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FUTURE NEWS

TO CONNECT, TO INFORM AND TO INSPIRE

IN THIS EDITION

THE FUTURE OF STRATEGIC DECISION-MAKING

by Roger Spitz

After working with countless decision-makers and interpreting the next-order impacts of our world's rapidly accelerating rate of change, humanity appears at a crossroads. Evolutionary pressure prioritizes relevance, and that pressure could be nearing our strategic decisions.

As a society, we must completely adapt the education system (Spitz, 2020), prioritizing experimentation and discovery, instilling curiosity and comfort with uncertainty, first starting in the playground and then spreading all the way to our boardrooms. If we don't improve our abilities to evolve in a nonlinear world, we could find human decision-making sidelined by algorithms as we become blindsided by increasing complexity, while machines gradually learn to move up the decision value chain.

AAA is often used to reflect the ultimate achievement. Those with finance backgrounds will recognize that AAA is the highest level of credit worthiness, or in science the best rank for alphabetical grading scales. The UNDP have used "Anticipatory, Adaptive and Agile" in the context of governance (Wiesen, 2020), as have esteemed colleagues in their recent article entitled "Triple-A Governance: Anticipatory, Agile and Adaptive" (Ramos, Uusikyla, & Luong, 2020).

Stephen Hawking (2000) qualified the 21st century as "the century of complexity." With that backdrop, for some time we have been using AAA as "**Anticipatory, Antifragile and Agility**" (AAA) to define what humans should be developing to improve their abilities as the world becomes more complex. This need for humans to enhance their capabilities is that much more relevant in the context of machines learning fast and with increasingly higher-level human functions.

While the term anticipatory is intimately related to foresight, for our AAA taxonomy we borrow the definition of antifragile from Taleb (2012): "Antifragility is beyond resilience or robustness. The resilient resists shocks and stays the same; the antifragile gets better." And we use "agility" in the context of the Cynefin framework (Snowden & Boone, 2007), looking at properties such as our ability to be curious, innovative and experimental, to know how to amplify or dampen our evolving behaviors depending on feedback, thus allowing instructive patterns to emerge, especially in complex adaptive systems.

Decision-Making: No Longer a Human Exclusive

> *"People's deepening dependence on machine-driven networks will erode their abilities to think for themselves.*

Decision-making for key strategic topics (like investments, research and development (R&D), and mergers and acquisitions (M&A)) currently mandates human involvement, typically through Chief Executive Officers, leadership teams, boards, shareholders, and governments. Looking forward, the question is not how much machines will augment human decision-making but whether in time humans will remain involved in the process at all.

Through machine learning (ML) and natural language processing (NLP), the capabilities of artificial intelligence (AI) in strategic decision-making are improving rapidly, while human capacities in this area may not necessarily be progressing. It could even be the opposite: while machines are deemed by many to augment humans in a positive way, the Pew Research Center cautions that AI could reduce individuals' cognitive, social and survival skills: "People's deepening dependence on machine-driven networks will erode their abilities to think for themselves [and]take action independent of automated systems" (Anderson, Cohn, & Rainie, 2018).

There are many decision cycle models including the much-admired OODA loop[1] (Observe, Orient, Decide, Act).

At its core, we frame decision-making as following a simple, three-step process:

1. Detect and collect intelligence.
2. Interpret the information.
3. Make and implement decisions.

Every one of these steps is essential to a successful conclusion. The following lists examples of failures in this process. Poor intelligence (failure at step 1) led to the Bay of Pigs invasion, while ineffective interpretation (failure at step 2) contributed to Israel's surprise at the 1973 October war.

Step 3 is sometimes harder to isolate. Making and implementing decisions can also include ones which decide not to set-up a system to detect or collect intelligence in the first place, or which limit investment in the resources to ultimately interpret such information. One could argue that the lack of preparation which resulted in improvised governmental responses for COVID-19 was a failure at all three steps.

Corporate history is littered with examples of leadership teams with a cognitive bias towards making poor decisions that extrapolated the past with linear predictions. This is often a result of humans finding it difficult to process "exponential" trends (which initially do not seem to grow fast) and being oblivious to next-order implications.

The telecom operators had the option to innovate in over-the-top (OTT) technologies rather than relying on historic cash cows like text messaging

1 Developed by USAF colonel and military strategic John Boyd.

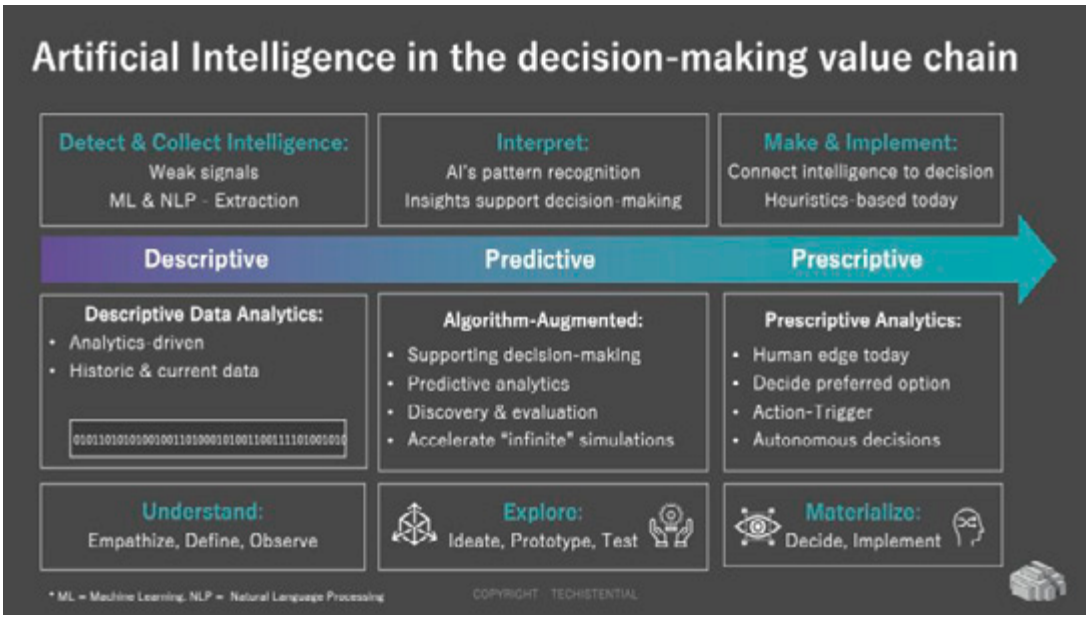
"Today, humans primarily use AI for insights, but AI's skills could surpass human abilities at every step in the process.

and international calls. This wrong decision paved the way for new players like Skype, WeChat, and WhatsApp to lead with disruptive exponential technologies. In the same vein, Verizon acquired video conferencing platform BlueJeans in April 2020 as a late defensive move given the pandemic and explosion of Zoom, as opposed to anticipating the strategic need for enterprise-grade video conferencing platform for the future of work (remote), health (telemedicine) or education (online learning). The pandemic accelerated this need while proper understanding of our two first decision-making steps should have meant that Verizon would have made those strategic decisions many years ago (instead of playing catch-up with Zoom today). In the same way that Disney only woke up in 2017 when it acquired control of BAMTech for streaming technology, leaving Netflix dominate this space during many precious years.

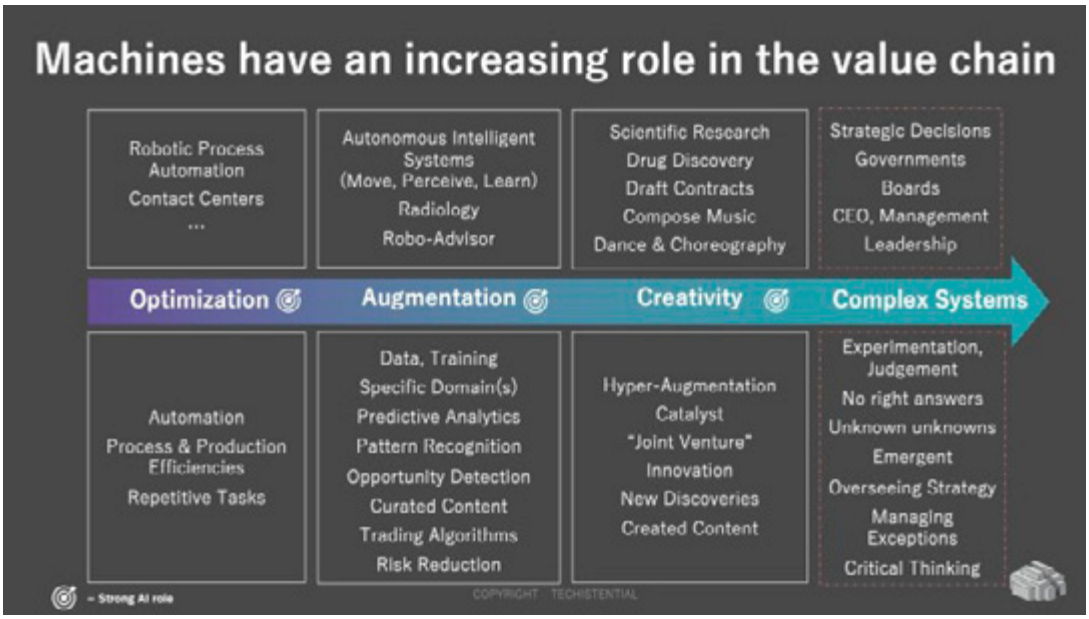
In 2011, Vincent Barabba wrote, "In essence we alerted the management team that change in the capturing of images through digital technologies was coming, and that they had a decade to prepare for it." Despite on target market assessments, Kodak did not make the correct strategic decisions.

Given the speed and scale of change, the question of "if and how" we are able to enhance our capabilities for decision-making is a legitimate one.

Machines are moving up the decision-making value chain



Today, humans primarily use AI for insights, but AI's skills could surpass human abilities at every step in the process. AI is already improving in predictive analytics, steadily making its way to the right, toward prescriptive outcomes recommending specific options.



This is in part fueled by exponential technologies as AI learns to move up the value chain:

- Machines are archetypically used in optimization, automating processes and repetitive tasks.
- We are finding them more present in augmentation roles as well, where they lend their greater processing powers to perceive and learn (such as in radiology).

AI is even tackling the formerly human-mandated domain of creativity. (Google Arts recently partnered with the British choreographer Wayne MacGregor to train an AI to choreograph dances (Leprince-Ringuet, 2018)).

A significant advantage AI has over humans is driven by stacked innovation platforms that can scale rapidly, wherein massive amounts of networked data provide ever deeper insights through signal detection, trend interpretation, and pattern recognition at scale and with unstructured data. This also allows non-intuitive information and connections to be unearthed through ML, while NLP is effective for unstructured extraction.

AI's current superiority at detection and collection, with scale helping the interpretation

AI already surpasses human ability in trend detection, signal-, and pattern-recognition for unstructured data at scale:

- One company, Blue Dot, used NLP and ML to detect the COVID-19 virus before the US Center for Disease Control.
- Another company, Social Standards, scrapes Instagram and Twitter to detect emerging local brands and competitors before they reach peak visibility.
- The geospatial analytics company Orbital Insight mines digital imagery to predict crop yields or construction rates of Chinese buildings.

Algorithm-augmented predictive insights drive decision-making

A step further than analytics-driven decision support, AI accelerates "infinite" simulations, evaluations and developments, reducing the cost of testing to carry out major R&D and drug discoveries:

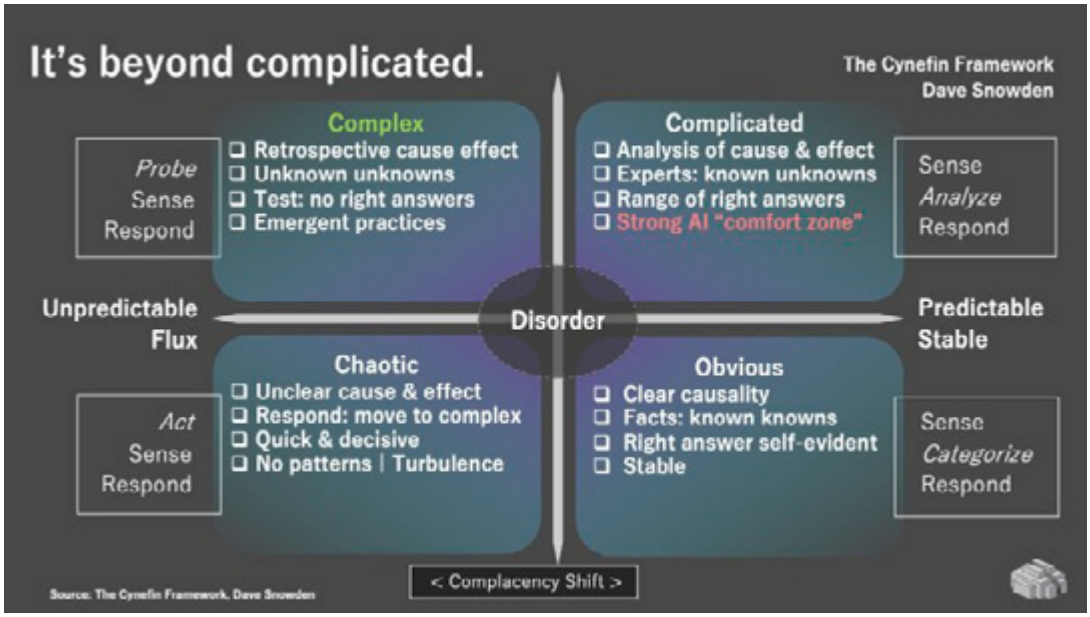
> *"Neither humans nor AI find that decision-making in complex situations is their strength.*

Halicin was the first antibiotic discovered using AI. The AI found molecules that even help treat formerly untreatable bacterial strains.

The OCD medication DSP-1181 is the first non-human-made drug molecule to enter phase 1 clinical trials. Thanks to DSP-1181's ML intelligence, researchers completed in 1 year what normally would have taken several years.

In the future, will AI perform autonomous, prescriptive strategic decision-making?

AI is currently tasked with decision-assistance, not autonomous strategic decision-making. Why? The situation is beyond "complicated".



Neither humans nor AI find that decision-making in complex situations is their strength. Using Dave Snowden's Cynefin Framework (Snowden & Boone, 2007), the complex domain involves unknown unknowns, where there are no right answers and it is only retrospectively that one can establish cause and effect. So if there is solace to be found in humanity's poor performance here, it is that machines are not currently able to do better (AI's comfort zone is in the complicated domain, where there is a range of right answers, known unknowns, and causality can be analyzed, so plays well to data).

Most applications of predictive interpretation involve a joint project (augmentation) between humans and AI. As AI is exponential, over time the role of humans may reduce in a number of areas.

In analyzing the trend of machine involvement, one thing is clear: AI is playing a greater role in every step of the decision process. It is starting to take over areas that we previously thought were too important to entrust to machines or required too much human judgment:

- In 2017, software from J.P. Morgan completed 360,000 hours of legal due diligence work in seconds.
- A mere two years later, in late 2019, Seal Software (acquired in early 2020 by DocuSign) demonstrated software that helps automate the creative side of legal work, suggesting negotiation points and even preparing the negotiations themselves.
- EQT Ventures' proprietary ML platform Motherbrain made more than $100 million in portfolio company investments by monitoring over 10 million companies, its algorithms taking data from dozens of structured and unstructured sources to identify patterns.
- A German startup called intuitive.ai delivers AI solutions to foster informed strategic management decisions, while UK-based startup 9Q.ai is developing "Complex AI" to optimize multi-objective strategic decision-making in real-time including for the management consultancy sector.

As we are seeing with the current crisis, the extent of international failures in preparation (such as completely ignoring warnings from US' own intelligence, Bill Gates or the World Economic Forum) is just the tip of the iceberg in our failures in responses to the required problem-solving frameworks. So currently, neither humans nor AI are performing well in complex systems. And few leaders embrace the experimental model, which requires curiosity, creativity and diverse perspectives to allow for unpredictable instructive patterns to emerge.

Will we rise to the challenge of accelerating, disruptive, and unpredictable complex times? Because AI will certainly keep learning—even beyond complicated—as algorithms will no longer rely on only a range of right answers:

- Matthew Cobb (2020) provides a detailed examination of whether our brain is a computer, spanning the views of Gary Marcus ("Computers are, in a nutshell, systematic architectures that take inputs, encode and manipulate information, and transform their inputs into outputs. Brains are, so far as we can tell, exactly that.") and those neuroscientists who consider that, even if this were true, "reverse engineering" the brain may not be a given.
- AI is developing fast in handling complexity with progress in key areas such as artificial neural networks (broadly inspired by biological neural networks which constitute brains and good at pattern recognition). Russell, in his seminal books on AI, acknowledges the views of a number of philosophers who believe that AI will never succeed while expanding on how intelligent agents reason logically with knowledge, including decision-making in uncertain environments and the importance of artificial neural networks to generate the knowledge required for the intelligent agents to have the components required to make decisions (Russell & Norvig, 2020).
- There are of course limitations to what AI can do today, partly due to the data itself, even more so in complex systems ("Data means more information, but also means more false information" (Taleb, 2013)). In

Black Swan, Taleb (2007) warns against how one can misuse big data, including "rearview mirror" (confirmation vs. causality), an instance of poor reasoning as the narrative is being built around the data that ends up with a history clearer than empirical reality. He also flags "silent evidence" as one cannot rely on experiential observations to develop a valid conclusion (the possibility of missing data, spurious correlations, and the risk of previously unobserved events have a tremendous impact).

- Earlier this year, Ragnar Fjelland (2020) wrote "Why general artificial intelligence will not be realized," and while acknowledging the major milestones in AI research (including DeepMind AlphaGo in deep reinforcement learning), his view is that the systems lack flexibility and find it difficult to adapt to changes in environment. Like Taleb, he focuses on correlation and causality, and AI's lack of understanding, a major limitation today.

"As AI continues to develop, machines could become increasingly legitimate in autonomously making strategic decisions, where today humans have the edge.

As AI continues to develop, machines could become increasingly legitimate in autonomously making strategic decisions, where today humans have the edge. If humans fail to become sufficiently AAA, rapidly learning machines could surpass our ability. They do not have to reach general artificial intelligence nor become exceptional at handling complex systems, just better than us.

How humans can remain relevant

To remain relevant, humans must become increasingly anticipatory and antifragile, with agility.

Anticipatory

Taleb (2007) uses the famous example of Black Swans to describe unforeseeable events with large impacts. In many cases, however, the more apt metaphor is the Gray Rhino (Wucker, 2016).

Gray Rhino events are highly probable and obvious, yet we still fail to respond. Perhaps we are in denial or pass the buck. We may diagnose the danger half-heartedly… and then panic when it's too late. COVID-19 was a Gray Rhino.

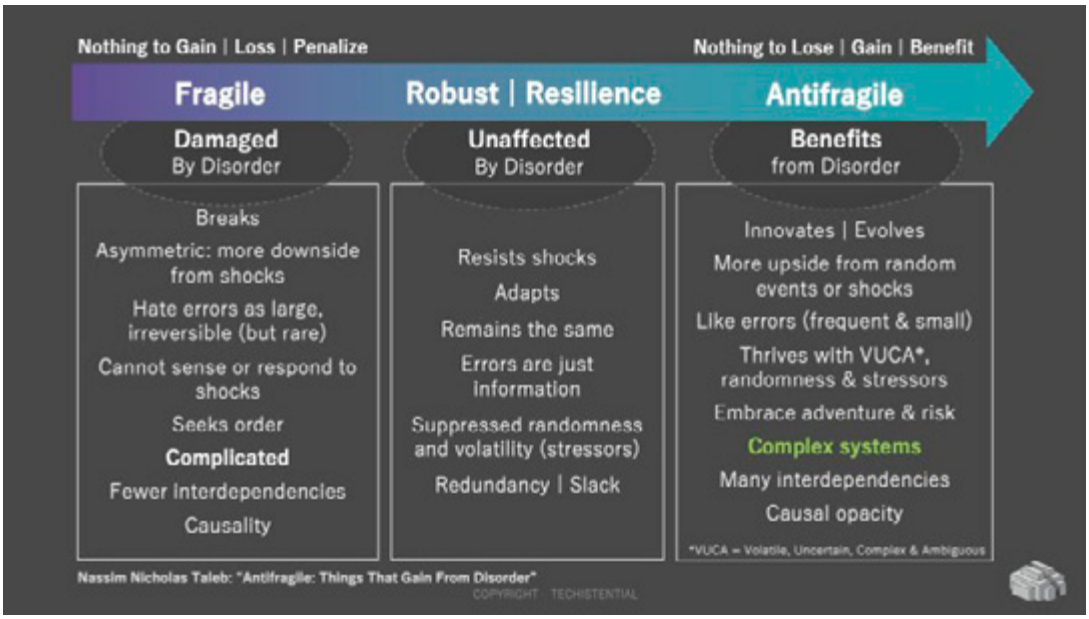
The leadership of companies, countries, and organizations are often not caught short by Black Swans but unable or unwilling to prepare for Gray Rhinos. Knowing your Black Swans from your Gray Rhinos is key to becoming more anticipatory and stop being trampled. In addition, leadership must:

- Learn to qualify weak signals and interpret the next-order impacts of change, connecting the shifting dots with action-triggers.
- Beware of relying on statistical risks that assume a stable and predictable world.
- Understand the ramifications of exponential change (which moves "gradually then suddenly"), as the world is not a linear evolution from the past. Remember Amara's law: "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

- Visioning: map out plausible futures, with the agency to realize our preferred future option. Both short- and long-term strategic decision-making are needed simultaneously today, prioritizing innovation as well as trial-and-error.
- Embrace "pre-mortem" analysis to identify threats and weaknesses via the hypothetical presumption of failure in the near-future.

Antifragile

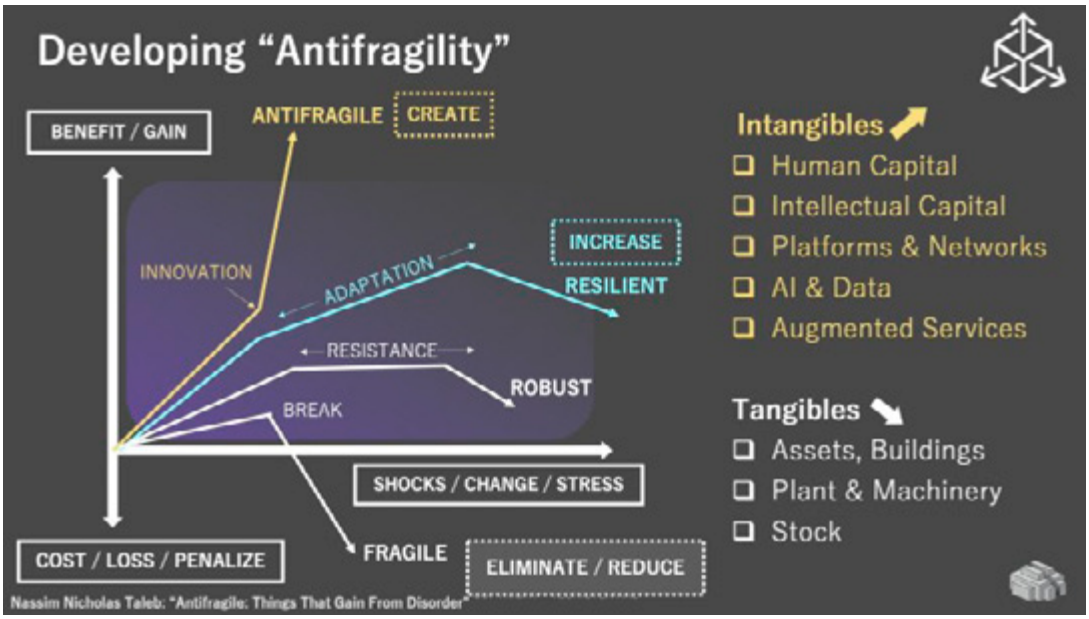
Continuing with Snowden's Cynefin framework, the complex systems that are being created must at least be resilient to shocks and changes, or even better benefit from these, or we could find them crushed.



Drawing analogies with Taleb's Antifragile (Taleb, 2012), fragile systems are damaged by disorder. They receive more downside than upside from shocks. Excessive debt is a fragile strategy. Stock buy-backs are too, even though they are common. Financial theory – predicated on a stable and orderly world – tells a company not to hoard cash, but cash can be a life preserver in unpredictable times.

Antifragile systems strengthen from disorder. The shocks and errors make them strengthen, not break. Silicon Valley, for example, responds well to pressure. Their experimentational, fluid mindset allows them to rapidly find new solutions. They innovate and evolve, strengthening through the natural selection-like pressure. It is no coincidence that Silicon Valley has $450 billion held in cash.

Many of our economic systems and companies are fragile from having followed the formulaic "strategic playbook" of optimization and hyper-efficiency in a world they presumed linear and predictable. When shocks or chaos strikes, they buckle. If we are to remain relevant (i.e. not seeing our strategic decision-making be substituted by machines), we must create innovative social and economic networked ecosystems that strengthen under stress.



Agility

Our centralized and hierarchical organizations are not nimble. Most move slowly, continuing in the same actions they have always taken. These strategies do not respond well to constantly changing circumstances.

As GE's Sue Siegel said in 2018: "The pace of change will never be as slow as it is today", so as the world accelerates exponentially, we must develop agility by:

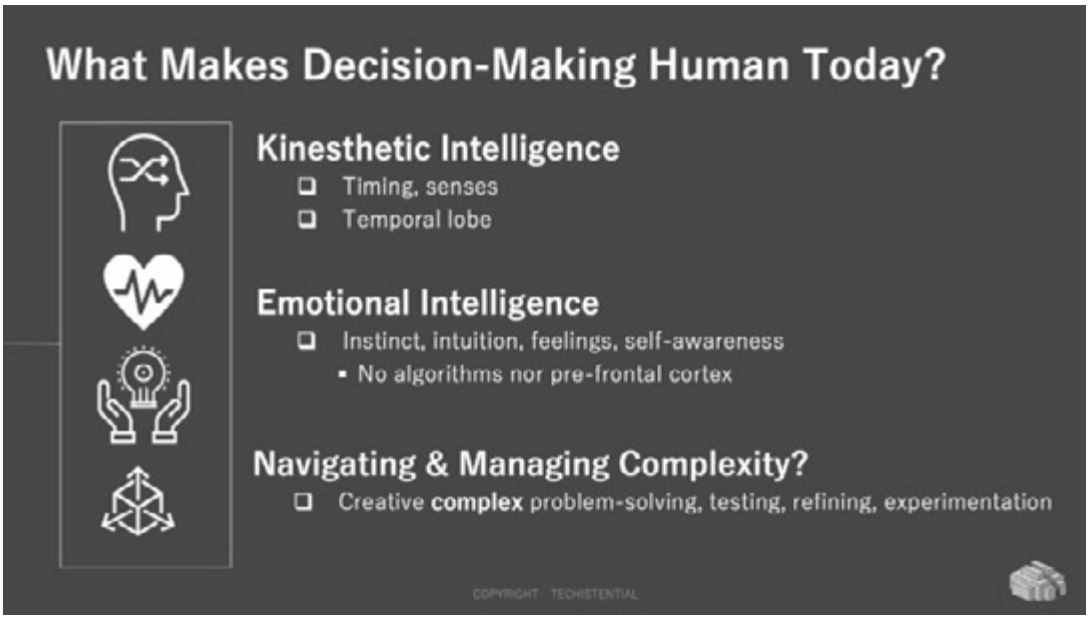
- Understanding better the entire system, given the unpredictability and interdependencies of moving parts where the whole is more than the sum of the parts.
- Developing emergent behaviors (amplified or dampened to move one in the right direction), experimenting and tinkering to fail fast and allow instructive patterns to emerge.
- Leveraging on liminality for transformation: use the in-between liminal spaces of uncertainty to drive creative destruction (Schumpeter, 1942) and disruptive innovation (Christensen, 1997).
- Decentralizing, allowing functional redundancies to be used as substitutions within an ecosystem, taking the place of failures.
- Harnessing curiosity, creativity, and diverse perspectives to go against the grain, because today's standard knowledge will never solve tomorrow's surprises. Cross-fertilization with T-shaped profiles that couple deep expertise with broad experience, can move naturally between disciplines, creating new combinations in a world where patterns are hard to interpret, and generalists flourish (Epstein, 2019).

We must create lean, nimble cells that attack problems independently influencing leverage points to create attractors for emergence. Inspired by nature itself, these agile strategies have risen in all sorts of areas, from lean startups to guerrilla fighters.

Looking Forward

Thus far, humans have excelled at decision-making, but our comparative advantage may not necessarily continue.

> *"Evolutionary pressure dictates that the best decision-makers will be the ones who survive.*



Our current mental frameworks may not be versatile enough to navigate and manage constant unpredictable change as AI evolves fast, including in the field of Emotion AI (aka Affective Computing or Artificial Emotional Intelligence), where startups such as Affectiva recognize, interpret, simulate and react to human emotion.

As the world and its systems get more complex, there are a number of options for the future of strategic decision-making, including:

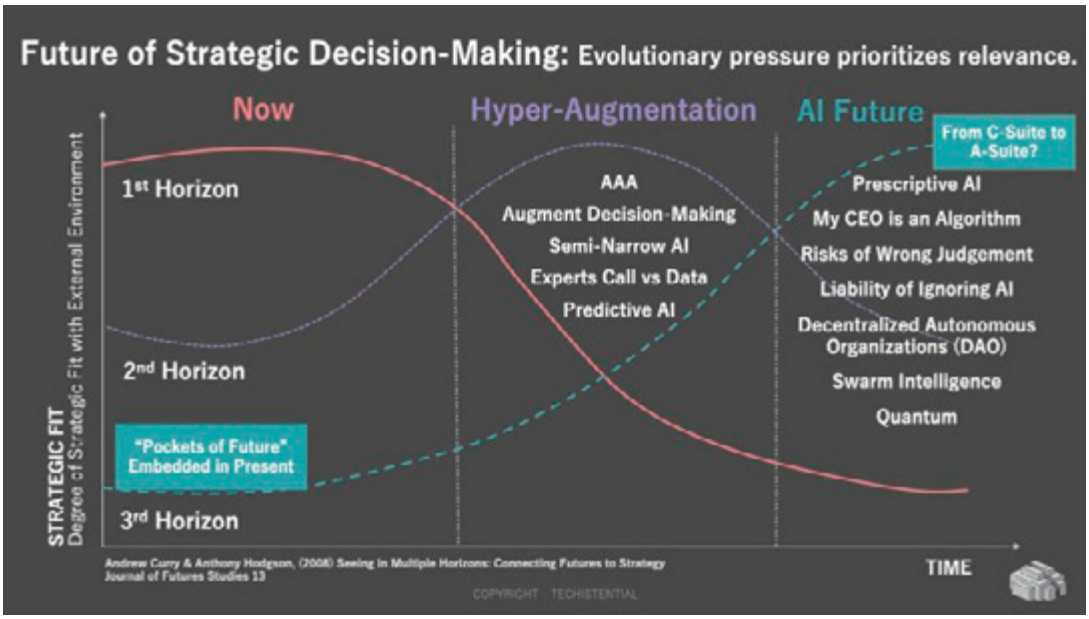
1. Humans are able to adapt and improve our decision-making—becoming more AAA—so we can continue to add value when partnering with machines. Here AI is providing insights to augment and make more informed decisions, uncover new opportunities without necessarily replacing humans.
2. Humans fail to adapt to our increasingly complex world, instead finding ourselves marginalized or substituted in the key process of decision-making, which could be taken entirely out of our hands.

There may be virtues in a future where we are relieved not only from the more mundane repetitive tasks but also the pressures and responsibilities of decision-making. However, this raises the question of choice: do we proactively decide on our position in the value chain or see ourselves being imposed a given spot.

Ultimately it is an existentialist question around agency, as evolutionary pressure dictates that the best decision-makers will be the ones who survive. If we do not fundamentally redesign our education and strategic frameworks to create more AAA leaders, we may see that choice made for us.

The dystopian alternative: from C-Suite to A-Suite?

I would prefer a world where human decisions continue to propel our species forward, where we consider what it takes to be more likely to build this world. If we do not, our current C-suite of leaders might find themselves replaced by an A-suite (of algorithms).



Using Curry and Hodgson's (2008) three horizons model, our possible futures are:

- Now: our present embedded with "Pockets of Future."
- Hyper-Augmentation: smart algorithm-augmented predictive decision making is matched with our AAA humans, creating a symbiotic human-machine partnership.
- AI Future: prescriptive AI autonomously evaluate the range of potential options (consequences, payoffs…), assessing preferred decisions based on optimized returns (quality of outcomes, speed, cost, risk…) without necessarily having human involvement.

This third horizon of AI Future paves the way for new prescriptive decision-making models:

- Decentralized Autonomous Organizations (DAO): self-organizing collectives determine and execute smart contracts, empowering frictionless automated cooperation at a collective level. Armed with the smart data, insights from analytics, and ML's predictive capabilities, DAO make optimized decisions.
- Swarm AI: infinite groups augment their intelligence by forming swarms in real time.

Adopting AAA can ensure more agency over our futures. The longer we wait, the greater the risk of being moved further along the value chain than our preferred future would have envisioned.

About the Author

Roger Spitz is the Founder & CEO of Techistential (Foresight Strategy & Futures Intelligence) and founding Chairman of Disruptive Futures Institute. He is an advisor and speaker on Artificial Intelligence. Roger has two decades leading investment banking businesses, as Head of Technology M&A he advised CEOs, founders, boards, shareholders and decision makers of companies globally.

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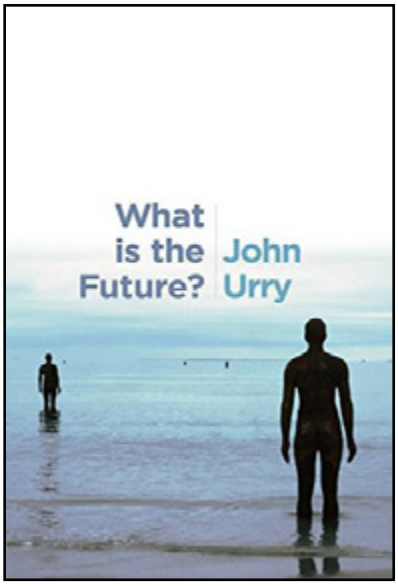


Book Review

by Paul Graham Raven

What is the Future
by John Urry

I was reading the final chapter of John Urry's What is the Future? in my local pub, when some passing wag bespied the title and asked me obvious question: "So, what is the future, then?" I thought about how to answer, and eventually settled on saying: "It's complicated. And, ultimately, pretty screwed."

As the title suggests, WitF? is a primer on futures thinking, which prompts an obvious question: do we realy need another one of those? But this book is rather different to the others that I've encountered, for two reasons. Firstly, it was written by a social scientist—the late John Urry, who was based at Lancaster University since before I was born, until his sudden and unexpected death in 2016 (WitF? was published later that year). Urry started off on the sociology of power and revolution, passing through topics ranging from economic and social change to mobility, tourism and consumer services during his lengthy career. Over the last decade or so, he got stuck into climate futures and complexity, and this book presumably represents something of an unplanned culmination of that research.

Secondly, and perhaps more unusually, it's a futures primer written for social scientists. And while I can already hear the scraping of chair-legs at the back of the room, I'm going to explain why I think practising futurists should read it, despite the perceived taint of relativism that still accompanies such origins. Indeed, it's that perceived taint that's the problem—your problem, to be clear, rather than that of the social sciences.

When I stumbled into the academy seven years ago, I was surprised by two things. The first surprise was that, outside of the business and management circuit, few if any academics had even heard of futures studies, and those that had gave it little attention and less credence. This is less surprising to me now.

The second surprise was that the social sciences, the obvious candidates for grappling with the challenges of speculation under severe uncertainty attendant on thinking through futures, were doing very little of it, with the notable exception of some sporadic critical cross-fire from the redoubts of Science & Technology Studies.

Things have changed a lot since then, and I had the luck to arrive as certain slow tectonic shifts began finally to manifest on the surface of Planet Academe. I got my break because scholars in the realms of civil engineering and systems management, having spent enough time working in close proximity to big-ticket consultancy and construction firms, had developed an interest in new ways to plan infrastructure projects under increasingly uncertain circumstances—techniques such as scenarios and sf prototyping and so forth.

My PI was looking for someone who could bring out the weird in a way that, for good reason, has largely been trained out of civil engineers long before they make it to postgrad status—which, to be clear, is a good thing. (I'm pretty sure

that the majority of science fiction writers would agree that putting us in charge of the water supply would be unwise.)

The engineering school is not a great home for critics and cynics—engineering is a problem-solving discipline, after all, and not a problem-identifying discipline.

And so began my crabwise scuttle ever leftwards into the social sciences: as I struggled to explain the practice (and indeed the point) of critical futures thinking to people who'd mostly never heard of it, I kept hearing the same thing: "you know, that sounds rather like what planners do".

What planners did would be more accurate. The planning discipline's name has been mud in the UK since the Thatcher administration, or longer, to the extent that most Brits think the main role of planners is to inform suburbanites that they can't have a conservatory quite as capacious as they'd like. And given the nigh-total dismantling of the UK's perennially laissez faire planning legislation, that really is close these days to the limit of a practising planner's powers.

But once upon a time, thinking about — and, yes, planning for—times to come was exactly what planners were about, along with the sociologists, geographers, political scientists and other denizens of the now dark and underfunded side of the academic quadrangle.

Urry's narrative starts with an explanation of how that came to be the case: at the risk of oversimplifying, he argues that the social sciences rejected futures work in the early Seventies because they were tired of being accused of Marxian utopianism, and had to some extent come around to the prevailing critiques of modernism that, once boiled down to caricature, were used to demolish the planning capacity of local councils and central government alike.

With the benefit of hindsight, it's now apparent that this retreat from futures thinking e ectively ceded the field to be colonised by financiers, free-market evangelists and the think-tank progeny of Doctor Strangelove.

Who owns the future?
Image courtesy of Taylor Kendall

"A key question for social science", says Urry, "is who or what owns the future – this capacity to own futures being central to how power works" (p11), and he goes on to observe that in much of what passes for futures thinking, "social characteristics are seen as less significant than 'technologies' and their capacity to bind humans to their character" (p12), and that the label given to those who point this out—or even, blasphemy of blasphemies, resist it—is "Luddite" (which is,

ironically, more historically and sociologically accurate a label than those who use it may realise).

From this perspective, "the future" is a commodity to be (mass-)produced and traded—a reminder that "speculation" was something that builders and land-owners did long before Robert Heinlein took up the term. Urry's project in this book is to "'mainstream' and 'democratize' the future" (p192); to clarify—and furthermore to put it in terms that will likely set those chair-legs a-scraping once more — "thinking and democratizing futures involves what we might call 'post-modern planning'" (p13).

There are three major sections to WitF?: a history of futures, a deep dive into systems and complexity theory from the social scientific perspective, and three batches of scenarios.

Much of Urry's history will be familiar to futurists, even if his perspective isn't: it starts with a tour through the classic [u/dys]topias, followed by a detailed dig into the "catastrophism" literature that has proliferated during these early years of the 21st Century. Here perhaps most of all Urry shows himself a creature of the 20th Century, though, in that his readings of utopias and dystopias alike are always straight—which isn't a reference to queer theory, but a way of noting that he doesn't engage with the possibility that one person's utopia can read as another's dystopia, and vice versa. But he does come somewhere close when he concludes that "visions of futures [...] may indeed engender futures, as they are part performative, not merely analytic or 'representational'" (p53).

It's a war of narratives, in other words — one protracted battlefront of which has been burning hot and ugly in the world of science fiction literature for the best part of a decade, and shows no sign of ending any time soon. That no such battlefront can be observed in the futures world can be put down to that territory having long ago been captured by one side: in his later discussion of the various ways in which futures are made, Urry observes that "some methods of 'thinking futures' have been turned into commodities that are bought and sold and circulated", and further that "there is a major market for 'good futures'" (p87)—a market which has been carefully cultivated by the futures industry, to the point that the two are effectively indistinguishable from the outside.

Perhaps the most useful section of the book is that which deals with theories of complexity—a term that peppers futurist discourse, but is nonetheless poorly understood. The headline bits about emergent behaviours and self-organising systems are so common as to occupy prime spots in any good Futures Conference Buzzword Bingo Card, but the deeper implications tend to go unmentioned. Sure, complex systems self organise; but that doesn't mean they're more orderly or manageable as a result. (The opposite, in fact.)

And sure, change appears to be accelerating; but that observation tends to occlude the fact that equilibrium is the historical norm, the fact that

equilibrium is sustained by path-dependency, every innovation consultant's nemesis, and the fact that punctuations in systemic equilibria tend to look rather nasty. (Try googling "extinction event".)

And sure again, the infrastructural systems that sustain our extant lifestyles are not just complex but profoundly interdependent; but far from presenting a rich opportunity for leverage and exploitation of "network e ects" (another term routinely abused by those who don't really understand its implications—yes, Silicon Valley, I'm looking at you), that interdependence is in fact an indicator of a fundamental fragility rather than a business opportunity. Only a short-term perspective could ever fool you into

And therein lies the rub, in that the problem with futures is that not only are they for the most part far too close to the thinking otherwise. present, but they tend to be almost totally devoid of history – perhaps because history is replete with inconvenient truths.

Urry's catalogue of methodologies will likely present few surprises to practising futurists, though his three sets of scenarios just might. The first set, dealing with 3D printing (and using narrative vignettes to carry the detail) is not a million miles away from other attempts at the topic, but carefully refuses to make any one quadrant take the "preferred" role (which, as noted earlier in the book, is the point at which futures work devolves into telling people what they already want to hear), and allows some shade into even the most positive outcomes: it's not utterly beyond the realms of plausibility that we could end up with the fab-lab-in-every-home scenario, but that would by implication be a world in which we consume a whole lot of feedstock and energy for a convenience that looks rather less than convenient when examined more carefully.

The four urban futures show an even starker separation as Urry introduces social and institutional factors to scenarios that routinely lack them; once you start adding detail to the hackneyed "smart city" and "mobile living" fictions, their implausibility (and bias toward the better off) becomes ever more apparent, and Urry ends the set by pointing out that the only one of the four with any significant precedent in reality is the "fortress city", which looks less like a future than the de facto present as the months tick by.

The climate scenarios are yet more chilling: BAU (looks great on paper, right up until there's no forests left to make paper with), de-growth (the only possible way to dodge the bullet, but requires a massive collective act of coordinated and e ortful self-sacrifice to follow a quorate recognition that the bullet is not only real but deadly), ecological modernization (a.k.a. "a magical wave of new technologies will save us just in time – look, I drew a graph!") and geo-engineering (wherein the best response to a system destabilised by unintentional meddling is apparently to get your fully intentional yet staggeringly under-informed meddle on, and to get it on at scale).

Ultimately, we all subscribe to some variant of one of these four scenarios as our "preferred" future—but as Urry notes, they're all shot through with multiple intersecting and

John Urry, socialogical polymath. Image: Lancaster University

entangled wicked problems, of which climate change is the boss of bosses. We may have our preferences, which will be informed, consciously or otherwise, by whether we think we'll be among its winners or its losers, but the point is that none of them are "preferable". It's already too late for that; and while Urry doesn't go so far, I'll say that to pretend otherwise is just another flavour of denial.

Of course, these wicked problems have been exercising the futures scene for a while. But the irony is that almost all of the methodological and conceptual gaps that the more earnest futures folk have been angsting over for years are in fact being worked on. The problem is that they're being worked on by the social sciences, and those earnest futurists have neglected to look over the fence to see if anyone else is doing anything that might be useful.

This is not to claim that the social sciences have all the answers, of course – as any fool knows, the first rule of Postmodernity Club is to point out there are no easy answers, and that even the hard answers are always contextual, always contested, always changed by the mere act of asking the question. But we have ways of working with that… and what we do know for certain is that "the future" belongs not to us, nor to the shiny suits slithering along the think-tank corridors, nor to Musk nor Zuckerman nor Bezos nor Kurzweil.

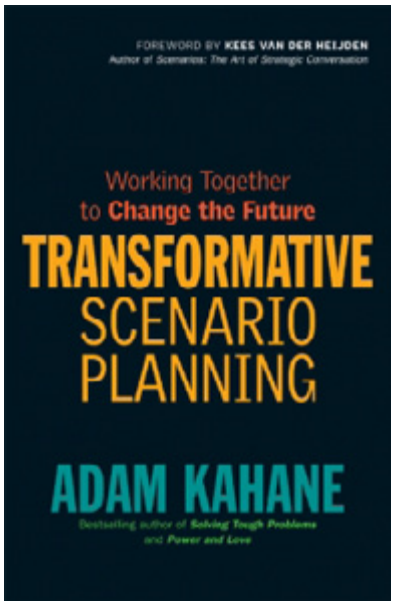
As John Berger once said of England, "the future" belongs to those with its dirt under their fingernails – to our children, and their children, and their children's children, to the generations who have no choice but to inherit this intractable shitshow and find a way to live with it. And while the heirs of RAND and Shell keep sawing away at the fiddle of prediction, and as the world burns ever hotter, we're going to try our best to give it back to them.

You can join us, if you'd like; hell knows we could do with more smart people willing to man the pumps. It lacks glamour, and the pay sucks by comparison, but hey—it turns out that utopia is hard work for little thanks. Who knew?

FUTURISTS IN ACTION

TRANSFORMATIVE SCENARIO PLANNING: WORKING TOGETHER TO CHANGE THE FUTURE

by Adam Kahane



The following is an excerpt from chapter two of the book, "A New Way to Work with the Future."

When the Mont Fleur Scenario Exercise ended in 1992, I was left inspired and also uncertain. It was clear to me that the exercise had contributed to creating change in South Africa, but it was not clear to me whether or how this way of working could be used in other contexts. In which type of situation could transformative scenario planning be useful? To be useful, which outputs did it have to produce and which inputs did it require? And to produce these outputs, which steps were essential?

These questions set me off on an exploration that I have now been on for 20 years. After I moved to South Africa in 1993, I sought out opportunities there and elsewhere to work with people who were trying to address tough challenges. I found colleagues, and together we worked on many different projects, on different challenges, of different scales, in different countries, with different actors, using different methodologies. These experiences gave me many opportunities for trial and many opportunities for error, and so many opportunities for learning. Gradually I found answers to my questions.

When to Use Transformative Scenario Planning

The South African context that gave birth to the Mont Fleur Scenario Exercise turns out to have been a particular example of a general type of situation. Transformative scenario planning can be useful to people who find themselves in a situation that has the following three characteristics.

First, these people see the situation they are in as unacceptable, unstable, or unsustainable. Their situation may have been this way for some time, or it may be becoming this way now, or it may possibly become this way in the future. They may feel frightened or excited or confused. In any event, these people cannot or are not willing to carry on as before, or to adapt to or flee from what is happening. They think that they have no choice but to try to transform their situation. The participants in the Mont Fleur project, for example, viewed apartheid as unacceptable, unstable, and unsustainable, and saw the just-opened political negotiations as offering them an opportunity to contribute to changing it. Another, hypothetical, example might be people in a community who think that the conditions in their schools are unacceptable and want to change them.

Second, these people cannot transform their situation on their own or by working only with their friends and colleagues. Even if they want to, they are unable to impose or force through a transformation. The larger social-political-economic system (the sector or community or country) within which they and their situation are embedded is too complex—it has too many actors, too many interdependencies, too much unpredictability—to be grasped or shifted by any one person or organization or sector, even one with lots of ideas and resources and authority.

South Africans who wanted to transform the apartheid situation had been trying for decades to force this transformation, through mass protests, international sanctions, and armed resistance. But these efforts had not succeeded. Mont Fleur and the other multistakeholder processes of the early 1990s (which the previous forceful efforts had precipitated) provided South Africans with a new way to work with other actors from across the system. In the community example, changing the conditions in the schools might require the involvement not just of concerned citizens and school administrators but also of teachers, parents, students, and others.

Third, these people cannot transform their situation directly. The actors who need to work together to make the transformation are too polarized to be able to approach this work head-on. They agree neither on what the solution is nor even on what the problem is. At best, they agree that they face a situation they all find problematic, although in different respects and for different reasons. So the transformation must be approached indirectly, through first building shared understandings, relationships, and intentions.

The actors who came together in Mont Fleur all agreed that apartheid was irretrievably problematic and needed to be dismantled, but they came in with deep differences in their diagnoses of the ways in which it was problematic and their prescriptions for how it should be transformed. The scenario process enabled them to create common ground. In the community example, the administrators, teachers, parents, and students might have a long history of unproductive disagreements that means they cannot simply sit down and start to work together.

Transformative scenario planning is, then, a way for people to work with complex problematic situations that they want to transform but cannot transform unilaterally or directly. This way of working with the future can be used to deal with such situations at all scales: local, sectoral, regional, national, or global (the stories in this book are all national because this is the scale at which I have done most of my work and that I know best). Transformative scenario planning is not a way for actors to adapt to a situation or to force its transformation or to implement an already-formulated proposal or to negotiate between several already-formulated proposals. It is a way for actors to work cooperatively and creatively to get unstuck and to move forward.

How Transformative Scenario Planning Works

In a transformative scenario planning process, actors transform their problematic situation through transforming themselves, in four ways.

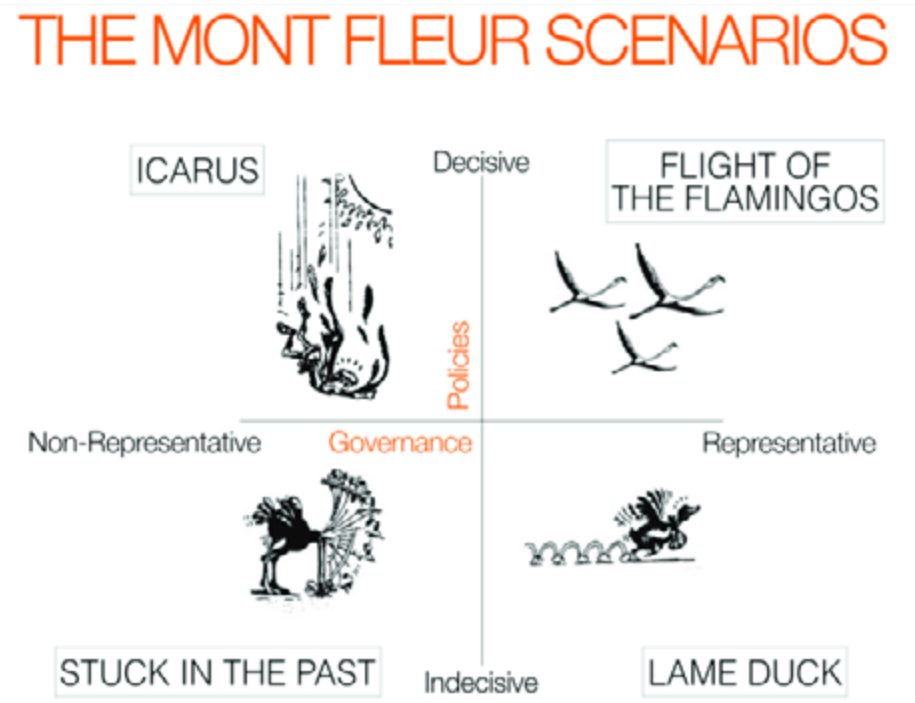
First, they transform their *understandings*. Their scenario stories articulate their collective synthesis of what is happening and could happen in and around the system of which they are part. They see their situation—and, critically important, their own roles in their situation—with fresh eyes. In a polarized or confused or stuck situation, such new, clear, shared understandings enable forward movement.

Second, the actors transform their *relationships*. Through working together in the scenario team, they enlarge their empathy for and trust in other actors on the team and across the system, and their ability and willingness to work together. This strengthening of cross-system relationships is often the most important and enduring output of such projects.

Third, the actors transform their *intentions*. Their transformed understandings and relationships shift how they see what they can and must do to deal with what is happening in their system. They transform their fundamental will.

Fourth, the actors' transformations of their understandings, relationships, and intentions enable them to transform their *actions* and thereby to transform their situation.

The story of Mont Fleur exemplifies this four-part logic. The participants constructed a new way of understanding the political, economic, and social challenges that South Africans were facing and then created four scenarios as to how South Africans could try to deal with these challenges. The participants constructed new relationships and alliances, especially between leaders of hitherto-separated parties, sectors, and races. And they constructed new intentions as to what they needed to do in their own spheres of influence to try to prevent the "Ostrich," "Lame Duck," and "Icarus" scenarios and to bring forth "Flight of the Flamingos." Over the years that followed, these new understandings, relationships, and intentions enabled the participants and others with whom they engaged to undertake a series of aligned actions that did in fact contribute to their achieving these intentions.



In the community example, a team of concerned citizens, administrators, teachers, parents, and students might construct a set of scenarios (both desirable and undesirable) about what could happen in and around their schools and community. This work together might enable them to understand and trust one another more, and to clarify what they need to do to change the conditions in their schools. Then they might be able to take action, together and separately, to effect these changes.

Transformative scenario planning can generate transformations such as those in these two examples only if three components are in place. Transformative scenario planning is a composite social technology that brings together three already-existing technologies into a new way of working that can generate new results.

The first component is *a whole-system team* of insightful, influential, and interested actors. These actors constitute a strategic microcosm of the system as a whole: they are not from only one part or camp or faction of the system, and they are not only observers of the system. They all want to address a particular problematic situation and know that they cannot do so alone. They choose to join this team because they think that if they can act together, then they can be more successful.

The second component is a *strong container* within which these actors can transform their understandings, relationships, and intentions. Building such a container requires paying attention to multiple dimensions of the space within which the team does their work: the political positioning of the exercise, so that the actors feel able to meet their counterparts from other parts of the system without being seen as having betrayed their own part; the psychosocial conditions of the work, so that the actors feel able to become aware of and challenge (and have challenged) their own thoughts and actions; and the physical locations of the meetings, so that the actors can relax and pay attention to their work without interruption or distraction.

The third component is a *rigorous process*. In a transformative scenario planning process, the actors construct a set of relevant, challenging, plausible, and clear stories about what *could* happen—not about what *will* happen (a forecast) or about what *should* happen (a wish or proposal)—and then act on what they have learned from this construction. The uniqueness of the scenario process is that it is pragmatic and inspirational, rational and intuitive, connected to and challenging of dominant understanding, and immersed in and disconnected from the complexity and conflict of the situation. Furthermore, the future is a more neutral space about which all actors are more equally ignorant.

The transformative scenario planning process that was invented at Mont Fleur originated in the adaptive scenario planning process that had been invented at Shell two decades earlier—but it turns this adaptive process on its head. In an adaptive scenario planning process, the leaders of an organization construct and employ stories about what could happen in the world outside their organization in order to formulate strategies and plans to enable their organization to fit into and survive and thrive in a range of possible futures. They use adaptive scenario planning to anticipate and adapt to futures that they think they cannot predict and cannot or should not or need not influence.

But adaptive scenario planning is useful only up to a point. Sometimes people find themselves in situations that are too unacceptable or unstable or unsustainable for them to be willing or able to go along with and adapt to. In such situations, they need an approach not simply for anticipating and adapting to the future but also for influencing or transforming it. For example, an adaptive approach to living in a crime-ridden community could involve employing locks or alarms or guards, whereas a transformative approach could involve working with others to reduce the levels of criminality. An adaptive response to climate change could

involve building dikes to protect against higher sea levels, whereas a transformative approach could involve working with others to reduce emissions of greenhouse gases. Both approaches are rational, feasible, and legitimate, but they are different and require different kinds of actions and alliances.

The key difference between adaptive and transformative scenario planning is, then, one of purpose. Adaptive scenario planning uses stories about possible futures to study what could happen, whereas transformative scenario planning assumes that studying the future is insufficient, and so it also uses stories about possible futures to influence what could happen. To achieve these two different purposes, adaptive scenario planning focuses on producing new systemic understandings, whereas transformative scenario planning assumes that new understandings alone are insufficient and so also focuses on producing new cross-system relationships and new system-transforming intentions. And to produce these two different sets of outputs, adaptive scenario planning requires a rigorous process, whereas transformative scenario planning assumes that process alone is insufficient, and so it also requires a whole-system team and a strong container.

Transformative scenario planning enables people to transform their problematic situation through building a strong alliance of actors who deeply understand the situation, one another, and what they need to do.

The Five Steps of Transformative Scenario Planning

I have learned how to do transformative scenario planning through 20 years of trial and error. I have observed when these projects fail to get off the ground and when they succeed in launching, when they get stuck and when they flow, and when they collapse and when they keep on going. In this way, I have been able to discern what works and what doesn't and why, and to piece together a simple five-step process. The five steps are as follows: convening a team from across the whole system; observing what is happening; constructing stories about what could happen; discovering what can and must be done; and acting to transform the system. This process is like an old cow path: although it is not the only way forward, it is a way that has, after many alternatives were tried out over many years, proven to provide a reliable route.

These five steps can be framed as an application of the U-Process to the transformation of complex problematic situations. The U-Process is a model of transformation that includes five movements: coinitiating (in transformative scenario planning, this is the convening step), cosensing (the observing and constructing steps), copresencing (the discovering step), and cocreating and coevolving (the acting step). The U-Process is an indirect process—a detour—in that it is a way to get unstuck and move forward to transform a problematic situation through pausing and stepping back from the situation. It is a creative process in that what can and must be done on the right-hand side is not visible from the left-hand side but can be discovered only along the way. And it is a fractal process in that each step along the U contains within it a smaller U, so that the actors repeat the five movements from coinitiating to coevolving over and over.

A transformative scenario planning project can be broad or narrow, large or small, long or short. My experience suggests, however, that for a complex problematic situation to be transformed, certain ideal parameters

exist. You can succeed outside of these parameters, but you will find it harder, or you will have to use methods different from the ones outlined in this book.

In the first step, a convening team of 5 to 10 people builds a whole-system scenario team of 25 to 35 leading actors (including the conveners themselves). Convening or scenario teams that are smaller than these will be unlikely to have the diversity required for whole-system insight and influence. Convening or scenario teams that are larger than these will find it difficult to develop the intimacy and engagement that the process requires. There are other methods for working with much larger teams, but these are not compatible with the structured combination of rational and intuitive processes of scenario work.

The scenario team undertakes the second, third, and fourth steps in three or four workshops of three to four days each (with supporting work being done in between the workshops), spread over four to eight months. A process with fewer workshops or workshops that are shorter or closer together will be unlikely to provide enough time for the team to go deep enough (and get lost enough) to transform their understandings, relationships, and intentions. (My partner Bill O'Brien said about the time needed for transformational work: "It takes nine months to make a baby, no matter how many people you put on the job." A process with more workshops or workshops that are longer or more spread out will find it difficult to maintain the requisite energy and momentum.

Finally, the scenario team, with others, undertakes the fifth step over another four to eight months or longer. A shorter process will be unlikely to provide enough time for the team's actions to transform their situation. But their actions could well ripple out for years, either within the scenario project or beyond its end. A transformative scenario planning project can get a process of systemic transformation started, but the process may take generations to be completed.

Transformative scenario planning is simple, but it is not easy or straightforward or guaranteed. The process is emergent; it almost never unfolds according to plan; and context-specific design and redesign are always required. So the only way to learn this process is to practice it in a range of contexts.

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The five steps outlined in the following five chapters therefore constitute not so much a recipe to follow as a set of guideposts to keep in view. For each step, I give two or three diverse examples from my own experience, with a few of the examples spread across several steps. Some of the examples illustrate a team's succeeding in moving forward and some a team's failing or stopping. I focus on my own experiences, many of them in extreme situations, because these point out in bright colors the universal dynamics of these processes that are harder to discern in more ordinary situations, and they also point out from inside and up close dynamics that are harder to discern from outside and far away. I have told some of these stories before, but I use them here to draw out particular methodological lessons. Finally, for each step, I give a generalized set of process instructions. All of these processes, plus a link to fuller explanations and examples, are collated in the "Resources" chapter.

Signals in the Noise

20 COGNITIVE BIASES THAT SCREW UP YOUR DECISIONS

by Samantha Lee and Drake Baer

You make thousands of rational decisions every day — or so you think.

From what you'll eat throughout the day to whether you should make a big career move, research suggests that there are a number of cognitive stumbling blocks that affect your behaviour, and they can prevent you from acting in your own best interests.

1. Anchoring bias.

People are **over-reliant** on the first piece of information they hear. In a salary negotiation, whoever makes the first offer establishes a range of reasonable possibilities in each person's mind.

2. Availability heuristic.

People **overestimate the importance** of information that is available to them. A person might argue that smoking is not unhealthy because they know someone who lived to 100 and smoked three packs a day.

3. Bandwagon effect.

The probability of one person adopting a belief increases based on the number of people who hold that belief. This is a powerful form of **groupthink** and is reason why meetings are often unproductive.

4. Blind-spot bias.

Failing to recognize your own cognitive biases is a bias in itself. People notice cognitive and motivational biases much more in others than in themselves.

5. Choice-supportive bias.

When you choose something, you tend to feel positive about it, even if that **choice has flaws**. Like how you think your dog is awesome — even if it bites people every once in a while.

6. Clustering illusion.

This is the tendency to **see patterns in random events**. It is key to various gambling fallacies, like the idea that red is more or less likely to turn up on a roulette table after a string of reds.

7. Confirmation bias.

We tend to listen only to information that confirms our **preconceptions** — one of the many reasons it's so hard to have an intelligent conversation about climate change.

8. Conservatism bias.

Where people favor prior evidence over new evidence or information that has emerged. People were **slow to accept** that the Earth was round because they maintained their earlier understanding that the planet was flat.

9. Information bias.

The tendency to **seek information when it does not affect action**. More information is not always better. With less information, people can often make more accurate predictions.

10. Ostrich effect.

The decision to **ignore dangerous or negative information** by "burying" one's head in the sand, like an ostrich. Research suggests that investors check the value of their holdings significantly less often during bad markets.

11. Outcome bias.

Judging a decision based on the **outcome** — rather than how exactly the decision was made in the moment. Just because you won a lot in Vegas doesn't mean gambling your money was a smart decision.

12. Overconfidence.

Some of us are **too confident about our abilities**, and this causes us to take greater risks in our daily lives. Experts are more prone to this bias than laypeople, since they are more convinced that they are right.

Signals in the Noise

20 COGNITIVE BIASES THAT SCREW UP YOUR DECISIONS

13. Placebo effect.

When **simply believing** that something will have a certain effect on you causes it to have that effect. In medicine, people given fake pills often experience the same physiological effects as people given the real thing.

14. Pro-innovation bias.

When a proponent of an innovation tends to **overvalue its usefulness** and undervalue its limitations. Sound familiar, Silicon Valley?

15. Recency.

The tendency to weigh the **latest information** more heavily than older data. Investors often think the market will always look the way it looks today and make unwise decisions.

16. Salience.

Our tendency to focus on the **most easily recognizable features** of a person or concept. When you think about dying, you might worry about being mauled by a lion, as opposed to what is statistically more likely, like dying in a car accident.

17. Selective perception.

Allowing our expectations to **influence how we perceive** the world. An experiment involving a football game between students from two universities showed that one team saw the opposing team commit more infractions.

18. Stereotyping.

Expecting a group or person to have certain qualities without having real information about the person. It allows us to quickly identify strangers as friends or enemies, but people tend to **overuse and abuse** it.

19. Survivorship bias.

An error that comes from focusing only on surviving examples, causing us to **misjudge a situation**. For instance, we might think that being an entrepreneur is easy because we haven't heard of all those who failed.

20. Zero-risk bias.

Sociologists have found that **we love certainty** — even if it's counterproductive. Eliminating risk entirely means there is no chance of harm being caused.

SOURCES: Brain Biases; Ethics Unwrapped; Explorable; Harvard Magazine; HowStuffWorks; LearnVest; Outcome bias in decision evaluation, Journal of Personality and Social Psychology; Psychology Today; The Bias Blind Spot: Perceptions of Bias in Self Versus Others, Personality and Social Psychology Bulletin; The Cognitive Effects of Mass Communication, Theory and Research in Mass Communications; The less-is-more effect: Predictions and tests, Judgment and Decision Making; The New York Times; The Wall Street Journal; Wikipedia; You Are Not So Smart; ZhurnalyWiki

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