



MINDS OVER MATTER

The power of consciousness in markets is neglected by mainstream economics. But the mind's ability to shape reality is critical for investors. That's doubly true today thanks to dual evolutionary leaps. First, proliferation of alien intelligence. Second, rapid changes in world order. These shifts are likely to widen the gap between reality and the market's perception of it, creating historic opportunities and risks. Minds matter more than ever.

PART ONE MIND VERSUS MATTER

WHAT IS THE MIND'S RELATIONSHIP WITH REALITY? And how can investors exploit it? In last year's Ruffer Review, I examined how differences between the two hemispheres of the human brain shape our perception of reality, encouraging us to treat the external world as mechanistic, predictable and manipulable with precision. The problem is, however, that reality is the opposite of mechanistic.

That also holds for financial markets and economies. Both are complex adaptive systems which evolve continuously under the influence of conscious participants' choices. This underpins markets' eternal ability to surprise.



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“Asset prices don’t simply reflect economic activity, they increasingly drive it.”

The power of minds to reflexively shape reality always matters to investors. But two evolutionary shifts make it particularly important now. First, the arrival of alien – read non-human – intelligence amongst us with rapid advances in machine learning. Second, a burst of rapid change in world order driven by generational shifts in geopolitics, technology, demography, climate, culture and the role of the state. These dual evolutionary leaps are likely to widen the gap between reality and the market’s perception of it, creating historic opportunities and risks.

So mind matters, and 2024 could be a pivotal year as countries home to half of humanity – representing 60% of global GDP and 80% of equity market value¹ – go to the polls. There’s just one certainty: great uncertainty means great opportunity.

DEAD OR ALIVE?

Envy is one of the seven deadly sins. Bad for your spiritual profit and loss account, and bad for earthly decisions, too. Modern economics suffers from physics envy – a desire for neat equations which reveal universal laws at the foundation of everything. Consequently, economics regards economies as mechanistic, populated by rational – or at least

predictably irrational² – agents and trending towards equilibrium (a balance between supply and demand) over time. Meanwhile, financial market prices reflect information rationally and more or less immediately, according to the efficient market hypothesis.

But mechanistic approaches miss the power of mind and everything which comes with it: the ‘hard problem’³ of consciousness, perception, will, memory, imagination and expectations. These are inextricable elements – and drivers – of any system where human consciousness plays an active role. All add to the complexity facing investors daily.

REFLEXIVITY RULES

The fathers of economics understood mind’s importance to markets. Adam Smith published *The Theory of Moral Sentiments* (1759) before his better-known *The Wealth of Nations* (1776) for good reason. The most famous modern take on the way minds change market behaviour is macro trader George Soros’ work on reflexivity – the role of feedback loops in situations involving conscious participants. Because they both observe the market and participate in it, their “understanding [is] imperfect and...their actions will have unintended consequences.”⁴

1 Bank of America

2 Kahneman (2011), *Thinking Fast and Slow*

3 Chalmers (1995), *Facing up to the problem of consciousness*

4 Soros (2003), *The Alchemy of Finance*

Crucially, reflexivity means that markets will not automatically return towards equilibrium. Instead, they will tend towards perpetual disequilibrium – boom and bust – as reflexive behaviour exaggerates market moves. For example, rising markets draw in more investors chasing performance, which pushes prices higher. Until something breaks. Credit – increasing or reducing borrowing – is often the preferred human expression of economic fear and greed.⁵ And policymakers' decisions based on the idea they are dealing with mechanistic mean-reverting systems can have major unintended consequences.

REFLEXIVITY IN THE WILD

During the recent deflationary era, a myopic focus on price stability kept interest rates too low for too long, creating a series of record-breaking credit and asset bubbles, each bigger than the last. These bubbles were encouraged by the decision of emerging market exporters to fix exchange rates artificially low to accumulate foreign exchange reserves (predominantly US dollars) and thus prevent a re-run of the Asian financial crisis (1997-1998).⁶ These reserves were recycled into US dollar assets,

keeping US interest rates lower and asset valuations higher than would otherwise have been the case – something consciously ignored by the Federal Reserve.⁷ Falling borrowing costs also fostered hyper-financialisation, with asset prices prioritised over the real economy (real life goods and services).

This has driven an increasingly tight reflexive relationship between the real economy and financial markets. For example, strong markets tend to boost the US economy, because CEOs typically hire workers as stock prices rise, and vice versa. So asset prices don't simply reflect economic activity, they increasingly drive it.

Meanwhile, onerous regulation in public markets and the privileged status of debt in the US tax code – itself contributing to financialisation – have encouraged a growing arbitrage between public and private markets. Investors are shifting lending and assets away from the regulators' glare into the so-called 'shadow banks' – institutions such as private equity and credit managers – which fall outside traditional banking regulations and can exploit private markets' 'lower volatility' (ie infrequent pricing) to carry more debt. With feedback loop upon feedback loop, this is a hall of mirrors where the concept of equilibrium itself becomes increasingly spectral.

“ Reflexivity rules. Mood matters. And yet both are neglected by mainstream economics.”

5 Ibid

6 Napier (2021), *The Asian Financial Crisis*

7 Bernanke (2005), *The global saving glut and the US current account deficit*

THE MARKET MIND

Feedback loops – whether influenced by conscious minds or not – are a key feature of complex adaptive systems. These range from rainforests and traffic to cities and financial markets. Other characteristics include non-linearity (ie small input changes can disproportionately influence outcomes), the spontaneous creation of order from local interactions (eg bird murmurations) and continuous evolution. Such systems also exhibit ‘emergent properties’: the system as a whole is significantly different to the sum of its parts, in unpredictable ways.

In financial markets, one of those emergent properties is a kind of extended conscious mind, one subject to the full range of emotions. In 1949’s *The Intelligent Investor*, Benjamin Graham – the ‘father of value investing’ – embodied this insight in his iconic allegorical character ‘Mr Market’, who suffers mood swings ranging from bouts of euphoria to depression and phases of both efficiency and irrationality.

Building on insights from Adam Smith, Soros et al, and backed by veteran strategist Russell Napier, academic Patrick Schotanus’ market mind hypothesis suggests “the market extends investors’ minds [and] distributes their knowledge so it can be shared”.⁸ Prices are not simply a function of mechanistic market dynamics but incorporate “the phenomenon of market moods such as exuberance, depression, fear, despair, mania or euphoria that investors often report experiencing intersubjectively”⁹ – ie between conscious minds.

A complementary take on how minds shape reality comes from the latest work of cognitive scientist Andy Clark, who views the brain as a simulation machine. “Contrary to the standard belief that our senses are a kind

of passive window onto the world, what is emerging is a picture of an ever-active brain that is always striving to predict what the world might currently have to offer. Those predictions then structure and shape the whole of human experience.”¹⁰ In short, the brain is constantly comparing expectations with reality in a two-way exchange and adapting accordingly. Isn’t that exactly what healthy markets do all the time?

Minds, therefore, have a strong reflexive relationship with reality, and expectations have huge power. Reflexivity rules. Mood matters. And yet both are neglected by mainstream economics.

MARKET NEUROLOGY

The precise relationship between mind and brain is beyond the scope of this article. But we know brain structure deeply influences our thoughts, even if it isn’t where we do all our thinking. Clark notes, for example, that we already delegate more and more thinking to calculators and smartphones.¹¹

Children’s brains exhibit high neuroplasticity – an ability to rewire neural connections and pathways as we learn and unlearn things. This plasticity reduces as we age. Neural pathways are like streams: the more flow they carry, the deeper they get, and so on. Thoughts become entrenched because we think them often, then they take on a reality of their own.

In the same way, market structure is probably key to understanding its psychology. In markets, we shape indices, benchmarks, portfolios and strategies, reflexively interacting with market flows, reinforcing the power of momentum and pro-cyclically drawing in – or pushing out – more money. Just as the brain’s limbic system regulates humans’ emotions, the

8 Schotanus (2023), *The Market Mind Hypothesis*

9 Ibid

10 Clark (2023), *The Experience Machine*

11 MacFarquhar (2018), thenewyorker.com



“ Alien – ie non-human and inorganic – intelligence is at work all around us already.”

market's emotional responses are influenced by popular trading strategies' rules, which hard-code certain reflexes. For example, the level of market volatility influences how much money 'vol-targeting' strategies put to work in the market. If volatility jumps, machines pull money out of markets. If it falls, they add. (That passive funds under management in the US now exceed active may mean the market mind is accumulating plaque!)

Markets' capacity to regulate mood internally is being further eroded by a significant reduction in market makers' capacity to hold assets. With fewer buyers in panics, mood swings could be larger. This is a consequence of regulation after the global financial crisis, reminding us that we cannot ignore the role of institutions. And the stability of a market less capable of regulating its own mood will be more dependent on intervention from central banks and governments.

Each participant – from regulators and central banks to governments and asset managers – has a collective consciousness of its own as well as objectives which may not even be economic. For investors, therefore, reflexivity, the market's physical structure and its psychology matter at all times and in all places, but especially when the market mind is evolving quickly. With rapid advances in machine intelligence, that time is now.

ALIEN INTELLIGENCE

Last year saw a renewed surge of interest in UFOs or, as we're now supposed to call them, UAPs – Unexplained Anomalous

Phenomena. Rumour has it 2024 may see confirmation of an exoplanet exhibiting signs of organic life. However, investors' gaze should be firmly terrestrial, recognising that alien – ie non-human and inorganic – intelligence is at work all around us already.

Sophisticated artificial intelligence (AI) programs do not reason like us. They also exhibit their own emergent properties. As ever more market activity is delegated to AI systems, the physical architecture of the market will change, and so will its psychology. We're likely to see higher speeds, liquidity feasts and famines (the machines typically trade within narrow ranges), greater tail-risks and even more powerful momentum. But will they increase investors' illumination and make markets more efficient?

BLINDED BY THE LIGHT

Data provides machines' food for thought. Yet, as the glut of often irrelevant information can make finding signals harder, a larger haystack may actually make markets less efficient, at least for a time.¹² Moreover, the greatest risks and opportunities will come from events and dynamics which do not appear in the data. After all, markets are evolving continuously and AI systems' memory extends only to digitised history.

This digital memory has been collected in the past generation – one partly defined by the remarkable stability of historically atypical asset correlations, notably a persistently negative correlation between stocks and bonds. This has been a product of a low inflation era which allowed central banks to cut rates at the first sign of trouble. But that's harder to do if there's more inflation around. So atypical data 'in' means

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unrealistic expectations ‘out’ – especially when even the data collected is for markets not dominated by AI programs.

It’s like the old joke about the man drunkenly searching for his keys under a lamppost. A police officer stops to help. “Are you sure you dropped them over here, sir?” he asks. “I dropped them over there,” says the man. “But this is where the light is.”

This ‘streetlight effect’ also applies to risk. It’s not the illuminated risks you should worry about. It’s what’s lurking unseen in the unexperienced – or unrecorded – darkness, past and future. Equally, the biggest prizes exist outside the data.

MIND THE (DATA) GAP

The power of reflexivity and consciousness more broadly remains underappreciated by policymakers and mainstream economics. This has contributed to the build-up of systemic risk. Adding complexity, the nature of machine intelligence is changing the character of the market mind. Simultaneously, a growing reliance on data, far from closing the gap between investor perceptions of reality and emergent reality itself, risks anchoring expectations to an atypical period of history. And this is happening just as the broader ecosystem is undergoing a radical burst of evolution for which there is no precedent in the fossil record. The result? Massive gap risk is opening up. That gap is between market minds – both organic and increasingly inorganic – which are anchored to memories and expectations of a world which is disappearing, and a markedly different emergent order.



PART TWO MACROMUTATION

DIRECTED EVOLUTION

Charles Darwin's theory of natural selection emphasises gradualism in evolution: incremental change over long periods. Previously, however, many biologists espoused saltationism, or sudden evolutionary leaps. Today, the broader market ecosystem is undergoing such a leap. But this burst is not driven by unconscious natural selection. Instead, it is a product of conscious minds' choices – let's call it directed evolution.

The era we are leaving has been characterised by ever-deeper global economic integration underpinned by a political settlement which favoured

relatively hands-off government, free trade and globalisation. US firepower underwrote it all. In other words, evolution was guided by political choices which drove lower inflation, interest rates and volatility. Many cultures consider paradise a well-watered garden, and this was a positively Edenic settlement – for the capital interest, at least.

Now, reflexive shifts in geopolitics, technology, demography, culture, climate pressures and the role of the state portend a more shock-prone environment of higher inflation volatility, which we call the New World Disorder. These changes are capable of creating disruptive dynamics unknown in market memory, and some deserve particular attention in 2024, a year when big choices – not all at the ballot box – could turbocharge the leap.

WELCOME TO THE JUNGLE

Political economy continues rewilding. The garden is becoming overgrown. In its place rises a jungle, more chaotic and competitive.¹³ Challenging America's fragile imperium are a range of geopolitical beasts, big and small.

The Sino-US Cold War II continues (see Reviews *passim*), though both sides' domestic pressures have encouraged them to put a tactical floor under relations. Taiwan – which kicked-off 2024's bumper election schedule and around which Xi drew an even redder line during his summit with Biden – remains a live flashpoint. So do ongoing crises in the South China Sea – notably between China and US ally the Philippines. These are encouraging East Asia's arms race: Pentagon estimates suggest China's real defence spending is almost on a par with the US, when adjusted for purchasing power.¹⁴

But the breakdown is far wider than Cold War II, from which most countries are anyway seeking opt-outs. The International Institute for Strategic Studies counted 183 active conflicts worldwide in 2023, the highest level in several decades. That was before the eruption of war between Israel and Hamas, which could easily metastasise into a regional conflict.

Or the crisis in the Red Sea. Just when supply chains had recovered from covid-related disruption, Yemen-based, Iran-backed Houthi rebels reminded the world that the arteries of global commerce are increasingly exposed. Using drones and missiles, they imposed a *de facto* blockade on the Suez Canal by throttling the aptly named Bab-el-Mandeb (Gate of Tears) which separates the Red Sea from the Indian Ocean. Contested seas mean live firing gunboat diplomacy is back in a big way.

Joining the line-up of antagonists, Mother Nature herself choked another commercial artery with drought: the Panama Canal, which needs 200 million litres of water for each ship passing through. Even in Latin America, long a geopolitical backwater, Venezuela and Guyana are squaring off. Meanwhile, North Korea's increasing belligerence would make more headlines were it not for 'hotter' competition in the Middle East and Ukraine – whose fate hangs in the balance, together with the credibility of US security promises. Politics will decide whether the US retains the willpower to uphold the order it created. If not, expect further failures of deterrence and nuclear proliferation as countries fend for themselves. Geopolitics will remain an important driver of shocks and inflation volatility.

¹³ Kagan (2018), *The Jungle Grows Back*

¹⁴ Robertson (2023), foreignpolicy.com

YEAR OF THE DRAGON?

So, too, will China's economy. The post-covid re-opening proved a damp squib, and political instability did little to reassure investors: swathes of senior Communist Party and People's Liberation Army officials disappeared, including the foreign and defence ministers, and the remaining outposts of market-oriented thought, such as the central bank, had their wings clipped. Meanwhile, the prioritisation of security over growth continues. Xi will be hoping that 2024 – the People's Republic of China's 75th anniversary and the Year of the Dragon – augurs a change in fortunes.

Beijing faces chronic conditions, including a deflating property bubble which is feeding consumer and domestic demand weakness, a population in freefall and – care of a managed exchange rate – deflation. Moreover, its fiscal capacity is constrained by the reflexive relationship between land sales and local government financing: weak property prices mean weak government finances. Local government debt levels may be 50% higher than the World Bank believes, given the debt hidden in state-owned businesses.¹⁵ The risk of contagion from property to the finance sector is high. And the security services, rightly fearing reflexivity, are threatening anyone reporting bad news about the economy.¹⁶ Despite the power of mind in shaping reality, we all operate within constraints. No matter what Xi wills, debt, demographics and weak consumer confidence won't simply disappear. Were Beijing not trying to establish the yuan as a plausible store of value, it would probably already have devalued, sending a deflationary shockwave around the world. Russell Napier shares his take on these dynamics later in this year's *Review*.



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¹⁵ Yuxuan, Yang (2023), eastisread.com citing David Daokui Li and Zhang He

¹⁶ Bishop (2023), sinocism.com

SHOCK TRADES

But China doesn't need to devalue the yuan to export fresh deflation. It has moved rapidly up the value chain in key technologies of the fourth industrial revolution including robotics, batteries, solar, electric vehicles (EVs) and communications. As its gargantuan property bubble deflates, Beijing is increasingly pivoting to these new industries, hosing them with cheap credit.

Amplified by China's domestic demand weakness, deflationary waves of goods are about to break over the global economy. Again. Symbolically, BYD – a Chinese car brand – overtook Tesla as the world's biggest maker of EVs, and China is now the largest exporter of cars of all types. This flood of exports will accelerate a Western political backlash which has already begun (see the EU's EV subsidy investigation), increasing fragmentation.

SHOW ME THE (ALTERNATIVE) MONEY!

Yet industrial dominance is undermined by reliance on the favoured enforcement stick of Pax Americana: the US dollar. Growing geopolitical multipolarity sits increasingly incongruously with a still relatively unipolar currency and capital order.

Inevitably, the system is rewiring itself. Keen to use their own currencies more, rising powers are expanding bilateral trade, as evidenced by Indian purchases of Russian oil in rupees. The newly enlarged BRICS+ grouping is a likely testbed for a vastly expanded bilateral – or multilateral – trade and settlement network. This will

be facilitated by new technologies, including central bank digital currencies, and will likely incorporate a neutral medium of exchange comprising gold and other commodities.

The end result: a disintermediation of Uncle Sam as financial middleman, and of the default recycling of capital surpluses into US assets. This would remove a central pillar of the current capital order and depress demand for US Treasuries just as deficits are soaring. These things happen slowly. Then suddenly. Such a shift could mean a much weaker relationship between the US dollar and emerging market prospects.

DIGITAL REFORMATION

Currency is just one way technological advances are helping to change the foundations of the financial ecosystem. DeepMind co-founder Mustafa Suleyman explains that “the coming wave of technology is built primarily on two general-purpose technologies capable of operating at the grandest and most granular levels alike: artificial intelligence and synthetic biology. For the first time core components of our technological ecosystem directly address two foundational properties of our world: intelligence and life.”¹⁷

Both the fabric of the jungle and its residents are being altered from the roots up. From Amazon's new warehouse robots to aerosolised semiconductors¹⁸ (yes, seriously), we have entered a new era in which machine intelligence shifts from the cloud to embodiment in the physical world. Even in the air we breathe. This is a revolution being driven by ‘accelerationists’ whose modus operandi is, quite literally, ‘move fast and break things’.

This increasingly inorganic ecosystem will only add to the surprise factor – both good and bad. Google DeepMind’s discovery of 380,000 new materials in just a few days hints at the colossal productivity opportunities AI is unlocking.¹⁹ Likewise, anti-obesity drugs could relieve pressure on public finances via reduced healthcare expenditure whilst boosting productivity through longer working lifespans. The potential is endless.

Unlike any previous general-purpose technology, however, machine intelligences are increasingly improving themselves. Unconstrained by biological limits, they will often reskill faster than publics and policymakers. As a result, our ecosystem now features evolution directed by human minds and, increasingly, by machine intelligence. This will have profound implications for where power sits, both between states and within them.

The issue is much broader than autonomous drone swarms or state-sponsored, AI-powered information warfare. Michael Creighton’s novel *Jurassic Park* famously explores the unintended consequences of playing God with the foundation blocks of life. Our era will see not just governments and Big Tech equipped with the power to play God, but individuals and non-state actors, too. We might not be about to bring T-Rex back (yet, anyway), but the unintended consequences of the AI era are set to fatten tail risks dramatically and indefinitely.

DEBT AND TAXES

Leviathan – a powerful state with a united government – was the sovereign entity Thomas Hobbes believed could protect individuals from the state of nature: “a war of all against all”. Beyond public security, modern states are increasingly expected to socialise other risks, from energy price shocks to rising mortgage payments.

With debt and deficits in many cases near peacetime records, the state is under more pressure than ever before: from technology’s threat to its monopoly of violence (think of cyber insecurity or the inevitability of random drone attacks) and the provision of basic public order to the potential for major upheaval in labour markets. Then add in the costs of the energy transition, ageing populations which crimp the Ponzi-esque public finance model, and rearmament.

Fraying social cohesion – accelerated by technology and mass migration – completes the mix. Unsurprisingly, anti-establishment populist parties are in the ascendancy – a tide which will keep rising. That creates a strong incentive to keep policy loose to avoid economic pain, especially in an election year. But higher interest rates have taken us closer to the fiscal endgame, where heavily indebted governments manage their debt burdens more proactively. This is likely to include both higher tax burdens and financial repression, where interest rates are held below the level of inflation.



¹⁹ Fan (2023), singularityhub.com

²⁰ Lyons (2023), theupheaval.substack.com

²¹ Smith (1759), *The Theory of Moral Sentiments* – hat tip Russell Napier



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THE GREAT PARADOX

Investors face an evolutionary paradox. On the one hand, genuine fragmentation and rewiring of world order. On the other, a convergence of sorts between East and West as governments grapple with high debt levels, restive populations and new technologies. As NS Lyons explains, “both China and the West, in their own ways and at their own pace, but for the same reasons, are converging from different directions on the same point – the same not-yet-fully-realised system of totalizing techno-administrative governance.”²⁰

Though given new life by mass surveillance technology, this is an old human instinct. Here is Adam Smith writing in 1759 about what we today recognise as both an ideologue and a technocrat: “The man of system...is often so enamoured with the supposed beauty of his own ideal plan of government, that he cannot suffer the smallest deviation from any part of it... He seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon a chessboard. He does not consider that...in the great chessboard of human society, every single piece has a principle of motion of its own, altogether different from that which the legislature might choose to impress upon it.”²¹

Technocracy is the ideology – and worship – of expertise, real or imagined. One which rarely accepts it is wrong. Look no further than the UK Post Office’s Horizon scandal where faith in the system’s infallibility led to the greatest miscarriage of justice in British history.

Policymakers everywhere are doubling down on managed outcomes. That’s a recipe for further upheaval.

“First, respect Mr Market’s mood. This is especially important in periods of upheaval, where patterns are being broken and re-established. Now, for example.”

PART THREE IMPLICATIONS

How can investors incorporate the power of minds beyond their own into portfolios?

First, respect Mr Market’s mood. This is especially important in periods of upheaval, where patterns are being broken and re-established. Now, for example.

Indicators for investor sentiment, positioning, trailing performance and narrative can help gauge this ‘conscious’ dimension. Extreme market pessimism can create tactical opportunities even where fundamentals are weak. And expectations rule.

In complex adaptive systems populated by conscious agents, standard measures of ‘risk’ – normal distributions, standard deviations, etc – fail to capture the potential extremes which non-linear, reflexive dynamics can deliver. Consequently, tail risks will often be underpriced, creating opportunities in derivatives.

But investors are not flying blind. We can observe the preferences and needs of other conscious agents and try to understand the rulebooks and limitations which guide their likely actions, whether Marxism-Leninism in China, the trading rules of dominant market strategies or the fact that, given the choice, indebted democracies generally don’t do deflation.

Chronic challenges with geopolitics, the environment, debt and demography will encourage the existing bias to looser fiscal and monetary policy and more activist government. Combined with the emerging order’s greater susceptibility to supply shocks, these will increase the chances of more volatile inflation leading to more unstable correlations between asset classes.

Bonds and equities are likely to be positively correlated more often. Alternative portfolio hedges could include commodities – energy, metals, gold and uranium – which offer optionality around currency, China and climate adaptation.

The structural preference for easier policy will get an extra boost from incumbents during a bumper election year which may yet accelerate or slow the pace of evolution.

The historian AJP Taylor mused that “nothing is inevitable until it happens”. Today, US-led order hangs in the balance. What lies beyond the election horizon – whether that’s an extended US-China thaw, resolution in Ukraine and a technology-fuelled Roaring Twenties or, as currently seems likely, something more dangerous – will largely be a product of minds meeting more or less moveable matters.





MIND OVER MACHINE

Markets and economies are not mechanistic. Like all systems suffused with consciousness, they are reflexively shaped by minds in a never-ending conscious dance.

Investors' job is to identify gaps between market expectations and the emergent reality they are themselves influencing. Then arbitrage them.

Twin evolutionary leaps in the nature of the market mind and the wider system are turbocharging that dynamic.

As increasingly powerful machine intelligence reinforces an all-too-human temptation to anchor to a passing era of atypical stability, the opportunity for their thoughtful organic rivals has never been bigger. Mind matters more than ever. ●

“As increasingly powerful machine intelligence reinforces an all-too-human temptation to anchor to a passing era of atypical stability, the opportunity for their thoughtful organic rivals has never been bigger.”

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