

The Compass, Not the Calculator

Imagination, Indigenous Wisdom, and the Irreplaceable Actuary

ASSA Inaugural Essay Competition | 2026

Introduction

The future of the actuarial profession lies in imaginations born of lived experience, and in systems of thinking the world has not yet fully valued.

Artificial intelligence, for all its capabilities, can only reflect the accumulated text, data, and logic of the world as it has been recorded, predominantly in English, online, and within the logic of Western economic and institutional systems. At its core, it is a recombination engine. A very powerful one. But a recombination engine nonetheless.

Over the next ten years, AI will automate a growing share of actuarial computation: data processing, model generation, report drafting, and anomaly detection. These are real shifts, and they matter. But they are not where the profession lives. The profession lives in judgment, taking a number and asking what it means for a human life, a community, a future that does not yet exist.

The world we need, equitable, sustainable, genuinely inclusive, is not in any dataset. The solutions are not waiting to be retrieved; they have to be imagined. And imagining them, in a country as complex and as full of potential as South Africa, is exactly the work no algorithm can do on its own. The future is not human versus machine. It is human, leading the machine, toward a world that does not yet exist.

What AI Cannot See, and What It Can, When Asked Well

It is worth being precise about what AI does and does not do. Large language models generate outputs by identifying statistical patterns in existing data and recombining what has already been said. Research by David Cropley of the University of South Australia, in the *Journal of Creative Behavior*, argues this creates a hard ceiling: LLM outputs are statistically plausible but derivative, their creative capacity “capped at the level of an average human” and unable to “reach professional or expert standards under current design principles.”

But the picture is more interesting than a simple ceiling. A 2024 study in *Scientific Reports* tested GPT-4 against 151 human participants on three standardised divergent-thinking tasks, measuring the ability to generate original, unexpected solutions to open-ended problems. GPT-4 outperformed humans on every task, producing answers that were more original and more elaborate, even after controlling for fluency.

Yet the researchers were careful about what this means. As they put it, “AI, unlike humans, does not have agency,” and is “dependent on the

assistance of a human user. Therefore, the creative potential of AI is in a constant state of stagnation

unless prompted." That is the heart of it: AI's creativity is entirely downstream of human direction. It can produce remarkably original output, but only in response to a question someone else decided to ask. It does not wonder. It does not notice that a question needs to be asked. Left alone, it produces nothing.

The honest position, then, is not that AI cannot be creative, but that everything it produces begins with a human doing the directing. What separates an idea from reality is execution, and AI is becoming a powerful partner in execution, provided a person holds the compass.

But even a brilliantly prompted model is still working from a limited well. The internet skews heavily toward English-language sources, digitised institutional records, and the outputs of formal economies. The 2025 *International AI Safety Report*, backed by thirty countries, warns that this dependence on digitised text leaves systematic gaps for oral traditions and non-digitised cultures. Springer Nature's *AI & SOCIETY* collection makes a related point: AI's reliance on large datasets can repeat old extractive habits. At the same time, indigenous knowledge systems carry contextual and ethical understanding that current models lack.

The knowledge systems that have sustained communities across this continent for generations, about land, water, shared risk, and collective wellbeing, were not uploaded to the internet. They were passed down through conversation, through practice, through living. Researchers at Penn State and the University of Washington have shown that generative models routinely depict non-Western cultures "through an outsider's lens" rather than as communities see themselves. You can prompt AI as brilliantly as you like. It still cannot give you what was never given to it.

An actuary who has grown up here, who has seen informal solidarity absorb shocks that formal insurance never reaches, who knows what risk looks like in a community with no stake in the formal economy, holds knowledge no model can be trained on. The best use of AI is not to replace that knowledge. It is to give it somewhere powerful to go.

The System AI Inherits, and Accelerates

AI does not arrive in a vacuum. It is built by institutions operating within a particular economic logic, defined by shareholder value, continuous growth, and the maximisation of return from every input. The risk is not that AI disrupts this system, but that, left undirected, it encodes and accelerates it.

Every measure we have elevated is a growth measure. GDP at the level of a country, shareholder value at the level of a company, and income growth on an income statement at the level of a business unit. Each one asks: Did the number get bigger? None of them asks whether people are

better off. They exclude caregiving, mental health, ecological integrity, housing security, and community solidarity, the foundations of a liveable life for most people. Even GDP's architect, Simon Kuznets, warned in 1934 that "the welfare of a nation can scarcely be inferred from a measurement of national income." And yet these measures remain the central targets of economic policy, corporate strategy, and internal reporting alike, as well as the implicit objective of much AI deployment. We have built a society that optimises for the part of the picture that is easiest to count and calls it the whole picture.

Kate Raworth's Doughnut Economics offers a different vision: an economy bounded by a social foundation, food, water, housing, healthcare, social equity, and an ecological ceiling beyond which damage cannot be undone. The goal is not growth for its own sake but thriving within a safe and just space. AI did not produce this idea; a human did, drawing on moral reasoning, feminist economics, and ecological science. But once the idea existed, tools like AI could help model, test, and communicate it at scale. The imagination came first. The execution is where the partnership belongs.

What is striking is that this systems-level, relational thinking was never a new idea. It was simply an excluded one. The Latin American concept of *Buen Vivir* holds that wellbeing belongs not to the individual but to "the individual within a community in relation to a specific cultural-natural environment." Closer to home, the Shona concept of *ukama* understands community not as a group of individuals but as a web of interconnections within the cosmos; the ethicist Munyaradzi Murove argues that *ukama*, read alongside ubuntu, expresses an African commitment to ecological conservation, a worldview that treats the natural environment not as a resource to be extracted, but as kin.

These were not primitive ideas waiting to be superseded, but sophisticated, tested ways of organising collective life, and, as scholars of Indigenous and circular economies note, mainstream sustainability models still too often exclude them. And the extraction does not stop at ideas. As LSE's Dr Ruhi Khan warns, without equitable governance, AI risks becoming a new form of colonialism, drawing data, labour and resources out of the Global South while leaving harm behind. A single 1 MW data centre can consume up to 25.5 million litres of water a year for cooling alone; Carnegie Mellon University Africa notes that on a drought-prone continent, such infrastructure "could require millions of gallons of water a day ... for communities where this resource is already in short supply." However, the same study finds the picture varies by climate. The costs are real. They land on people. And right now, they are largely going unpriced.

The Irreplaceable Actuary: No Tool Is Neutral, and Speed Is Not Wisdom

None of this is an argument against AI. A calculator calculates. Excel

excels. And AI, used well, frees actuaries from the most time-consuming parts of their work: analysis suggests time spent on data manipulation can fall from roughly 70% to 30%, with the rest shifting toward validation, interpretation, and stakeholder engagement. That shift is the point. The calculation was always a means; the judgment was always the end. The actuary who refuses to work with AI is not protecting their relevance; they are giving it up.

But working with AI is not the same as deferring to it. Langdon Winner once asked whether artefacts have politics. His answer was yes: every technology embeds the values of those who built and funded it. AI embeds the internet's values: English-language, Western-centric, and oriented toward shareholder returns. This is structural, not a flaw to be patched in the next update. The actuary who asks whose values shaped a model's output, and whose lives it skips over, is doing the most rigorous work in the room. Auditing the assumptions that the tool cannot audit itself is the whole job.

There is also the culture AI accelerates, the culture of speed, which treats reaching an answer quickly as reaching the right one. But inequality, climate, and systemic exclusion will not be solved by an algorithm that runs in seconds. The Norwegian philosopher Guttorm Fløistad captures it: "To master changes, we have to recover slowness, reflection and togetherness. There we will find real renewal." Maggie Berg and Barbara Seeber make the same case about academic life: pressure to produce faster hollows out genuine expertise and leaves superficial understanding in its place.

Real learning happens in the struggle between what you can do alone and what you can do with guidance. A good mentor teaches, then steps back, because the struggle is where understanding forms. AI never steps back on its own. A surgeon still studies anatomy by hand despite imaging technology, not from nostalgia, but because that understanding is what makes the scans meaningful. So here: the actuary who has built a model from first principles can direct AI toward something useful and tell when it is pointing the wrong way.

Learning to Imagine: The Practical Work of World-Building

This raises a question the profession has not answered seriously enough: how do you teach someone to imagine outside the system in which they were trained? It starts with taking seriously the knowledge systems that formal education has treated as peripheral. Indigenous literature, philosophy, and economic thought are not soft additions to an actuarial education; they are sources of precisely the long-horizon, community-centred thinking the world urgently needs. Reading *ukama* seriously, not as a cultural footnote but as a legitimate framework for relatedness, ecological responsibility, and collective risk, changes how you see a pricing model. Reading *Buen Vivir* changes what you think insurance is for. And once that thinking exists, AI becomes genuinely useful: it can

model scenarios, stress-test ideas, and surface patterns at a scale no person could manage alone.

The South African Actuary in Ten Years

At its 51st Convention in 2024, ASSA's leadership said: South Africa's challenges are too specific, too layered, too *ours* to be solved with imported global solutions. The South African Actuarial Development Programme frames transformation not as an aspiration but as a strategic imperative. So what does this look like in ten years? The South African actuary working well with AI will:

- **Use AI as a creative partner, not a replacement for thought.** They bring it a well-formed question, born of lived experience, indigenous insight, and ethical grounding, and let it model, test, and elaborate at a speed no person could match.
- **Ask who is not in the data.** A model trained on South African insurance data carries decades of exclusion inside it. The responsible actuary asks which communities are underrepresented, and which behaviours are coded as high-risk when they are really symptoms of poverty.
- **Price the hidden costs.** When AI tools are adopted, they ask what it actually costs and who bears it: water, energy, and the communities near the infrastructure. These are risk variables. Leaving them unpriced is not neutral.
- **Serve as the governance layer.** Where algorithms shape decisions about credit, pricing, health risk, and pensions, the actuary stands between the model and the person it affects, the source of the profession's public authority and trust.
- **Protect the craft, even while using the tool.** They still do some things the slow way, not from nostalgia, but because fluency requires practice. The actuary who has sat with difficult data and uncertain answers is the one who can tell when AI is wrong and ask the next great question.

Conclusion: A Compass, Not a Calculator

The South Africa we need, where insurance reaches the informal economy, where risk models account for structural inequality, where the costs of development are shared justly, does not yet fully exist. You cannot retrieve it from a dataset. But you can build it, with the right question and the right tool in hand. It requires people who know what a number feels like when it lands on a real human life, and who will say, with authority, that the answer the machine produced is not the answer we should accept.

AI is here, and it is powerful. Research shows it can outperform people on certain measures of creative output, but only when someone asks it the right question. The direction of AI's impact on this profession is not fixed; it is a choice, made one prompt, one model, one decision at a time, and those choices require imagination, ethical grounding, and accountability

that no tool can supply on its own.

Ukama tells us that community is a web of interconnections among people and the natural world; *Buen Vivir* tells us that wellbeing is relational; Raworth tells us that a good economy has both a floor and a ceiling. None of these ideas came from a dataset. Raworth's came from imagination, from one person refusing to accept that the world as it is is all it could be. *Ukama* and *Buen Vivir* came from somewhere else entirely: generations of people who lived them, ways of organising collective life that were displaced rather than disproved, and that we are only now beginning to recover. The work ahead asks for both the courage to imagine what has never existed and the humility to return to what we were taught to leave behind, and today, the people doing that work have a tool to help them build it, provided they are the ones doing the imagining and the remembering. In ten years, the actuaries who matter will be those who used AI as a calculator, a collaborator, and an accelerator, with their humanity always as the compass.

South Africa does not need actuaries who can run a model faster; it needs actuaries who have deeply learned their craft, who imagine a fairer world, and who know how to bring a powerful tool to help build it.

References

- Bengio, Y. et al. (2025). *International AI Safety Report*. Commissioned by the AI Safety Summit; backed by 30 countries, the UN, EU and OECD.
- Berg, M. & Seeber, B. K. (2016). *The Slow Professor: Challenging the Culture of Speed in the Academy*. University of Toronto Press.
- Cropley, D. (2025). "'The Cat Sat on the ...?' Why Generative AI has Limited Creativity." *Journal of Creative Behavior*. University of South Australia.
- Economou, C. (2024). Address to the 51st ASSA Convention, Cape Town. Actuarial Society of South Africa media release, 21 November 2024.
- Fløistad, G. On the Slow Movement: "To master changes, we have to recover slowness, reflection and togetherness."
- Hubert, K. F., Awa, K. N. & Zabelina, D. L. (2024). "The current state of artificial intelligence generative language models is more creative than humans on divergent thinking tasks." *Scientific Reports, Nature*.
- Khan, R. (2025). "From AI colonialism to co-creation: bridging the global AI divide." Media@LSE, London School of Economics.
- Kuznets, S. (1934). *National Income, 1929–1932*. Report to the 73rd US Congress, 2nd session, Senate document no. 124.
- Murove, M. F. (2009). "An African Environmental Ethic Based on the Concepts of Ukama and Ubuntu." In M. F. Murove (ed.), *African Ethics: An Anthology of Comparative and Applied Ethics*. University of KwaZulu-Natal Press.
- Narayanan Venkit, P. et al. (2024). Research on cultural misrepresentation in generative AI. Penn State College of IST & University of Washington.
- Raworth, K. (2017). *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. Random House.
- Shumba, N., Tshekiso, O., Li, P., Fanti, G. & Ren, S. (2024). "A Water Efficiency Dataset for African Data Centres." Carnegie Mellon University Africa; presented at ACM COMPASS 2025.
- Springer Nature. "Indigenous Knowledge Systems and AI." Topical collection, AI & SOCIETY.
- Stanford Institute for Human-Centered AI (2025). Policy white paper on AI and low-resource languages (S. Koyejo, senior author).
- South African Actuarial Development Programme (SAADP). "Reimagining the Future of Actuarial Science in South Africa" (2025).
- The Conversation (2015). "Buen Vivir: South America's rethinking of the future we want," drawing on the work of E. Gudynas.
- Winner, L. (1980). "Do Artifacts Have Politics?" *Daedalus*, 109(1).
- World Economic Forum (2024). "Why circular water solutions are key to sustainable data centres."
- hyperexponential / Casualty Actuarial Society E-Forum. Analysis of AI-

driven shifts in actuarial time allocation (2025).

Declarations

Originality. I affirm that this essay is my own original work and that it has not been previously published.

Use of AI. The ideas in this essay are mine. The intellectual foundations I build on, including Kate Raworth's Doughnut Economics, the indigenous knowledge systems of *ukama* and *ubuntu*, the Latin American concept of *Buen Vivir*, and the philosophical arguments of Langdon Winner, Lev Vygotsky and Guttorm Fløistad, are frameworks I chose, connected, and applied to the actuarial profession myself. I began from my own thinking and lived experience, and wrote a full first draft before any AI tool was involved. An AI assistant (Microsoft Copilot) was then used in three ways. First, as an editor, to tighten phrasing, test structure, and format the final document. Second, to help me locate sources and surface relevant research I had not yet encountered, including the empirical studies on generative creativity and the work on water use in African data centres. Third, and most importantly, I asked it to find credible sources that *contradicted* my position, so that my argument would be tested rather than simply confirmed. The finding that GPT-4 can outperform humans on divergent-thinking tasks emerged this way and directly reshaped my thinking: my original draft treated AI's creative limits as absolute, and that counter-evidence pushed me toward a more honest and more defensible claim. I read and verified every source cited, and every judgment, argument, and turn of phrase that carries the essay is my own.

Disclaimer. *The views expressed in this essay are my own personal opinions. They do not represent the views of any employer or of any professional society or body of which I am a member, and do not necessarily reflect the views of the Actuarial Society of South Africa.*