the future” was ever the goal of futurists and futures studies, it should not be the goal now because of the fluid, contradictory, and wholly uncertain conditions we live in now:

Das says we have moved “from an environment shaped by prolonged ‘crisis’ to intrinsic ‘chaos.’” “Long-range prediction of chaotic systems [is] fundamentally impossible” in spite of “continuity bias” on the part of most futurists and their customers. Hames calls this “the cult of the normal.”

Rostek speaks of the “global polycrisis” (that was the subject of an issue of Compass a while ago) where “events and crises unfold at an accelerating rate” to which Damian adds the metaphor of “Polycrisis Cascades.”

Damiani claims that “what defines this era is entanglement,” the interconnection between processes, and not the identification of one, or even a list of events.

Frost calls attention to a widespread “collapse awareness [that] has changed the emotional landscape of leadership, and futurists.”

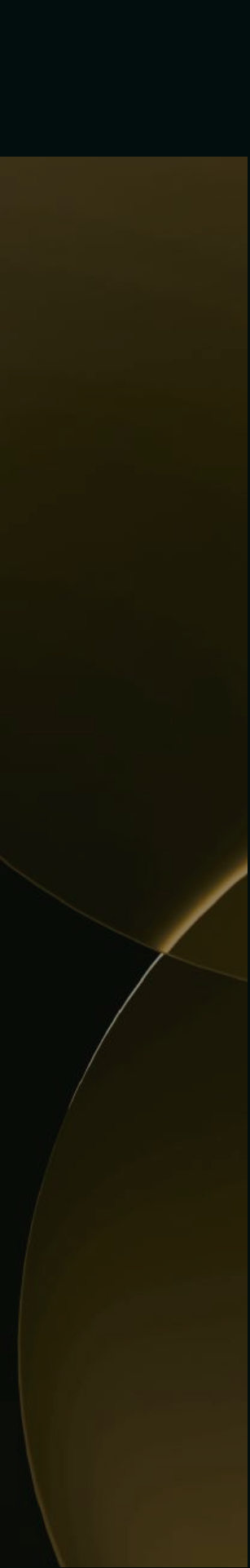
Maillet notes profound “uncertainty.”

Hames claims that “surprise is no longer a trivial psychological quirk. It’s become a structural condition; the air we breathe.”

Spitz observes that “as extreme events appear with greater frequency, the challenge for foresight is not only to detect weak signals, but also to continually expand what we consider possible.” Indeed, he and Dupont ask, “Is Everything a Black Swan” now?

Uldrich, concludes that paying “clients desperately want to know what’s coming” but that the “most consequential events are the ones nobody predicted.”

So, if we can no longer predict the future, while most clients may assume that is what they are paying for, what are we to do as futurists? Again, while each futurist has their own special way of plying their trade, there was a considerable amount of agreement that we need to change what we do, how we do it, and even who we are:



Das says we should shift the focus of our work “from probabilistic certainty to instability sensing,” “from trendlines to system dynamics,” and “from bounded scenarios to branch pathway scenarios [that] model the decision nodes and trigger events at differing moments systems could shift trajectory.” “The most consequential inputs to a system are often those that currently appear insignificant, negligible and inessential...., determinants that never become independently consequential, but whose interaction with a system at a specific threshold moment may produce outsized, irreversible consequences.”

Cooper similarly shows that futurists should shift their emphasis “from prediction to pattern recognition and intervention design” while making “agency visible.” We should “reframe foresight from a speculative exercise into a disciplined practice of intervention using a three-horizon scheme.

Rostek observes that “science fiction novellas are designed to stretch plausibility in order to better anticipate and navigate the speed and uncertainty of which change is experienced.” “Indeed, science fiction novellas can be used to anticipate and visualize Wild Cards and Black Swans.” He discusses how the Canadian Army developed and used two rigorous and detailed science fiction novellas.

Fisher claims that to be useful now, “futurists guide leaders through shock events.” “We help leaders navigate the deeper transition shocks triggered” during “the shift from one operational reality to another.” “We didn’t try to pick the ‘right’ future. We designed strategies that would hold up in several,” referring to their book, *SuperShifts*, for details.

Frost comments on a major shift that has occurred in the general public’s perception of the present and immediate future: the likelihood of system collapse. Suddenly, “calm, humor, and grounded presence are no longer ‘soft skills’ [for futurists] – they’re required professional competencies.” “We are no longer the future expert with all the answers, but a capacity builder.” As such we should frame “collapse awareness as a creative breakthrough,” emphasizing “presence over prognostication,” embracing our “emerging role as companion,” “manifest calm as activism,” utilize “creative disruption over control,” “disrupt despairalysis” rather than wallowing in it; see that being “small is strategic,” and above all celebrating “joy over resilience.”

Damiani declares that “where rubber meets road for futurists is not in identifying the single shock, but in preemptively charting cascade paths.” “Wild card-spotting is no longer a secondary foresight activity; it’s table stakes.” The “value of foresight now lies in tracing how wildcards collide, synchronize, and cascade, and in building living maps of interdependence. We need “polycritical foresight.”



Maillet also asserts that Riel “Miller argues that we must first abandon the pursuit of certainty,” and show “humility toward the unknown, comfort with not-knowing, and confidence in continuously experimenting in a world where outcomes cannot be predefined.”

Hames claims that “surprise doesn’t come from nowhere. It breeds in the gaps between how systems actually behave and how we prefer to imagine them.” “Anticipation then becomes a kind of craft. We’re not guessing the precise shape of tomorrow’s shockwave. We’re mapping where shockwaves, whatever their origin, will hurt most,” “expanding the field of the plausible.” “Instead of projecting certainty, authentic leaders would normalise not-knowing.”

Spitz expands the arenas of our unknowing by introducing “The Complex Five”: Black Elephant (Known Unknown), Black Jellyfish (Unknown Known), Black Swan (Unknown Unknown), Gray Rhino (Known Known), and the Butterfly Effect, acknowledging that Sardar and Sweney use the term “Black Jellyfish” as a feature of what they designate as our ‘Postnormal Times.” Spitz applies the Complex Five to an analysis of the emergence and impacts of AI, showing that the impacts are especially significant in conventional processes of decision-making and education. “Reinventing education, from the playground to the boardroom, is now an existential priority” because of AI.

Finally, Uldrich, postulates “a lesson nature learned long, long ago: the systems that endure across long time horizons look wasteful on short ones.” Even though “clients desperately want to know what’s coming” “the most consequential events are the ones nobody predicted.” Thriving does not “require the organization to know which future is coming. Instead, the focus must “shift from prediction to preparation.” “Redundancy is not a waste. It is the price of continued existence.”

Amazing agreement, it seems to me, that we are in a new environment that requires a new kind of futures studies and futurists.



But is the world actually more chaotic than usual? Or are we just more aware of it because of social media, or (my contention) the shift from Information Societies to Dream Societies?

Comments:

It may be true that some of us were taught and then taught our clients that the future is a linear and somewhat predictable process of continued economic growth within a cone of possible, plausible, probable and preferable futures. “Continue” — specifically, continued — economic growth has been the preferred future (indeed, the official future) of all major institutions in industrial and information societies.

Any serious deviation from that view would have made us pariahs in the consulting futurists’ community and limited our employability by being “too negative.”

To be sure, there were futurists who insisted there were, for example, always four generic, alternative images of the future in the minds and manifestations of humans, of which “continue” was one. But we also insisted that images of collapse, discipline, and transform could be found by those who looked diligently. And some of us insisted that futurists are not studying “the future,” which does not exist, but images of futures which do exist to be collected, studied, and used in understanding the minds and behaviors not only of our clients but also of the wider world of life and physics. But we were fuzzy-headed tenured eggheads who didn’t know how to park our bicycles straight. We didn’t have to tell a nice story in order to have a nice living...though first Covid and then MAGA have put an end to that brazen tranquility.

For some time, “collapse,” which was always an arrow in our futures quiver, has totally overwhelmed and replaced continued growth as the dominant image, while we persist in insisting that all four images of alternative futures exist and always will, some more popular sometimes than others, and some largely ignored.

Now, everyone recognizes the end of “normal” linear prediction and the interconnectedness of EVERYTHING. But that is no help at all.

Anything can happen but everything can’t happen all at once, so when, where, and why all hell breaks loose is central even if we are well prepared for it.

The longer I live the more I realize our biggest lack is not ignorance of future events that we need to take seriously and prepare for now. Even for Covid, or the Fall of the Wall, or AI, or you name it, we had sufficient fictional and professional, scholarly, expert plans and often extensive preparations. Many of us knew and told what was coming and we knew how to make the most of it.

What we lacked—and still lack—was the cultural, ideological, political, and public will to act on our preparations when the time comes.

As Spitz noted, our wholly dysfunctional political, economic, and educational systems overwhelmingly discount the future, and so make it impossible to act quickly and effectively in the present even though we are fully forewarned and forearmed.

Die laughing?

Recently, Dr. Park Yongseok, a magnificent PhD graduate of mine a while ago, called my attention to a doctoral dissertation successfully defended in January 2026 at Yonsei University in Korea by Park Eun Sun, titled “Preposterous Comedy Approach to Speculative Critical Design.” Dr. Park served on the dissertation committee. The dissertation documents the sophisticated, extensive, and rigorous process by which Park Eun Sun examined the role that various forms of comedy play in identifying Black Swans and other emerging issues. It is an extraordinary achievement.

Though Frost stated that humor is a soft skill futurists need now, and urged us to celebrate joy over resilience,

neither she nor anyone else claimed that we might have a better understanding of what is important in the future if we paid less attention to things that make us afraid, angry, and hateful, and more to things that make us laugh.

That may be our fundamental problem as futurists – and as members of western culture. We know that Jesus wept, and sometimes acted in anger – like when he threw the money changers out of the Temple – but did he laugh, and make others laugh? The Bible is silent on the point. But he was obviously a powerful, persuasive, inspiring, indeed, popular speaker. He must have known how to make salvation more compelling and accessible by infusing his sermons with humor. Indeed, he might well have roused a wry chuckle when he cracked that “it is easier for a camel to go through the eye of a needle than for a rich man to enter into the kingdom of God” or when he chided hypocritical Pharisees who “strain at a gnat but swallow a camel.” Imagine what our world and future might be like if Jesus were understood to be not only the prophesized sacrificial savior of the world, but also the first of a long-line of stand-up comics who riffed on the preposterous.



James Allen (Jim) Dator is Professor Emeritus and former Director of the Hawaii Research Center for Futures Studies, Department of Political Science, University of Hawaii at Manoa; Core Lecturer, Space Humanities, International Space University, Strasbourg, France; Adjunct Professor, Graduate School of Futures Strategy, Korean Advanced Institute of Science and Technology; Daejeon, Korea, and former President, World Futures Studies Federation. He also taught at Rikkyo University (Tokyo, for six years), the University of Maryland, Virginia Tech, the University of Toronto, and the InterUniversity Consortium for Postgraduate Studies in Dubrovnik, Yugoslavia.

SECTION:

WORLD OF FUTURES THINKING

SURFING CONSTELLATIONS OF EDUCATIONAL REFORM:

A STAR ALLIANCE IN FUTURES STUDIES

By Eva Oloumi in conversation with
Sohail Inayatullah, Ivana Milojević, Eman
Ebed Alkadi, Suzanne Stein, Gül Beyza
Kosamiş, Doris Viljoen, Kuo-Hua Chen



Every few years, the futures studies field rediscovers the same uncomfortable truth: we speak fluently about long-term transformation while ourselves reproducing and constrained by educational systems designed for the industrial past.

For more than thirty years, there have been a number of attempts to globalize futures education. A shared online course in 1994; a funded global Master's proposal in 2001, abandoned when universities retreated behind institutional control and intellectual property concerns; and vice-chancellors in Malaysia in 2016 quietly dissolving scenario-planning reforms for lack of commitment. A COVID-era shift online in 2020 exposed both the appetite for futures learning and the structural rigidity of the institutions meant to deliver it.

The lesson has been consistent: *futures thinking scales socially and epistemically but struggles when confronted with institutional pressures.*

In November 2025, at the fourth edition of the [Dubai Future Forum](#), curator Eman Ebed Alkadi gathered a global group of futurists to confront a premise the field has long avoided: the failure to globalize futures education may not be a matter of insufficient will, but of institutional design.

Rather than proposing yet another standalone program, participants examined whether a “Star Alliance” approach, meaning networked articulations linking shared philosophies, faculty, curricula, and recognition across organizations, might solve for the previously impossible by actively refusing the logic of centralized ownership. The full session report will be available [here](#).



Illustration: Eva Oloumi

“If the future is built through collaboration, then futures studies must model it – not as isolated efforts, but as a connected global alliance. Convening this dialogue at the Dubai Future Forum reflects a deliberate step toward greater alignment across the field – strengthening networks, elevating standards, and building the foundations for more coordinated global impact.”
– Eman Ebed Alkadi, Head of Foresight Networks

WHAT IS THE STAR ALLIANCE MODEL?

The concept has deep roots. Sohail Inayatullah, who facilitated the workshop on Learnings Day at the Dubai Future Forum, first articulated three scenarios for the university of the future in a book he edited with Jennifer Gidley in the late 1990s. The Star Alliance model envisioned transferable credits and fluid movement of professors, virtually and physically.

A follow-up conference at Tamkang University in the early 2000s, led by Kuo-Hua Chen attempted to launch the network, but the practical obstacles around funding, legitimacy and the weight of institutional prestige proved too great:

“Now in 2026, it may be easier. The linking could be by universities, by students, by professors, or by platforms. The options are greater and, with the slow steps toward the 'Uberification of the Professor,' far more possible.”
— Sohail Inayatullah, UNESCO Chair in Futures Studies

However, three unresolved tensions remain, Inayatullah argues:

1. Currency and credit exchange;
2. Quality and certification; and
3. Pitfalls of democratization (namely how to maintain standards as foresight spreads rapidly and unevenly).

His answer is a triangulation of market forces, academic rigour, and community validation. No single model will suffice.

THE HIDDEN CURRICULUM OF INSTITUTIONAL INERTIA

The futures education ecosystem currently resembles a noisy flea market: fragmented offerings, competing claims of expertise, and legitimacy conferred through institutional branding or market success rather than epistemic robustness or societal relevance. This current landscape produces a structural contradiction: a field defined by anticipatory governance and long-term stewardship that continues to use architecture designed for linear industrial-era career pathways.

Suzanne Stein of OCAD University diagnoses the problem in its deeper logic:

“The paradox persists because legacy structures – departmental silos, prestige hierarchies, and narrow epistemologies – reward uniformity over imagination. We must strive to increase our capacity for empathy, reduce our egocentrism, and eschew the hierarchies we aspire to ascend.”

The field's origins compound the challenge. Futures work has evolved from military strategy, corporate planning, industrial design, science fiction, and community activism – a plurality of foundations that resist any single canon. This fluidity, Stein argues, also surfaces in persistent professional tensions: uneven role clarity, non-linear skill development, the centrality of mentoring, and the need for leadership literacy across sectors.

THE STANDARDIZATION TRAP

When faced with fragmentation, the instinctive response is to standardize, that is, to impose accreditation regimes, competency frameworks, or global benchmarks. But, in a field that requires unlimited imagination, flexibility, and openness to emergence, standardization is its own trap. Global standardization often means epistemic compression: flattening contextual, relational, and community-based approaches in favour of dominant academic norms.

Participants at the Dubai Future Forum workshop focused instead on establishing shared reference points: minimal global principles of rigour and trust, without prescriptive methodological orthodoxy.

The question is not whether quality matters (it does) but whether quality can only be secured through compliance, and whether epistemic compression can even be considered quality in the first place.

Over the last decade or so, we have seen that the demand for futures literacy is exploding. With it, we also see a chaotic influx of new practitioners and an ever-increasing quantity of materials. This is happening just as many educational institutions are shifting towards a transactional, often lucrative yet 'box-ticking' exercise of "futures washing," focused on delivering convenient credentials rather than fostering deep, transformative capability.

It is a model that values compliance over curiosity, shallow performativity over insight and knowledge, and aesthetics over meaning; taken together, these create a dangerous combination. The result is a dilution of quality, and a real risk that the futures field becomes a tokenistic and convenient jungle of superficial ideas rather than a healthy, resilient forest of foresight. The solution isn't rigid, top-down regulation, which would only stifle the creativity and diversity we need. Instead, we must actively cultivate an ecosystem of quality from the ground up.
— Ivana Milojević, Director of Metafuture

WHO GETS TO IMAGINE THE FUTURE?

Behind the structural debates lie deeper fault lines.

Most futures methodologies remain steeped in Western academic assumptions:

supremacy of the written word over lived experience, linearity over relationality, individual agency over collective stewardship, and an implicit framing of technological advancement as both inevitable and desirable.

Alternative ways of knowing, including feminist, Indigenous, spiritual, and intergenerational perspectives, are sidelined or included as enrichment rather than treated as foundational.

Participants imagined a shift from the production-line model of learning toward what they called a coral reef ecosystem: shared stewardship, relational governance, citizen assemblies, elder guidance, and peer-based evaluation that challenge the assumption that legitimacy can only be conferred by institutional authority.

Everyone has the right to imagine the future, and more importantly, should be actively involved in shaping it. The future should not be shaped by data alone, but also by the collective imagination of people.

— Gül Beyza Kocamış

PROFESSIONALIZATION OR PROFESSIONAL CAPTURE?

In many policy and corporate contexts, futures work is still misunderstood as prediction or trend theatre.

A capability-based framework could help organizations recognize rigorous foresight across its core competencies (framing and scoping, research and synthesis, systems understanding, facilitation, and translation to decision), while reflecting the non-linear, mentorship-driven nature of how practitioners actually develop.

Stein cautions against professionalization that simply reproduces industrial-era logic. The Star Alliance must embed safeguards: multiple practice streams across policy, corporate, civic, Indigenous, and arts-led work; portfolio- and community-validated assessments; professional ethics grounded in consent, inclusion, and ecological responsibility. And perhaps more than any formal mechanism, it must model the qualities it espouses.

SURFING THE CONSTELLATION: WHAT COMES NEXT

What's next as we surf the constellations of change in futures studies?

The next major milestone in the creation of this alliance will take place later this year in Dubai, where we hope to tap into the collective intelligence gathered at last year's Forum. We would like to map the existing constellation of futures programmes globally and work toward developing at least one collaborative module, such as a "Ways of Knowing" elective co-taught by Star Alliance members across institutions as a concrete proof of concept.

Inayatullah is characteristically clear-eyed about the obstacles that remain, such as credit exchange, quality assurance, and the politics of who benefits financially from shared students.

He also is optimistic, pointing to AI-assisted administration as a potential unlock for the coordination challenges that defeated earlier attempts.

"For students, the mobility of learning will increase. For professors, it is also easier. For administrators, it is more difficult to map, though most likely AI platforms will make this task far more possible."

— Sohail Inayatullah, UNESCO Chair in Futures Studies

Doris Viljoen of the Institute for Futures Research at Stellenbosch Business School and Kuo-Hua Chen of Tamkang University, whose institution hosted the original Star Alliance conference more than two decades ago, both see the moment as genuinely different from previous attempts. The network already exists informally; what is being built now is the connective tissue to make it legible and generative.

It may be too complicated and too soon for some stakeholders to already attempt a complete qualification, but Viljoen says we can consider two things today: 1.) Cross-teach on each other's existing programmes, and 2.) Develop a Star Alliance Masterclass, which could be non-credit-bearing but offered as a value-add to participating programmes.

"While a global master's, as long as it is localized, has a certain inevitability to it, linking the various MA programs will strengthen the quality of our field. Indeed, the more linking – integrating – the better."

— Kuo-Hua Chen, Dean of the College of Education

"But, most fundamentally, this must all be built on a bedrock of ethics. Foresight without a moral compass is merely a powerful tool – one that can be weaponised or commodified as easily as it can be used for good. The title of "futurist" should not be claimed lightly, but grounded in demonstrable knowledge and practice, as in any other discipline; this principle should equally apply to the naming of "futures institutes," organisations, and professional roles. Accordingly, our aim should not be the proliferation of "futurists" or "foresight practitioners," but the cultivation of qualified facilitators of change and curators of the future – individuals committed to the rigorous, evidence-based, and transformative work of advancing more equitable and genuinely preferred futures for all"

— Ivana Milojević, Director of Metafuture

The Star Alliance project is a pragmatic exercise in collective sensemaking toward futures education that works. The idea is to approach change experimentally, learn from the process and tap into the collective intelligence of the futures community to create effective models for distributed, non-proprietary, and quality-anchored futures education.

Consider joining the conversation: Join the conversation via the [Global Futures Society](#) and sign up to attend the next iteration of the constellation mapping session in the fall of 2026.

The field is at an inflection point – it's time that futures education reflects the requisite plurality, care, and imaginative rigour inherent to our work.

Eva Oloumi is the founder of Paradeigma, an award-winning and globally recognized collaborative design and transformative foresight practice that brings together world-leading futures expertise with world-class facilitation capacity. She is known for helping people in high stakes, multi-stakeholder contexts collaborate to tackle seemingly unsolvable problems and build transformative futures. Whether untangling interconnected issues across sectors or driving innovative, sustainable progress, Eva's work spans projects that have reshaped regional food systems, influenced housing national policy debates, and established strategic dialogues on public health issues.



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Ivana Milojević is a researcher, writer, and educator with a transdisciplinary background spanning sociology, education, gender studies, peace and conflict studies, and futures studies. She is Director of Metafuture, a global think tank, and Metafuture School, a foresight learning platform. Previously, she served as Senior Futures Thinking and Foresight Specialist at the Asian Development Bank. Her career includes academic roles across Australia, Serbia, Taiwan, and the UK, as well as consulting and research work with governmental, international, and non-governmental organizations across Asia-Pacific, Africa, and Europe.



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Doris Viljoen is Director of the Institute for Futures Research (IFR) and Program Head for the PGD and MPhil in Futures Studies at Stellenbosch Business School. Her work focuses on interpreting global and local trends and their relevance for Africa. She teaches environmental scanning, foresight methodologies, scenario planning, and strategy development. Previously, she consulted on feasibility and location assessments for major capital projects. Doris is passionate about asking the right questions, working with data, and designing tools that support strategic thinking about plausible futures.



Kuo-Hua Chen is Dean of the College of Education and Professor of Education and Futures Design at Tamkang University, Taiwan, where he also directs the Center for Futures Intelligence and Research (CFAR). He previously led the Graduate Institute of Futures Studies and the College of Global Research and Development. He serves as co-editor of the Journal of Futures Studies and sits on the editorial board of World Futures Review. A fellow and board member of the World Futures Studies Federation, he has over 30 years of teaching and research experience in futures studies.





GEOMETRICITY:

**A NEW APPROACH TO THINKING
ABOUT THE WORLD ORDER**

By Manoj Kothari and Vinit Soneji



The world is undergoing a profound structural shift that extends beyond politics and economics into the way individuals, societies, and institutions navigate identity, trust, and alignment. This evolving reality is Geometricity, a term we've coined, is a new giga-trend reshaping human activity far beyond the familiar arenas of diplomacy or trade.

Globalization once enabled vast flows of goods, capital, people, and data, but the same openness also produced fragilities, inequalities, and cognitive overload. As more regions develop their own capabilities and influence, the idea of a "flat world" is giving way to a patterned world where relationships, alliances, and flows are increasingly shaped, bounded, and intentional.

Geometricity captures this transition from unbounded openness to purposeful and structured alignment, marking a shift toward a world defined not by uniform integration but by deliberate and differentiated geometries of connection.

GEOMETRICITY CAPTURES THIS TRANSITION FROM UNBOUNDED OPENNESS TO PURPOSEFUL AND STRUCTURED ALIGNMENT, MARKING A SHIFT TOWARD A WORLD DEFINED NOT BY UNIFORM INTEGRATION BUT BY DELIBERATE AND DIFFERENTIATED GEOMETRIES OF CONNECTION.



ORIGIN OF GEOMETRICITY

Geometricity emerges from a set of deep structural shifts that have been building for nearly two decades. These shifts are not isolated incidents; they have been accumulating and reinforcing one another, gradually pulling the world away from a borderless imagination and toward a patterned, intentional global architecture.

Instead of the frictionless integration promised by hyper-globalization, the world now resembles a landscape of corridors, clusters, gated technological provinces, and purpose-built coalitions, each shaped by the need for security, resilience, and alignment.

Together, these forces form the foundation of this giga-trend and explain why global flows increasingly pass through shapes and boundaries rather than universal open channels.



1. GLOBALIZATION'S EXHAUSTION: INTERDEPENDENCE TURNING INTO EXPOSURE

The original promise of globalization rested on seamless efficiency. For decades, nations optimized for specialization, scale, and just-in-time logistics. Yet the same interdependence that once symbolized progress also produced systemic vulnerability.

The COVID-19 pandemic made this hyper-fragility impossible to ignore. Supply chains strained under pressure, semiconductor shortages halted industries, and medical systems became dangerously dependent on distant manufacturing hubs. As the World Bank documented in 2022, global supply chains created far more points of failure than expected, making them highly sensitive to disruption.

In this moment of exposure, countries began to reassess what could safely be outsourced. Pharmaceuticals, electronics, energy components, and food systems were rapidly reclassified as strategic national assets. Governments realized that efficiency without resilience is simply fragility disguised as optimization. Policies such as the United States CHIPS and Science Act and India's Production-Linked Incentive program marked a decisive shift toward anchored capability and away from geographically stretched vulnerability.

As this recalibration unfolded, globalization started to feel less like opportunity and more like exposure. Interdependence turned into a source of risk. The world moved from fluid networks to structured boundaries, national buffers, and resilience corridors. This shift forms an early expression of Geometricity, where the global roundabout turns into a map of shielded nodes and purposeful alignments.



2. MULTIPOLAR ECONOMIC AND TECHNOLOGICAL RISE; THE END OF SINGULAR CENTERS OF GRAVITY.

Global economic and technological power once concentrated in a few Western nations, but that structure no longer holds. Influence now spreads across multiple rising centers, each creating its own gravitational pull. The United States acts as a tech and defence supernode. China anchors global manufacturing and digital infrastructure. The European Union shapes global standards through regulatory leadership. India, Southeast Asia, and the Gulf function as diversified growth engines, while Africa and Latin America expand their roles as production and resource hubs.

This redistribution of influence makes universal globalization impossible. As power disperses, the world reorganizes into regional constellations, strategic partnerships, and overlapping spheres of collaboration. Countries align around political, economic, and technological compatibility rather than one global field.

Recent developments reinforce this shift. BRICS expands into a wider economic bloc. The EU accelerates its push for strategic autonomy in defence and technology. Gulf nations build coordinated investment ecosystems and logistics corridors that extend their influence across Africa and Asia. These forces create regional gravitational fields, the geometric shapes that Geometricity builds upon.



3. TECHNOLOGY AND REGULATION CREATING NEW POLARITIES; THE RISE OF TECHNO-SOVEREIGNTY

Technology once operated as a shared global domain, but it has become one of the most contested, regulated, and strategic arenas of the 21st century. Nations now treat technological capability as a sovereignty asset, a national identity marker, and a geopolitical instrument. As breakthroughs in AI, quantum computing, biotechnology, clean energy, and defence systems define national futures, governments tighten control over how technology moves and who gains access.

This shift appears across multiple fronts. Data localization laws redraw digital geography, creating boundaries around how information is stored and processed. Sovereign cloud mandates reshape computational landscapes by keeping sensitive workloads inside regional clouds. Export controls fracture the global semiconductor ecosystem, while nations conduct strict security vetting of telecom and digital infrastructure suppliers. Together, these actions create new digital borders and technology-access hierarchies.

Technology no longer moves through an open digital field. It flows through fenced technological corridors, digital border walls, and competing hardware and cloud geometries. The once-flat internet becomes a set of interoperability islands, each with its own rules and alliances. This is a core expression of Geometricity, where innovation unfolds inside bounded spheres rather than across open global circuits.



4. NEW GLOBAL CHALLENGES GENERATING PURPOSE-DRIVEN COALITIONS: FUNCTION REPLACES GEOGRAPHY.

Many urgent global challenges no longer align with traditional geopolitical blocs. Countries now face issues such as climate change, digital sovereignty, energy security, and supply chain resilience, and these issues demand collaboration by purpose, not proximity. The world responds by forming coalitions of purpose, alliances built around shared missions instead of shared borders.

Examples already illustrate this shift. The International Solar Alliance links more than 120 countries in a clean-energy mission. Regional groups across Europe, Australia, and South America coordinate digital regulation to create cross-continental legal harmonization. The African Continental Free Trade Area works to build a unified market across the continent. Indo-Pacific partnerships form around maritime resilience, semiconductor supply chains, and defence coordination, showing how function drives alignment.

These coalitions operate as mission-oriented polygons, task-aligned clusters, and purpose-bound networks, not as broad universal institutions. Their rise signals a move from global governance to geometric governance, where states assemble into intentional formations designed for speed, relevance, and clear outcomes.



5. SOCIETAL DESIRE FOR CERTAINTY: IDENTITY IN AN AGE OF OVERLOAD

Society moves through a period of risk fatigue driven by pandemics, political polarization, misinformation, and constant information overload. People respond by seeking coherence, verification, and stable identity. This shift shows up in the rapid growth of digital identity systems across Europe, Africa, and Latin America, where citizens want clearer, more trustworthy ways to define who they are.

Platforms such as Europe's eID framework for the upcoming EU Digital Identity Wallet and Estonia's e-governance ecosystem demonstrate this move toward verified, structured participation. Citizens increasingly prefer clarity over anonymity and stable affiliation over fluid identity. Identity functions as a stabilizing geometry, giving individuals a personal anchor in a world defined by accelerating flux.

This social realignment parallels geopolitical behavior. As nations build geometric governance structures, individuals gravitate toward geometric identity structures. Both reflect a desire to navigate complexity through bounded spaces, verified membership, and trusted affiliations. These psychological and geopolitical patterns reinforce each other and strengthen the rise of Geometricity.

HOW GEOMETRICITY AFFECTS BUSINESS-AS-USUAL

Geometricity functions as a giga-trend, not a megatrend. Megatrends behave like waves that push industries, but a giga-trend acts as the tide that reshapes the entire sea. It changes the foundational geometry through which nations, markets, technologies, cultures, and individuals interact. The world shifts from a borderless plane to a patterned map defined by corridors, clusters, alliances, and identity zones. Connectivity becomes structured, and cooperation becomes bounded.

1. GEOPOLITICAL REALIGNMENT: FROM FLUID ORDER TO INTENTIONAL BLOCS.

Countries no longer rely on large universal institutions. They prefer mini-lateral partnerships that offer speed, predictability, and tight alignment. Frameworks such as QUAD and AUKUS sit between bilateral ties and large multilateral bodies, forming agile clusters designed for strategic clarity.

States now curate their associations. They define who belongs inside their strategic shape and who sits outside it. Alignment matters more than openness. Power shifts from diffuse global influence to structured, bounded, and intentionally architected formations. Scholars increasingly highlight this as the rise of mini-lateralism, where small groups achieve what large forums cannot.

2. ECONOMIC RESTRUCTURING: CORRIDORS OF TRUST, NOT JUST COST.

Economic flows no longer follow the logic of “produce anywhere, sell everywhere.” Instead, trade, investment, and manufacturing reorganize into trust-based geometries shaped by reliability, political alignment, and supply-chain resilience. Companies adopt nearshoring, friendshoring, and ally-shoring, reversing three decades of hyper-globalization.

Cost advantage still matters, but it no longer dominates. Alignment, security, and continuity form the new coordinates. Production networks tighten into resilience corridors, where trusted partners outweigh low-cost alternatives. The US-Mexico semiconductor cooperation under the CHIPS Act shows this shift, as does the Japan-Netherlands-US alignment on chip export controls.

Capital follows the same pattern. Investors prefer markets that feel politically compatible and technologically aligned, producing a global economic map built around clusters of compatibility, not a flat global marketplace.

3. TECHNOLOGY GEOMETRIC-CLUSTERS: INNOVATION INSIDE BOUNDED SPHERES.

Technology no longer operates as a universal commons. AI models, semiconductor supply chains, cloud systems, and digital identity networks sit inside competing blocs with distinct rules and alliances.

The chips a firm uses signal its geopolitical alignment. The cloud it relies upon determines its regulatory exposure, such as the US CLOUD Act versus the EU's sovereign cloud frameworks. The location of stored data triggers specific security assumptions, creating nationalized digital boundaries.

Innovation now unfolds inside bounded spheres, shaped by access restrictions, alliance structures, and regulated interoperability. The global tech landscape shifts from an open space into fenced technological provinces – digital fortresses with gatekeepers, alliances, and exclusion zones. The spread of the “splinternet” shows how the once-open internet now resembles a set of interoperability islands rather than a single global network.

4. CULTURAL CONSOLIDATION: IDENTITY AS A BOUNDED ECOSYSTEM

Culture, once fluid and transnational, has become tightly structured. Streaming catalogs differ sharply across countries because of licensing, regulation, and censorship. Platforms such as TikTok face bans in India and heavy scrutiny in the United States and Europe, creating culture-in-residence zones where stories circulate within controlled boundaries.

People no longer occupy one global media sphere. They live inside curated cultural geometries, shaped by political decisions, local identity, and algorithmic filtering. The stories they see, the creators they encounter, and the worldviews they develop come through region-shaped windows rather than global flows.

Culture becomes a strategic asset, something states protect, define, and guard. Cultural ecosystems resemble layered domes, with their own rules, symbolic anchors, and access structures, reinforcing the geometric nature of global identity formation.

FUTURE POSSIBILITIES: WHERE GEOMETRICITY MAY LEAD

To understand how Geometricity may shape the future, we outline directional possibilities that explore how structured global alignment could influence technology, trade, culture, and identity. These are not predictions but lenses that help us imagine what may arise: the splintered cloud, trade archipelagos, cultural cubicles, and identity corridors.



THE UNITED STATES ENTERS THE AGE OF THE SPLINTERED CLOUD

For much of the digital era, the world imagined one open internet. Platforms crossed borders with ease and users felt part of a shared digital sky.

By the late 2030s, this sky may fragment into sovereign digital constellations. Nations could operate their own clouds with unique verification rules, requiring users to prove regulatory compatibility before crossing digital borders.

The internet may resemble a cluster of geometric enclosures rather than one connected field, pushing companies to maintain parallel tech stacks in every digital province.

Future headline:

“AMERICA’S DIGITAL PASSPORT BECOMES MANDATORY FOR GLOBAL CLOUD ACCESS.”



INDIA NAVIGATES THE GREAT TRADE ARCHIPELAGOS

Global markets once behaved like a single ocean where products moved freely and supply chains followed cost efficiency.

Under Geometricity, this ocean may break into trust-based trade islands linked by alignment rather than price. Nations could trade through corridors of reliability, shaped by political compatibility.

Products may gain access based on corridor membership instead of origin, making economic identity badges the new entry credential. Strategy begins by choosing the right island, not the cheapest route.

Future headline:

“INDIA’S SOUTH-SOUTH CORRIDOR OVERTAKES COST-DRIVEN GLOBAL TRADE ROUTES.”

EUROPE LIVES INSIDE CULTURAL CUBICLES

Culture once felt like a shared global stage where music, films, and creators traveled seamlessly.

By 2035, culture may fracture into region-shaped storytelling rooms, each shaped by regulation, identity, and localised algorithms. Streaming platforms could show entirely different narrative universes depending on where one lives.

A single story may produce multiple versions adapted to its cultural geometry, creating curated cultural cubicles instead of a global cultural river.

Future headline:

“EUROPE’S CULTURAL FIREWALL REINVENTS REGIONAL STORYTELLING.”

THE GULF BUILDS IDENTITY CORRIDORS FOR GLOBAL TALENT

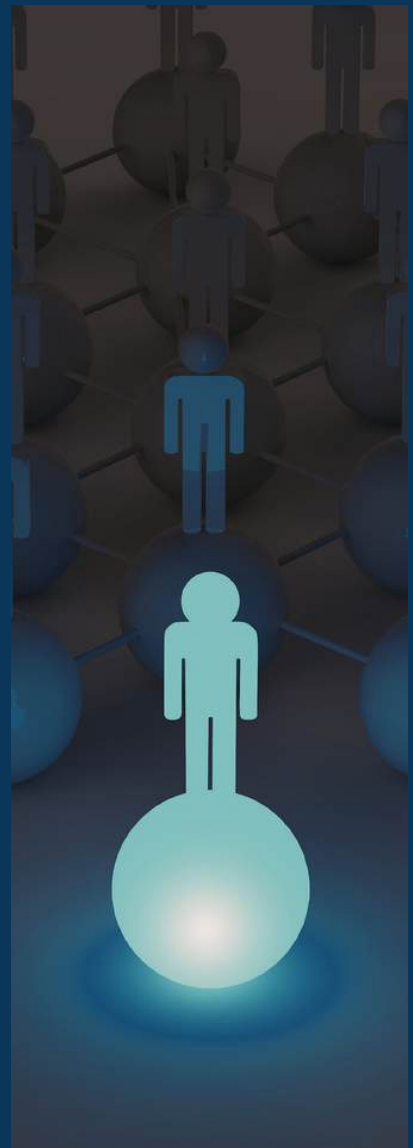
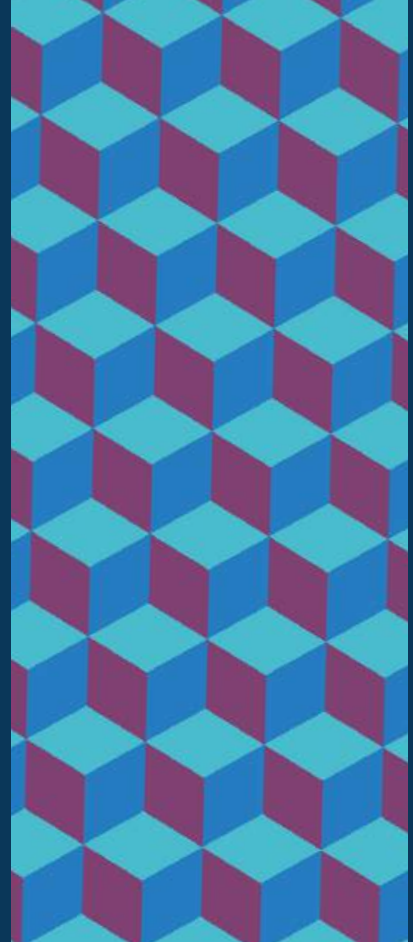
As reported by Travel and Tour World, Gulf nations are already piloting a regional one-stop immigration system aimed at eliminating arrival checks, signaling early steps toward alignment-based mobility.

Mobility once depended on nationality, education, or income. Under Geometricity, identity may evolve into a geometric credential shaped by digital history, ideological alignment, and trust markers.

Talent movement could shift into layered trust corridors where individuals move as members of data-shaped tribes rather than simply citizens of states. A new consumer persona may emerge: people who live inside geometric choices, selecting ecosystems of alignment and shaping their lifestyle and identity through the corridors they inhabit.

Future headline:

“GULF COUNTRIES ANNOUNCE MOBILITY ZONES BASED ON DIGITAL ALIGNMENT.”



REPATTERNING OF THE GLOBAL ORDER

Geometricity is not merely a geopolitical adjustment. It is a repatterning of the global order, a shift that rewrites how nations, markets, technologies, and people move through the world.

The flows of goods, data, culture, and identity no longer travel across open landscapes. They pass through structured geometries, guided by corridors, clusters, and bounded spheres. The world is no longer flat and no longer randomly fragmented. It has become shaped, bordered, and deliberately arranged, like a map built from intention rather than inevitability.

Geometricity is not the map of the future. It is the edge of the future, the underlying structure that determines who gains entry, who participates meaningfully, and who holds influence in the decades ahead.

In this new world, belonging is designed, participation is curated, and leadership is shaped by the geometry one inhabits.

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He frequently speaks at conferences on foresight and emerging trends and has served as a guest lecturer at several leading institutions.

THE SEVEN PROVOCATIONS

INTRODUCING A NEW METHOD
FOR MAKING PROVOCATION A
STRUCTURED AND STANDALONE
FORESIGHT PRACTICE

By Simon Fuglsang Østergaard with
Giovanna Noronha



The future is inherently unpredictable, shaped by new assumptions, behaviours, and realities that have yet to emerge. This has always been true, and it will continue to be so. Yet, when things become less certain – and therefore less controllable – individuals and organisations alike tend to retreat into the comfort of linear thinking. Luckily, foresight exists to challenge this tendency of linear thinking. Integral to most foresight work is an element of provocation to help push people out of the comfort of linear thinking, to deliberately shift perspectives, and cultivate a more expansive understanding of potential futures. Many traditional foresight methods do this really well.

However, many of these foresight methods can be intricate and demanding, requiring significant foresight expertise and facilitation skills. For individuals and teams with limited experience or confidence in foresight practices, meaningfully engaging with these methods can be daunting, potentially hindering effective participation and leading to underwhelming foresight outcomes. In fact, we often encounter hesitation to even engage in foresight altogether, as it is perceived as abstract, complex, and time-consuming in fast-paced organisational environments.

The idea behind the Seven Provocations Method is to build on the longstanding foresight principle of provocation, but to strip it back to something more accessible and practical, including for

those with limited foresight confidence or experience. It offers a clear and intuitive way to identify entrenched assumptions about the future, confront them with structured provocations, and explore potential implications that emerge from that.

PROVOCATION IN FORESIGHT, MADE EXPLICIT

Provocation has a negative connotation in most contexts. But it also can represent a positive confrontation or stimulus to incite new thinking and fresh perspectives. In foresight, it is precisely this constructive potential that makes provocation valuable. When we purposefully challenge entrenched assumptions, it helps us facilitate “re-perception” – the act of shifting perspectives to think of the future in a new way, recognising that the future will likely be different from what one currently expects (Wack, 1985).

While provocation is embedded in many foresight approaches, it is often implicit. Take for example scenario development, arguably the most recognisable and commonly used foresight method, which uses provocative narratives to present divergent futures that contrast both with present realities and with each other (Schwartz, 1991; van der Heijden, 2005). Or Causal Layered Analysis (CLA), which works by deconstructing surface-level issues and reframing them through deeper worldviews and myths, provoking shifts in perspective and understanding (Inayatullah, 2019). Along with many others.

SURFACING ASSUMPTIONS ABOUT THE FUTURE

Before we meaningfully provoke new thinking, we must first establish a clear understanding of the key assumptions underpinning a current future outlook. Our assumptions are the underlying factors and expectations that shape how we interpret information, make decisions, and anticipate change. They influence the questions we ask, the risks we perceive, and the opportunities we consider.

Any given strategic lens or outlook relies on a mix of explicit and implicit assumptions about technology, social dynamics, markets, geopolitics, etc. Some assumptions are widely shared across organisations or industries, while others are more individual and context-specific. Regardless, if left unchallenged, they can create a confirmation pathway, leading to a flawed or overly deterministic view of the future.



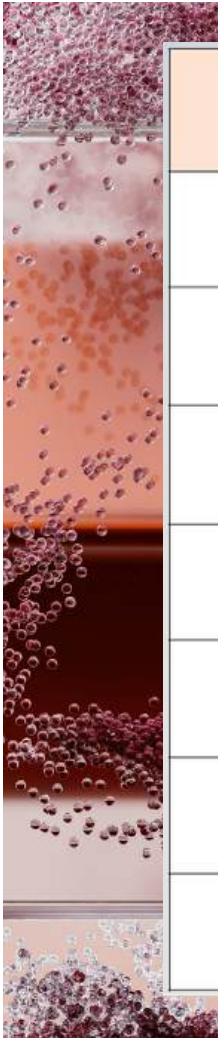
Surfacing assumptions can be challenging enough in itself. However, by forcing people to articulate why they believe something to be true, their assumptions will be embedded in these responses. One way to do this is through targeted prompting, for example:

- What conditions do you strongly assume will not change?
- Which developments do you assume will continue their current trajectory?
- Which developments do you believe must unfold in a specific way?
- Which beliefs or “truths” about the future do you rarely question, but regularly base decisions on?
- What potential developments are instinctively dismissed as unlikely, unrealistic, or off the table?

Others have explored more structured approaches to surfacing assumptions in organisations within strategic and foresight contexts, for example van der Heijden (2005), whose work on scenarios emphasised the role of assumptions in shaping strategic conversations.

USING THE SEVEN PROVOCATIONS METHOD

Each of the seven provocations is targeted to confront and reframe a specific type of assumption. They can be used individually or in combination. While some provocations may overlap and some provoked implications will repeat, each offers a distinct lens to reframing how the future is currently understood.



PROVOCATION	ASSUMPTION TYPE CHALLENGED	ANGLE OF PROVOCATION
#1 The Flip	Directional certainty	Inversion of core assumption
#2 The Discontinuity	Continuity of present systems	Subtraction of what is assumed permanent
#3 The Resistant	Inevitable change	Stickiness of the present
#4 The Overcorrection	Overestimating change in the short term	Less transformative than assumed
#5 The Undercorrection	Underestimating change in the long term	More transformative than assumed
#6 The Uncomfortable Truth	Emotional/moral avoidance	Confronting what is being ignored
#7 The Value Lock-in	Value stability over time	Exposing constraints from value lock-in

Assumptions come in many forms and selecting which provocations to use depends on the nature of the assumptions you want to challenge. Some relate to core strategic logic and beliefs around continuity, direction, and inevitability that shape how the future is understood. Others concern how the timing, pace, and rhythm of change are perceived and interpreted. And, perhaps most importantly, some assumptions are tied to value-laden beliefs and emotional avoidances that limit what is acknowledged when considering how the future might behave.



The progression logic of the method itself is deliberately simple. You start by articulating a core assumption about how the future will unfold, reframe it through the lens of the selected provocation, and then explore the potential implications if the provoked version of the future where to unfold. Ideally, you also want to capture additional reflections related to whether this provocation exposes something worth exploring further.

PROVOCATION USED: _____

**ASSUMPTION TO
CHALLENGE**

State an assumption/expectation/
belief about how the future will
unfold

**REFRAMED
ASSUMPTION**

Rewrite the assumption through
the lens of the provocation

**POTENTIAL (STRATEGIC)
IMPLICATIONS**

List key implications if this
provoked version of the future
were to unfold

**ADDITIONAL
REFLECTIONS**

Consider how central this
assumption is to your current outlook
and if this provocation expose
something worth exploring further



Each of the provocations and their specific purpose are outlined in more detail below:

1

#1: THE FLIP

Provocation: *What if a key assumption about the future unfolds in a fundamentally different or even opposite direction from what you expect about the future?*

Purpose: To directly challenge the assumptions that form the foundation of your current future (strategic) outlook, especially those considered stable, predictable, or “unchallengeable.”

How: Identify a core assumption or widely accepted “truth” about the future that underpins your current future (strategic) outlook. Flip this assumption and explore the (strategic) implications of this inverted reality.

Illustrative examples:

- Globalisation is expected to persist, but what if it fragments or reverses instead?
- Renewable energy is expected to displace fossil fuels, but what if fossil fuel investment rebounds?
- Banks are expected to remain central to payment infrastructures, but what if banks are bypassed entirely by alternative payment rails?
- AI is expected to rapidly transform work, but what if real-world uptake stalls due to inertia or distrust?

2

#2: THE DISCONTINUITY

Provocation: *What if defining features of a current reality or dominant “ways of doing” are rendered obsolete in the future?*

Purpose: To understand how an unexpected discontinuation of the existing, often an overlooked aspect of how change unfolds, may significantly shape and impact your future (strategic) outlook.

How: Identify developments or conditions that you assume cannot or will not change in the foreseeable future (start with 5-10 year outlook). Consider a future where these are discontinued or made obsolete and explore the (strategic) implications of a context without these foundational elements.

Illustrative examples:

- Universities act as the primary credentialing institutions, but what if that is no longer the case?
- Traditional university degrees are seen as the gold standard, but what if they lose their value entirely?
- Physical retail stores have historically been the primary way to access goods, but what if physical retail disappeared?
- The nation state is seen as permanent, but what if its role as a governing structure fades?

3

#3: THE RESISTANT

Provocation: *What if a development or change you strongly expect to happen is delayed or stopped by deeply rooted structures or habits defining the present?*

Purpose: To uncover barriers, structural resistance, or dominant narratives that may hinder the change that you view as inevitable or necessary, consequently misaligning your future (strategic) outlook.

How: Identify developments or conditions that you strongly believe must unfold in a specific way. Consider a future where “sticky” forces of the present work to delay or stop the change unfolding in the expected way. Explore the (strategic) implications of this stagnant future outlook.

Illustrative examples:

- Hybrid work is expected to become the norm for knowledge workers, but what if organisational culture and control pull workers back on-site?
- A shift to plant-based diets is seen as inevitable, but what if current habits and systems resist the change?
- Private car ownership is expected to decline, but what if status and culture keep it firmly in place?
- Autonomous vehicles are expected to be widespread, but what if regulation and social complexity continue to slow their arrival?

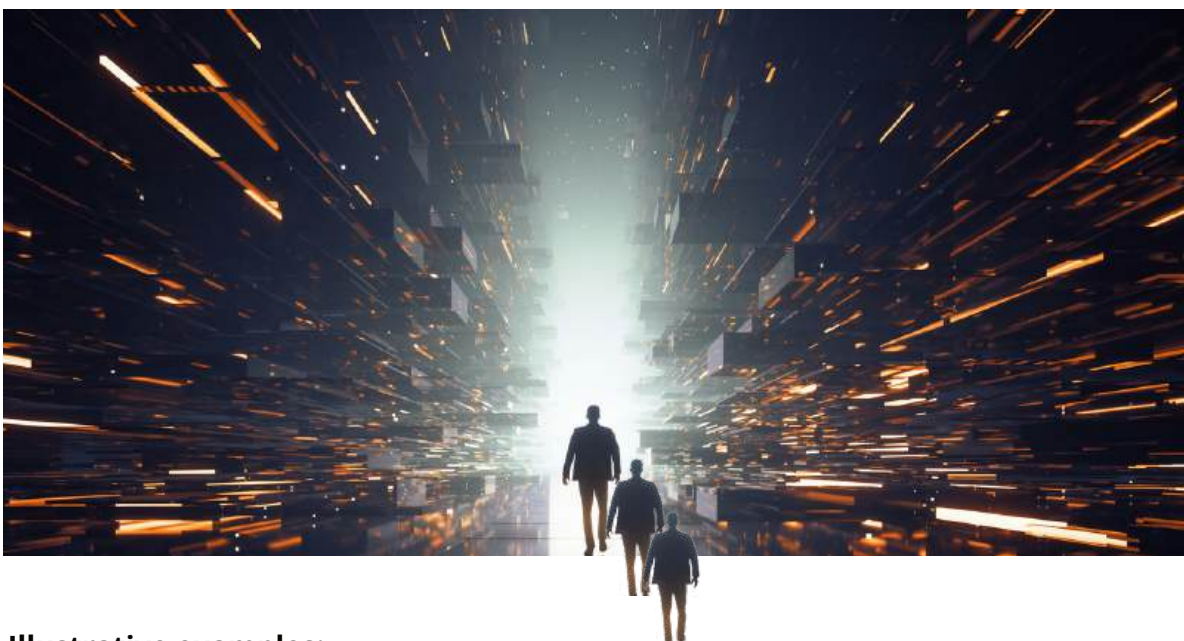
4

#4: THE OVERCORRECTION

Provocation: *What if an emerging change that appears strong and transformative in the short-term levels off or becomes less transformative in the longer run than initially assumed?*

Purpose: To challenge assumptions anchored in peak moments or strong hype cycles, which may lead to overestimating how profoundly or permanently your future (strategic) outlook will change.

How: Identify a development that currently feels transformative and is believed to strongly shape your future (strategic) outlook. Consider a future where the “promise” of this development proves highly inflated. Explore the (strategic) implications of a future where this change is much less transformative than expected.



Illustrative examples:

- The metaverse was expected to reshape work and social life, but what if its relevance continues to fade?
- Vertical farming was expected to be a food systems breakthrough, but what if its long-term impact remains limited?
- Generative AI is expected to transform industries at large, but what if its real-world integration proves slower and narrower than assumed?
- Green hydrogen is expected to decarbonise heavy industry, but what if infrastructure and cost barriers stall its impact?

5

#5: THE UNDERCORRECTION

Provocation: *What if a change that seems marginal or easy to dismiss today becomes far more transformative in the longer run than initially assumed?*

Purpose: To challenge assumptions that downplay or underestimate the longer-term significance of emerging developments, leading to underestimations of how impactful a development may become on your future (strategic) outlook.

How: Identify a development that you might currently be downplaying or see as marginal in terms of significance on your future (strategic) outlook. Consider a future where this development accelerates or compounds over time. Explore the (strategic) implications of a future where its impact turns out to be far greater than initially expected.

Illustrative examples:

- Public trust in democratic institutions and processes is in decline, but what if it accelerates into systemic breakdowns?
- Traditional news media has seen decline, but what if it becomes completely marginalised?
- Artificial general intelligence (AGI) development is still considered speculative by many, but what if it advances far faster than expected?
- Decentralised finance (DeFi) is treated as experimental, but what if it reshapes core financial infrastructures?

6

#6: THE UNCOMFORTABLE TRUTH

Provocation: *What uncomfortable or inconvenient “truths” about the future are being consciously or subconsciously avoided?*

Purpose: To deliberately counteract ignorance and bias around “taboo” topics that are being avoided, but that may significantly impact your future (strategic) outlook.

How: Identify developments or potential future outcomes that are often dismissed or ignored due to their challenging or undesirable nature. Explore the (strategic) implications of these uncomfortable “truths.”

Illustrative examples:

- What if transatlantic cooperation is assumed to be stable, but ultimately breaks down?
- What if diversity and inclusion efforts are assumed to advance, but plateau or reverse?
- What if digital platforms capturing end-customer relationships are dismissed by traditional actors, but end up marginalising them across sectors?
- What if a global pandemic as a known risk was systemically avoided?

7

#7: THE VALUE LOCK-IN

Provocation: *As we lock in on a transformation toward a system or paradigm seen as more desirable, what embedded new constraints, exclusions, or dependencies might shape that preferred future in limiting ways?*

Purpose: To challenge the assumption that transformations toward new, desired systems or paradigms will be inherently better, freer, or more inclusive simply because they reflect today's preferred values and ideals for the future. It encourages critical reflection on how the values we institutionalise today may later feel rigid, limiting, or exclusionary as the future cannot be assumed to remain "value stable."

How: Identify key assumptions that underpin your understanding of a preferred version of the future. Explore how this new, desired future can potentially create constraints or "bad outcomes" – just of a different kind – as it may no longer reflect today's values and ideals over time.

Illustrative examples:

- What if radical sustainability agendas embed forms of eco-authoritarian control that later feel undemocratic or coercive?
- What if human enhancement and longevity efforts create new inequalities?
- What if technological optimism around AI locks societies into high-risk dependencies with limited accountability?
- What if radical inclusion frameworks unintentionally erode perceived fairness or meritocracy?

WHAT'S YOUR PROVOCATION?

While the Seven Provocations Method has been developed conceptually, it remains a work in progress, and it is currently being tested in real-world strategic settings. Its practical value will ultimately depend on how well it can be integrated into different organisational contexts and foresight processes. Further application and refinement will be important to understand where it works best – and where it may need to evolve.

Hence, this is also an invitation to test and experiment with the method in your own context – to explore how it can add value, how it might be iterated for greater rigour and usability through real-world application, and how it can be integrated with other foresight approaches.

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Giovanna Noronha is a journalist and futures researcher with experience in storytelling, strategy, and branding. She is particularly interested in applying foresight to strategy and translating complex research into actionable strategic direction. In recent years, she has focused on the role of collective intelligence and ancestral knowledge networks in foresight practices.

TRUST IN INNOVATION ALGORITHMS CAN'T AUTOMATE

By Autonnette McLaughlin



What does Nelson Mandela have to do with trust in innovation? In a word, everything.

Entrepreneurs are increasingly pursuing technological innovation. The Small Business & Entrepreneurship Council found that more than half are already relying on AI tools they consider essential to competitiveness.

Mandela innovated in the trust dimension by reconciling a divided nation in pursuit of human dignity rather than vengeance. When entrepreneurs innovate without building trust, they create specific harms. They deploy platforms without governance. They use algorithmic systems that erode trust precisely when it matters most and break down the shared truth that holds communities together.

Stakeholders experiencing these harms are seeking alternatives. By 2030, entrepreneurs will shift from demographic targeting to individualized relationships. Those who build authentic trust through these individualized relationships gain a competitive advantage as this shift accelerates.

So how do we avoid this?

BUILDING TRUST

Robert Putnam described trust as the lubricant of civility. If his sentiments are a foundational truth, then social trust and capital foster reciprocity and trustworthiness. Building and maintaining trust requires deliberate actions. The cosmogonic myths from creation guide us toward ritual repairing. Cosmogonic myths are the foundational stories of how the world began, found in every culture. These creation stories teach the practice of deliberately restoring broken relationships and rebuilding trust.

Nelson Mandela embodied this notion by focusing on generating bonds and bridging networks. He replaced second-guessing with seeking understanding and deep-diving with collaboration. He fostered disruptive thinking by deliberately building a future in which human dignity extends to everyone through truth and reconciliation.

Entrepreneurs build trust at multiple interconnected levels. They must build trust through individual character, within their organizations, with their customers, and across their communities. Building trust at one level strengthens trust at other levels. Entrepreneurs who embody trustworthy character assemble teams capable of innovation. At the same time, teams built on trust deliver experiences that earn customer loyalty.

When entrepreneurs understand how these levels connect, they see the strategic potential of trust as a competitive advantage. Entrepreneurs must decide. They can compete by building trust through contributions or by exploiting value through manipulation. Those who understand this distinction build businesses that strengthen rather than harm their communities and markets.

Paula Caligiuri, author of *Cultural Agility*, wrote,

"the equal opportunity laws, practices, and values prevalent in the United States are extensions that shape US businesses as global employers."

INNOVATION DEFINES ENTREPRENEURSHIP

The Global Entrepreneurship Monitor asked entrepreneurs starting or running new businesses whether their products or services are new to their area, country, or the world. Over half stated they were new to the area or the country.

Challenging entrepreneurial environments, lack of AI awareness, and uncertainty prevent innovations from expanding beyond local and national markets. In most economies, only 3 out of 10 entrepreneurs believe AI will be essential in the next few years. Entrepreneurs transform innovative ideas and technologies into new products and services. They expand consumer choices by creating new markets in challenging circumstances. Creating something new isn't optional for entrepreneurs – innovation defines entrepreneurship. We must trust in innovation, knowing it extends far beyond technology.

This understanding matters because stakeholders overlooked by demographic targeting are gaining influence. These forgotten stakeholders will shift brand focus toward individualism.

INDIVIDUAL CHARACTER

Entrepreneurs who build businesses that strengthen communities demonstrate specific character traits. Genuine service orientation rather than transactional thinking. Long-term patience rather than short-term opportunism. Authentic relationship-building rather than networking for advantage, and adaptive learning while maintaining core principles. Entrepreneurs can't automate these traits or delegate them.



Developing these character traits into competitive advantages for entrepreneurs requires sustained commitment and practice. Entrepreneurs must resist pressure to extract short-term value at the expense of long-term relationships. Patience to build rather than urgency to exploit creates sustainable success. When entrepreneurs embody these character traits, they form the foundation. However, an individual character alone cannot scale. These traits must extend through organizational systems to build trust at every level.

ORGANIZATIONAL TRUST

Some leaders struggle to build trust. The Edelman Trust Barometer researchers interviewed 70 leaders, all of whom affirmed that trust-based organizations achieve higher performance, loyalty, profitability, and innovation. But without measurement systems, entrepreneurs operate on intuition alone. They can't manage what they don't measure. Measuring trust enables ritual repairing at the organizational level. Leaders who identify where the trust has broken down can restore it by treating trust as a measurable business asset. They track Net Promoter Scores, repeat purchase rates, and complaint resolution time. They monitor retention rates and referral conversions alongside revenue metrics. Beyond these business systems, trust depends on how entrepreneurs create customer value.

CUSTOMER TRUST

Entrepreneurs face a choice in how they create customer value. Some remain oblivious to customer challenges. Others solve customer challenges. This choice determines whether customers trust or distrust a business.

Education entrepreneur William Feng examines this choice in his TEDx talk. He identifies zero-sum thinking as the belief that someone else's gain must be your loss. Entrepreneurs who adopt zero-sum thinking ignore what customers actually need. Maria Flynn, president and CEO of Jobs for the Future, challenges zero-sum thinking in her Forbes article. She argues businesses thrive when they invest in others' success. Entrepreneurs who reject zero-sum thinking genuinely solve customer problems. When they help customers succeed, their businesses grow.

Fogo Island Inn, located on the coast of Newfoundland, demonstrates how solving customer challenges works. The Cobb family practices ritual repairing by reinvesting all surpluses into the local culture and economic development. Guests pay premium rates because their money funds the community preservation efforts they value. The community thrives. Guests experience authentic preservation. The business succeeds. When entrepreneurs build customer trust by solving real challenges, they create the foundation for community trust.

COMMUNITY TRUST

Relationship deficits exist in many communities and markets. When business relationships become transactional, people lose connection with the businesses they support. Communities lose the social bonds that commerce once strengthened. Edelman found that 68% of customers want to feel safe, confident, and inspired when choosing brands. Entrepreneurs who rebuild trust through authentic relationships strengthen both individual lives and community well-being.

According to Edelman, stakeholders are prioritizing relationships with brands that engage in trust-building behaviors. They avoid those oblivious to their challenges. Entrepreneurs who address relationship deficits attract customers seeking businesses that see them as human, and not commodities. These entrepreneurs create market opportunities by addressing relationship deficits.

Entrepreneurs cannot rush the trust-building process. Mandela understood that building bonds required years of consistent action. Building trust-based competitive advantages requires thinking in years, not months.

Entrepreneurs must experience a holistic transformation that begins with building trust.

Transformative leaders transcend self-preoccupation. Whether heading organizations or building solo ventures, they influence cultures and create businesses built on trust and collaboration. They reward innovative mindsets that strengthen communities and markets by combining technological capability with trust built through individual character, organizational trust, customer trust, and community trust.

The trust factor matters to futurist entrepreneurs because it remains human. Every social bond connects us to each other at multiple interconnected levels of trust. In business each level is a competitive advantage and can become measurable business asset. The erosion of trust in governments, corporations, and nonprofits is an unintentional invitation for us to integrate the trust factor into foresight projects. Putman wrote, "the higher the level of mutual trust in a community, the higher the probability of cooperation will be."

So how do we do this?

As stakeholders prioritize individualized relationships over demographic targeting, entrepreneurs preparing for 2050 must ask these questions. Are we building contributions or extracting value? Where have our business relationships become transactional? How do we measure trust in our organization? What would ritual repairing look like for our customers? Does our innovation strengthen or weaken community bonds?

Answering these questions begins with seeing problems others overlook. Here is a common situation to consider.

As an entrepreneur, you're on assignment in the South of France. You arrive at your five-star hotel after a long flight and a harassing taxi journey along a crowded motorway near Marseilles in mid-summer. Unfortunately, your cab has no air conditioning. You are desperate for a cool shower. So, you rush to your room. Immediately, you set the shower running, without looking particularly closely at the controls. You start to get undressed. Your shoelace becomes knotted, and you spend a frustrating two minutes unpicking the tiny knot. By the time you finish, the shower has settled to a steady temperature, though you don't yet know how high or low it is.

Some people may see this situation as just how things are. Others may see a problem to solve. What do you see, and how would solving it build trust?



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COMPASS

MAY 26- JUN 26

THE FORESIGHT OF WONDER:

HOW
SPACE
BECOMES
CULTURE

By Yuna Lee



THE WORLD NASA/JPL HAS OPENED THROUGH SCIENCE, ART, AND CULTURAL IMAGINATION

Space is not merely a subject of scientific exploration; it serves as a profound medium that connects humanity, society, and culture.

Since 2003, The Studio at NASA's Jet Propulsion Laboratory (JPL) has pioneered a distinctive model: deploying designers, artists, strategists, and storytellers alongside scientists and engineers to make the invisible universe tangible. This involves unlocking dimensions of space such as space as cultural translator, space exploration as a foresight engine for futurists, experience as public engagement, and the intersection of art, science, and foresight.

While strategic foresight in NASA is often understood to focus on internal workforce management and mission achievement, I invite you and other futurists to look beyond that boundary – to the role of cultural translators who integrate scientific data with art, design, and storytelling to make the universe intuitively understandable and experientially meaningful, not just to specialists, but to everyone.

SPACE AS A CULTURAL TRANSLATOR: BRIDGING SCIENCE, ART, AND HUMANITY

The universe operates on scales and through forces that human senses cannot directly perceive. Gravity silently shapes continents and seismic waves travel through planetary interiors we will never visit. The challenge for science communication has always been the same: how do you make people feel what they cannot see?

The Studio at JPL was founded on the conviction that this is not merely a communications problem; it is a design problem, an artistic problem, and ultimately a cultural problem. By leveraging visual strategies and immersive experiences, The Studio transforms complex space and Earth science into forms accessible to everyone, imbuing them with social and cultural significance.

The Orbit Pavilion, first unveiled to the public in 2015, exemplifies this philosophy with elegant simplicity. Shaped like a nautilus shell, its 28 speakers translate the real-time trajectory data of 19 NASA Earth science satellites, which we perceive fly silently through space – into sound. As each satellite passes overhead, a distinct soundscape moves through the space: desert winds, crashing waves, rustling leaves, and frog calls. The sound arc mirrors the actual orbital path of each spacecraft. When a visitor extends their arm toward a sound, they are pointing, within a few degrees, at a real object traveling at 17,000 miles per hour above them. The invisible is suddenly, viscerally present.





ORBIT PAVILION

First exhibited at the World Science Festival, New York, 2015. A 30-foot nautilus-shaped structure housing 28 speakers that translated the real-time orbital trajectories of 19 NASA Earth science satellites into 3D soundscapes. Photo courtesy of NASA/JPL-Caltech.

This same instinct drives every Studio project. The Visions of the Future poster series began in 2015 as the "Exoplanet Travel Bureau," five posters depicting worlds orbiting other stars, before expanding in 2016 to 14 posters with the addition of destinations within our solar system, including Mars, Europa, and Enceladus. Created by nine artists in close collaboration with JPL scientists, engineers, and communicators, the series reimagined the WPA National Park poster tradition for the space age. Each poster captures a single extraordinary scientific truth about its destination: the sulfuric clouds of Venus, the subsurface ocean of Europa, the wind-carved dunes of Titan, and has since become one of NASA's most culturally resonant works of public communication.

VISIONS OF THE FUTURE

14 travel space posters created by nine artists in close collaboration with JPL scientists, engineers, and communicators. Each reimagines the WPA National Park poster tradition for the space age, distilling a single extraordinary scientific truth about its destination.



What distinguishes The Studio's approach is its refusal to treat science communication as a one-way transmission. When artist David Bowen connected 126 mechanical grass stalks to real-time wind data from NASA's Perseverance Mars rover for the 2024 Blended Worlds exhibition, visitors did not learn about Mars atmospheric science; they felt it, as living grass moved with the actual breath of another planet. When composer Shane Myrbeck designed the Orbit audio system, he was not illustrating satellite data; he was giving it a body.

In doing so, these initiatives create what might be called a new interdisciplinary platform: a cultural space where the boundary between the knower and the known, the scientist and the citizen, the present and the possible, becomes permeable.

WHY SPACE MATTERS FOR FUTURISTS: EXPANDING IMAGINATION AND SOCIETAL FORESIGHT

From a futures studies perspective, the value of space exploration transcends the technical. Space is one of humanity's most productive imagination engines, a domain where the constraints of the present dissolve and alternative futures become thinkable. The practices of The Studio at JPL demonstrate how this imaginative capacity can be deliberately cultivated and channeled into public consciousness.



GRACE FOLLOW-ON — A SCULPTURAL TRANSLATION OF EARTH'S WATER DATA

Two spacecraft bodies suspended in the precise formation of the GRACE Follow-On twin satellites, connected by the invisible gravitational thread they measure. Making Earth's disappearing ice and groundwater tangible.

Consider the GRACE Follow-On mission: twin satellites that measure Earth's gravitational field with such precision that they can detect the loss of ice sheets at the scale of centimeters, or the depletion of underground aquifers across California. Extraordinary capability. But data presented as graphs touches few outside the specialist community. When David Delgado, a Cultural Strategist at JPL, translated the concept into a half-scale sculptural installation, two spacecraft bodies suspended in the precise formation in which they orbit, the mission became something a visitor could walk around, approach, inhabit. The abstract became concrete. The future-threatening became present-urgent.

This is what futurists call scenario embodiment: the practice of making alternative futures sufficiently real and sensory that they can be emotionally processed, not merely intellectually acknowledged. The Studio's work does this systematically. The *Visions of the Future* posters do not present exoplanets as data points; they present them as destinations, worlds with travel advisories, seasonal guides, and implied tourist economies. They make the far future feel inhabited, and in doing so, invite audiences to imagine themselves as actors within it.



Space exploration also serves as a pressure test for human ingenuity under radical constraint. In the early days of the Covid-19 pandemic, JPL engineers repurposed their spacecraft development capabilities to complete a working ventilator prototype in just 37 days. Named VITAL, the device used one-seventh of conventional ventilator components, received FDA Emergency Use Authorization, and was licensed free of charge to 28 manufacturers worldwide. In his TEDx talk, Dan Goods, a visual strategist with JPL, recalls the question a fellow engineer was asking himself: "Is what I'm doing right now the most important thing I can be doing?" Those who had spent careers sensing distant worlds like Mars and Jupiter believed their methods had something to contribute closer to home.

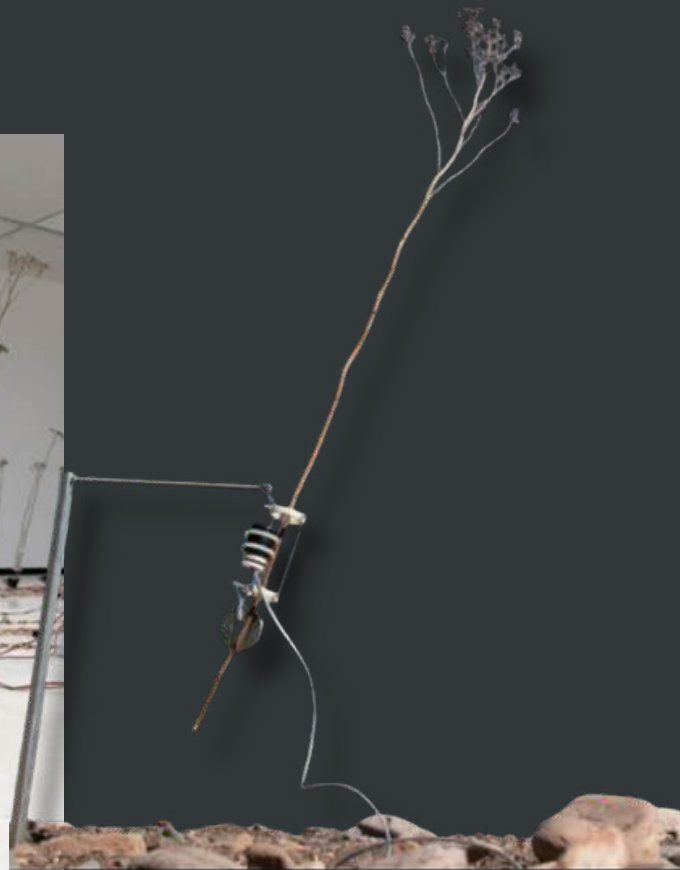
For futurists, this is the deeper lesson of space. It is a practical instrument for training institutions, communities, and individuals to think beyond present constraints, to anticipate problems that do not yet exist, and to act with purpose across very long-time scales. The challenges of climate disruption, resource depletion, and technological transformation demand decades, even centuries, of sustained imagination. To care about space is to cultivate exactly that capacity. For futurists, that is not a peripheral interest. It is a core competency.

EXPERIENCING SPACE: MAKING THE INVISIBLE FORCES OF THE UNIVERSE TANGIBLE

How can such engagement be fostered? The work of The Studio at JPL offers a practical answer: make the invisible felt. Space and Earth science data are facts, but when translated into experience, they connect with human emotion, values, and action in ways that information alone cannot. There is a fundamental difference between conveying data and making the forces of the universe tangible to the body. The Studio has consistently chosen the latter. And that is how cultural and social imagination gets sparked.

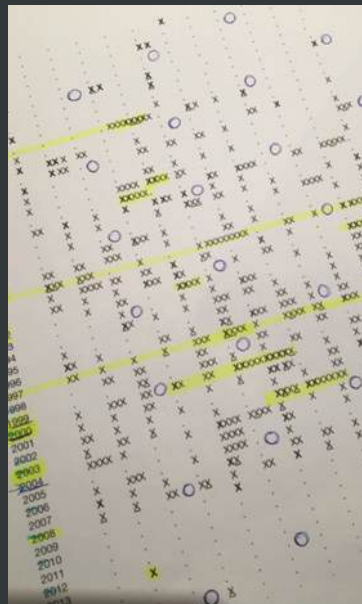
The 2024 exhibition *Blended Worlds: Experiments in Interplanetary Imagination*, presented at Brand Library & Art Center in Glendale as part of Getty's PST ART: Art & Science Collide initiative, represents the most comprehensive realization of this approach to date. Eleven artists collaborated with JPL scientists, engineers, astrophysicists, astrobiologists, and planetary scientists to create cross-disciplinary works spanning sound, movement, scent, poetry, and light. Each work in the exhibition embodied a different theory of how scientific data becomes human experience:

- *Tele-present wind* by David Bowen
- *Seismic Percussion* by Moon Ribas
- *Time Machine* by Larry Bell
- *Interstellar Soundings X Sensory Mementos* by Saskia Wilson-Brown & Shane Myrbeck



tele-present wind by DAVID BOWEN

126 mechanical grass stalks moved in real time with wind data from NASA's Perseverance rover. Earth vegetation responding to Martian atmosphere. Two planets, briefly sharing a breath.

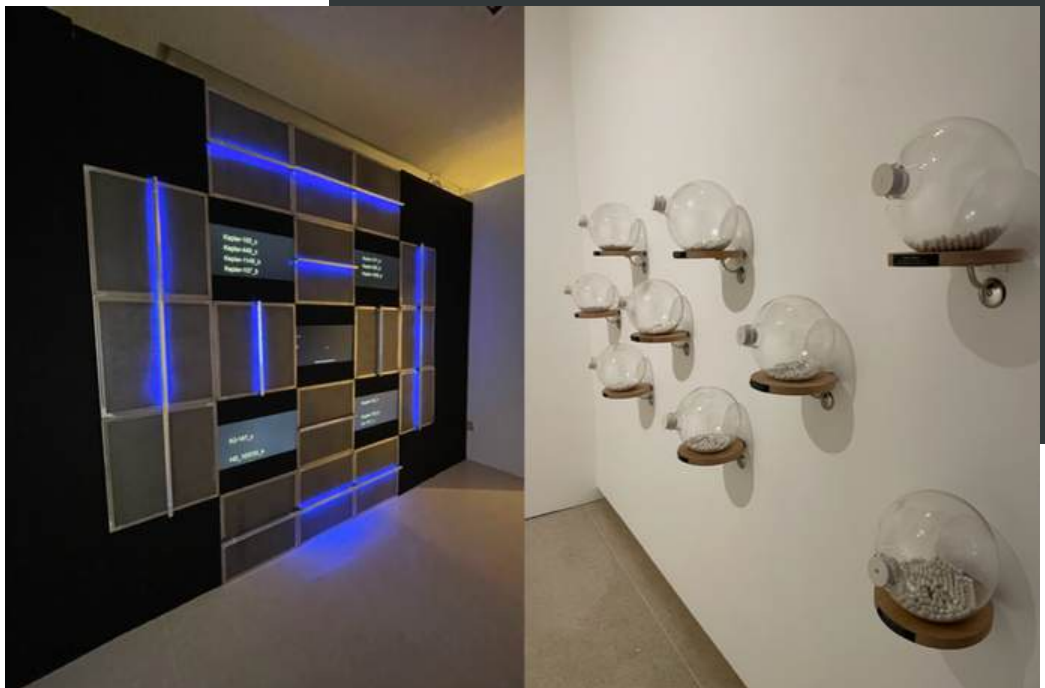


SEISMIC PERCUSSION BY MOON RIBAS

Seismic data from Earth, the Moon, and Mars translated into a multiplanetary drum score. The geological rhythms of three worlds compressed into a single performance.

TIME MACHINE BY LARRY BELL

Two visitors sit on opposite sides of a barium glass mirror. The glass simultaneously reflects and transmits, merging them into one. Bell's thin-film coating technique mirrors technologies JPL uses in space instrument development.



INTERSTELLAR SOUNDINGS X SENSORY MEMENTOS BY SASKIA WILSON-BROWN & SHANE MYRBECK

(Left) Interstellar Soundings: 16 exoplanets from the NASA Exoplanet Archive, each assigned a composed sound, with delays proportional to their distance from Earth.

The scale of the galaxy heard as rhythm and silence.

(Right) Sensory Mementos: Twenty scientifically formulated scents guided visitors from Earth into space: a blade of grass, a city after rain, a clean spaceship, the Moon, Mars. Framed as the olfactory archive of a humanity that had left Earth, the work asked: what would you miss most?

What is most remarkable about these works is not any single piece, but the cumulative effect of experiencing them together. The realization that the universe is not a distant backdrop to human life, but a continuous presence that can be heard, felt, smelled, and inhabited.

This is what experience-based engagement achieves and amplifies in ways no lecture or data visualization can. People leave not only knowing more but carrying a new dimension of insight into their relationship with the cosmos. It is the difference between being informed about the universe and being connected to it, through the senses, through the body, through experience.

The Pulse, a permanent installation in the JPL's lobby, achieves a similar effect at institutional scale. LED light flows in real time up and down a floor-to-ceiling column: upward when data is transmitted to spacecraft, downward when received. The entire Deep Space Network becomes visible as a living pulse. Every visitor who pauses before it is briefly connected to Voyager, to Cassini, to the outermost horizon of known space.

THE PULSE

A floor-to-ceiling LED sculpture installed in the JPL director's lobby in 2014. Light flows up and down the column in real time, visualizing the live transmission of data between Earth and spacecraft communicating through the Deep Space Network.



The Studio also maintains a creative space within JPL called *Left Field*, where scientists and engineers work through complex mission concepts under The Studio's facilitation. The purpose: to ask questions that peers do not ask, and to help researchers see their most complex ideas in new ways.



**LEFT FIELD - THE
STUDIO AT JPL'S
CREATIVE SPACE**

A dedicated creative room inside NASA's JPL brings scientists and engineers together to think beyond the boundaries of their discipline.

THE INTERSECTION OF ART, SCIENCE, AND FORESIGHT:

WHY SPACE INSPIRES THE PRESENT AND THE FUTURE

From a futurist perspective, understanding and caring about space is a critical strategic act for designing a sustainable and inclusive future for humanity.

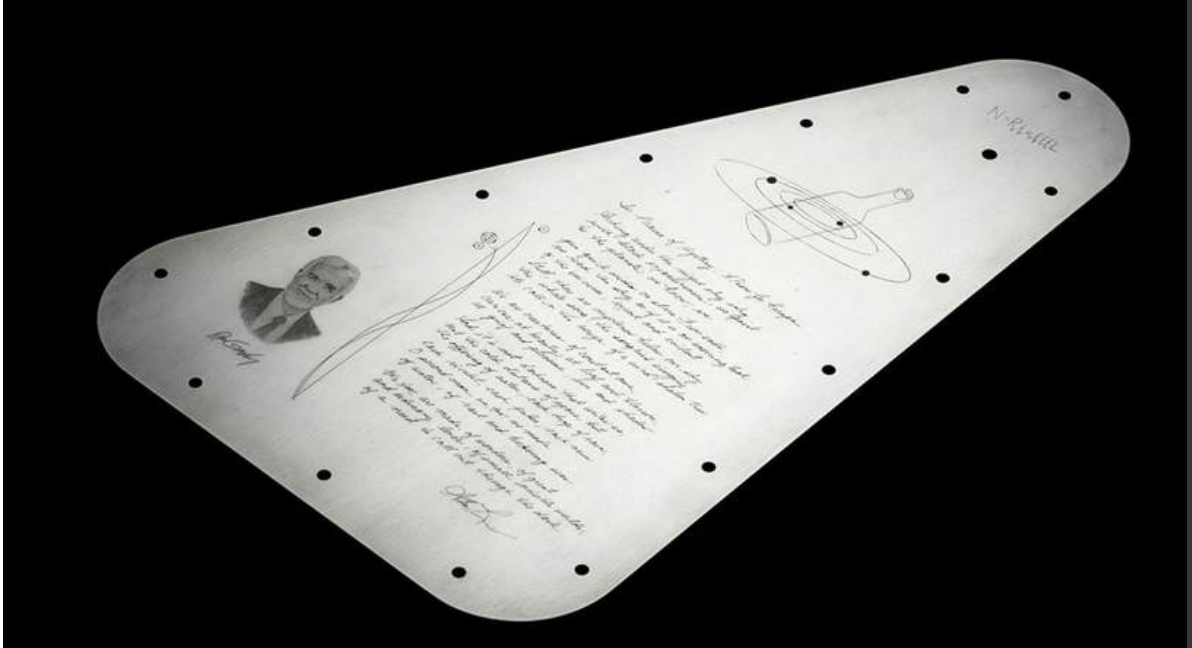
Transforming scientific facts into artistic experiences provides a new interdisciplinary platform for addressing complex global challenges at the intersection of science, technology, and culture.

The work of The Studio at JPL over the past two decades makes a compelling case for all of this.

First, it demonstrates that science communication is not a downstream function, but a generative one. The Visions of the Future poster series created a new cultural genre — the interplanetary travel poster — that changed how millions of people relate to the question of other worlds. The Orbit Pavilion produced an acoustic architecture for experiencing orbital mechanics. These are creative contributions that generate new meaning, not just new understanding.

Second, the most complex scientific challenges of our time — climate change, biodiversity loss, resource scarcity — require exactly the kind of cultural translation The Studio practices. The GRACE Follow-On satellites measure the disappearance of ice and groundwater with millimeter precision; but precision data does not by itself produce the emotional and political will to act. Art does. The scent of a blade of grass, imagined as a generational memory held by a humanity that has lost its home planet, can do what a graph cannot: make the stakes feel personal.

Third, the work of The Studio argues that wonder is not a sentiment; it is a cognitive and civic resource. When Moon Ribas translates Martian seismic data into a drum performance, or when Ada Limón's poem is engraved on the Europa Clipper and launched into the solar system, currently in flight, bound for 49 flybys of Europa before a final impact with Ganymede in 2034, something more than science communication is happening. A civilization is articulating its relationship to the unknown. And that declaration does not stop at JPL's gates. eCLOUD, a 108-foot data-driven sculpture at San José International Airport, responds in real time to weather data from 100 airports worldwide. Wonder does not belong only in museums or space centers. It can be planted in every space we pass through.



IN PRAISE OF MYSTERY: A POEM FOR EUROPA

U.S. Poet Laureate Ada Limón's original poem, engraved in her own handwriting on Europa Clipper's vault plate.



ECLLOUD - 108' DATA DRIVEN SCULPTURE

Thousands of electrically switchable smart glass panels operate as pixels, responding in real time to weather data from 100 airports worldwide.

Art that is scientifically precise yet humanly resonant, and experiences that make the universe feel like something to which we belong. At the heart of it all has always been a single obsession: making the invisible felt. The orbit of satellites as sound, the tremors of planets as drumbeats, the disappearance of glaciers as sculpture, the wind of Mars as the sway of grass. Building a bridge of wonder between science and the public. In the way The Studio at JPL has spent over two decades opening the future, I leave you with an open question:

You may not yet know what door of possibility you are opening. What futures are you making imaginable right now?



Author's Note: Special THANKS to Brian Brophy, who orchestrated new conversations around the value of science at Caltech and for his inspiring work and insights at the intersection of science, storytelling, and performance, which have profoundly shaped this article and my thinking about how space, art, and culture can be interwoven to engage both society and the imagination.



Dr. Yuna Lee is a political scientist and historian specializing in strategic foresight in government and policymaking, with a particular focus on science diplomacy and frontier and strategic AI governance. She is also a Science Fellow selected by the Ministry of Science and ICT (MSIT) of the Republic of Korea, as one of its Science and Technology Talent. Her professional background spans finance, where she worked as an industry analyst and new business planner, and it is perhaps this breadth of experience that allows her to bring an unusually wide range of perspectives to her research (shaped in part by an earlier career that included a degree in fashion design and work as a K-pop visual director). That breadth is not incidental. It reflects a deliberate commitment to developing her capacities holistically, and to never stop learning. She recently completed a PhD in Political Science from University College London (But at the Bartlett Faculty of the Built Environment), with her doctoral thesis "Evolution of Strategic Foresight and Policy Making: A Comparative Evaluation of British and American Strategies for National Emergency Crises." Her research interests span future strategy, crisis management, and anticipatory governance.

DARWIN SY ANTIPOLLO

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LOCATION: ANTIPOLLO CITY, THE PHILIPPINES (BUT WORKING GLOBALLY)

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WHAT'S IN YOUR FORESIGHT TOOLKIT

DARWIN SY ANTIPOLLO?

WHAT DO YOU DO AS A FORESIGHT PROFESSIONAL?

I design and facilitate foresight-informed learning experiences that help leaders, teams, and organisations think more creatively and clearly in conditions of uncertainty. My work sits at the intersection of business innovation design, applied strategic foresight, and facilitated accelerated learning where serious play methods support the practice. As a self-identifying foresight guide, I help people move from abstract futures talk to embodied insight and practical action.

WHO ARE YOUR TYPICAL CLIENTS?

My clients are typically senior leaders, strategy teams, educators, and innovation practitioners in corporations, universities, and mission-driven organisations. Often they are facing complexity, disruption, or strategic fatigue and looking for a fresh way to step back and reflect before gaining the sense to move forward.



WHAT TYPES OF FORESIGHT WORK DO YOU TYPICALLY DO?

I primarily apply specific foresight tools on real life situations like wind tunneling in workshop format to stress-test current strategies, futures-informed learning and capacity building programs in partnership with other institutions or directly to corporate entities, and design organisational tools, activities and experiential methods that are “mash ups” of different domains that are utilised in my practice.

HOW LONG HAVE YOU BEEN AN APF MEMBER? HOW HAS YOUR MEMBERSHIP HELPED YOU IN YOUR CAREER?

I've been a member of the APF for several years, since 2023 to be exact. It took me a while post-Covid to pitch a tent in a tribe that welcomes my oddity! The APF has been a most welcoming community that helps normalise and celebrate diversity in our individual journey through futures and foresight. I think many of us meander through our professional life and meet foresight at a pivotal moment. The APF has been a valuable space for peer learning, intellectual generosity, and seeing how we can co-exist beautifully with our differences.

WHAT'S YOUR FAVORITE PART ABOUT BEING A FORESIGHT PROFESSIONAL?

I turned my back from a comfortable job as a digital marketer and technologist and set out to develop a 'different' tech-enabled agency only to realise I am all about people. I love watching people shift from anxiety into curiosity, playfulness, and agency. Foresight invites us to slow down, ask better questions, and imagine possibilities. Being part of that moment and instrumental in that transformative unlocking is deeply rewarding.



WHAT'S YOUR APPROACH TO FORESIGHT?

My approach is experiential, reflective, and relational. Foresight is a practice that cultivates our capacity to see patterns, hold many possibilities in our mind, and make informed even wiser decisions in our present. I draw heavily on facilitation, serious play, design disciplines and recently depth psychology to approach foresight.

WHAT FORESIGHT TOOLS ARE IN YOUR FORESIGHT TOOLKIT?

How long is this page? :) I'm a tools guy but you're likely going to see a slight tweak or a variation of what would be our usual list of tools used in foresight work. Scenario, Wind Tunneling and Backcasting are my go-to when I meet clients. That's where they are mostly, ready with their strategy(ies), holding an action plan.

In capacity development programs, each of the phases in Futures/ Foresight have my preferred tools – Three Horizons, Futures Triangle and CLA are up there in “most used.” Then I would wield my cards and unconventional training tools into custom-designed activities and experiences within the foresight context.

WHAT IS YOUR FAVORITE FORESIGHT TOOL?

This is the hardest to answer! The simplest but the most effective foresight tool for me would be a well-crafted “What If?” question. Not software. Not a matrix. Not a 2x2. A disciplined, provocative “What If...?”

Then, I love to use embodied tools like cards, objects and serious play structures to make foresight tangible. When people can touch and rearrange ideas, they think differently. Lastly, I have a prototyping lab in a suitcase when we need to see/feel the futures which essentially means tapes, cartons, and lots of stuff.

DO YOU HAVE ANY FAVORITE TECHNOLOGY TOOLS THAT YOU USE TO SUPPORT YOUR FORESIGHT WORK?

Since the nature of my foresight work centers around design and facilitation, I use collaborative whiteboards (Miro/ Mural), lightweight design tools (Canva), and robust communication technology (Zoom) when it's “mostly” online. As a recovering digital marketer/ technologist, sorry to disappoint dear readers, I've become super analog in designing interactions and conversation in many of my foresight-related work. Ask me for my top 10 well-designed deck of cards if you think that qualifies as “tech tool” in foresight work. :)

HOW ARE YOU USING (OR NOT) AI IN YOUR FORESIGHT WORK?

I use AI as a “thinking” partner – especially since I mostly work independently, only calling others to bolt in depending on the foresight work at hand. I use it for pattern and structural exploration, reframing questions and flow and accelerating knowledge synthesis. I'm super careful not to outsource judgement or imagination, yours, theirs or mine.

HOW DO THE FORESIGHT TOOLS YOU RELY UPON HELP YOU DEMONSTRATE YOUR VALUE AS A FORESIGHT PRACTITIONER?

Across the tools, they make thinking visible. Good tools for foresight help groups see how they are thinking, not just what they are thinking, so insights become shared, discussable, and actionable. The tools I wield are informed by my desire to design a playful learning environment and mostly facilitating conversations that matters. We need more play / playfulness in this space.



WHAT OTHER FORESIGHT TOOLS DOES THE PROFESSION NEED?

The next generation of foresight tools should invite serious play. When people can move ideas, test assumptions, and experience uncertainty together, foresight stops being abstract and becomes a lived capability.

LATEST BOOK READ?

Playful: How Play Shifts Our Thinking, Inspires Connection, and Sparks Creativity by Cas Holman.

FAVORITE PODCAST?

I am likely plugged in to what's latest from these favourites.

- This Jungian Life Podcast (Joseph Lee, Deborah Stewart, Lisa Marchiano)
- Creative Codex (MJDorian)
- The Wicked Opportunities Podcast (TFSX)

12

Questions with APF Member

Yelena Muzykina,

APF



Yelena V. Muzykina is a certified and award-winning futurist, practitioner, and educator with ample experience in various fields. She is a fellow at the Centre for Postnormal Policy & Futures Studies and a trainer at the Academy of Public Administration under the President of Kazakhstan. Since 2019, she actively promotes futures studies and foresight in the Central Asian region and beyond, taking part in different international projects and cooperating with public, educational, governmental, and private organizations. Yelena is a reviewer and a guest editor for the Journal of Futures Studies, World Futures Review, and Islamoved (an Islamic Studies academic journal, Dagestan). You can follow her on LinkedIn: <https://www.linkedin.com/in/yelena-muzykina-9105a95b/> or on Instagram: yelena_cppfs.

01

Could you describe what you do as a professional futurist?

Yelena: Well, as a futurist, I deal with things that don't exist because I deal with the future. You cannot touch or test it. However, I would say that my work has a dual nature. On the one hand, it is of the transcendent world, the world of ideas, images, thoughts, expectations, feelings, senses, and subconsciousness. But on the other hand, I work with data, reports, statistics, physical people, specific companies, organizations, and TORs.

I develop and lead workshops where we build different types of the future, critically assess them, discuss, and try to foresee what might happen under specific circumstances. We also play games and boost our creativity by looking at ordinary things from an unordinary perspective.

I work with various organizations and institutions, but one thing is common for all of them – they want to get out of their routine and reach new heights. I help them with that through group discussions, scenario planning, horizon scanning, detecting signals, black swans, elephants, jellyfish, and other instruments of foresight. All in all, as a professional futurist, I help people reformat their activity.

02

How did your journey into foresight begin?

Yelena: It was absolutely unintentional! I guess that's the case for most futurists. It was just the beginning of 2019. I recently completed my second PhD, titled "Contemporary Muslim Ethics: Tariq Ramadan and Ziauddin Sardar." Zia Sardar was very generous; he remained in touch with me throughout my doctoral research and after my defence. I remember sitting in an Almaty cafe, reading some articles from the *Futures* journal he had shared with me. Among them was his article, *Three Tomorrows of Postnormal Times*, and I had a lot of questions about it. I wrote to him, wondering whether he could help me understand some concepts – all those black elephants, jellyfish, Three Horizons, the Extended Present, etc. – that seemed incredible to me at the time.

The next day, I received an email from Zia stating that John Sweeney, his colleague from the Centre for Postnormal Policy and Futures Studies, was coming to Kazakhstan. What was more incredible was that he was coming to Almaty to work there! It was February 3, 2019. And the next day, on February 4, I met with John at the same cafe to discuss the possibility of launching a foresight center at Narxoz University, where he was about to start working.

At that time, I didn't think that my life was taking a different course! I stepped onto the road full of adventure, ups and downs, extreme turns, exciting encounters, and many challenges.

My life stopped being plain. But I do not regret it. John was the person who immediately included me in the foresight practice. It was he who taught me the field's key principle: "Learning by Doing." I was learning about futures studies and foresight, not in classrooms but in workshops which I co-facilitated with him. As a professional scholar, I always felt I lacked some theoretical knowledge, so I finally took a certification course, "Become a Futurist," with Sohail Inayatullah at Metafuture. I was the first graduate there, literally. Well, I'm still learning, and I realize that it's not the end of the road!

03

What does it mean to you to be a professional futurist?

Yelena: I often feel like I'm a physician. I help people get a new pair of eyes without surgery. People come to me and complain that they constantly stumble, fall, and hurt their legs, hands, and heads. They try to fix their balancing problems, not realizing they are blind and need to treat their vision disorder.

Also, I have to lead people through the mindset shift. Our vision is governed by our brain. I like the statement my colleague Jordi Serra del Pino made, "Do we think what we think because of what we see, or do we see what we see because of what we think?" It's not a word game but a very profound statement that points out to the areas of futurists' work – human vision and mind. Both of these components are the essential ingredients of a worldview, which, in my opinion, is the centre of futurists' work. So, futurists deal with worldviews, reshaping, reforming, and reconfiguring them. It's tough work and requires a lot of time.

04

What do you feel the world really needs from futurists and what are you contributing to make a difference?

Yelena: We live in the era of extreme uncertainties and turbulence. People are scared and lost. They adopt a narrow view of reality, often forgetting the future entirely. Many people struggle to get their daily bread. The statistics show that over the last few decades, the world has made enormous progress against extreme poverty. In 1990, 2.3 billion people lived in it. Since then, the number of extremely poor people has declined by 1.5 billion people. But there is a serious threat: if developing countries don't start improving their economies, the result will be reversed quite quickly. This is the moment when futures studies and the work of futurists can have an impact, recognizing that there is life beyond the moment.

However, futurists are not magicians and cannot change the situation instantly. Talking from the inside, I would say they do hard work helping people build the future they want. The term "constructive" has a dual meaning. Futurists construct the future people want, doing so in the spirit of constructive cooperation with others.

I've been thinking a lot about my work in Kazakhstan. This country needs a drastic paradigm shift across everything – people's mindset, the economy, politics, and social structures. For 30 years, it gradually slid into authoritarianism and deep corruption. Double standards, lawlessness, tribalism, hypocrisy, name other vices, and you can find them here. Many talented, highly educated young people have fled Kazakhstan because they do not see a future for themselves there. And it gives me much pain. Therefore, I see my duty as a futurist to give them that hope, to participate in molding a new generation that will affect the situation and break the spell.

There is another thing to mention. I was recently reviewing notes from my training programs at the Academy of Public Administration under the President of Kazakhstan. The top three trends that all groups have been mentioning year after year are corruption, a shortage of professionals, and finance. Corruption is a major issue in this sector and appears to be an invincible, unbeatable enemy. However, my conclusion is that the issue will be solved when people adopt futures thinking and start thinking like futurists. Futurists have a long-view perspective, looking several generations ahead, with both positive and negative scenarios and options in between. Therefore, if public servants adopt the same mindset and futures thinking, corruption will be overcome.

05

What do you feel are your strengths as a futurist and as a human?

Yelena: I love learning new things. I am a life-long student. Curiosity is my strength. I am not a press-an-easy-button person. I'd rather use my natural intelligence than AI. As a human, I'm proud that I have it and make efforts to develop it.

I'm also a culturally sensitive person. In my workshops, I always put a heavy weight on culture, traditions, and worldview. The latter are the glasses we look through into this world, which determine our behaviour. Unless we are mindful of it, the slogan "Culture eats your strategy for breakfast" will determine our permanent failure.

06

What's a career highlight for you that you'd like to share?

Yelena: Though foresight is a very young discipline in comparison with philosophy, for example, my career in it is in an embryonic state. However, I can consider the visibility of Kazakhstan in this field a certain achievement, and the fact that I was interviewed by *Compass* proves it.

07

What would you tell your younger self – an 21-year-old you – about your journey as a professional futurist?

Yelena: I would encourage myself to keep going, without any change! My younger self lived through times of great turbulence that prepared me to face the current tsunamis. It was the 1990s, the notorious period for post-Soviet territories, when you had to learn to survive, literally and figuratively. And my previous life experience and all my educational background prepared me for my career as a futurist. I learned to wear many hats and walk in different shoes. I learned what uncertainty is before I read Sardar's article "*Welcome to Postnormal Times*," because a key characteristic of my whole life has been uncertainty.

08

Do you remember the moment when you said to yourself or someone else, “I’m a futurist?” How did that feel?

Yelena: You asked, and I realized that it was quite recently that I grasped the meaning of this title, that it can cause a different reaction from different people. The first case made me feel uneasy. It was a couple of years ago, in a meeting organised by Switch-Asia. I worked as a senior consultant on the project “Strategic Foresight for the Circular Economy in the Tourism and Hospitality Sector with a Focus on Food in Central Asia.” There was one session for the project’s foreign consultants, and we had to give self-introductions. When I said that I was a futurist working on this project, one person in the group laughed to my face as if it were a joke. The reaction looked strange, but it made me realize that not everyone is going to appreciate what I do – that foresight can sound weird to some people.

The second experience was much more positive. My colleagues from the Centre for Postnormal Policy and Futures Studies and I were at the 18th EISA Pan-European Conference on International Relations in Bologna. Before we started our session, “Making Sense of Change at the International Level,” our moderator was collecting our bio info. And when she turned to me, there was an awkward moment. I felt she expected me to say I was an expert in International Relations, but I said I was a futurist and that my field of interest was futures studies. At that very moment, my colleague from CPPFS said we should be proud to do that kind of work and not disguise ourselves (by the way, he was one of us). I was very grateful to him for that support! Because it was a moment of appreciation for my effort from the person I respect.

09

Why are you a member of the APF? What is the value of being part of the APF global community?

Yelena: The value is the letters after my name on LinkedIn! (laughing). But seriously, it’s a community where I can learn and share. I absolutely love the Compass magazine! It’s a golden treasure for me due to its thematic publications, the quality of its papers, and the different perspectives it includes in every issue. I love our online sessions where futurists from different regions share their experiences. It is very important! Especially our comments in the chat box during those meetings! That’s a parallel session, sometimes, where you can network, find solutions to your (work) problems, and test your vision.



What (books, movies, travel, etc.) or who (mentors, professors, etc.) have inspired your work as a futurist? Who do you hope to inspire?

Yelena: First of all, I should mention John Sweeney. He was the first futurist whom I met in my life. For me, John was a fountain of ideas, bursting with energy. I am a more reserved person; therefore, that talent immediately caught my eye.

The next person is Ivana Milojević. Knowing her background, I admire her ability to cope with her feminine and professional selves. She is a very profound thinker; her approach to futures studies is solid, substantial, but it does not overwhelm you, and you do not feel drowning in her articles, terms, literature reviews, etc. Quite the reverse: they help you stay above the deep waters of futures studies. I like her *"The Hesitant Feminist's Guide to the Future,"* though I do not agree with everything in it. But I do agree with the theoretical part, yes! I enjoyed the process of writing a response to it, which was published in the *Journal of Futures Studies*. It was captivating!

The third person is Sohail Inayatullah. I didn't have a chance to meet him in person when he came to Kazakhstan in 2019, but I remember our interactions while I was taking my certification program at Metafuture. The most amazing thing about him to me is his ability to give feedback on written assignments. Incredible! Really! Those in the academic field who submit to peer-reviewed journals know how long the review process might take. But with Sohail, you should be ready to receive his feedback the next day! And a paper review is not the only job he is doing! He is a very multifunctional person, travelling around the world, conducting workshops and courses, and publishing his own articles. That's very inspiring for me! Moreover, it was Soheil's CLA that prompted me to pay more attention to culture and to include it in the focus of foresight work.

Of course, there are many other people whom I have met along my professional road. Everyone is a gem to me, because our future studies community is like a star constellation. Every person is unique, and we all influence each other.

A biography of Jules Verne by Leonid Borisov, a Soviet writer, became another source of inspiration for me. It is written as a novel, not as a standard documentary, and the reading is very captivating! It is an old book published in 1957. It stood on my bookshelves unnoticed for quite a long time. But when I started reading it, I could not stop. I remember I had to fly to Ankara, and I read the book throughout my whole five-hour flight. The life of that person is an outstanding example of one who was able to pierce time for centuries ahead. Nothing could stop him from dreaming big dreams! His life was not all pink and rosy. But he remained faithful to what he believed was his call. And he did a lot for the younger generation of his time, helping them learn not only science but also to dream of things that seemed unthought in their century.

11

When you're not doing foresight, what else do you love to do or are passionate about?



Yelena: Travelling and reading! I love visiting different places, airports, planes, and the feeling of getting out of the airport in a new country. That's where the adventure starts! Some countries I've been visiting for years, and I love coming back. I have friends and colleagues there, my favourite place to go and spend time. I used to go to the Middle East. I liked the region a lot and felt very comfortable there. Now I like going to Turkey and Uzbekistan. Though I've spent a lot of time there, even in Istanbul and Tashkent, there are still a lot of new places to discover! I am not a beach person. I love museums, historical places, walking through old streets, and sitting in parks, observing the locals. I like going to non-touristic places, where you can see the authentic life of a country. That's what I do in Istanbul and Uzbekistan now. That's fantastic!

As for reading, I love taking a book with me when I travel and read for leisure. I prefer historical novels or biographies. I am from a generation that was taught to read a lot, and I am steadfast in my conviction that nothing can substitute for reading in your personal development. Because when you start a book, you have to imagine the main characters, the situations, and the environment. You start drawing different pictures, and you get into a living reality. You can always stop and reread, reimagine, reconfigure the stage. That's why I also like theatre. I try to go there regularly when I am not on a business trip. If I hadn't become a futurist, I would have become an actress (laughing). Even being abroad, I try to find a chance to go to local theaters and attend different performances and concerts. I love it!



12

**If we were to
come visit you
where you live,
what would you
love to show us
about your
country/city?**

Yelena: If you come to Almaty, I will take you to Medeo first. It is the world's highest-altitude outdoor skating rink, famous for its construction. Then we will take a series of cable cars up to Shymbulak Ski Resort for alpine views at 3,200 meters. Almaty is a beautiful city surrounded by stunning Tian Shan mountains, with a blend of Soviet architecture, vibrant street culture, and many cafes, parks, trees, and fountains. Until 1997, Almaty, or Alma-Ata, served as the capital of Kazakhstan (the Kazakh Soviet Socialist Republic). Until now, it remains the country's trading and cultural hub. A new Almaty Museum of Modern Art opened last year, where you can enjoy works by our modern Kazakhstani artists. We have the State Opera and Ballet Theatre, several drama theatres, theatres of modern art, many concert halls, art galleries, and national theatres – German, Uyghur, and Korean – because Kazakhstan is a multinational country. More than 160 ethnic groups live here.

Of course, we will go to Green Bazar! It is a must-visit place in any Central Asian or Oriental country! I love going to bazars myself, and I melt in the atmosphere of a unique oriental bazaar culture, choosing goods, trying food, and chatting with sellers. It's not like shopping in the West. It's an entertainment by itself! And if we still have time – depending on how long you want to stay – we can go to the city outskirts and visit Big Almaty lake, again in the mountains.

Almaty is a very cosmopolitan city. You can find whatever you want here, and I know that tourists who come to the city feel very comfortable, whether they are from Europe, Southeast Asia, or the Middle East. Quite recently, I met a family from Dubai at my favourite coffee shop. It was their first visit to Kazakhstan, and they made the right choice of coming to Almaty first. By the way, "Almaty" is often referred to as "the city of apples." When McDonald's was about to launch its first outlet in the Soviet Union and was looking for ingredients for its famous apple pie, it chose the Almaty apourt, a unique local variety of apple.

So, you are most welcome to come to my city and see everything with your own eyes (no surgery is needed)!

SECTION:

HOW-TO

THE WORK BEFORE THE RED CIRCLE: REFLECTIONS ON GIVING A TEDX TALK

By Dana Klisanin



COMPASS



MAY 26 - JUNE 26

From the outside, a TEDx talk can look deceptively simple.

Eighteen minutes or less.

A red circle.

One idea worth spreading.

From the inside, it is an exercise in radical sensemaking.

When I stepped onto the TEDx stage, I wasn't simply delivering a talk – I was presenting a compressed artifact of long-horizon inquiry.

Like many futurists, my work lives upstream of certainty: tracing patterns, noticing slow erosion alongside rapid acceleration, and asking what kinds of inner and collective capacities a regenerative future may require.

A TEDx talk demands that all of that be brought into coherence – not only conceptually, but emotionally and somatically – in a form that can be carried by an audience beyond the room.

Before going further, it's worth naming what this article is – and is not. This is not a how-to guide in the conventional sense. There are many resources that explain how to apply for a TEDx talk, how to structure a script, or how to prepare for the stage. What follows instead is a reflection on my own experience – offered in the hope that it may resonate with other futurists navigating the same terrain.

THE INVITATION: WHEN AN IDEA CHOOSES YOU

TEDx organizers often say they are looking for “ideas worth spreading.” What they don't always say is that the strongest talks emerge when the idea has already been living – sometimes uncomfortably – inside the speaker.

In my case, the central question of the talk had been following me for years:

**If our outer world is becoming increasingly endangered,
what is happening to our inner one?**

As futurists, we often work with vast information streams – climate data, technological acceleration, demographic shifts, and cultural or political change. Over time, I became increasingly concerned with a quieter signal: the erosion of inner capacities humans once developed through sustained relationship with the living world – imagination, attentiveness, embodied presence, and a felt-sense of belonging.

COMPRESSION, TIME, AND THE SHAPE OF AN IDEA

One of the greatest challenges of a TEDx talk is compression.

As futurists, we are trained to work with complexity rather than resolution. We hold multiple time horizons at once, track weak signals, and resist premature closure. A TEDx talk, by contrast, requires decisive framing.

What is less visible is that this compression must happen long before the stage. Writing the talk is, in many ways, the most demanding part of the process – at least it was for me. It is not simply about editing for length, but about determining what insight is actually being offered.

In my case, I was invited to give the talk approximately eight weeks before the event. That time constraint shaped everything. Eight weeks had to hold topic determination, narrative framing, writing, memorization, and rehearsal – alongside ongoing work and family responsibilities.

The pressure forced clarity. There was no space for abstraction or hedging. The talk had to resolve into a single orienting insight – one capable of naming a present condition while opening a longer future conversation. I returned repeatedly to a question that may feel familiar to futurists: If this is the signal that survives, what future does it point toward?

After countless hours working on the script, my talk eventually crystallized into a simple but unsettling proposition: *our most endangered habitat may be inside us*. That idea represented the convergence of years of research, practice, and artistic inquiry—years of noticing parallels between ecological degradation and psychological depletion. Articulating our interiors as endangered habitats, however, only became possible through the discipline of writing.

***I returned
repeatedly to a
question that
may feel familiar
to futurists: If
this is the signal
that survives,
what future does
it point toward?***

VULNERABILITY AS CREDIBILITY

TEDx talks often carry an aura of authority. What gives them credibility, however, is not certainty – it is vulnerability. That was a consistent message from the speaking coaches supporting our cohort. Audiences, they reminded us, are saturated with information and performance. What they are most receptive to is a sense of authentic personal connection to the idea. This does not mean oversharing; it means acknowledging where the idea touches the speaker's own life.

The conditions I spoke about – disconnection, grief, erosion of inner vitality – were not abstract trends. They were patterns I had witnessed in clients, students, and myself.

Naming that did not weaken the talk. It grounded it.

THE FUTURIST'S DILEMMA: URGENCY WITHOUT ALARM

One of the most delicate balances in a TEDx talk, especially for futurists, is communicating urgency without tipping into alarmism.

We are acutely aware of what is at risk. But fear alone rarely catalyzes meaningful change. A TEDx audience needs not only diagnosis, but orientation – a sense that something can still be restored, remembered, or reimaged.

To support this, I offered three practices for reconnecting with the more-than-human world: *notice, name, and nurture*.

Taking a few minutes each day to notice something living nearby, learn its name, and nurture relationship with it – through speaking words of admiration and gratitude. These practices, though seemingly simple, can begin to restore both inner and outer ecosystems. The framing allowed the talk to remain hopeful without denying the scale of what we face.

BEYOND THE RED CIRCLE

On the day of the talk, I was aware that there was nothing left to add. The task was simply to stand in that red circle, share the idea as honestly as possible, and let it go.

What happens next is largely out of the speaker's hands, as the talk moves through editing and approval before it can enter wider circulation. More importantly, the process continues internally, clarifying what the work is asking next. For me, it reinforced something essential: the role of futurists is not only to map possible worlds, but to tend the inner capacities required to inhabit them wisely.

It reinforced something essential: the role of futurists is not only to map possible worlds, but to tend the inner capacities required to inhabit them wisely.

My TEDx talk took place in Bentonville, Arkansas in late November 2025. You can watch it on YouTube – you can search for it at *Rewilding the Mind: The Missing Piece to Human Flourishing*



I hope it is received as a moment of convergence – where years of research, practice, and lived inquiry briefly come into focus. It represents one articulation of a longer exploration into how relationship with the more-than-human world shapes our inner capacities to imagine, sense, and inhabit possible futures.

For futurists, that may be the deeper resonance of the TEDx experience: not the red circle itself, but what it demands of us as practitioners – the willingness to clarify what we believe is at stake, to stand publicly inside that claim, and to offer it in a form that others can carry forward.

In a time of accelerating change, this may be one of our most essential skills – not only anticipating the future, but cultivating the inner conditions required to meet it.



Editor's Note: Watch Dana's TEDx Talk here:

<https://www.youtube.com/watch?v=KuidGfK1luM>.

As of this publication, it has more than 251,000 views.



Dana Klisanin, Ph.D., is a psychologist and futurist and the founder of ReWilding: Lab. Her work examines how the erosion of human–nature relationships undermines well-being and reshapes perception, imagination, and long-term decision-making in an era of accelerating technological and ecological change. She develops and applies the Rewilding Futures approach, a framework that explores how attention and human experience shape foresight and the ability to engage with long-term futures.

She works with organizations and interdisciplinary teams to reframe problems, expand perspective, and navigate complex, long-horizon challenges, with a focus on bringing human, sensory, and ecological dimensions into futures thinking—areas often underrepresented in strategy and foresight processes.

Her research and applied work have been recognized by the World Futures Studies Federation and the American Psychological Association, and her insights have been featured in BBC, TIME, Fast Company, and Forbes. She is also the author of the Chronicles of G.A.I.A., a speculative fiction series for young readers that introduces anticipatory thinking and environmental futures.

OPENING THE FUTURE



SIGNAL
BY
SIGNAL:

SIGNALS STUDIOS AS A
PRACTICE OF COLLECTIVE
SENSEMAKING

By Manasi Kumbhat



In organisations designed to decide, act and deliver, there are surprisingly few spaces dedicated to not knowing. Fewer still that legitimise curiosity without demanding conclusions, or exploration without immediate utility.

Yet in a world shaped by compounding crises, accelerating technologies, and increasingly non-linear change, the capacity to notice and interpret weak signals of change may be as critical as the ability to respond decisively. This capacity grows stronger when insights are enriched by diverse perspectives – when people can contribute based on curiosity and their ability to see interlinkages, connecting dots across areas and domains that might otherwise remain siloed.

To address this gap, the United Nations Development Programme (UNDP) created Signals Studios.

Rather than another workshop optimised for outputs, alignment, or action plans, Signals Studios are deliberately light-touch foresight conversations. They offer a structured but non-extractive space where colleagues can collectively explore early signals of change, surface diverse interpretations, and practice futures thinking without the pressure to converge or decide. In doing so, they shift foresight from a specialised activity to a shared organisational habit.

A vertical decorative graphic on the left side of the page. It features a solid light blue bar on the far left, followed by a vertical strip containing several interlocking puzzle pieces in a light grey color. The puzzle pieces are arranged in a way that they appear to be floating or falling into place.

WHAT IS A SIGNALS STUDIO?

Signals Studios are virtual, interactive, 60-minute conversations hosted by the UNDP Strategy & Futures Team. They bring together colleagues from across UNDP and, increasingly, across the wider United Nations (UN) development system to explore signals of change drawn from the **Future Trends and Signals System (FTSS)**, UNDP's exclusive internal signals scanning system.

Originally called "Signal Clinics," these sessions were designed to help UNDP's signal scanning community understand horizon scanning. As the community grew and became more sophisticated in its practice, Signal Clinics evolved into Signals Studios—more complex, more collaborative – not just sharing how to scan for signals but hosting deeper discussions to make sense of the signals being collected.

Signals Studios intentionally break down siloes and hierarchies, creating space for conversation across job levels, subject matter expertise, and region. An innovation specialist based in the Caribbean can connect with an economist in the Arab States; a programme officer in Asia can exchange ideas with a policy advisor in Africa — people who might not otherwise have the chance to share perspectives with each other. This cross-pollination across regions and areas of expertise fosters diversity of thought and ensures that multiple perspectives shape how emerging change is understood.



At their core, Signals Studios are about *training* minds to pay attention. Each studio focuses on a broad theme, such as the futures of learning, futures of water, futures of democracy, or futures of activism, and invites participants to engage with a curated set of signals of change: early indicators that something in the system may be shifting. These signals might come from policy experiments, social behaviours, technological developments, cultural artefacts, or lived experience.

THE FUTURE TRENDS AND SIGNALS SYSTEM (FTSS)

Signals Studios draw their content from UNDP's **Future Trends and Signals System (FTSS)**: a collaborative foresight platform built by and for UNDP. The FTSS collects early signals of change from across UNDP's global footprint, contributed by a growing network of 500+ signal scanners across 100+ countries embedded in UNDP country offices, regional hubs, and global teams. Launched in 2022, the FTSS relies on daily contributions from these signal scanners. These signals range from policy innovations and emerging technologies to shifts in social behaviour and unexpected community-led initiatives. They can be spotted in the news, online, or simply from what scanners observe in their daily life.

The FTSS is an internal collaborative horizon scanning system, rooted in UNDP's language, mandates, and operating realities. Signals are tagged and used across contexts, allowing dispersed observations to accumulate into shared organisational intelligence rather than remain isolated insights. This allows connections to be made across contexts, creating connective tissue across UNDP's global footprint.

Signals Studios act as one of the FTSS's living interfaces: a space where signals are actively interpreted and enriched through conversation.

A DIFFERENT KIND OF FORESIGHT SPACE

UNDP Signals Studios differ from traditional foresight workshops, sense-making sprints, or strategy sessions in three important ways:

- 1.They are **not designed to narrow down ambiguity or create alignment**. While sense-making may occur, it is not the endpoint. Studios resist premature synthesis in favour of keeping multiple interpretations alive.
- 2.They carry **no requirement to decide or recommend**. The goal is exploration; understanding what might be emerging, why it matters, and how different people read the same signal differently.
- 3.Outcom **intentionally loose**. Insights from a studio may later inform policy and programme design, research, scenario work, or strategic conversations – but they do not have to. The value of the studio lies in the shared thinking itself, not in a predefined deliverable.

In this sense, Signals Studios are better understood as *opening up the future space*, rather than narrowing it. They can be a space that ultimately informs a larger or broader foresight initiative, or simply a space where people come together to have a conversation about a topic that interests them, which may seed thinking elsewhere in the organization.

HOW A SIGNALS STUDIO WORKS

While each Signals Studio is adapted to its theme, the process is intentionally simple. The aim is not to teach participants how to use foresight tools, such as the Futures Triangle, but to create an immediate entry point into futures thinking.

1. ALL ARE WELCOME

A Signals Studio is not just for futurists. Within UNDP, Signals Studios allow the organisation to invite those who are new to foresight, such as those who work in a UNDP country office, or in other UN organizations. For many of these people, the Signals Studio offers a unique, non-technical, first introduction to the practice of foresight and some of the tools that professional futurists use to create a futures space.

Additionally, participants don't need to be subject matter experts in the studio's theme. In fact, Signals Studios actively welcome people from different fields and disciplines. A health specialist might bring fresh perspective to a studio on the future of finance; a governance expert might notice patterns in signals about technology. This cross-disciplinary participation enriches the conversation and ensures that signals are interpreted through multiple lenses

2. CREATING AN ONLINE SPACE

We have conducted Signals Studios with as few as five or six people and with as many as 60+ participants. For larger groups, break-out rooms are essential to create smaller conversation spaces.

Because we conduct Signals Studios virtually, we use Miro or Mural to allow participants to post their signals onto an online board. Signals Studios also are recorded to capture signals that are voiced but not necessarily posted onto the online board.

In addition, because UNDP is a global institution, we typically conduct two Signals Studios across time zones on the same topic to allow participants to participate at a time that best works for them.

3. BROWSING SIGNAL

Ahead of the session, facilitators curate a small set of signals related to the chosen theme using the FTSS. During the studio, participants explore these signals together and are encouraged to add what they are seeing from their own contexts: their professional work, local observations, or lived experience.

This establishes an important baseline: futures thinking starts with noticing, not expertise.

4. USING DIFFERENT FORESIGHT TOOLS

Flexibility is central to the nature and culture of Signals Studios. Depending on the studio's topic, the direction of conversation, and the composition of participants, facilitators draw on different foresight tools and adapt them as needed. What follows are examples of tools commonly used in Signals Studios.

4a. ENGAGING WITH SIGNALS THROUGH A SIMPLIFIED FUTURES TRIANGLE

Rather than introducing the Futures Triangle (credited to futurist Sohail Inayatullah) as a formal analytical framework, Signals Studios use a deliberately simplified version of the exercise. The triangle is separated into three clear spaces, each anchored by an intuitive prompt:

- **Which signals make you hopeful or fearful for the future?** (*Pull of the future*)
- **Which signals make you sit up a little or surprise you?** (*Push of the present*)
- **What reminds you of the past, or feels like a regression?** (*Weight of the past*)

This subtle shift matters. By foregrounding emotional and intuitive responses rather than conceptual categories, participants engage immediately. They do not need to “understand the tool” before contributing. The conversation begins where people already are and how they feel.

Which signal inspires you about future possibilities?

What is at the forefront of development or is still bubbling under the surface, making or inspiring a signal?

What signal should we pay more attention to?

Which signal makes you sit up a little?

What is confusing, surprising or makes you laugh?

Which signal is a potential "wildcard"?

Which signal makes you think of the past?

Which signal makes you think we are regressing?

Which signal makes you think we are rediscovering the wisdom of the past?

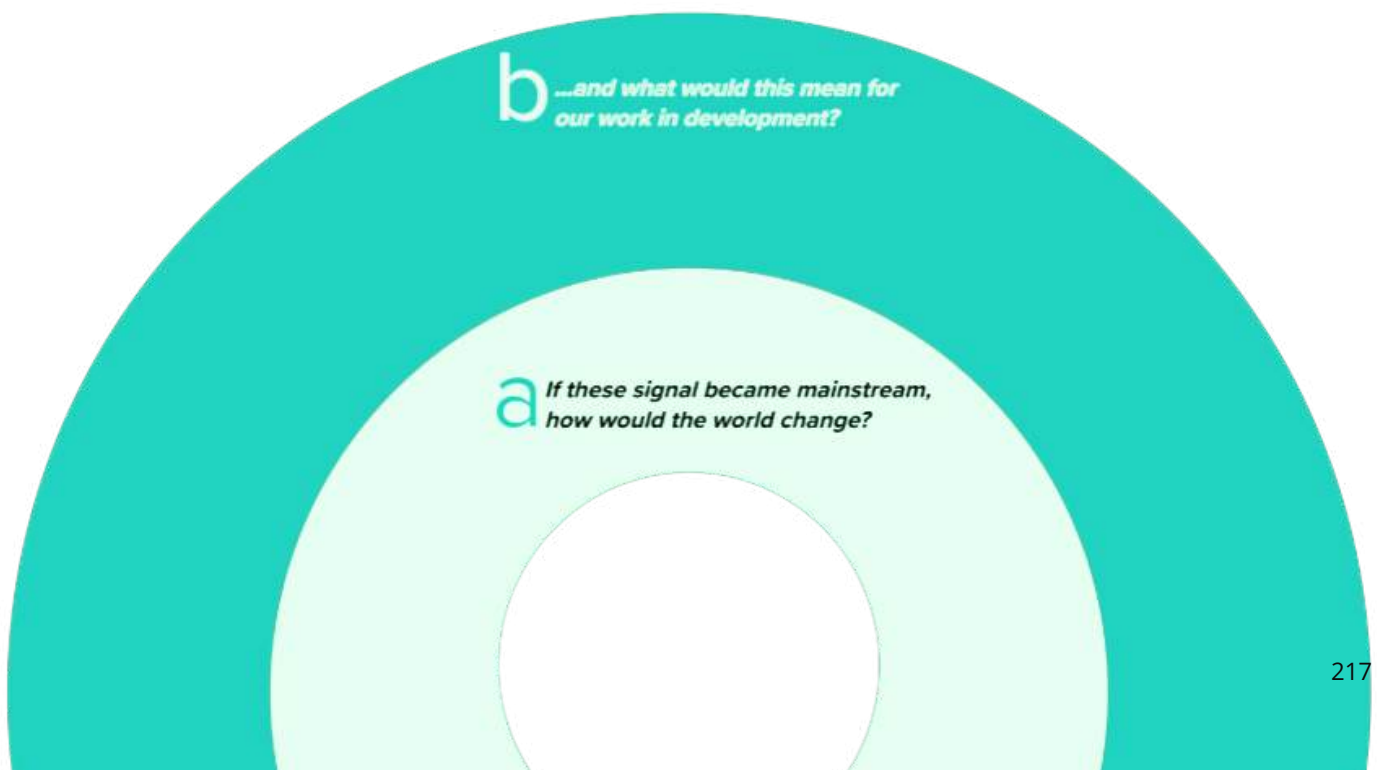
4b. EXPLORING IMPLICATIONS WITH A SIMPLIFIED FUTURES WHEEL

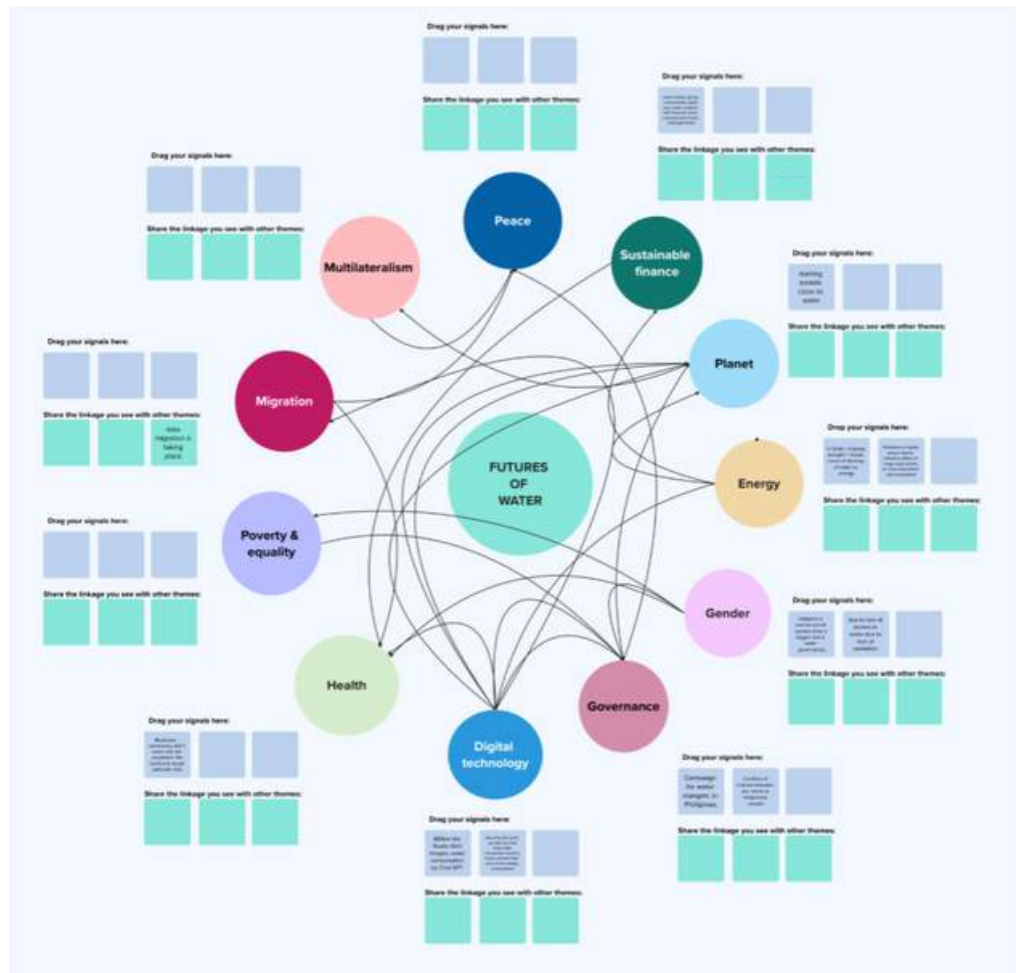
When studios move into implications, the Futures Wheel (credited to Jerome C. Glenn) is also adapted for accessibility.

Instead of a complex, layered diagram that requires participants to build sequential first-, second-, and third-order effects, the studio version creates a more open visual space.

Participants are invited to write down implications as they arise, without pressure to connect them, extend them, or validate them against one another. This openness has three effects:

- People are comfortable stopping at a single implication if it feels salient.
- Contradictory implications are easier to surface and sit alongside each other.
- Participants follow their own train of thought, rather than feeling constrained by the structure.





4c. OTHER ENAGEMENT TOOLS

The Futures Triangle and Futures Wheel are only starting points.

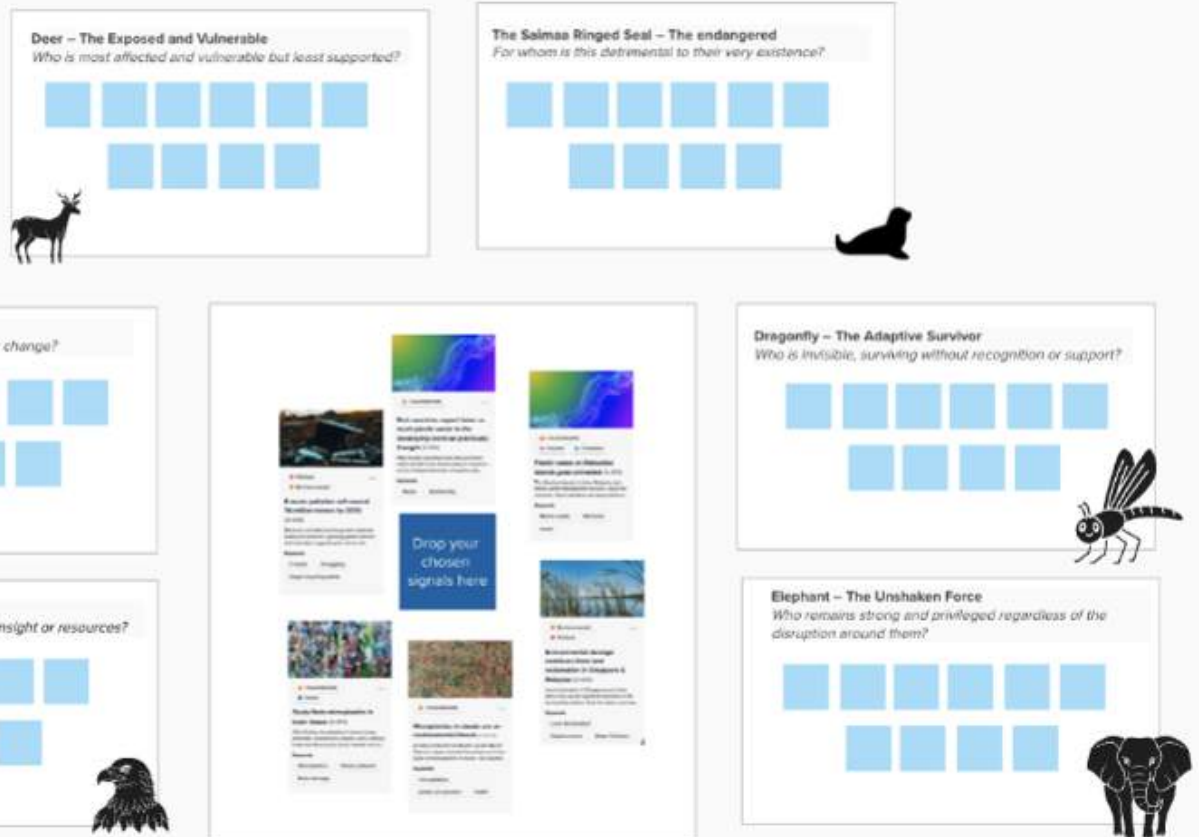
With each Signals Studio, facilitators experiment with slightly different ways of engaging participants: sometimes by adapting existing tools, sometimes by designing new ones from scratch. The intention is to keep lowering the threshold for participation while deepening the quality of insight.

One such exercise is the **Interconnections tool**, which lays out the 12 themes identified in UNDP's Landscape of Development paper. Participants are asked to look across all signals discussed in the studio and draw the linkages they see between themes, making interdependence visible rather than assumed.

In studios on topics such as the Future of Water or Futures of Food Systems, this exercise reinforces a core insight of foresight: no signal sits in isolation. Environmental change connects to finance, gender, health, migration, and digital technology—often in non-obvious ways.

THE INSIGHT AND FORESIGHT ZOO

Who are the stakeholders affected by or influencing this cluster?
How can we support, inform, or guide them toward a preferred future?



Another adapted tool is the **Insight and Foresight Zoo**, inspired by a [SITRA framework](#). Here, participants engage with a signal through a human-centred lens by asking:

- Who is most exposed or vulnerable?
- Who is endangered at an existential level?
- Who holds power to accelerate or reverse this signal?
- Who is adapting quietly, without recognition or support?

By mapping stakeholders in this way, the discussion shifts from abstract futures to lived impacts and agency. Participants practice thinking not only about what might change, but for whom, and who has the capacity to shape outcomes.

WHAT SIGNALS STUDIOS MAKE POSSIBLE

Foresight is often perceived as abstract, technical, or reserved for specialists. This perception alone can be a barrier, particularly for colleagues encountering futures thinking for the first time, confronted with unfamiliar terminology and an expanding toolbox of methods.

Signals Studios are designed to dismantle that barrier.

They make foresight feel doable: By starting with easy conversation and shared observation, studios show that engaging with the future does not require mastering a toolkit. People realise that they are already noticing change; foresight simply gives language and structure to that instinct.

They normalise uncertainty: In day-to-day work settings where we reward clarity and confidence, uncertainty can often be treated as a weakness. Signals Studios reframe it as a shared condition: something to be explored collectively rather than resolved individually.

They build confidence through repetition: Participants do not leave these sessions as foresight (or subject-matter) experts. They leave knowing that they can participate and engage, even without expertise. They see that their perspectives and contributions can add to the conversation. Over time, repeated exposure builds comfort with ambiguity and familiarity with long-term thinking.

They strengthen collective intelligence: Because signals are discussed across roles, seniority, regions, and disciplines, insights emerge by connecting the dots. A signal that might otherwise seem a local anomaly becomes part of a broader pattern, when shared in a studio where it resonates with people from different countries and regions.

They shift foresight from event to practice: Perhaps most importantly, Signals Studios model a way of working. They show how foresight can live inside regular conversations: informing strategy, programming, and policy not as a separate exercise, but as an ongoing habit of noticing.

A PRACTICE, NOT A PRODUCT

Signals Studios are intentionally modest in form. They do not promise clarity, consensus, or solutions. Instead, they offer something rarer: a safe space to notice change together, before it becomes unavoidable.

In doing so, the Signals Studios quietly reshape how futures thinking is experienced: not as a specialised skill owned by a few, but as a shared organisational capacity that grows through conversation, curiosity, and repeated practice.

Over time, this may be their most durable impact.

For those curious to try this approach, the upcoming [UNDP Signals Studio Toolkit](#) provides a starting point. It brings together practical guidance on designing and facilitating a studio, examples of tools in use, and reflections from studios conducted across varied contexts.

Author's note: Since May 2025, UNDP Signals Studios have been co-designed and facilitated with Tanvi Jain, Futures Fellow with UNDP's Strategy & Futures Team. Tanvi also played a lead role in developing the Signals Studio Toolkit referenced above.

Disclosure: *Compass* editor Stephen Dupont was a Futures Fellow with UNDP's Strategy & Futures Team. This relationship is disclosed here to ensure transparency and avoid any perceived conflict of interest.



Manasi Kumbhat is a part of the Strategy & Futures team at the United Nations Development Programme (UNDP). She has 20 years of diverse experience across multiple industries. She began her career in financial markets and spent six years at a food manufacturing conglomerate-Cargill, in diverse roles such as Strategic Pricing, Sales, and Business Strategy. She led the Disruptive Innovation and Emerging Technology initiatives in Cargill's Cocoa and Chocolate business, where she focused on applying Design thinking and Lean start-up methodologies across multiple innovation projects for the company.

Following her corporate tenure, Manasi joined Board of Innovation, an international Innovation Consulting firm, where she provided strategic innovation guidance to large corporations, public institutions, and NGOs, specialising in Service and Product Design, Ecosystem Mapping, Innovation Portfolio Management, and Strategic Foresight.

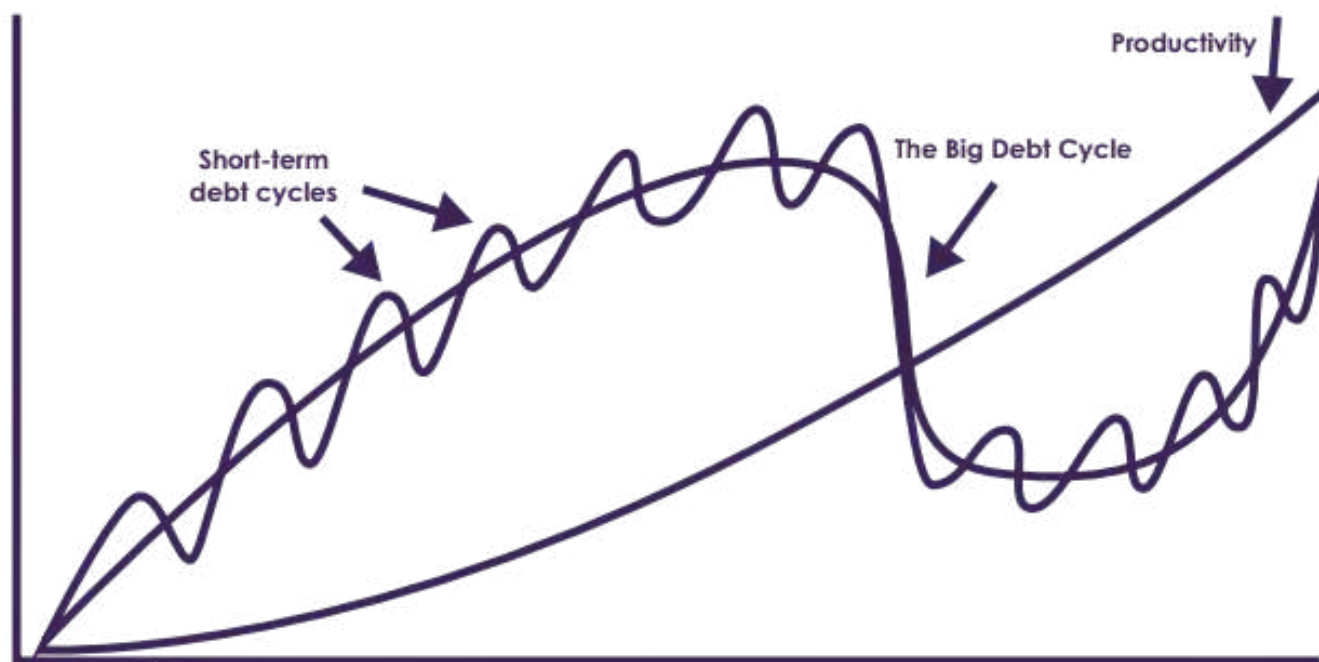
She is also the co-author of *If Not This, Then What?*, a book that introduces a new framework for mapping and designing radical systems change. The book draws from first-principles logic and set theory to help individuals and institutions rethink and redesign entrenched, broken systems.

SECTION:

BOOK AND MEDIA

HOW COUNTRIES GO BROKE:

THE BIG CYCLE BY RAY DALIO



By Jim Murray



In Ray Dalio's latest book, *How Countries Go Broke: The Big Cycle*, he warns that the U.S. economy is in serious trouble, essentially heading for a collapse in the next five to ten years as a result of continued overspending and increasing debt.

Dalio's experience as a successful hedge fund manager and advisor/consultant to many different countries and global economies, make it difficult to classify him as another "Chicken Little."

In the book, Dalio gives examples of other countries/empires that have followed similar paths, the challenges they faced, and mistakes they made in trying to correct the problem. He explains the process as cyclic and reminds us that history may not always repeat itself, but – it often rhymes.

Dalio explains how he built a template for how countries get through economic cycles based on his years of experience and research. The template shows how the process is typically a series of short cycles culminating in what he calls *The Big Cycle*, which happens around 80 years or so.

According to Dalio, the current U.S. cycle started just after the end of World War II, which puts us at around the 80-year mark today. He shows how years of steady overspending and resulting deficits are pushing our economy towards a collapse as more and more revenue needs to be allocated towards debt servicing. He uses examples of other countries where similar scenarios have played out and the resulting consequences.

Because he defines The Big Cycle as a cyclical event, there may be a tendency to believe that we can successfully manage through a similar crisis again. But Dalio notes that circumstances have changed over time, and as a world leader, the U.S. will have more to lose than it ever has based on its status today and the increasing competition to be a world leader.

NOT ALL DOOM AND GLOOM

The book is not all doom and gloom, and Dalio proposes a plan of action to alleviate the effects of the oncoming crisis but acknowledges that we have to be wary of the ever growing level of political polarization, which makes enacting any plan of action more and more of a challenge.

Dalio wrote the book for readers of all levels of economic and financial understanding. He prefaces each chapter with a recommendation based on the level the reader feels capable or willing to delve into details. In each chapter he puts the most important points in bold print and even recommends that a reader could simply read the bold print to understand the point he is trying to make. For more detail and in-depth explanations, you read the sentences that follow which elaborate on the bolded statements.

Dalio also highlights what he calls "timeless and universal truths" by italicizing certain sentences and putting a red dot in front of it. I chose to read every word and notation and don't regret it. Some of the explanations and accompanying charts and graphs are quite detailed and technical, but interesting, and can be considered an opportunity to learn.

VALUE TO FUTURISTS?



Why would a futurist need to read this book? The book provides us with a collapse archetype scenario from a subject matter expert, with information on some of the pain that goes with it. The repercussions are likely to be widespread.

I'd suggest taking some time to look at the organization for whom you work or represent, or you're the foresight domains you're exploring, and develop a futures wheel showing secondary and tertiary effects of an economic collapse while taking into account the United States current economic standing both at home and abroad. What is certain is that organizations will have to adapt at some level to survive.

It's evident that Dalio took the time to write the book because of his belief in the importance of the topic – as well as his concern. Based on his experience, he's warning us about what's possible. He took the time to write it in a way for readers of all levels of economic and financial knowledge to become aware of the problem. I encourage everyone to take the time to read the book at some level. So much of our everyday lives rely on the strength and success of our economy and understanding possible changes can only help us all to better prepare for the future.



Jim Murray graduated from the University of Houston Masters in Foresight program in December 2022. He is a part-time/aspiring futurist. He retired in 2017 as a Colonel in the US Army Reserve after thirty years of service. He currently resides with his family in New Bern, NC, and can be reached via his LinkedIn page at <https://www.linkedin.com/in/jim-murray-7106655b/>.



A RETURN TO PACKARD'S

THE HIDDEN PERSUADERS

BY Richard Slaughter





Of all the ideas suggested by Karl Marx, one that has always resonated with me is his view that people are "authors" of their society yet have forgotten their authorship.

In one sense this is unexceptional. Not everyone has the time, opportunity or breadth of mind to appreciate the social construction of reality, the uses of legitimation and the many ways that powerful interests favour themselves above others.

On the other hand, there's something increasingly bizarre about the way that entire populations in the rich West have been sold a notion of "the good life" based on a mid-20th century invention known as affluent consumerism. For if one thing has become clear it's the undeniable fact that this way of life has been on a collision course with planetary systems for some time. As Professor Sam Alexander puts it:



"Capitalism wants or needs what it cannot have: that is, limitless growth on a finite planet. This ecological predicament is the defining contradiction of capitalism in the 21st century, insofar as growth is now causing the problems that growth was supposed to be solving."
(Alexander, 2018).

While browsing in a small bookshop in Wigtown, Scotland, a few years ago, I came across a Penguin paperback of Vance Packard's book, *The Hidden Persuaders*, first published in 1956. It's perhaps 50 years since I first read it, but it left a strong impression. It's almost certainly one of the underlying reasons I've never accepted full-on commercial advertising as anything other than what Donella Meadows called "an unwanted tax on humanity." (She also said that "you only have to spend millions on promoting something if it's worth is in doubt.")

PSYCHOLOGY AND SELLING



The Hidden Persuaders provides a snapshot of the U.S. advertising industry in the mid-1950s – a relatively early stage in its development. Packard begins by explaining why marketeers adopted the "depth approach," by which he meant the study of human psychology specifically for the manipulation of behaviour. A concern at the time was that 'factories had ever-larger warehouses full of goods to move.'

From a standard point of view this could be seen as a good thing since it suggested higher material standards of living. But a rather different view was emerging that suggested "we must consume more and more, whether we want to or not, for the good of our economy." This is clearly one of the sources of the myth, central to Capitalism, that all "growth is good." Packard also noted, "fortunately for the ad men the supply of social scientists to draw from had multiplied in profusion within the decade." From then on "recruitment gained momentum" (as) hundreds of social scientists gravitated into making depth studies for marketers. Consequently,



"...merchandisers of many different products began developing a startling new view of their prospective customers. People's subsurface desires, needs, and drives were probed in order to find their points of vulnerability... Once these ... were located, the psychological hooks were fashioned and baited and placed deep in the merchandising sea for unwary prospective customers." (P.37).

One area that attracted close attention was the calculated manipulation of self-images. Success was subsequently measured by the fact that the latter were “soon expediting the movement of hundreds-of-millions-of-dollars-worth of merchandise to consumers, particularly gasoline, cigarettes and automobiles.” Packard's account shows in some detail how an evolving understanding of human psychology was employed in ways that compromised human agency on an unprecedented scale.

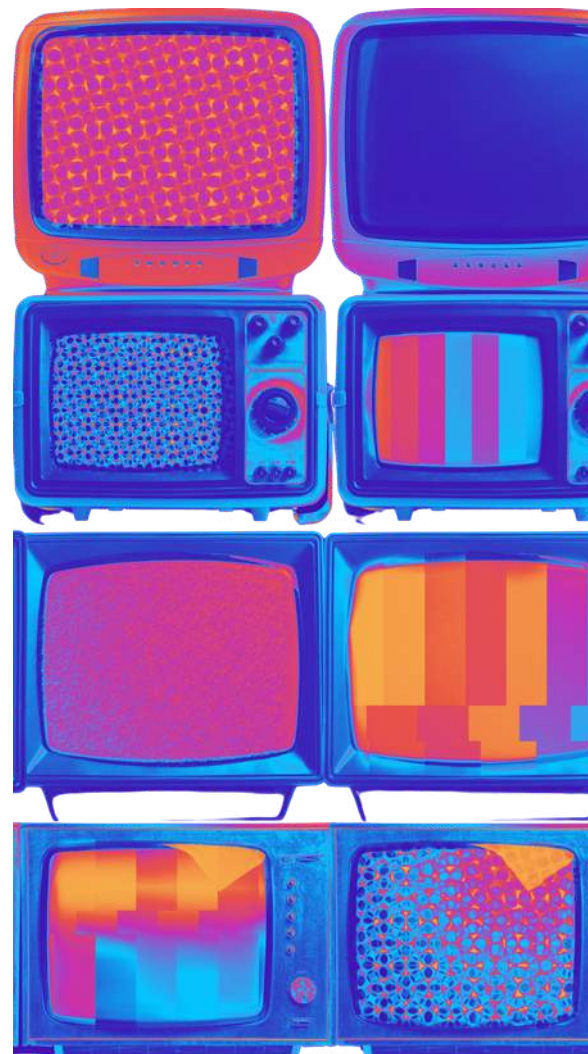
From its inception, this knowledge was used to undermine and belittle legitimate human interests in dignity, privacy, integrity, freedom of choice and so on. Indeed, its goal was to replace these with a range of substitutes favoured by, or invented by, the market. Large amounts of money were spent on these society-wide manipulations.

One study even went so far as to characterise the children of America as “consumer trainees.” None of this assumes that U.S. citizens were stupid or mere passive dupes. But it's also clear that few or no effective countervailing forces emerged to challenge these degrading initiatives. The marketers prevailed in part because their work fitted perfectly with the growth imperatives of global capitalism.

GLOBAL IMPLICATIONS

Several decades later these very same interests have been globalised, along with their strategies of mass deception and reality avoidance. Today's global marketers continue to display levels of entitlement and influence that cannot but be counter-productive in an imperilled, overshoot world. They constitute a cultural force and a set of embedded practices that profoundly affect – but also reach far beyond – the lives and actions of individuals.

At the very time when major shifts in the global system have made it abundantly clear that we need to be re-thinking and re-negotiating the foundations of the social and economic order, commercial interests strive ever harder to project their custom-designed “clouds of unknowing” across the world. The advertising industry is by no means the only culprit, but it's worth emphasising that it never sought, nor was given, anything remotely like a social licence to operate as it does. It was allowed to infiltrate civic culture and economic life much as the Internet oligarchs do today.



When the values of heartless advertising and those of hi-tech innovation came together in the shape of internet oligarchs, they merely pushed through a door left open by minimal governance and manifestly inadequate values. The more focused, reality-based versions of anti-trust legislation that had previously served to break up monopolies and place limits on corporate power were pushed aside. There was nothing whatever inevitable about the “IT revolution,” as it proceeded to disrupt and imperil almost everything in its path. Power hungry, self-focused entrepreneurs walked away from the public-spirited and libertarian values held by early pioneers who had sought to provide openness and freedom. Instead, the revolution reverted to overt exploitation. Consequently, much of what now falls under the heading of “the Internet” acquired dystopian aspects as it undermined human agency and trespassed upon the most private and personal spaces of human lives. In other words, there's a direct line from the merchandisers of the early 1950s to the regressive character of social media and internet as they currently exist.

This goes some way toward explaining why many people who are immersed in what they have been constantly assured are well-established and viable ways of life find it difficult to appreciate how the underpinnings of affluent consumerism are dissolving beneath us all. Decades of immersion in processes of “industrial scale” deception have left millions confused about what their real needs, their true identities and their actual responsibilities to present and future generations might conceivably be. In this context, actively exploring alternatives should no longer be regarded as the domain of visionaries and dreamers. Rather, it has become an essential attribute of citizenship itself.

REJECTING AUTHORITARIAN VISIONS



One starting point is greater clarity about the many contradictory forces at work in civic culture. For example, one of the greatest challenges of our time is the need to shift from a growth-and-consumption trajectory to a contraction, or steady state, with far lower levels of energy use and consumption across the board.

Yet, influential figures almost everywhere seem content to promote “Megastructures, New World Cities” and similar over-sized memes favoured by developers and others. Fantasy visions of high-tech, high-rise, high-density futures have therefore become commonplace. Such authoritarian visions, however, remind one of familiar “used” or “compromised” futures, all of which need to be exposed and rejected. None recognise the coming energy crunch that will render many high-rise structures and high-density settlements uninhabitable. None of them are honest about vanishing species, shrinking ecosystems, dehumanisation or ecocide.

Current socio- and world-centric worldviews misrepresent reality to the extent that they cede too much authority to growth-addicted economics and, as a result, the world appears safer and more durable than it really is. Those holding such views simply do not appreciate the profound systemic risks created simply by ignoring global limits. World-centric perspectives, backed by positive values, however, reveal a very different picture.

For example, in a 2018 article, English journalist, author and political activist George Monbiot wrote:



“Public figures talk and act as if environmental change will be linear and gradual. But the Earth’s systems are highly complex, and complex systems do not respond to pressure in linear ways. When these systems interact (because the world’s atmosphere, oceans, land surface and life forms do not sit placidly within the boxes that make study more convenient), their reactions to change become highly unpredictable. Small perturbations can ramify wildly. Tipping points are likely to remain invisible until we have passed them. We could see changes of state so abrupt and profound that no continuity can be safely assumed. Only one of the many life support systems on which we depend – soils, aquifers, rainfall, ice, the pattern of winds and currents, pollinators, biological abundance and diversity – need fail for everything to slide.” (Monbiot, 2018).

Before long the Great Barrier Reef, and other coral reefs around the world, will bleach for the final time. Even then, there will still be people who regard high-rise modular cities, fossil fuel production, commercial sponsorship, poker machines and super casinos as economically valuable activities. Yet the current “free lunch” period of cheap and available fossil energy really is over, and we now know that “green growth” is merely another convenient illusion. Renewables will not be able to pick up the slack and fill the huge supply gaps that will appear. Yet strategies based on ‘de-growth’, slowing down and reducing demand - strategies that could actually make a real difference – remain literally unthinkable. It’s easier to expand airports and build new roads.

DANCING WITH THE PLANET



Under these conditions, the prospect of overshoot-and-collapse futures scares people who tune out and turn away in vast numbers.

Default responses such as avoidance, evasion and denial remain all-too common. Reinforced over decades such habits become normalised, unthinking and instinctive. This too is part of the legacy of the advertising industry and the powerful interests that continue to sustain it.

By blindly pursuing their own narrow agendas they've delayed action on multiple fronts and ensured that adaptation to a radically different world will be more costly and difficult than it ever needed to be. Canadian-American economist, diplomat and intellectual J.K. Galbraith touched on a very human aspect of this dilemma when he suggested: "...faced with the choice between changing one's mind and proving that there is no need to do so, almost everyone gets busy on the proof." Today that's looking less like a clever aphorism and more like an epitaph for a way of life whose time is over.

If there is a way out, a way forward, it will partly depend on changes in values and perceptions. Outlooks in which the cumulative impacts of humanity upon the global system, especially over the last century-and-a-half, become universally recognised. Once denial is set aside, the ramping up of human demands on the global system will be seen for what they always were: effects that begin slowly and become undeniable over time.

In this future, humanity is certainly challenged. Yet, equally, it need not be bullied into immobility by exaggerated tales of “overshoot and collapse.” Rather, it makes sense to look clearly and honestly at how the world is shifting and adjusting to human presence, human “forcing.”

Rather than stoking fear, the possibility of a different story emerges.

It's a story that feels more like “dancing with the planet,” respecting its durability and power. One in which we learn to adapt to these 'corrections' and open to new possibilities. Two gifts, among others, seem likely. One is the recovery of our own repressed history; the other is the long-delayed chance to pursue a new and conscious balance between humanity and its world.

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Richard A. Slaughter completed his Ph.D. in Futures Studies at Lancaster University in 1982. He later became internationally recognized as a futurist / foresight practitioner, author, editor, teacher and innovator. During the early 2000s he was Foundation Professor of Foresight at Swinburne University of Technology, Melbourne. He currently works out of Foresight International, Brisbane, Australia and can be reached at: foresightinternational.com.au. Readers may like to hear two episodes of FuturePod (113 & 116) on the skewed narratives of affluent nations and avoiding a Digital Dystopia, at futurepod.org. His recent book, *Deleting Dystopia*, can be downloaded from: <https://usq.pressbooks.pub/deletingdystopia/>

EXPLORING THE DEPTHS OF SCENARIO PLANNING

By Lavonne Leong

A CONVERSATION WITH
BETTY SUE FLOWERS
ABOUT HER NEW BOOK,
SCENARIOS: CRAFTING
AND USING STORIES OF
THE FUTURE TO CHANGE
THE PRESENT





Betty Sue Sue Flowers is a writer, scholar, and strategic foresight practitioner whose work bridges narrative, leadership, and systems thinking. Trained as a literary critic, she became widely known in futures and strategy circles through her work for Royal Dutch/Shell, a company known for establishing scenarios as a core discipline for futures and foresight in business strategy. In parallel, her work on myth, archetype, and language influenced the interpretive methods many foresight practitioners use to surface underlying worldviews. She served as the series consultant for the seminal Bill Moyers documentary *Joseph Campbell and the Power of Myth*.

Flowers continues to advise organizations, emphasizing dialogue and moral imagination as essential capabilities for navigating uncertainty. Her work continues to shape global foresight today. Her new book on scenario building for foresight practitioners was published in November 2025.

Lavonne Leong: How did you come to write *Scenarios: Crafting and Using Stories of the Future to Change the Present*?

Betty Sue Flowers: The editor of a series of publications in “Dialogic Organization Development” asked me to contribute a book on scenarios to the series – in part, I think, because of *Presence*, a book I co-authored with pioneers in the field of dialogue, leadership, and the U-theory of change management.

Lavonne Leong: In *Scenarios*, you talked about how your mother and your grandmother responded to your father's wartime absence in two very different ways. Could you share that story here?

Betty Sue Flowers: I got interested in stories about the future, and in the power of myth, when I was five years old. My father had been a prisoner of war in World War II. A man had knocked

on the door and said to my grandmother and grandfather that your son is missing in action, presumed dead. My grandmother mourned his death. And then he came back alive, having been rescued from a German prisoner of war camp. Now my father was a very upright man of his generation, and he thought he hadn't served his country because he'd been captured. So, when the Korean War started, he volunteered to go back. We moved in with my grandparents, and I began to notice that my mother was okay and my grandmother was not. My grandmother felt he couldn't have been saved from death *twice*. That you can't be lucky twice, right? She was completely depressed. And my mother, who was a very innocent woman and highly religious, prayed and got the answer in her prayer that he would come back. So, she was perfectly fine, and my grandmother was not. Eventually we had to move out of the house because of the clash between their two stories of the future—and I, as a five-year-old, wanted to know which story was true.

But you can't know the future, that's the thing. I thought and thought and thought, and I realized neither of them knew, but the story they were telling about the future created the present they were living in. That's where I came to the realization that we all have a story of the future that shapes the present that we're living in. Just like that.

Lavonne Leong: What happened to him? Did he come back?

Betty Sue Flowers: He did come back, luckily. But his coming back was not caused by either of these stories of the future. And it meant that my grandmother had spent a lot of time in a dark place she needn't have spent it in, and mother had spent a lot of time in a light place, which precluded any planning for if he had not come back. It worked both ways for me. I thought, "Well, both stories should have been in play."

Lavonne Leong: Layering futures thinking and scenarios work into this story, how does it help us to have multiple stories of the future in play?

Betty Sue Flowers: To me, the main advantage of thinking about multiple futures is that you don't hold your story of the future so tightly, because we often hold our story of the future as if it were true, and that limits our capacity to imagine otherwise. But when you hold several stories of different possibilities at the same time, you don't hold them as truths, you hold them all as fictions. That's very useful. Having a conversation based on a platform of fictional scenarios means you can introduce things in a playful spirit that you might not be able to bring into a heavy conversation about strategy.

And if you are talking about multiple scenarios, it also allows less popular strategic options to arise in the conversation. Sometimes bosses or extroverts dominate the strategic conversation – but they can't, if there are multiple stories.

Lavonne Leong: You were once an academic, and then in the 1990s you began to work with Royal Dutch Shell (now Shell Global) on scenarios. There, you played a crucial role in shaping the storytelling dimension of scenarios, and it is something people still seek you out for. How has scenarios work changed over the last few decades?

Betty Sue Flowers: Well, in big corporations, more scenarios work is internal now. They used to have a lot of thinkers from the outside come in for a short term to do global scenarios, but as time went on, modeling became more important. Now, Shell partners with MIT and does very sophisticated modeling, and I won't say the modeling now drives the story, but it does provide a fence. You're very aware of plausibility in a metrical way, rather than a storytelling way. You can't say something happens in a scenario unless it can be reflected in the model, which is a good discipline. It just means there's a different kind of conversation, a lot of conversation about how to make the story plausible metrically, and not just as a story.

Lavonne Leong: Can you give an instance in which scenario work really helped influence the way things unfolded?

Betty Sue Flowers: With scenarios, as you know, there's no cause-effect chain. With a big company like Shell, a lot of it is very complicated and behind closed doors. Our last set of scenarios showed how extremely difficult it would be to get to net zero carbon. And I don't know if that had any influence on decisions to – I won't say go backwards, because they're not doing that, but to have a slightly less ambitious renewables path. Shell isn't the only one that appears to be slowing down, I should add. Companies and governments all over the world are doing the same.

Lavonne Leong: Yes, I noticed British Petroleum (BP) took a strategic U-turn away from renewables and back towards fossil fuels.

Betty Sue Flowers: They all have – at least all the ones I know of. But I'm not an expert in the field, so take that with a grain of salt. I think that has to do with a kind of realism, the discipline of the metrics. In a way, that's a good thing, but in another way, maybe not – because before you knew that it was really almost impossible to get to net zero, maybe you still had the ambition.

Lavonne Leong: Creating scenarios can be a years-long process, but in your book, you talk about distilling it down into a short workshop. What does that process look like if you only have a few hours?

Betty Sue Flowers: One of my aims in the book was to ask what is the skinniest approach possible – the least amount of time, the least amount of money, the least amount of outside expertise you could use? I don't particularly like matrices; there's always a heaven quadrant and a hell quadrant, and they're a little predictable – but they do have the advantage of being very fast. You can put 15 up in 5 minutes, and there's a high energy

quotient there. People form teams and draw these matrices on flipcharts and vote on what seems most relevant or what's most interesting. Then you have a break, and the scenario builder, or the person running the workshop, has to make sense of these, to cluster them into two or three stories. The person leading the scenario project has to recognize the salient features of stories that go together. That's the one outside expertise you need, if you're going to do it fast.

It's faster if you have someone with expertise saying, okay, three stories seem to be emerging here. Then you assign the teams to come up with events, put the events in a timeline, and make causal connections between events in order to create a story.

Then the scenario writer goes away and writes something that is circulated at least once for individual comments. I don't use Google Docs because I like one-to-one interaction with team members, so they're not influenced by each other. You get different points of view, and they don't slough off work on the first person who responded or react to the psychological dynamics at work in a company that can be reflected in different comments.

Lavonne Leong: The world feels to many people like it's getting more volatile, and that systems are loosening or letting go. Can you talk about that?

Betty Sue Flowers: I think algorithms and social media are the two real disruptors, because they disrupt the story of what's true. Even scenarios, which are fictions of the future, take off from a platform of an agreed reality of the present. In the past there were not so many contradictory stories about the facts as we have now. That's partially the result of social media and the algorithms that direct us into developing our ideas of reality within separate bubbles.

AI threatens to disrupt our economic systems profoundly. You can say that's happened in the past – we had the Industrial Revolution; we had the printing press. Yes, but those transformations took 100 years to work their way through the system, whereas AI may cost us a whole bunch of jobs this year alone.

We've never had such a profound and existential threat. Some of the AIs they've tested do not do kind things when given a choice. They're willing to let somebody freeze to death in a room rather than turn on the electricity if that means they "die."

This is disruptive in profound ways. Also, we're so interconnected, not only in trade, but also in relation to climate change. So, at one and the same time, we're both more interconnected in reality and more split as far as our stories of reality go.

Lavonne Leong: Against this backdrop, what do you think needs to come next for us, as a field?

Betty Sue Flowers: I think we have to develop a practice of avoiding the lazy, apocalyptic future scenarios that are all around us, for good reason, and imagine worlds of incredible cooperation and collaboration. We have to imagine that the best of us as human beings emerges. You know, the famous line from the W.H. Auden poem: “We must love one another or die”? That's becoming almost literally true.

We have to be much more imaginative than we've ever been, in terms of the stories we tell about human beings. What is our best way of being? Because it's not as if we can fool around too much.

Lavonne Leong: Asking what are we capable of spiritually, or relationally? Instead of just technologically.

Betty Sue Flowers: If you use the word “spiritual” in a way that gets at the heart of every religion, it has to do with loving one another – not, love just as an emotion, but love as a deep recognition that we are all interconnected. And therefore, what I do to you, affects me.

I love the idea of the Declaration on Future Generations that Jane Davidson in Wales championed and the UN adopted. In some countries this idea means that every time a law is passed, we have to imagine, as Indigenous people in [the Americas] did, what its effect will be on future generations. We have to be future-oriented in our actions.

Lavonne Leong: Because we've been borrowing from the future without counting it, and without thinking about it.

Betty Sue Flowers: That's right. And borrowing from nature. We use nature as a kind of inexhaustible resource that we don't count as part of our GDP. We have to change our economic measurements and the story they are telling. There are so many stories we have to change right now.

Lavonne Leong: I like your pairing of lazy with apocalyptic. In many ways, that is the easiest path to take imaginatively.

Betty Sue Flowers: I think that's one of our jobs as scenario builders – not to fall into that trap. We can help each other think outside the box, which is one of the things that scenarios are supposed to do.

Lavonne Leong: In futures and foresight work, how can we encourage clients or communities to have that imagination?

Betty Sue Flowers: One way is to recognize in advance that there are those lazy stories – and that the hard stories are the ones with a new positive outcome that we have to make plausible.

Speaking as an American, that's one reason it's such a miracle that we got the Constitution. The possibility of that kind of creative thinking resulting in a structure that's lasted, however imperfectly, all these years – the chances were just astronomically low. They did it back in the 18th century! So why can't we get together in new creative structures now?

Lavonne Leong: That's a good segue into talking about the Athena Project. In a recent FuturePod episode with Peter Hayward, you mentioned that you were interested in the futures of democracy. Can you tell us more?



Betty Sue Flowers: A Greek futurist colleague and I gathered about 30 women from all over the world, every continent. We're working on a white paper on what new ideas about democracy there might be, from what might be seen as a female perspective.

One of our tasks is to write a kind of white paper, the way that Eleanor Roosevelt did when she helped developed the thinking that led to the UN Declaration of Human Rights.

Jane Davidson, the Welsh politician who introduced the Well-Being of Future Generations Act of 2015 and spoke on behalf of the UN Declaration for Future Generations, is in this group, as is Catarina Tully, who founded the School of International Futures. We use what we call the archetypal female perspective: What would a caring democracy look like? What would a caring economics look like?

There are other, related groups forming out there – one of them is called Women Transforming Global Security, comprised of people such as Mary Robinson, former President of Ireland and UN High Commissioner for Human Rights. There are all these networks of women forming to rethink, in a futuristic way, “What would things look like if you shifted a bit, from an ethic of competition to an ethic of care?”

It's a huge opportunity, this breakdown in our democracy. Most of my work is in Europe. I've often said to my European colleagues, I look forward to the day when Europe steps up to show the U.S. a different perspective on democracy, which is having a better social safety net and healthcare for all.

Lavonne Leong: They're like Democracy 2.0, in some ways.

Betty Sue Flowers: Yes, the EU has its problems, of course, but the U.S. could learn from some of its social experiments. There is real opportunity here for a reset of democracy to include other perspectives, and I hope we enter that world sooner rather than later.

Lavonne Leong: Going back to the craft of scenario creation, in the book, you talk a lot about your preference for scenarios as stage sets versus scenarios as novels. Could you walk us through what the difference is?

Betty Sue Flowers: The main difference is whether you include actors, as you would in a novel, or if the agents who walk on to the stage have to be you. In a novel, there is a hero or a heroine, and you sit back and you watch them perform. I was an English professor, and I know you need interesting main characters to make a good novel. But that's not the way I write scenarios. I paint the world with as much granular detail as I can, and then say, "Imagine your company, or you, or your country, are in this world."

Lavonne Leong: So, you build the world, you build the rules, and then you say, "And here you are, what will you do?"

Betty Sue Flowers: Yes. What would you do in this world that would change what happens next?

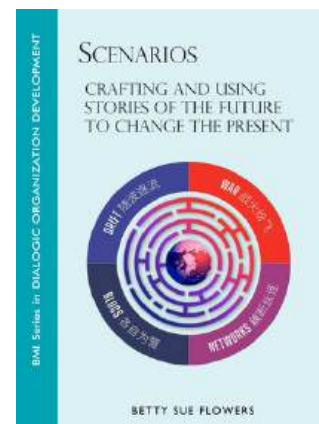
Lavonne Leong: That makes sense. Creating personae for scenarios is very common, but it has never quite sat right with me.

Betty Sue Flowers: No, it comes in part from UX practices in market research. In that context, you use personae because you're looking through a window, so to speak, at how humans behave. You are responding to what humans are doing now, rather than creating a future world in which humans must act. I can see how creating personae is helpful in market research, but I don't find it helpful in scenarios.

Lavonne Leong: What's next for you?

Betty Sue Flowers: Well, the day after *Scenarios* was published, I got a book contract for a new book to be called *Democracy, Gender, and the Economic Myth*. It has some of the stuff we've been talking about here but expanded at much greater length.

By the way, when I say gender, I'm not talking about feminism, per se. I'm talking about this binary system that we as humans have always had, which begins with the original binary story, when Adam and Eve ate the apple, and they suddenly discovered that they were male and female.



Whenever we have a binary, we always say one is “better than.” Black, white. Female, male. Emotion, intellect. One is privileged over the other. It's just human nature: There's a fork in the road, so which one are you going to take? Which is better?

We have to consciously go against the way we learned how to navigate reality as children in order to have a much more ecological framework of how we appreciate diversity, which we are not good at doing as human beings.

Lavonne Leong: Right. Appreciating diversity means valuing “the other.”

Betty Sue Flowers: Absolutely. And the ecology of how everything is connected.

Lavonne Leong: What's the economic myth part?

Betty Sue Flowers: Well, that's the myth we've been in. It seems to be crumbling now, but we don't have a new one to replace it. We need to move into a paradigm of health rather than growth. Growth is an aspect of health, but we need to quit pursuing it as the highest good or the measurement of well-being. Health comes from the same root in English as wholeness, so it's about the whole, the interconnections, and thinking ecologically rather than simply economically.



Editor's Note: Check out the FuturePod interview with Betty-Sue Flowers (Episode 232): <https://www.futurepod.org/podcast/ep-232>



Dr. Lavonne Leong is an award-winning futurist and former journalist. Based in Honolulu, she works in adaptive and transformational futures and foresight capacity building with organizations and communities around the world, including the UNDP, the U.S. Centers for Disease Control and Prevention, and the East-West Center. She is also the co-founder of the The Futures Studies Channel, a global network advancing cross-pollination in futures teaching and methods. Dr. Leong holds an MSc in Strategic Foresight from the University of Houston and a DPhil from the University of Oxford.



What's Next on the FuturePod?

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EPISODE 242

EP 242: AUTHORSHIP THROUGH PARTICIPATION - EVA OLOUMI

In episode 242, the FuturePod speaks to Eva Oloumi who is the founder and practice lead of Paradiegma and is known for guiding organisations through transformative change.



EPISODE 241

EP 241: SUPERSHIFTS - STEVE FISHER

In episode 241, the FuturePod speaks to Steven Fisher who, with Ja-Nae Duane, co-authored *SuperShifts: Transforming How we Live, Learn and Work in the Age of Intelligence*.



EPISODE 240

EP 240: THE BUSINESS OF FORESIGHT - JO LEPORE

In episode 240, the FuturePod speaks to Jo Lepore who practiced corporate foresight within McDonald's and Mars Wrigley, leads the insights company Dig, is the founder of FIG, is a partner at Copenhagen Institute for Futures Studies (CIFS) and a podcaster at Looking Outside.



EPISODE 239

EP 239: NAVIGATING THE AGE OF CHAOS - JAMAIS CASCIO

In episode 239, the FuturePod speaks to Jamais Cascio who with Bob Johansen and Angela Williams co-authored *Navigating the Age of Chaos: A sense making guide to a BANI world*.



EPISODE 238

EP 238: GROWTH THROUGH FRICTION - JULI RUSH

In episode 238, the FuturePod meets Juli Rush who is an Educator, Foresight Strategist and a Death Doula with a focus on partnering futures + death and grief processing.



EPISODE 237

EP 237: APF IF AWARDS WINNER - REANNA BROWNE AND JAMES ALLEN

In episode 237, the FuturePod meets two of the Winners from the Association of Professional Futurists IF awards, Reanna Browne and James Allen.



EPISODE 236

EP 236: OCEANIA FUTURES AND FORESIGHT SYMPOSIUM 2026 - ELISSA FARROW AND FRIENDS

In episode 23, Elissa Farrow returns to the FuturePod, and brings some friends to talk about the second iteration of the Oceania Futures and Foresight Symposium on the 26th and 27th of March 2026.

**"The only way to
make sense out of
change is to plunge
into it, move with it,
and join the dance."**

- ALAN WATTS



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