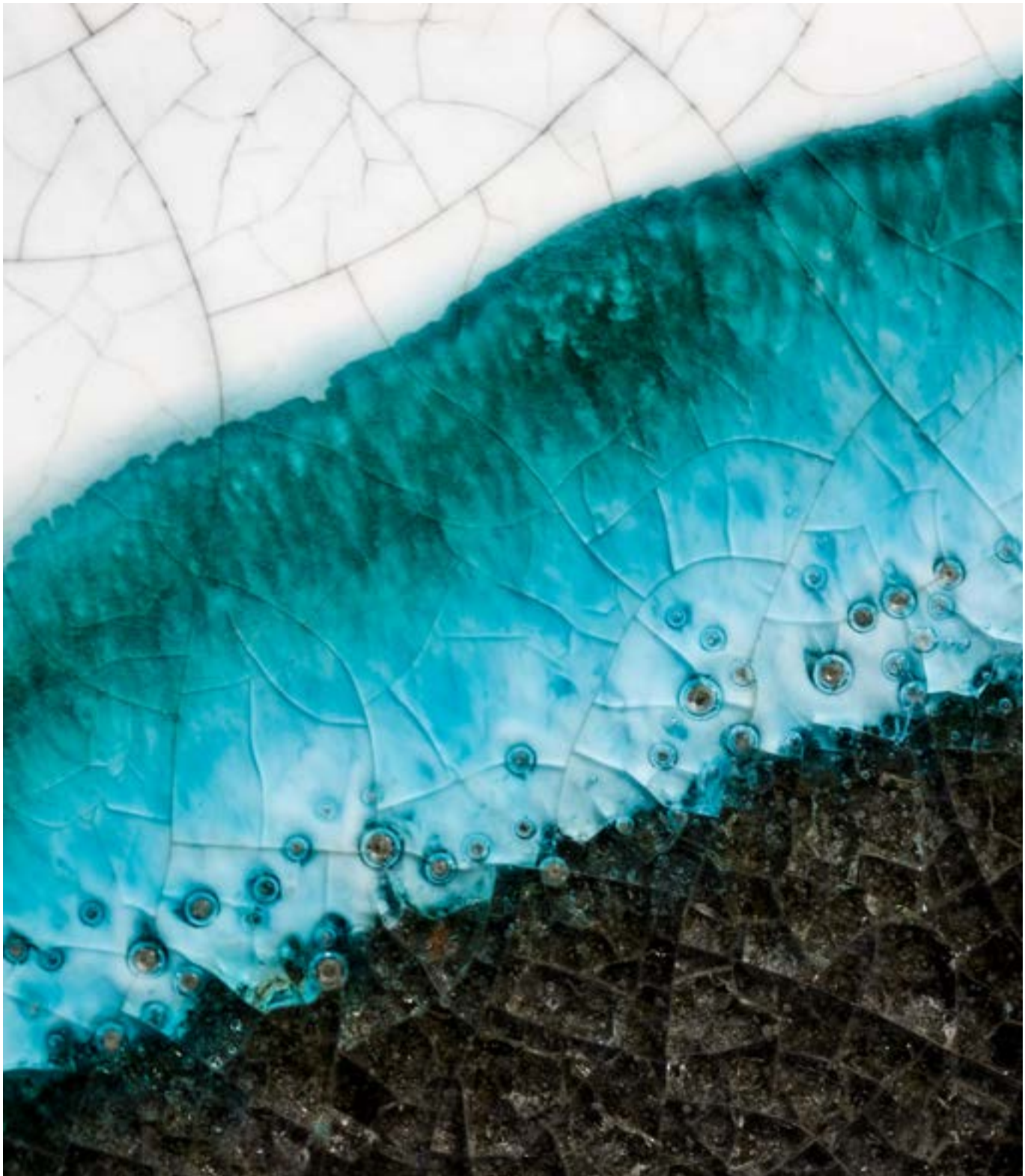
Thinking Ahead Institute

Wot we wrote in 2018

A compendium of investment insights published on the Thinking Ahead Institute's member forum



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Contents

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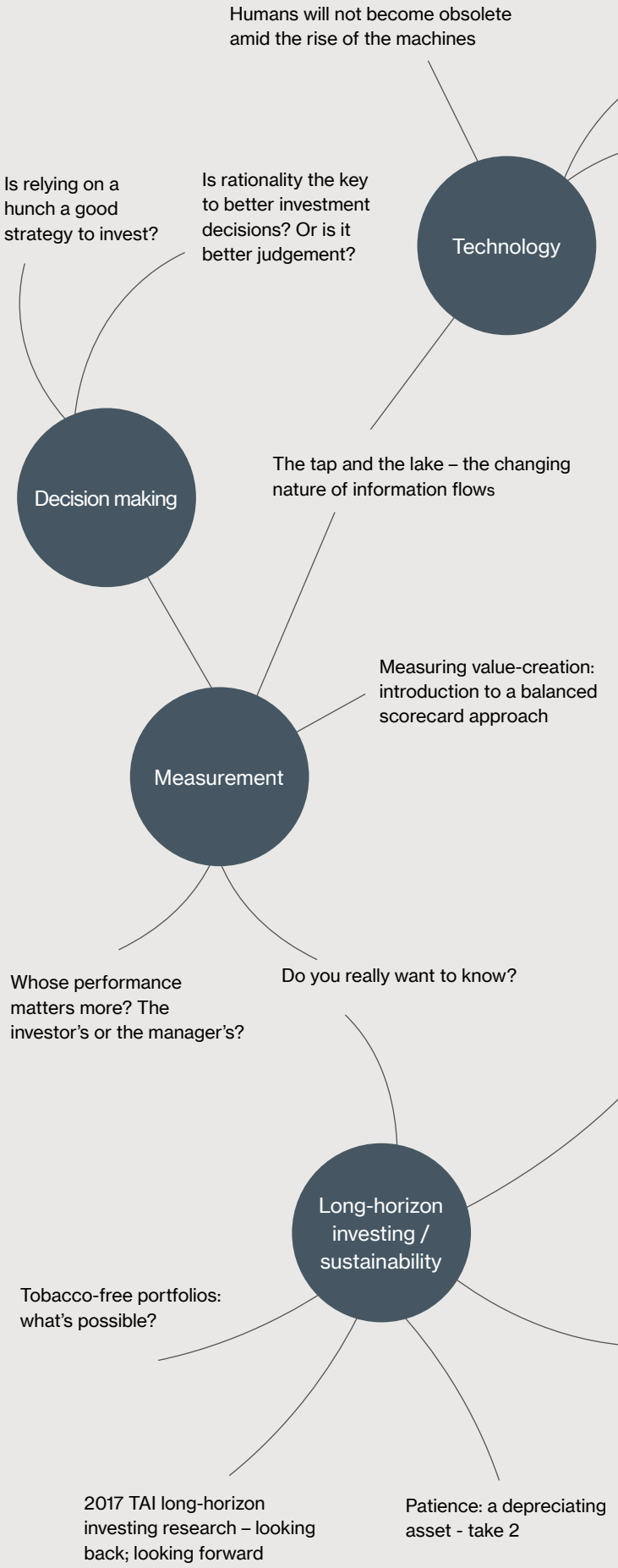
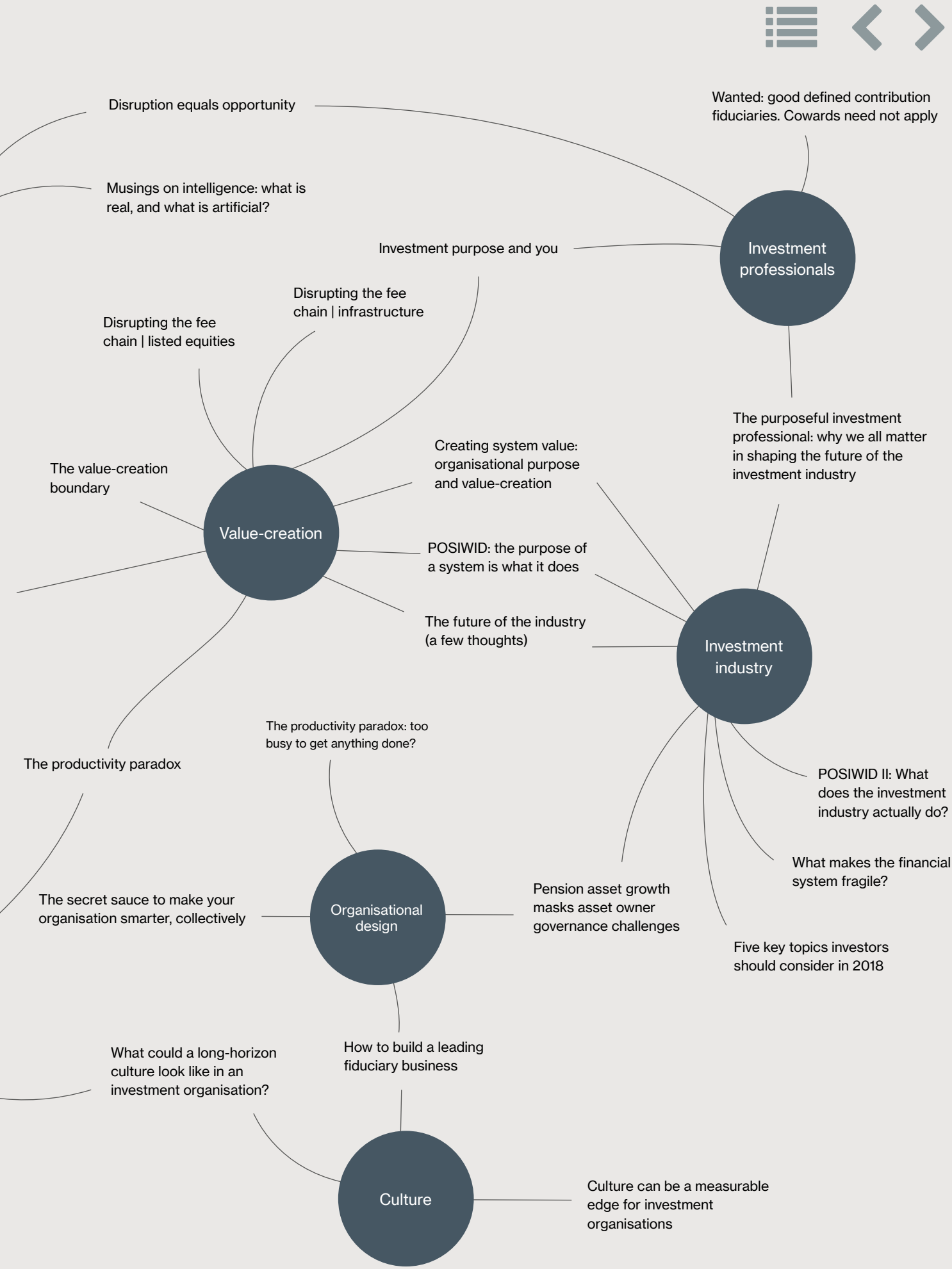
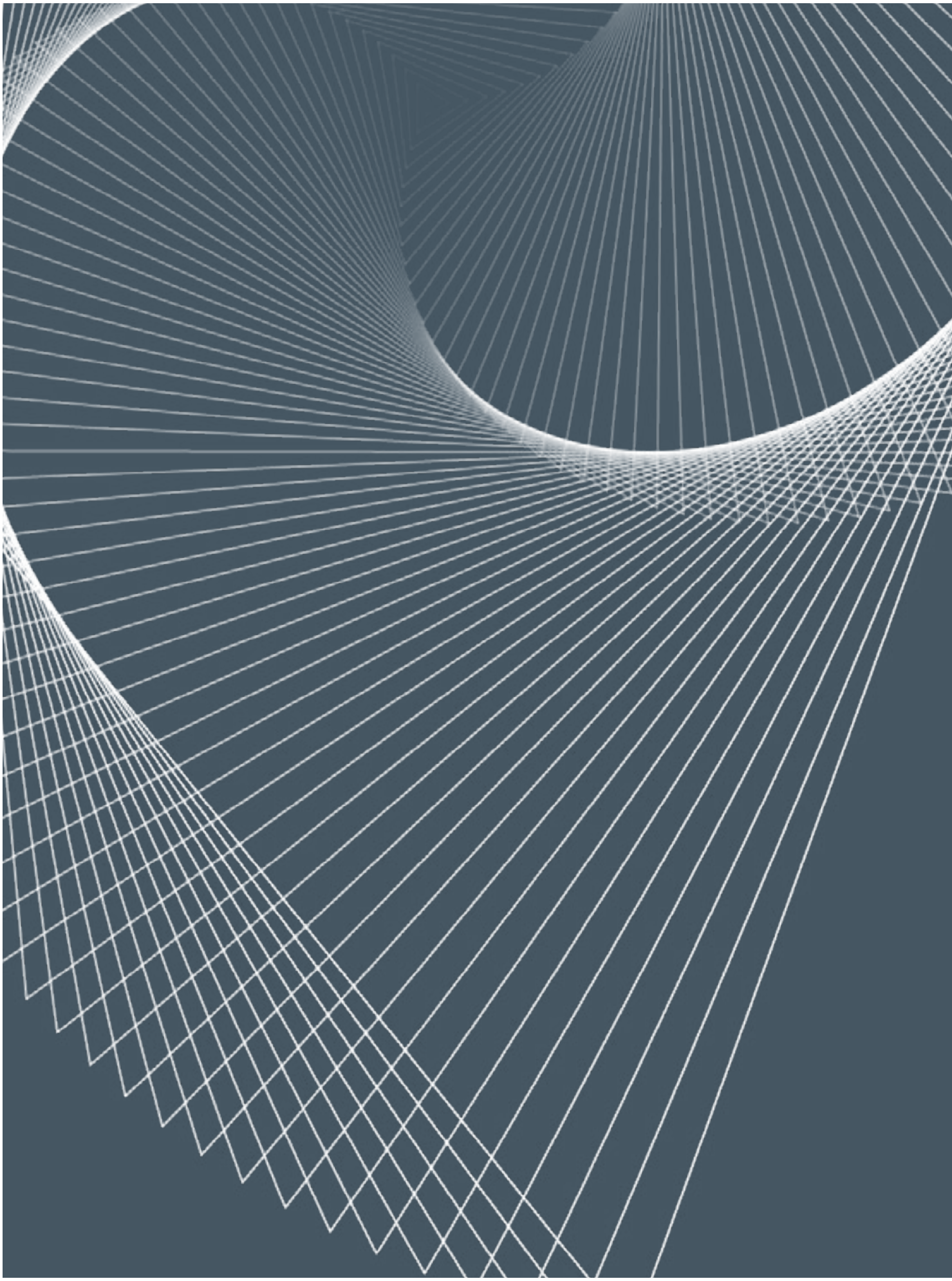
We received feedback that the title of last year's compendium (Here be dragons) was too abstract. Too abstract? Us? Hopefully the title for this year is clearer, even if the spelling is not quite right. If we are trying to push thinking into new areas we should expect to make the odd mistake. Plus, the incorrect spelling should make searching for it much easier (clue, just type 'wot').

The map adjacent is our preferred representation of these thought pieces, and so the exploration of an electronic document as the reader desires should be the most satisfying way to engage with the material. The alternative is for us to choose the route and guide the reader through in a linear fashion – for a printed document this is the only viable approach. For the linear version we have chosen to start with Decision making.




Disruption equals opportunity
Musings on intelligence: what is real, and what is artificial?
Wanted: good defined contribution fiduciaries. Cowards need not apply
Investment professionals
Investment purpose and you
Disrupting the fee chain | infrastructure
Disrupting the fee chain | listed equities
The value-creation boundary
Value-creation
Creating system value: organisational purpose and value-creation
POSIWID: the purpose of a system is what it does
The future of the industry (a few thoughts)
The purposeful investment professional: why we all matter in shaping the future of the investment industry
Investment industry
The productivity paradox
The productivity paradox: too busy to get anything done?
The secret sauce to make your organisation smarter, collectively
Organisational design
How to build a leading fiduciary business
Pension asset growth masks asset owner governance challenges
POSIWID II: What does the investment industry actually do?
What makes the financial system fragile?
Five key topics investors should consider in 2018
What could a long-horizon culture look like in an investment organisation?
Culture
Culture can be a measurable edge for investment organisations



Decision making

The first two insights in this series represent our first approach to the subject of decision making. To what extent do we make decisions intuitively – or do we rationally process all available information?

Is relying on a hunch a good strategy to invest?

It is unlikely a serious investor would answer yes to this question. But if I replace "hunch" with "expert intuition" it becomes a more interesting question.

So what is intuition? The most widely accepted definition comes from Herbert Simon[1]: "the situation has provided a cue: this cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition". In other words, intuition is simply pattern matching. In principle, this process is no different than how kids recognise that an animal is a dog, not a cat. "Expert intuition" is acquired and applied in professional fields: playing chess or firefighting for example.

Intuition belongs to the kind of knowledge known as tacit knowledge. We, as human beings, know more than we can tell. Even the experts themselves aren't able to articulate their intuitions, let alone justify them. It happens effortlessly. It feels automatic.

If that sounds familiar, you have probably come across Daniel Kahneman, a Nobel Prize winning psychologist, and his work on system 1 vs system 2 thinking. In short, system 1 is heuristic thinking – a fast, autonomous and unconscious way of thinking. System 2 is reasoned thinking – a slower, harder and controlled way of thinking that normally kicks in when faced with complex problems. In this context, intuition is a system 1 tool.

There is strong evidence to support that the intuitive judgements of some professionals are impressively skilled.[2] On the other hand, Kahneman tells us that system 1 thinking is prone to cognitive biases. It cannot be trusted all the time.

So can we trust expert intuition with making investment decisions?

It turns out that for intuition to be genuinely skilled there are two necessary conditions[3].

First, there must be adequate opportunity to build up the expertise. The "10,000 hour rule" might apply here[4]. Assuming 40 hours a week and 45 weeks a year, that's less than six years' experience. This seems like an easy hurdle for investment professionals.

Second, more importantly, the environment in which the expertise is acquired needs to sufficiently regular to be predictable. The ideal situation is that the feedback is immediate and unambiguous. Think learning to apply brakes when driving around a bend. Intuition can also be acquired in the presence of uncertainty but the key condition is that the environment (underlying probability distribution) needs to be stable. Think poker, where the probability of any given hand is always the same but the outcome of each round is uncertain (ie worse hands can win the round).

Unfortunately, the feedback we receive from financial markets is not immediate and is far from unambiguous. I think there are a couple of reasons to believe that intuition gained in this environment is likely to be spurious.

[1] Simon is probably best known for suggesting that instead of trying to achieve optimisation, which very often involves high cost of gathering information, we aim for satisfactory solutions, a concept he coined as "satisficing"

[2] See G. Klein (1998) Sources of Power. MIT Press

[3] Conditions for Intuitive Expertise: A Failure to Disagree, Daniel Kahneman and Gary Klein, 2009, American Psychologist

[4] Outliers: The Story of Success, Malcolm Gladwell, Back Bay Books

First, cause-effect linkages are very weak in a high-noise environment like investment markets. Nonetheless, Kahneman's research suggests that human minds are strongly biased toward causal explanations. We refuse to accept that we simply cannot explain why certain events happen. Stock markets went up by 1%. Fundamentals must be improving. We come up with false explanations to satisfy our craving for coherence and reason. If rising markets suggest that fundamentals are improving, we ought to buy more! Clearly this buying-high strategy is doomed to fail.

Second, our financial education actually gives us a false impression that we operate in an environment where reliable intuition can be acquired – a stable underlying probability distribution. In reality, financial markets often behave for a prolonged period of time as if they resemble a stable environment, until a regime shift brings about abrupt systemic changes. This leads to a false confidence that genuine expert intuition can be learnt.

System 1 is always on – it cannot be turned off. Through years of experience, it will pick up something. I would argue that, in the environment of financial markets, it is picking up unreliable hunches and cognitive biases instead of valid intuition.

Is it all bad news? Of course not. I can offer at least two positive observations.

Decisions facing leaders in the investment industry are much broader than how to position a portfolio for an uncertain and unpredictable future. There are numerous decisions in the area of managing the investment business and operations as well as investment talent. Arguably the environment for these types of decisions is more benign for developing reliable intuition. Statements such as leadership is more art than science, are a strong testament to the important role of tacit knowledge.

Then there is another type of intuition in my mind. It is about the ability to assess the environment and determine whether/when to stop relying on intuition. The acquisition of this type of intuition is through attention, effort and rigorous analysis – all signatures of system 2 thinking. But through practice it becomes fast and almost automatic, like a system 1 intuition. Warren Buffett's famous remark "be fearful when others are greedy and greedy when others are fearful" is a great example. I believe this type of intuition is worth pursuing.

A second colleague explores a similar idea in this post, but emphasises the specific context of complex adaptive systems:

Is rationality the key to better investment decisions? Or is it better judgement?

In this post I will share some initial thoughts on a topic that we'll be spending a lot of time on this year: investment decision-making.

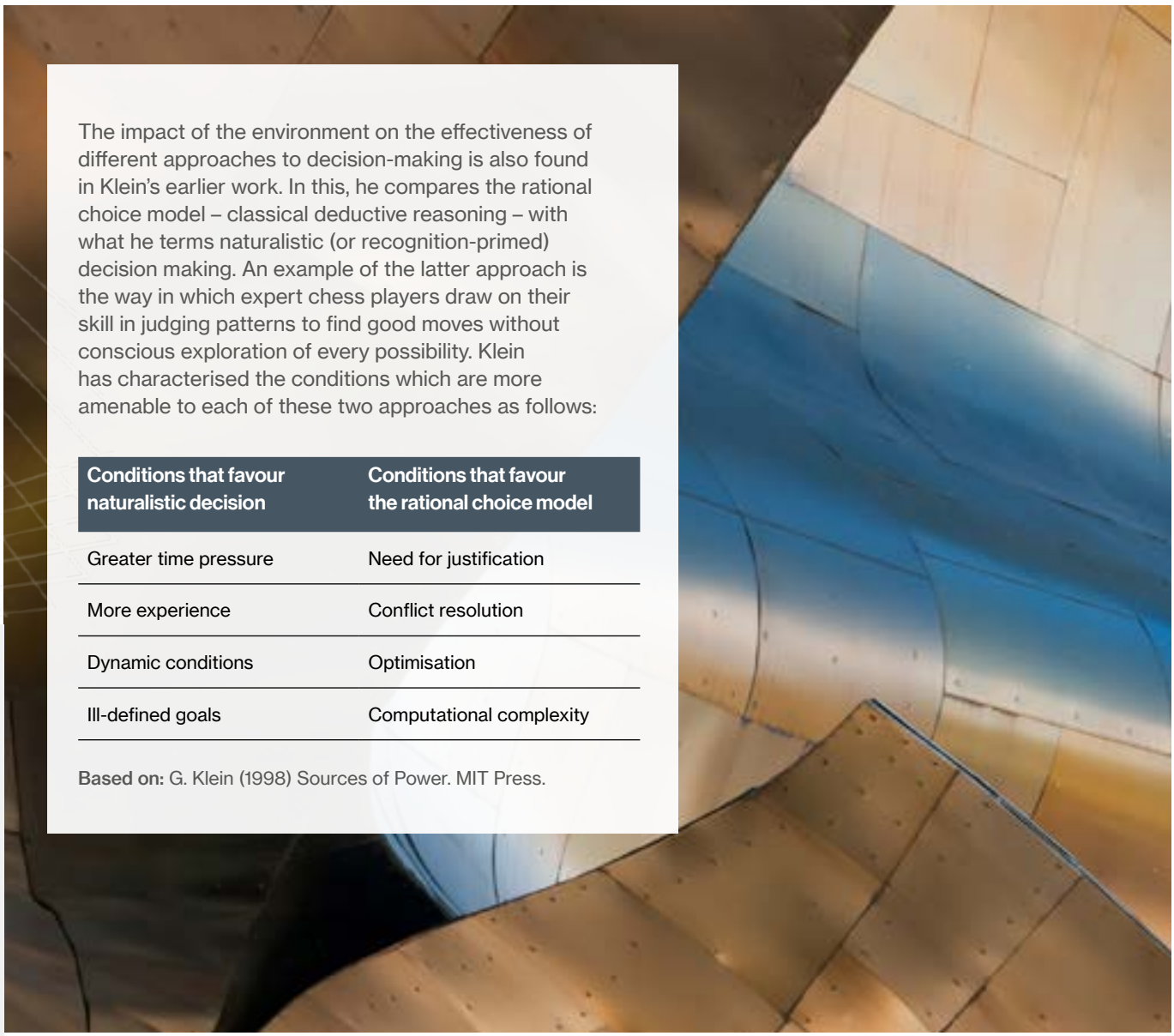
My starting point is the specific perspective of the investment world as being a complex adaptive system. This perspective underlies much of the work that TAI has created over the years, including papers such as *Stronger investment theory* and *System thinking and investment*.

In loose terms, this view can be thought of as abandoning the characterisation of economics in general (and investment markets in particular) as analagous to the study of physics, and instead characterising them as more akin to biology. There's a good description of the technical foundation of that distinction in a paper by *Andrew Lo and Mark Mueller*.

That change of perspective makes real-world phenomena – bubbles; crashes; prolonged spells of abnormally low or high market volatility; and so on – seem much less odd. The natural world is a messier, less-well-behaved system than the machine-like world of physics equations. It's a better point of reference for making sense of market behaviour.

The change of reference point leads to a different view of decision-making. Gary Klein, a psychologist, has studied in depth how experts such as firefighters and military officers make decisions in the field, with a focus on the successes of expert intuition. He is perhaps best known for having co-written with Daniel Kahneman the paper *Conditions for Intuitive Expertise: A Failure to Disagree*, a paper that describes itself as "an effort to explore the differences between two approaches to intuition and expertise that are often viewed as conflicting".

On the surface, Kahneman and Klein seem to represent different sides of an argument about the value of intuition and expert judgement. Yet the paper found a great deal more common ground than either expected. Notably, there was agreement that intuition is derived from recognition and that intuitive judgements are more valid in environments in which relationships are stable and where there is sufficient feedback to allow skill and expert intuition to develop. The two sides of the argument turned out to be at least in part a simple difference of focus: one discipline was looking into how to harness the remarkable power of skilled judgement, the other focusing on those instances where reliance on intuition tends to lead to error.



The impact of the environment on the effectiveness of different approaches to decision-making is also found in Klein's earlier work. In this, he compares the rational choice model – classical deductive reasoning – with what he terms naturalistic (or recognition-primed) decision making. An example of the latter approach is the way in which expert chess players draw on their skill in judging patterns to find good moves without conscious exploration of every possibility. Klein has characterised the conditions which are more amenable to each of these two approaches as follows:

Conditions that favour naturalistic decision	Conditions that favour the rational choice model
Greater time pressure	Need for justification
More experience	Conflict resolution
Dynamic conditions	Optimisation
Ill-defined goals	Computational complexity

Based on: G. Klein (1998) Sources of Power. MIT Press.

In his discussion of this distinction, Klein specifically highlights investment portfolio analysis as an example of a decision that is computationally complex. That implies a need for rational, rather than intuitive, decision-making. But markets are not merely complex[5] systems, they are complex adaptive systems; their making – a theme that TAI will be exploring in depth in 2018 – is a thorny and fascinating topic. The recognition that investment markets are complex adaptive systems is a starting point. But making sense of the financial challenges faced by individuals, institutional asset owners, and the investment industry is a messy business, a task that cries out for thorough, rational, clear thinking and yet which no model will ever fully capture.

Given that decision making relies on data, at least to some extent, we move on to consider measurement.

[5] Technically, what is meant by "complexity" in the context of a complex system is not quite the same thing as the plain-English version of complexity to which Klein's table refers. The distinction is not important for the purposes of this post

Measurement

A potentially surprising, but important, place to start is to ask whether we want the data at all...

Do you really want to know?

Unqualified truths are very rare in the world of investment, which is why investment beliefs are critically important for investors, in particular those who view themselves as long-horizon investors.

But let me propose one truth here: all genuine long-horizon investors experience underperformance (if they measure investment performance frequently enough).

Let me start with a colourful hypothetical example borrowed from Nassim Taleb's brilliant book *Fooled by Randomness*. Consider a dentist setting up a trading room in his attic - perfectly rational behaviour, as he is a truly outstanding investor. He is able to outperform short-term bonds by 15% pa, albeit with a volatility of 10% pa. He therefore has a probability of making money in any one year of 93%, which would keep most of us happy. However if we shorten the time frame for measurement, the story starts to sound very different. Measured over a minute, his probability of being ahead shrinks dramatically to 50.17%. Over a second? The very same statistic goes down to 50.02%, basically a coin flip. With this monitoring frequency, all investors will experience underperformance; literally in a matter of seconds.

Of course no investors monitor performance that frequently so let me show you some real-world data. A study conducted by Brandes Institute examined a sample of 145 international equity funds and their long and short-term performance. It discovered that the top 15 funds with the highest 15-year returns all underperformed the index and their peers significantly during shorter periods. All of them showed up in the worst decile for at least one quarter. When measuring rolling three-year returns eight out of the 15 fell into the worst decile at least once. Their conclusion is that short-term underperformance is "as normal as death and taxes" and simply an inherent by-product of the long-term investment process.

With that I think it is reasonable to argue that for long-horizon investors, short-term underperformance is not something they might encounter; it is something they will encounter.

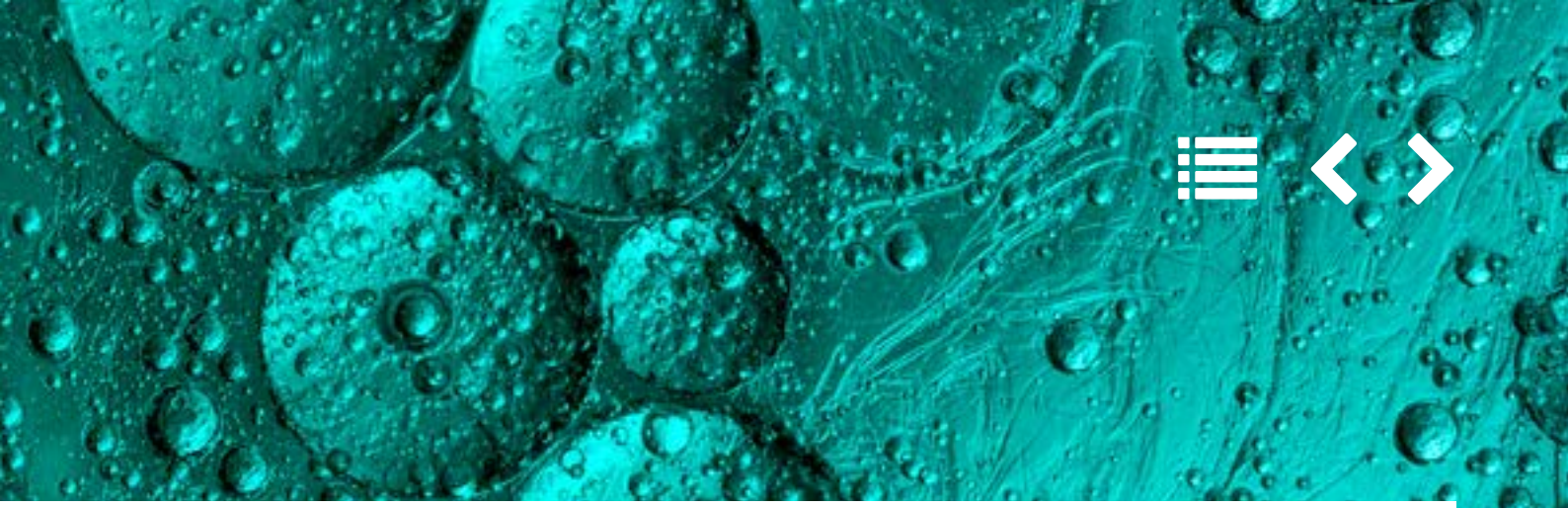
Unfortunately it is well established that human brains don't treat losses and gains the same. There is a technical term here introduced by Amos Tversky and Daniel Kahneman: loss aversion. It refers to people's tendency to prefer avoiding losses to acquiring equivalent gains – the emotional wear and tear caused by the losses outweighs the boost from the gains.

If we marry loss aversion with frequent performance measurement we then get another technical term that starts to reveal one of the fundamental difficulties with regards to long-horizon investing: myopic loss aversion.

Remember in our example the dentist has a 50.17% probability of being ahead (ie outperforming short-term bonds) over a minute. Assuming he spends eight hours a day in front of his screen, he will have (on average) 241 pleasurable minutes against 239 unpleasant ones. Not only will our dentist be emotionally drained by the end of each day from the sheer volatility of the ups and downs, but he will feel the losses far more keenly that any boost he gets from gains. Our dentist will simply not survive this emotional onslaught, and heaven forbid may even be tempted to change the portfolio (which if left alone has a 93% chance of finishing the year ahead).

To summarise, myopic loss aversion leads to "selling low" – terminating prematurely a sound long-term investment position – and that is exactly the behavioural trap long-horizon investors should guard themselves against.

There is a simple solution, at least in theory: recognise the value of inactivity and evaluate investment performance less often. In practice fiduciary duty can make it hard to argue that you are acting responsibly in respect of someone else's investments if you don't even know what the performance looks like. A remedy to that would be shifting the focus of reporting/measurement from short-term metrics to long-term outcomes – eg extending the term over which performance is measured.



Instead of reading too much into the performance for the last quarter, try to put it in the context of the long term by focusing on for example the average return for the past seven or ten years.

Better statistical tests can be designed so as not to draw erroneous conclusions from data with abnormally high noise. These tests should be pre-specified with an agreed confidence interval, and be sensitive to the changing degrees of freedom as we collect more data.

The tension for long-horizon measurement is to stay focused on achieving long-term goals while still providing short-term checks and balances / ongoing review. To overcome the short-term noise issue it is important to incorporate subjective qualitative assessment alongside more objective performance data points. In essence, it requires looking at non-performance elements and seeking to answer whether there is anything about the investment proposition now that leads us to believe is will make a positive (or negative) performance contribution in the future. Has the investment strategy executed been consistent with stated investment beliefs and thesis? Did anything happen to affect the qualitative, forward-looking skill rating of the (both internal and external) asset managers? Has the investment team been stable and has team culture remained positive and strong?

Long-horizon investors should study the past but it is the past experience that is informative and valuable; not the past performance.

Given that we will want to measure the progress of our portfolio, if not as frequently as before, what measure should we use?

Whose performance matters more? The investor's or the manager's?

The most common approach to calculating a portfolio's investment return is the time-weighted rate of return. This approach is dictated by the industry performance standard ("Firms must calculate time-weighted rates of return that adjust for external cash flows"[6]) and for a long time was widely taught to trainee analysts as simply being the right way to calculate performance[7].

The feature that distinguishes time-weighted returns from the alternative money-weighted approach is that time-weighted returns negate the effect of external cash flows. The argument for doing so is that the investment manager does not control those cash flows, so it would be unfair to allow them to influence the client's assessment of the manager.

To explore this argument further, we will use the following example:

A portfolio has an initial value of $100, and in its first year grows by 50% to $150.

Following this good run, an additional $100 is added to the portfolio, bringing the total value to $250.

The second year is less successful, however, with a loss of 20% being incurred. The portfolio ends the second year worth $200.

So the ending value of the portfolio is $200 and the net effect of the investment activity is neither a gain nor a loss. This outcome is captured in the money-weighted rate of return calculation, which would show a 0% return.

Had the additional capital not been injected, however, the portfolio value would have gone from $100 to $150 to $120, producing a gain of $20. Hence the argument that it is unfair to the manager to say they did not add value for the portfolio: it was not their decision to inject additional money. So the time-weighted return would give the same weight to the first year's return of 50% as to the second year's return of -20%, and show a positive return of 9.5% a year[8].

But wait a second: who is more important here? The investor or the manager? The first question that performance measurement ought to address is to measure the experience of the investor: what was the outcome from their point of view? And that question is answered with a money-weighted return.

Certainly, we also want to do the best job we can of accurately assessing how good a job the investment manager did. And it's true that, as in the example above, the investor's outcome can be affected by factors outside the manager's control – including external cash flows. So the time-weighted return is a useful tool when we're assessing a manager's ability to generate returns, because that ability is largely independent of portfolio size[9]. But it's really an attribution tool. The manager's ability to add value is not the only thing that affects the investor's outcome, and the primary thing that performance measurement should be measuring is that outcome.

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[6] CFA Institute (2010). Global Investment Performance Standards (GIPS)

[7] There is another (somewhat related) debate to be had concerning the merits of absolute vs. benchmark-relative returns. That's a subject for another day

[8] MWRR formula solves for 100 x (1 + mwrr)2 + 100 x (1 + mwrr) = 200. TWRR solves for (1 + twrr)2 = (150 / 100) x (200/250)

[9] "Largely" because with extremes of very small or large portfolios, practical considerations come into play. And the claim that cash flows are outside the manager's control has its exceptions, too

To the extent that money-weighted returns exceed or lag time-weighted returns, that's an indication of the impact of the investor's capital allocation decisions: did the decision to add to one manager's portfolio – or to subtract from another's – add value or subtract it?[10] That, too, is useful information – but once again is attribution.

Technical addendum:

Time-weighted returns generally have an upward bias relative to money-weighted. This follows from the fact that assets tend to be taken away from investment portfolios that have performed poorly, and to be added to portfolios that have done well. In the example above, the manager's time-weighted return will exceed the money-weighted return whenever the second year's performance is below that of the first year. Similarly, for a manager from whom money is taken, time-weighted returns will be above money-weighted whenever the second year's performance exceeds the first's. So if there is any reversion in performance patterns – ie unless exceptional performance persists indefinitely – time-weighted returns will paint a more positive picture of performance than investors' actual experience.

So time-weighted returns are useful in assessing manager skill, and the manager in the example above can claim that they demonstrated skill over the two-year period. But they cannot claim to have delivered a net gain for the client. The time-weighted return is not the best measure of the investment performance as experienced from the perspective that matters most: the asset owner's. It shouldn't be the primary number shown on the typical client performance report.

Our bridge between Measurement and Technology is the following post, which considers the changing nature and sources of data – and how that is intertwined with advancing technology.

[10] It would be nice to think that some managers can provide useful input to these capital allocation decisions: to give a steer on when would be particularly good or bad times to add to the portfolio. It would be unrealistic to expect that input to be completely objective, of course

The tap and the lake – the changing nature of information flows

Explaining the metaphor

I came across the concept of the tap and the lake in a discussion paper on the future of corporate reporting (The changing flows of corporate performance information). The tap describes historical (and current) corporate reporting (periodic, unidirectional, controlled by the company) while the lake recognises that digitisation has changed the world. Data and information relating to a company can trickle, or flow, in from multiple sources, can arrive at any time, can be accessed by anyone, for almost any purpose, and can be contaminated perhaps.

The discussion paper raises interesting and important questions about how corporate reporting should change as a result of the new reality. I thought I was going to document my thoughts from an investment perspective. But I find myself being drawn to a higher level of abstraction (who saw that coming?!). Surely this metaphor applies equally well to news. Once upon a time the newspaper was the tap, controlled by the publisher, delivering periodic and unidirectional information. Fast forward to our current context and the news lake (ocean?) is fed from millions of sources, not all of which are reliable or well meaning.

Data | information | knowledge | understanding | wisdom

This section's title sets out a clear data hierarchy. Data is some set of symbols (numbers, letters, emojis...); information is contextualised data (so 'C' in one context is the initial letter of a person's name, and in a different context - Roman numerals - represents the number 100); knowledge is organised information; understanding is interpreted information; and wisdom is utilised understanding.

The first point to make, therefore, is that the tap is providing – and the lake contains – information, possibly knowledge, but not data. This is not shocking given the history, as the intended consumer was a human and humans generally do better with contextualised data rather than the raw data itself. But it is also important, as propaganda is nothing other than data that has been contextualised in a particular way, for a particular purpose. I recognise that propaganda is a strong and potentially emotive word, but I use it deliberately. Consider the last published annual report of Enron, or WorldCom, or any other entity, before they declared bankruptcy. What label should we attach to that information? Is propaganda too strong a label, if the intent of the report was to deliberately mislead? Or consider fake news. Is it annoying pollution that is an inevitable by-product of the modern economic machine? Or is it purposeful and, possibly, state-sponsored? In which case we should label it appropriately – as propaganda, designed to mislead us.

How do we progress?

If we accept that the goal is get to wisdom, in order to make wise decisions, and we know that some of the information available to us is contaminated, then what should we do? [Please note that we are not talking about data scrubbing or cleansing here; we are talking about contaminated information, so data that may or may not be clean, that has been wrongly contextualised – whether in error or deliberately.]

I can see two broad options:

1. accept the current reality, and use the information as best we can. Whether this would involve an attempt to clean the information before analysis, or involve statistical filters during the analysis is outside my knowledge domain,
2. change the future reality by attaching a reliability score to each item of information. Again, this is beyond my sphere of knowledge, but conceptually I am aiming for the equivalent of a record of provenance to attach to each piece of information. Presumably this would require a new internet protocol, which sounds difficult – but it also sounds like an increasingly important public good given the likely digital content of our future lives and economies.

The rise of technological tools

We know that machine learning algorithms are getting increasingly accurate in their labelling of pictures of cats (and other tasks); we have observed the success of two-way buyer and seller ratings on online platforms; and we are aware of firms using algorithms to assign weightings (believability or reliability scores) to employees to improve decision making. In this light, we can envisage that all items of information being added to the lake would be vetted by technology and a tag, perhaps containing its reliability score, would be added. Don't we effectively do this already – albeit in a qualitative and unstructured way – when we chose to emphasise or deemphasise certain elements when making a decision?

In fact, could we imagine a blockchain-like technology being used to more closely resemble the idea of a record of provenance. So a particular item of information would, presumably, have a better provenance if it came from the company directly. And the provenance could be improved if the information goes through an independent audit process (which would also be recorded alongside the information itself).

With some form of public vetting of data having been done, applying distributed ledger / blockchain technology would also make the data uneditable. Everyone would then be free to add their own context, and organise the information as they saw best. In essence we are aiming for freely available data – a public good – and competition in the uses to which the data is put.

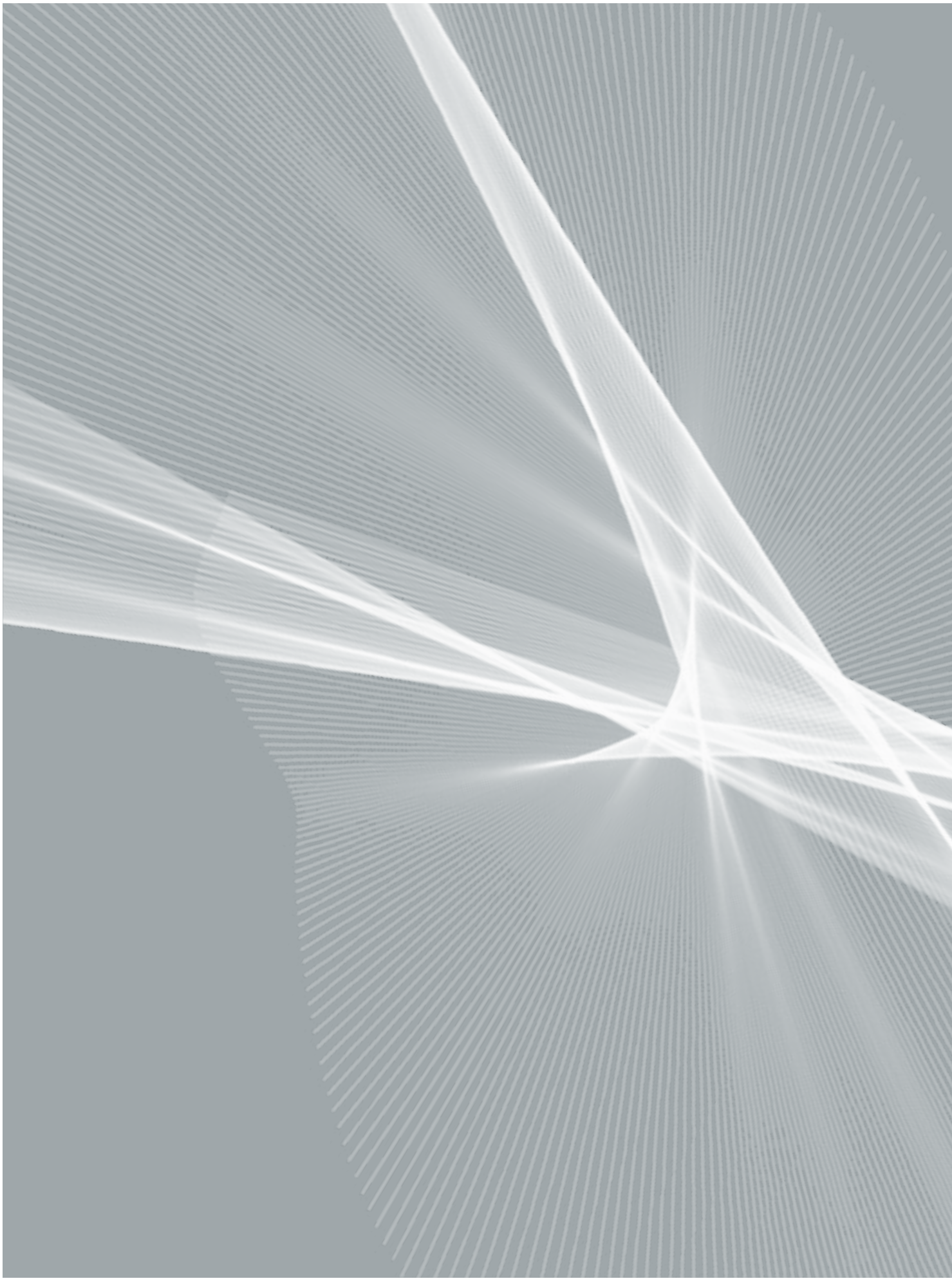
How would this change corporate reporting?

As already stated, the goal is wise decisions – and the issue I am exploring is whether we can reduce the noise within the data hierarchy, whether introduced by error or malicious intent. The suggested mechanism is to separate out the contextualisation and make it transparent. Corporate reporting would therefore also be split in the same way. The corporate would be one of the many parties contributing information to the lake, and it would receive a reliability rating. It could submit data in real time – how many units of which products left the factory gates at what time; how many units at which price were invoiced to which customer, and when; whether the customer paid in full, and when. The customer, of course, could be submitting equal amounts of transparency to their data lake – and the relevant cross-checks could be made.

With transparency like that, investment analysts could seek to add value for their clients with the accuracy of their modelling – and the accuracy of the context they apply. Meanwhile the corporate can now periodically release a narrative into the lake. The narrative is more likely to take the form of knowledge or understanding – the corporate should know itself better than external analysts. But the narrative can be checked against the data for reasonableness, or the creep of propaganda.

Why would this be better?

The dissemination of information, whether news or corporate report, has always been subject to change over time. However the digital revolution has delivered a huge chunk of change in a short period of time. We now have the opportunity to reorganise the plumbing – to reassign roles and responsibilities to suit the new skillsets. We can now assign much more work to computers, the cloud and the crowd rather than to individual humans. In the near term there will roles for humans in interpreting knowledge, and using the resulting understanding – and maybe in the long term too. But a redesign could help us get on the front foot regarding fake news, and lead us to better decisions.



Technology

After the collapse of the bitcoin bubble, arguably the biggest technology story is the rise of artificial intelligence (AI). Typically following close behind is the scare that AI will replace vast swaths of human jobs. The first article below takes a step back to consider what we know, and what we don't know, about intelligence – and it offers some hope that AI will not necessarily steal all our jobs. The second article applies the advance in capability of the machines directly to the investment context – and concludes that humans will still have a valuable role to play.

Musings on intelligence: what is real, and what is artificial?

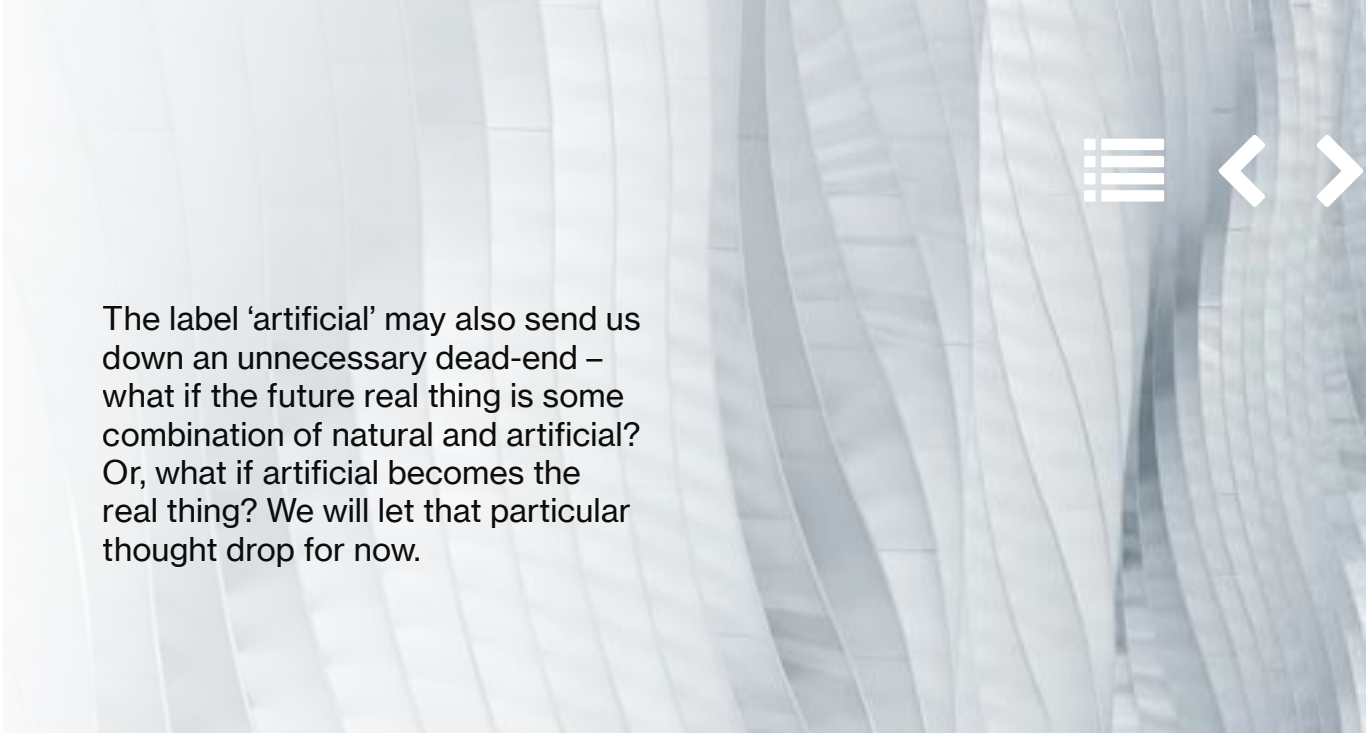
It is clear that we are going to have to deal with artificial intelligence and its various impacts on our industry and wider economy. But to label something as artificial implies that we know what the real thing is. Do we mean human intelligence? And if we do, does that mean crows, chimps and dolphins are not intelligent? Or is intelligence something bigger and more abstract, such as evolved, cultural intelligence? This latter thought hints at a difference between the individual and the collective: an ant or a bee may not clear my hurdle for intelligence, but an ant colony and bee swarm would. And having decided what the real thing is, can we adequately define it?

The label 'artificial' may also send us down an unnecessary dead-end – what if the future real thing is some combination of natural and artificial? Or, what if artificial becomes the real thing? We will let that particular thought drop for now.

As for defining intelligence, I defer to David Krakauer, president of the Santa Fe Institute, who has defined intelligence as "making hard problems easy". He also defined stupidity as "making easy things hard" (and talks of other categories including genius, ignorance and being wrong). I really like these definitions for a number of reasons; they are short and use short words, they are medium-free (ie indifferent between biological neurons and printed circuits) and they give wide scope for exploration.

I have already suggested above that culture could be a form of intelligence – by laying down behavioural rules, or norms if you prefer, culture can make hard problems easy by showing us how to choose or behave in a given situation. So it seems that there are multiple forms of intelligence, not all of which are obvious under casual observation. What about embodied intelligence (morphological computation)? It is possible to build a purely mechanical machine, based on human geometry (ie pelvis and two legs), that will walk on a tread mill – suggesting that evolution has found a design that can perform a sophisticated function without the need for external computation. Or consider the performance of top athletes, who make hard things look effortless. We could call it skill, or we could call it movement intelligence. Essentially their hours of training can be thought of as creating a set of reflexes that fire with precise timing to achieve the desired result. But movement intelligence may require language intelligence, a conjecture advanced by John Krakauer (David's brother) of Johns Hopkins University. The top athlete has a coach providing language-based instruction. Conversely, there are no videos of monkeys juggling on YouTube – perhaps the movement intelligence behind juggling can only be learned through language ..."this is what you need to do first...".

Going back to reflexes, they are by definition involuntary. They are too fast for us to be able to think about them. And therefore they can show us the limits of knowledge. Experiments have shown that you can give subjects the necessary knowledge – such as 'the handlebars of this bicycle have been reversed', or 'the mouse has been adapted to move the cursor up and down when the mouse if moved left and right' – but it is of no use to them. Apparently it takes months to retrain bike-riding reflexes. All very interesting, but we should get back on track – and I would like to return to the thought I dropped earlier, about combining natural intelligence (whatever that is) and artificial intelligence (whatever that is).



The label ‘artificial’ may also send us down an unnecessary dead-end – what if the future real thing is some combination of natural and artificial? Or, what if artificial becomes the real thing? We will let that particular thought drop for now.

If you subscribe to the Pablo Picasso school of thought – “computers are useless, they can only give you answers” – then, in effect, you believe in the cognitive outsourcing model. Under this model we give computation problems to a computer on the basis that it can perform them faster, cheaper, and probably more accurately than we can – just like any good outsourcing arrangement. Nothing much of interest is implied by this model. There is no transformative leap in our, human, intelligence, just some solid productivity improvements. This is possibly why artificial intelligence can be viewed as threatening. As the machines advance faster than we can, what if they start to know things that we don’t?

However, an alternative model is available – the cognitive transformation model. This model states that as we internalise new cognitive technologies we change the range of thoughts we can think. So computers, under this model, become a medium for expanding and spreading cognitive technologies. Artificial intelligence then becomes less threatening, as it can be viewed as offering us more powerful cognitive technologies which, in time, we will internalise – giving us more powerful ways of thinking (and allowing us to design more powerful artificial intelligence, and so on). Now that would be real intelligence.

To me, the cognitive transformation model offers optimism and hope – as an alternative to the dark march towards the technological singularity (the point at which machines can design better machines than us, and therefore take charge) – and therefore I would like to believe it’s true. But hope is not a strategy. And the extraordinary pace of development in artificial intelligence makes understanding intelligence a very practical question. The good news is that there are many bright minds studying intelligence in academia. The bad news, according to David Krakauer, is that stupidity is the single biggest threat to mankind – and no one is studying that.

Humans will not become obsolete amid the rise of the machines

If your investment portfolio has high exposure to geopolitical risks you probably followed closely the Trump-Kim summit that took place in Singapore in June 2018.

Perhaps you searched for similar historical events (eg the Iran denuclearisation deal or even the Nixon-Mao meeting in 1972) and their impact on asset returns. Until recently, it would have been likely to take one of your highly-paid research analysts quite a few days to gather and process the relevant information.

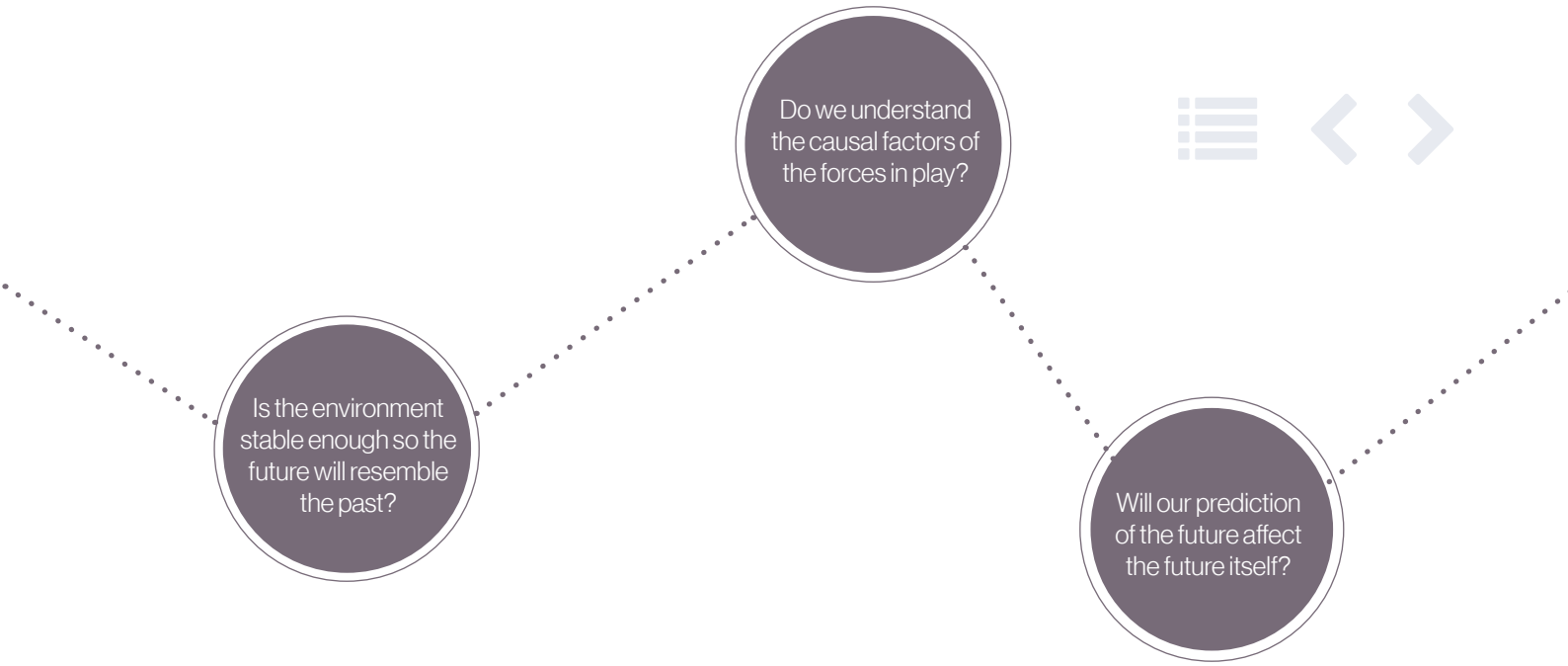
Today, it can be done by a smart machine in just a few minutes. It takes that long because you still need to pick from a series of drop-down menus to specify your needs. The astonishing recent advances in machines are described in a recent *New York Times* article.

The advantage of machines over humans on processing tasks such as this one is obvious. Compared to computational power advancement, the evolution of human intelligence is an extremely slow process. So the gap is only going to get bigger.

If the machines are that good and continue to get better, are humans still going to be needed in the institutional investment decision-making process?

The answer is a resounding yes. Let me unpack why this is the case.

Humans and machines actually have complementary strengths. Humans are constrained by biological limits.
We have limited memory. We get tired easily. It takes physical effort for us to compute. As Daniel Kahneman pointed out in his book "Thinking, Fast and Slow", we can easily compute 5+8 while walking but try, say, 56 x 7 next time. You will probably stop walking. Machines don't have these problems.



While both humans and machines can be biased (if the input or the people who wrote the algorithm are biased), one of the key strengths of machines over humans is that they make perfectly consistent decisions when given identical input. Humans, on the other hand, make inconsistent decisions even based on the same input, driven by both internal (our mood and emotional state) and external factors (distracting information that is irrelevant to decision making eg weather).

On the other hand, machines can't develop common sense (at least not yet). They don't have contextual knowledge about which problems require solving. They can't think outside the box. They are better at discovering correlations that at identifying causality. They have narrow intelligence as opposed to humans' general intelligence. A Go-playing algorithm, no matter how good it is, is useless at driving a car.

So where does this leave institutional investment decision making?

Investment is basically about understanding and dealing with an unknown future. As in the geopolitical risk assessment exercise with which this post begins, understanding the future in practice normally starts from digging into the past in order to uncover similar patterns.

This is where machines really excel. Machine learning algorithms are capable of gathering data and recognising patterns on their own, painting a much more complete picture of the past. If there is a story in the past data, machines will find it for you quickly and cost-effectively.

If only the past was a reliable predictor of the future.

To make the leap from past to future, three questions need asking, which is where the role of humans comes into play:

1. Is the environment stable enough so the future will resemble the past?
2. Do we understand the causal factors of the forces in play?
3. Will our prediction of the future affect the future itself (the technical term here is reflexivity)?

With the "rhymes" discovered by machines, humans are left with an arguably even harder question: to what extent does history repeat itself?

Most of the time there are no easy answers to these questions. But another key strength we enjoy as humans is that we are capable of recognising the limits of our own intelligence. We are capable of coming up with sensible strategies even in the absence of a complete knowledge about the future. That's why we diversify, for example.

Circulating back to the debate between humans and machines, I envisage a human-machine partnership that is more powerful and effective than humans or machines alone. The discussion shouldn't be about humans versus machines. It should be about achieving synergy between the two types of intelligence. The concept of collective intelligence does not need to remain within the boundary of human intelligence.

How should we split our roles in this partnership?

It looks like Pablo Picasso had already given us an answer decades ago: "They (machines) are useless. They can only give you answers."

Disruption equals opportunity

The FIFA World Cup has generated a lot of compulsive viewing including one unique first – all games broadcast on UK commercial television carried at half time the Hitachi DAC advert for a fridge equipped with blockchain. The claim is you can use this technology to manage your home consumption and expenditure seamlessly by talking with your devices, getting devices talking to each other, and doing a whole bunch of other cool things.

We know the retail, transport and consumer durables sectors are being disrupted, and most would say for better more than for worse. Does the investment industry too have an 'Uber moment' on the way? Is there a transformation coming in business models with simplicity, speed, scale and synergy advantages after which nothing is the same again?

Asset management is one of the last industries to be disrupted. That is because it is an industry that depends so heavily on regulation, complexity and long-term experiences. It does not lend itself easily to the worldwide wish for simple and speedy that is leading most disruption. But the Uber moment is nonetheless coming to asset management sometime soon.

As with other industries, new technology in investment covers a spectrum: big data and AI applied to predictive and prescriptive analytics; cloud computing for improved flexibility and security; and the Internet of Things connecting all facets and devices of our personal lives including our financial lives.

As with other industries, this technology will support greater transparency of value, better utilisation of assets and lower costs. And it can deliver to investment clients – particularly in DC and retail investing – improvement in ease of use that are long overdue. These are the gaps which seem likely to produce the Uber moment.

If those are the challenges, these are the responses

What can investment firms do to position themselves well through these turbulent times? That is addressed in *Investment Firm of the Future* a study I co-authored for the CFA Institute. In it we discuss the disruptive implications of unprecedented monetary and investment conditions, set against a back-drop of social- and technology-driven change. It explains how firms will face trouble unless they are pro-active in defusing disruptive threats and embracing disruptive opportunities.

To deal with disruption investment firms need to adapt in a number of areas:

- a big step up in understanding client needs and wants through a customer-data-driven process, in which systematic data gathering, customized algorithms and Amazon-type recommendation engines play a big part
- a big step up in communication, particularly in exploring risk as a unique client feeling
- a person plus technology delivered experience – think of combining AI processes with skilled human engagement to build maximum competency and trust – similar to the collaborative robot or 'cobot' (see the FT leader '*Ceding powers of decision to AI presents a paradox*'. *'This will require a framework that enables humans to make full use of these powerful tools, while ensuring they are directed to the best ends').*

The acid test of successfully making these shifts is to build sustainable trust with clients. This can be reinforced through a strong and authentic brand. Can technology companies challenge traditional investment firms on their home turf here? This is not yet clear. Technology brands work well with the tangible and the immediate, they don't translate so well into the slow to emerge outcomes in asset management contexts. This may explain some of the reluctance of the technology titans to step into asset management.

The CFA research sets out six attributes needed on a checklist for investment firm success:

1. Strong culture. While recognizing with culture one size does not fit all, end investors crave a culture of professionalism in which commitment to competency and client loyalty are critical values
2. Technology commitment. A commitment to the considerable time and money necessary to introduce better technology
3. Technology-savvy leaders. This is a very human craft with T-shaped people – well-qualified all-rounders - particularly suited. See *Humans will not become obsolete among the rise of the machines*
4. Well-positioned business models. Firms need to align themselves to benefit from the new trends in asset management in which the biggest growth area is in investment solutions
5. Recognition of comparative advantage. Firms need to be good at knowing what they are good at. And consistent with that, collaborating with or outsourcing to partners
6. Dealing with change. This involves the ability to step away from legacy systems and thinking and to reject the natural temptation to deny the issues.

This new world certainly favours large investment firms with scale. But it also favours smaller firms with agility and focus. Most of all it favours firms that have thought deeply about the new terrain they will be traversing and have a vision, strategy and culture ready for it.

Investment professionals

Our link to this section was via technology, with the previous article noting that part of the impact of technology will be on people – the need for a culture of professionalism, and the need for T-shaped skills. This section continues to explore aspects of being an investment professional – first by issuing a call for brave fiduciaries to step forward to run defined contribution plans, and then by exploring issues relating to purpose.

Wanted: good defined contribution fiduciaries. Cowards need not apply

No matter which particular legislative backdrop you happen to operate in, the fiduciary role is a demanding one. Those who are responsible for managing other people's money are in an unenviable position. In the widely-quoted language of a 1928 New York Court of Appeals judgement, "A trustee is held to something stricter than the morals of the marketplace. Not honesty alone but the punctilio of an honor the most sensitive is then the standard of behavior.[11]"

A natural reaction to this heavy responsibility is to become risk-averse. And, in particular, to stick with the crowd. But this is not always in the best interest of the plan participant.

The faint-hearted fiduciary won't create the change that is needed

It's largely a question of incentives. The payoff patterns for the fiduciary and the beneficiary frequently differ. Consider this simplified example: suppose a position is judged as having an equal probability of generating either an extra dollar of gain or fifty cents of loss. This position is, from the point of view of the beneficiary, generally a good position to take: there's more upside than downside.

But the outcome won't necessarily be perceived that way. The fallout from a loss arising from a non-traditional approach can attract scrutiny and criticism, heavily spiced up by the benefits of hindsight. So the downside for the fiduciary is not just the fifty cents of potential loss but also the fallout that would accompany it, fallout which does not have a corresponding benefit on the upside. This can be a deterrent for the fiduciary.

For defined contribution (DC) fiduciaries around the world who want to do the right thing by their plan participants, this is not just a hypothetical discussion. As we've set out in the paper *Proposing a stronger DC purpose*, most DC plans around the world are trying to solve the wrong problem: instead of focusing on income provision throughout the whole post-work period, too many plans are operating as if their purpose is the maximisation of savings at the point of retirement, which is a much narrower goal.

There's a need for change; the DC world is crying out for fiduciaries to stand up and change the focus of the industry. It's the right thing to do. But it's not the easy thing to do. The faint-hearted fiduciary will hide in the crowd.

I have bad news for the faint-hearted fiduciary. As the old saying goes: sometimes the biggest risk in life is not taking one. Sometimes keeping your head down means that you aren't doing your job. Fiduciaries are expected to make their own interests secondary. They shouldn't be setting their course according to their own payoffs, but according to those of the beneficiary. Failing to act in those interests is failing to live up to the fiduciary standard.

Brave, but not foolhardy

So the truly wise fiduciary realises that there comes a time to step away from the (apparently) safe position of sticking with the conventional approach. That is, clearly, not to be done lightly. So let's be clear that changing the focus of the DC system from savings to lifetime income provision is unequivocally in the interests of plan participants. The reason it's difficult is because the incentives acting on the various actors in the system discourage change. Recognising this, and doing what needs to be done to change the picture, is what the fiduciary is there for.

[11] Meinhard v. Salmon, 164 N.E. 545 (N.Y. 1928). A punctilio is a fine point of detail. Lawyers being lovers of flowery language, this quote has become, for many, the go-to description of what being a fiduciary really involves

"There's a need for change; the DC world is crying out for fiduciaries to stand up and change the focus of the industry. It's the right thing to do. But it's not the easy thing to do. The faint-hearted fiduciary will hide in the crowd."

And let's be clear, too, that fiduciaries who depart from the conventional approach need to take care to document their rationales; documentation that is made at the point of the decision can be a powerful counter to accusations based on hindsight. Good fiduciaries know that they need to ensure not only that their actions are prudent, but also that they can be shown to be so. That's doubly true in a situation such as this.

The need for good documentation applies, too, to those who choose to stick with the current approach. Some fiduciaries may reach the conclusion that, in their particular circumstances, participants' best interests really are served by a focus on asset accumulation. They too have a duty to demonstrate why that is the case, to ward off accusations of self-interest.

Or is regulation the answer?

One way to shortcut the issues described above could be a regulatory push. For example, in the early 2000s, U.S. DC fiduciaries faced a thorny situation regarding what to do with the savings of those who had been defaulted into the plan and had not selected an investment strategy: a situation with close parallels to the situation we've described in this article. In an aggressively litigious environment, fiduciaries were reluctant to expose assets to any risk of capital loss – and frequently made choices that were demonstrably ineffective as long-term investment strategies as a result. It took a legislative safe harbour[12] to resolve that particular dilemma.

Perhaps it's going to take a similar intervention from outside the industry to resolve the current situation and re-align the focus of the system. If so, shame on the faint-hearted fiduciaries who left it to others to do their job.

[12] The Pension Protection Act of 2006 created a new category of investment, the Qualified Default Investment Alternative (QDIA), of which Target Date Funds are the best-known example. Fiduciaries who default participants into a QDIA have protective relief from liability in the event of losses

Investment purpose and you

Growing up, I always had dreams of becoming a teacher. My mother was a teacher and I used to spend a lot of time at her school, wearing her oversized heels and pretending to teach imaginary kids mathematics while waiting for her to finish classes. Becoming an actuary, particularly one who worked in the investment sector, was far from my mind. But I was an eager and somewhat focussed math student and the rest is history. Like many I started working in the investment industry, very passionate about what I was doing, but not having a clear idea on what my purpose was or the purpose of the industry which I operated in.

But purpose is important. Morten Hansen in his recent book, *Great at Work*, argues that passion must be connected to a strong sense of purpose. He observes that people who are passionate about their work, but have no sense of purpose, do not perform as well as the top performers who have matched purpose and passion.

So where does this sense of purpose come from? As professionals we know that the investment industry is a highly complex, interconnected, reflexive and non-linear ecosystem. How are we as agents in the industry supposed to have a clear sense of purpose in an ever shifting environment and why does it even matter? Arguably, if we can improve our collective understanding of the industry's purpose, as individuals we can develop a stronger sense of purpose. So what is the purpose of the investment industry? Let's deal with this question first.

The purpose of investment

Saker Nusseibeh, chief executive of Hermes Investment Management, argues in his white paper, *The why question*, that the investment industry has concentrated so heavily on the mechanics of its function (beating an index, providing savers with above-inflation nominal returns) rather than its purpose that the financial system has become entirely separate from the world in which savers live and in which they will retire.

So what is the industry's purpose? First, let's get our terminology straight. When we talk about the industry's purpose, I don't mean to imply that this is something that we can all simply sit down and agree on. The industry is a collection of investment firms, asset owners, consultancies, and a host of other intermediaries, who contribute to its functioning and therefore define its purpose. While the industry is a 'thing' – a complex ecosystem – it does not have top-down control over its agents; it is an emergent system with an emergent purpose. So it stands to logic that to fully understand the industry's purpose, we must understand how it works.

As professionals we know that the investment industry is a highly complex, interconnected, reflexive and non-linear ecosystem.

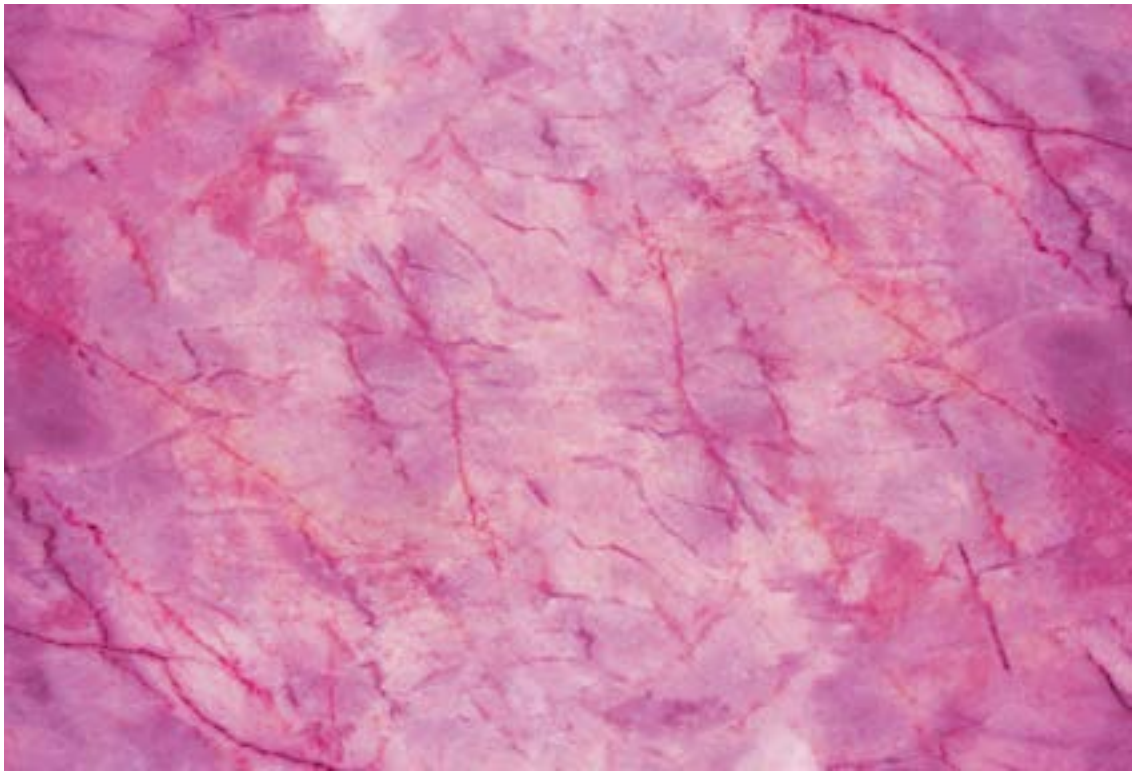
Let's start at the organisational level. Organisations use their capital to generate goods and services. These goods and services can be either progressive or regressive to contributing to the wealth and well-being of society (think solar farms versus tobacco). According to the CFA Institute, investment firms can be said to have two overlapping functions in this system: wealth creation (mobilising financial capital for jobs and growth) and savings and investment (deploying investment services for wealth and risk management). In short, investment firms' primary export to other 'real world' firms is their portfolio outcomes. In a 2017 post, we argued that investors are best served by a focus of the industry on the following activities:

- Engaging with company management on the best ways to generate sustainable long-term growth, and manage the risks that might impair a company's prospects (so stewardship and engagement have a fundamental prominence)
- Allocating investors' assets in a way that provides them long-term exposure to those sectors and companies that are best-placed to benefit from the evolution of society's needs – the ones most likely to capture a growing share of overall consumption. With this reframing, it is reasonable to expect new investment solutions to emerge and existing ones to evolve.

So the investment industry's purpose goes beyond the traditional view of efficient allocation of capital. The industry's actions have impact, both through direct allocation to economic activity and through indirectly influencing the companies it invests in through stewardship and engagement.

While the industry's effective purpose is an outcome of how organisations and individuals within it behave, that purpose can be shaped if there is broad enough consensus. The CFA Institute proposes in its 2017 Future state of the investment profession report that 'the fundamental purpose of finance is to contribute to society through increases in societal wealth and well-being'. But there is one step further to be added as without an overarching and common target, society's 'wealth and well-being' is subject to misinterpretation. For a clear statement of what societal wealth and well-being includes, a good place to look is at the UN's sustainable development goals (SDGs).

This universal set of goals, targets and indicators has been agreed by 193 member states, covers a broad range of social and economic development issues and is expected to frame government agendas and political policies at least until 2030. The SDGs are arguably the most objective reference point for determining what is good for society, with unarguably beneficial goals such as ending poverty, hunger, achieving gender equality and improving access to clean water and sanitation. In short, the SDGs point to a common language which the great majority of economies (and hence industries) can rally around. This can be used to focus the target for a purposeful investment industry – to enable the creation of sustainable value, through increases in societal wealth and well-being in support of the universal SDGs.



Why your purpose matters to the wider industry

So back to the first question: how are we as agents in the industry supposed to have a clear purpose in an ever shifting environment and why does it even matter? It is useful to have a better understanding of the industry's purpose, but as previously noted, the industry is an emergent system which is a product of the organisations and individuals within it. The industry's purpose emerges from the purpose of the agents within it. A purposeful industry (aligned to the SDGs) can only emerge if there are sufficient organisations which align with that purpose (either through intrinsic or extrinsic motivations). And an organisation is only as good as the people within it. If the dials on the compass (purposeful people, organisations and the industry) do not align then parts of the industry ecosystem break down (sometimes to systemic proportions – think the global financial crisis). So the SDGs offer a clear way forward for the industry as a whole. And the clearer the industry's purpose, the more likely the individuals working within it will be able to develop the strong sense of purpose with which I started this piece. In doing so, we reinforce the sense of purpose at the industry level.

A sense of purpose – at both the individual and the industry level – is sorely needed. State Street Centre for Applied Research and the CFA Institute's 2016 study, Discovering phi: motivation as a hidden variable of performance, notes that only 5% of industry professionals say they remain in the industry to contribute to economic growth; only 28% say that they remain in the investment management industry for the purpose of helping clients achieve their goals. These are worrying statistics. The study goes on the state that individuals which do have a mindset to deliver performance that is driven by purpose and embedded by habits and incentives ('phi') contribute to better organisation performance, client satisfaction and are better engaged. This purpose-driven motivation is fertile breeding ground for the range of new skills needed by individuals to ensure the future sustainability of our industry: cognitive flexibility, creativity, ownership and corporate citizenship.

In short, understanding and connecting your role to the broader purpose of the industry and your organisation is important – it directs behaviour and influences results. Individual purpose is validated by a strong culture, underpinned by unselfish leadership and linked to an organisation's passion for serving its clients, its people, its investors and wider society. Purpose, trust and values are all connected.

The investment industry cannot thrive without the trust of wider society that it will obtain fair and sustainable results from its services. To gain this trust we, as building blocks of the industry, need to collectively agree the broader purpose of investment and better understand how our actions connect to this purpose. We need to shift the balance to improve the value proposition to society. Without that, we are in danger of losing our social licence to operate.

The purposeful investment professional: why we all matter in shaping the future of the investment industry

In our thought piece, Creating system value, we argued that organisations are inextricably linked to the wider society and environment in which they exist. In short, if businesses are to flourish they need to ensure the good health of the wider ecosystem. But organisations have no separate existence (except in a legal sense) – they consist of individuals, just like us, who are responsible for setting missions and objectives, driving culture and behaviours, and generally making decisions on how much our businesses contribute (or not) to various stakeholders in society and to the planet as a whole. To borrow generously from POSIWID[13], if we want to drive change in our organisations, and hence the industry, we need to change what we, as individuals do. We need to examine our own motivations and behaviours and how they collectively combine to drive our firms' and the industry's objectives.

Intrinsic vs extrinsic motivations

Intrinsic motivations	Autonomy	▪ Have control over self, freedom to seek interesting, rewarding work ▪ Adaptability and resilience
	Mastery	▪ Desire mastery in their field and focus on building competency skill sets - go deeper into issues
	Relatedness/purpose	▪ Have belief that they are contributing to something greater than themselves - connections to the 'nobility' of the profession ▪ Goals are aligned with their organisation, clients and wider society
Extrinsic motivations	Explicit incentives - promoting 'good' behaviours	▪ Work environment provides clear signals to good behaviours ▪ The greater the degree of socialisation and self-integration the more autonomous the motivation

[13] POSIWID (purpose of a system is what is does), refers to purpose at a system level and asserts that purpose is revealed by what the system does. Clearly for individuals this is different. The pinnacle of Maslow's hierarchy of needs points to self-transcendence which focuses on needs beyond the self like altruism, spiritual awakening etc. As individuals, it is clear that we may deem ourselves to have a purpose beyond what we actually do. And we have the ability to choose a purpose, and adjust what we do accordingly

The purposeful self

Intrinsic and extrinsic motivations

Deci and Ryan's self-determination theory, points to the fact that we are all influenced by both intrinsic and extrinsic motivations. The former (intrinsic) describes something that is inherently interesting or rewarding while the latter (extrinsic) leads to some separable positive outcome such as high pay or avoidance of punishment.

While much debated, several bodies of research question the effectiveness of extrinsic motivations on producing positive long-term results. Princeton academics, Bénabou and Tirole, note: "in well-known contributions, Etzioni (1971) argues that workers find control of their behaviour via incentives 'alienating' and 'dehumanising', and Deci and Ryan (1985) devote a chapter of their book to a criticism of the use of performance-contingent rewards in the work setting. And, without condemning contingent compensation, Baron and Kreps (1999) conclude that: there is no doubt that the benefits of [piece-rate systems or pay-for-performance incentive devices] can be considerably compromised when the systems undermine workers' intrinsic motivation"[14]. In short, being driven by self is a vital ingredient in achieving positive long-term results.

Purpose-driven motivations

At our March 2018 Sydney roundtable event, the top three responses to the question "what motivates you to perform in your current role?" were: (i) interesting and enjoyable work, (ii) helping clients and (iii) helping to do something meaningful with societal purpose. Interestingly, the lowest ranked categories were 'pay' and 'helping my organisation to achieve its financial goals'. Second, attendees were asked to choose between which of two options they valued more: 94% of attendees chose "my organisation produces more societal wealth and well-being" compared to only 6% choosing "my organisation produces more profits".

These results are interesting and suggest that intrinsic motivations that are linked to a positive purpose (such as improving societal wealth and helping clients) are highly valued.

Having purpose-driven motivation is important. State Street Centre for Applied Research's and the CFA Institute's 2016 study, Discovering phi: motivation as a hidden variable of performance, argues that individuals that have a mindset to deliver performance that is driven by purpose and embedded by habits and incentives ('phi') contribute to better organisation performance, client satisfaction and are better engaged. These results suggest that connecting the mission, values and culture of an organisation with an individual's sense of purpose is vital (we discuss this further in the next section).

The purposeful self -> the purposeful organisation

Institutional investment is a team game. Through teams, strategic investment decisions are made, value is added to portfolios (or destroyed) and a progressive (or regressive) culture is built. In our paper, How to choose: a primer on decision-making in institutional investing, we note that collective judgement can be superior to that of any individual within a group subject to three conditions applying: diversity, independence and an effective means of aggregating views[15].

There is a reflexive relationship between individual purpose-driven motivations and the motivations of a collective team – individual purpose is validated by a strong team culture and a strong team culture is built through the aggregation of individual purposes that drive to a common objective. Effective aggregation requires a careful awareness of social dynamics – perceptiveness by leadership and group members are key. In short, investment professionals need to be not just T-shaped and technically capable but also emotionally so.

[14] See "Modern organisations", A Etzioni, 1971; "Intrinsic motivation and self-determination in human behaviours", E Deci and R Ryan, 1985; and "Strategic human resources", J Baron and D Kreps, 1999

[15] While group interaction can reduce overconfidence and make better decisions in uncertain environments, we note that groups introduce biases of their own. James Surowiecki's three conditions, expressed more clearly in his 2004 book "The wisdom of crowds", are critical to the intelligent design of groups

The purposeful self -> the purposeful organisation -> the purposeful industry

We need a coalition

At the Thinking Ahead Institute, we believe in the power of thought leadership to create positive investment industry change for the benefit of the end saver. We strive to achieve this change through a dynamic and collaborative research agenda and through bringing together forward-thinking investment professionals across the globe to discuss solutions that promote (i) better investment strategies, (ii) better organisational effectiveness and (iii) enhanced social legitimacy. As noted in investment purpose and you, a purposeful industry can only emerge if there are sufficient organisations which are aligned in their individual purposes. And an organisation is only as good as the people within it. If the dials on the compasses (purposeful people, organisations and industry) do not align then the system will be suboptimal at best. We believe that change can only be effected through a coalition of individuals with a common mission to ensure that the investment industry drives positive social value.

Investment industry

In discussing investment professionals, we have already started to refer to the investment industry. The theme of purpose continues through this section – in fact you could consider purpose to be the section's backbone, off which other thoughts like fragility and technology hang. We start with a little light future gazing.

The future of the industry (a few thoughts)

Professional Investor (CFA UK publication) asked me for my thoughts on the future of the industry five or 10 years from now, for publication in early 2018. This is what I have sent through...

Business model

1. Purpose of the industry

A debate over purpose grumbles on. Opportunities for 'capital allocation', the funding of new investments and creation of new wealth, are still largely restricted to private markets. A new consciousness has emerged regarding the industry's role in intertemporal (investment) risk management for end savers. There is also greater emphasis on the stewardship of client wealth, and being joint stewards with investee company managements of the wider environment.

2. Financials

Back in 2018-2020, there was a period of rapid experimentation with alternative fee models (traceable back to 2017 moves by AB and Fidelity). Various models emerged as alternatives to the ad valorem fee basis – including PaaS (portfolios as a service) - with a per-use fee –and fixed-dollar retainer relationships. The main consequence was that the established trend of a decline in average fees gathered pace.

3. Consolidation

Very much as a consequence, the industry saw extensive merger activity between asset managers. There was a temporary pause in activity as concerns over culture and compatibility surfaced, but the brute fact of financials and scale regained the ascendancy.

There was also consolidation and growth in scale amongst asset owners, but at a slower rate than for asset managers.

Operating model

4. Technology

After a slow start, technology brought significant change to the industry. Portfolios are now built by robots (algorithms) – whether systematic (factors) or 'new active' (relative return). Hand-built portfolios are still available on the margins of the industry – for a price. The back-office has been 'blockchained', and the basis of competition has shifted to the production of customer interfaces. The overall shift can be described as away from product (building portfolios) and to platforms (connecting products/solutions with savers; crowd-funding; dis-intermediation).

5. Regulation

Asset owners – and asset managers wishing to (re)connect with the end saver – now face more onerous investor protection legislation. GFC2 was followed by further regulation aimed at promoting systemic stability.

People model

6. Leadership, culture, diversity and inclusion

The "it's about return" generation of leaders retires. While financially comfortable, it is an open question as to how much satisfaction they feel – the rise of a more purpose-orientated generation led to the vilification of past poor leadership practice. A new generation of leaders prioritises cultural renewal, aligning their organisations to delivering social and customer value. On diversity and inclusion there is shift from talk and box ticking to deliberate action - it is now possible to find non-dominant race/gender, medieval historians in investment discussions.

"A new generation of leaders prioritises cultural renewal, aligning their organisations to delivering social and customer value. "

8. Winners and losers

The main areas of growth turned out to be private assets and systematic investing (smart beta / factors). Within systematic, ETFs continued astonishing growth to now represent a significant share of the market. The losers were seen in traditional active and a significant shrinking of hedge funds – the highest quality ones survive, some as departments within consolidated asset management organisations.

Investment model

7. Commitment to sustainability

The old paradigm of managing risk and return was replaced with managing risk, return and impact. The prize was a stronger social licence to operate and growing trust.

POSIWID: the purpose of a system is what it does

The history

In the Thinking Ahead Group we have spent well over a decade thinking about investment as a system. We are at least as interested in the macro behaviour of the industry, as we are about the micro behaviours of the various agents. Then we formed the Thinking Ahead Institute with the stated purpose of changing the investment industry for the benefit of the end saver. In effect we wanted to encourage the industry to (re)align itself to better serve a social purpose – to strengthen its licence to operate.

The painful recognition

In 2017 one of the Institute's research streams was investment as an ecosystem. We held a couple of topical days as part of the exploration. One of my personal goals was to understand whether an ecosystem could have a social purpose. Professor Mark Pagel was very clear that biological ecosystems had no intrinsic purpose. The fact that they happen to produce oxygen, tasty protein and recycle waste (amongst other 'ecosystem services') is very convenient for us humans. But nothing in a biological ecosystem is aiming towards those goals. He therefore suggested that this, ie an absence of over-riding purpose, was the starting point for considering human-made ecosystems, such as the investment industry.

Even with this helpful guidance, I still didn't get it. It has only been in pursuing our research this year into value-creation that I have run into the acronym POSIWID – the purpose of a system is what it does. I think I get it now. But the realisation that I am a slow learner has been painful.

What does it mean?

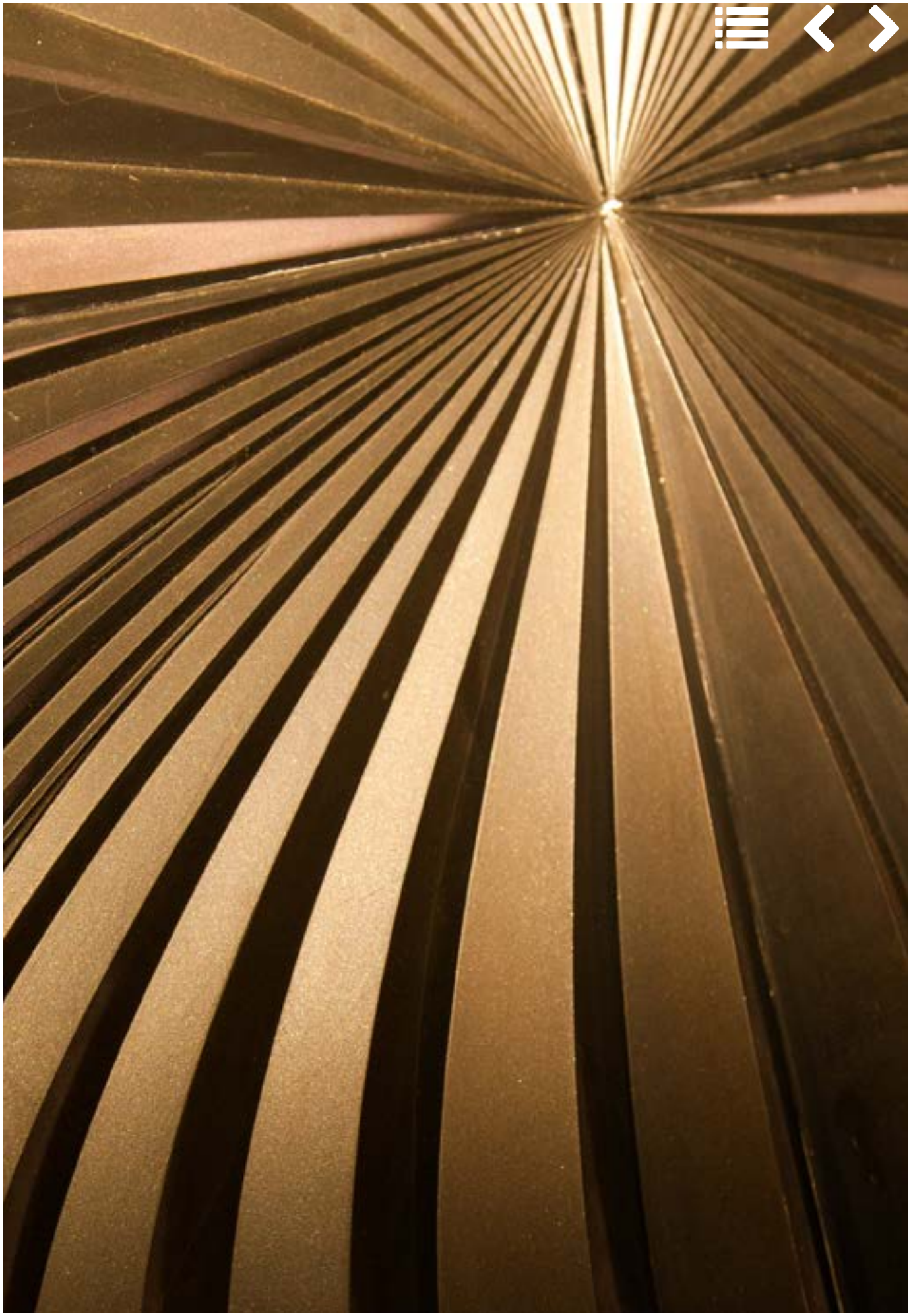
The essence of POSIWID is to counter the notion that we can infer the purpose of a system from the intentions of those who design, operate, or regulate it. The originator of the phrase, Stafford Beer, stated that it gave a better starting point for understanding (rather than attributing good intentions, moral judgements or even knowledge to the system). In turn, for the investment industry, this means two things:

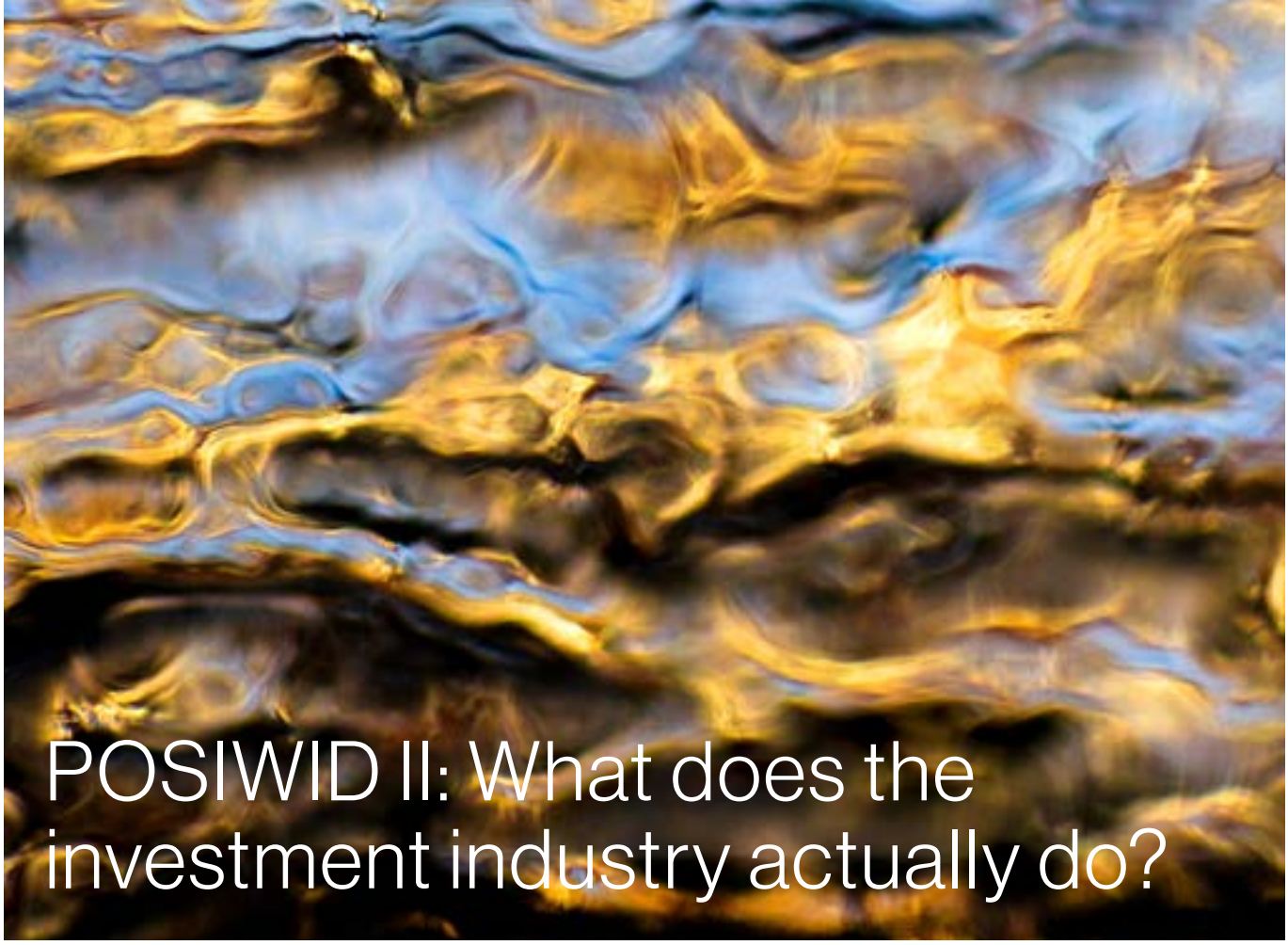
1. It is beyond the power of any agent, even a regulator or a government, to impose a social purpose on the industry, and
2. If we want the investment industry to pursue a better social purpose, then we need to change what the industry does.

Where to from here?

I believe that POSIWID is powerful insight for us and the working group to consider in the value-creation research this year. For example, in response to the first point above, we should accept that no single agent can impose a purpose – but that doesn't mean an absence of influence. Could a sufficient number of purposeful investment professionals influence a sufficient number of investment organisations to change the industry? How large might that coalition need to be, to be successful? How much effort should be spent persuading regulators or governments to add their influence?

And the second point above is potentially deep, and throws off a number of questions, such as: what do we think our industry does? What does our industry actually do? If these answers are different, why is that? (Spoiler alert: I think the answers will be different, because we think our industry still does what it once did, such as allocate capital, but the passage of time and the adaption of the system means what we actually do is now different (listed equity markets are now net returners of capital)). What should our industry be doing? And what would we need to change to accomplish that?





POSIWID II: What does the investment industry actually do?

In our thought piece above (POSIWID – the purpose of a system is what is does), we argued that:

1. It is beyond the power of any sole agent, even a regulator or a government, to impose a social purpose on the investment industry; and
2. If we want the investment industry to pursue a better social purpose, then we need to change what the industry does.

These assertions beg the question: what does the investment industry actually do?

The primary functions of the investment industry

The myth of capital allocation versus the reality of risk management

Commentators often describe the core function of the investment industry as "the efficient allocation of capital", but as we, and many, have argued, adaptation by the system means that the focus of what the industry does now looks very different.

The Bank for International Settlements (BIS) notes that since the early 2000s, there has been a reduction in the amount of equity capital raised by corporations.

This follows a global trend in developed countries where funds withdrawn from the market through acquisitions for cash and share buybacks have routinely and considerably exceeded the amounts raised in rights issues and IPOs. Many large firms quoted on the stock exchange no longer rely on the equity markets to raise cash to fund capital expenditure and indeed, over the 20-year period to 2016, the number of listed equities in the US has fallen by almost 50% and in the UK by 26% (or by 57% if you include the AIM market). A powerful case study of this shift is the capital expenditure of four of the world's largest tech companies: Alphabet's Google, Amazon, Facebook and Microsoft. Over the 12-month period to March 2018, Bloomberg reported that these companies collectively spent $60bn on capital expenditure and capital leasing – up by 48% on the equivalent figure from 2017. The bulk of this was directed towards so-called hyperscale computing, which enables rapid access to heavy duty processing power on demand, and is vital to the tech behemoths' pursuit of dominance of the cloud. From a financial point of view, the remarkable aspect of this vignette is that the firms were able to deploy this amount without tapping equity markets. According to John Kay "as a source of capital for business, equity markets no longer register on the radar screen".

Over the past two years, S&P 500 companies have spent $1.1tn on share repurchase programmes according to a recent FT article. Proposed changes to the US tax regime expected to trigger a repatriation of offshore funds are likely to increase this number significantly. The BIS argues that "share buyback booms in the US have typically coincided with surges in net bond issuance, suggesting that the former have been financed, at least in part, through the latter". Professor Mihir Desai, in his article Capitalism the Apple way vs capitalism the Google way, points to the corporate trend of using borrowed funds to distribute cash to investors. In response to shareholder pressure to distribute more earnings, Apple began to issue debt and borrow funds. Over the 4-year period to March 2017, Apple released $200bn via dividends and buybacks, partially financed by $99bn in new debt. Apple has not been alone in this approach. According to Desai, "the dominant corporate-finance pattern for the last decade has been Apple's. Companies have been distributing cash via share buybacks and have borrowed money to finance these distributions at a rapid rate. As American stalwarts such as Deere, IBM, Amgen, and 3M cede power to investors, it's like watching leveraged buyouts unfold in slow motion".

According to a Fitch ratings report, share buybacks have exceeded free cash flow after dividends since 2014, "with most companies using debt to cover the shortfall, underscoring a more aggressive stance across the sector". In other words, the managements of listed companies have inflicted financial engineering on themselves in the same way that private equity firms inflicted it on non-listed companies[16].

So what exactly is going on? There was a time where the purpose of the investment industry was acknowledged to be the efficient allocation of capital. Money directed to an equity portfolio is predominantly applied to buy ownership rights in the secondary market[17]. Bonds that are issued are increasingly being used for financial engineering versus investment in real growth. If investors are no longer performing the oft told tale of efficient capital allocation directly, we go back to our first question, what does the investment industry actually do?

We would suggest that the most significant observed activity within the industry is risk management – specifically the construction of portfolios to suit the asset owner's risk budget, or risk tolerance. While it is true that asset managers can influence the use of retained earnings by companies through stewardship and governance, it is difficult to suggest that they are directly responsible for the generation of return as this is done by the investee companies themselves[18]. Arguably, the business model of asset managers of private securities means that they have a greater influence over the return received by investors. These managers are often able to control the use of investee company earnings, typically by having representatives on the board of directors. However, given that private equity assets under management hovered at around $2.5trn compared to the approximately $69.1trn total run by the asset manager universe, even if this was all used for primary investment, this would represent only a small fraction of total activity.

In short, the industry spends less of its time efficiently allocating capital and more on (facilitating) financial engineering and the shuffling of ownership rights. Pitt-Watson and Mann describe the management of risk as one of the core functions of finance, whether it be to provide us with a pension until we die or to control the risk of failure to meet an investment return objective. One of the key roles of the industry is manage investors' risk through time, an activity conducted to a greater or lesser extent by asset owners, fiduciaries, asset managers and consultants within the industry. We would suggest, however, that the incentive structures and mandates prevalent in the industry mean the vast majority of effort goes into managing cross-sectional, or point-in-time, risk – rather than through-time risk. Capital allocation does occur at the margin, but this is subservient to the behemoth of risk management.

[16] These actions are often deemed to be 'efficient' as bond interest is paid before tax but equity dividends are paid after tax. However, borrowing necessarily reduces the resiliency of the organisation and the system. Managements and shareholders are therefore changing the shape of the return distribution (increasing returns a little in most outcomes; massively increasing losses in tail outcomes) rather than creating value in aggregate. The call by some for interest and dividends to be treated equally appears to have merit

[17] As a brief aside, the accumulation of large pools of internal capital seems to be an evolutionary phenomenon, and is far more noticeable in developed than emerging markets, where equity is still a major source of financing for new capital projects

[18] The role of investee companies is to allocate capital provided by stakeholders to generate wealth and improved well-being. These 'asset creators' fund new assets from retained earnings or the sale of securities to raise cash

Stewardship is gaining traction but can be done better

As John Kay argues in his book, Other people's money, even if there were no new investment in capital stock, there would still be a need for the investment industry to nurture and maintain the existing stock of assets through a stewardship function. Society needs mechanisms for transferring wealth over time and trade in securities is one such mechanism. As previously argued, most large quoted companies are self-financing and so the relationship between these companies and the long-term investor must be one of stewardship. In other words, one of the key roles of the investment industry should arguably be to engage with company management on the best ways to generate sustainable long-term growth, and manage the risks that might impair a company's prospects.

So how does the investment industry fare against this objective?

While difficult to measure, there is increasing empirical evidence to support the value of stewardship[19].This has led to a growing number of investors exercising active ownership policies, fuelled by the growing adoption of stewardship codes in many countries such as the US, UK, Switzerland, Japan and the EU. At the same time, the number of signatories to the UN Principles for Responsible Investment (UN PRI) continues to rise. However while a number of asset owners integrate stewardship into their investment practices, more work is needed to be done. According to the 2017 Future Fund and Willis Towers Watson global research of the 'Top 15' asset owners, opportunities are being missed by asset owners in the overlapping areas of sustainability, ESG, stewardship and long-horizon investing. Additionally, the UK's Investment Association notes that while most asset managers and asset owners consider influencing business strategy as a key priority for engagement, most actual engagements with companies are around executive remuneration. This is consistent with the trend that executive remuneration continues to dominate the dialogue between investors and companies.

Grewal et al., in their 2016 working paper on Shareholder activism on sustainability issues, note that while a growing number of investors are engaging with companies, 58% of the shareholder proposals studied were filed on immaterial ESG issues (filtered using guidance from SASB) suggesting that a significant number of shareholders were unaware of the materiality or were pursing objectives other than enhancing firm value. The paper argues that pressure on companies to address ESG issues that are not financially material destroys financial value. While the rise in stewardship and engagement activity is welcome, investment firms need to continuously distinguish between material and immaterial sustainability factors to avoid destroying value.

The 'meta' functions of the industry

We recognise the interconnectedness of the investment industry and its role in providing wider societal value. For example, the industry contributes to the wider economy through supporting jobs, communities, product innovation and capital and infrastructure spending. However, the fulfilment of the industry's purpose should be judged by the net value it creates, a function of how aligned its participants are to the end saver, how much they cost the system relative to their value and how effectively they operate. In March 2018 the Thinking Ahead Institute conducted a joint investment industry survey with the International Integrated Reporting Council (IIRC) to better understand how the investment industry delivered its value proposition across these areas. The score of 4.2 out of 10 by the investment professionals surveyed suggests that the industry still has substantial room for improvement.

[19] See "Active Ownership", Dimson, Karakas, Li, Review of Financial Studies, 2015. Also, "ESG Engagement in Extractive Industries: return and risk", Hoepner, Oikonomou, Zhou, 2015

Conclusion

If this represents what the investment industry is actually doing (primarily risk management), then it provides a challenge for investment professionals to consider the question: what should the industry be doing? This question is likely to require consideration of individual, organisational and industry purpose – and the notion of a licence to operate. We discuss this further in Creating systems value and The purposeful investment professional.

What makes the financial system fragile?

This group has often made the case that investment markets are a complex adaptive system – highly interconnected and non-linear and reflexive. Market behaviour seems, to us, to be much more akin to the natural world than to the metronomic machine of the standard economic models.

When you adopt this view of the world, the occasional crisis seems much less surprising. Bubbles and crashes are not anomalies in a complex world. Rather, they are a natural consequence of a system in which the interactions between the parts are more important than the actions of any part in isolation.

This view also changes the perspective on what it is that creates fragility within the financial system.

It all comes down to feedback loops

Feedback loops come in two varieties. On the one hand there's negative feedback: that's what happens when the reaction of a system to an effect tends to dampen that effect. For example, when a beehive gets too cold, bees react by huddling together and moving around to generate warmth. Negative feedback is a stabilising force.

In investment markets, the primary form of negative feedback occurs through the value mechanism. When an asset's price increases, then buyers should be less willing to buy and sellers more willing to sell; when the price falls then the opposite occurs. If that happens, then the resulting effect on the balance of supply and demand is to dampen the price movement.

Negative feedback loops create stability. The traditional economic model understands the negative feedback loop.

Things become unpredictable, though, when positive feedback loops start to kick in. Positive feedback is self-reinforcing. In the natural world, it is positive feedback at the molecular level that makes your blood clot, and that creates storms and hurricanes and tidal waves. Positive feedback is how army ants are mobilised (there's no central command that issues the call to arms, just a pheromone trail that becomes stronger with each passing soldier).

In the investment world, positive feedback loops create instability. The behaviour of markets is driven by the behaviour of investors – but investor behaviour itself is shaped by the behaviour of markets: a recursive relationship that is known as reflexivity. Reflexivity can play a role in creating and sustaining positive feedback loops.

There are several sources of positive feedback in investment markets: momentum investing, stop-loss orders and, of, course, plain old market sentiment (fear or euphoria). The widespread use in 1987 of portfolio insurance (which responded to a drop in the market by selling) appears to have been a significant contributor to that year's 20% single-day drop in the US equity market, with even bigger declines in many other markets. The flash crash of 2010 seems to have followed a similar pattern at a greatly accelerated scale (it lasted barely half an hour). Positive feedback on that occasion seems to have come from high-frequency algorithmic trading.

Homogeneity and instability

The balance between positive and negative feedback in global investment markets is constantly shifting. An important factor in that balance is homogeneity: how diverse is the system? How independently do participants think?

If investors globally focus on different data, if they tend to have different assumptions about the world, if their sentiment is determined by different factors, then they are likely to respond to market developments differently. But the more they resemble one another and the more their actions are driven by the same considerations, the more they'll move in lockstep. And that makes positive feedback loops more likely, and the financial system more fragile.

The relationship between homogeneity of investor behaviour and market fragility has been illustrated via agent-based modeling, for example, by Blake LeBaron in the paper Financial Market Efficiency in a Coevolutionary Environment. He observes that crashes in his simulated market are generally preceded by a drop-off in the variety of trading strategies that are being followed. The likely explanation: "During the run-up to a crash population diversity falls. Agents begin to use very similar trading strategies as their common good performance begins to self-reinforce." As a result, liquidity declines and markets become brittle.

Today's investment community is truly global, but it's also closely-connected. Those making decisions for the largest pools of capital all around the world are increasingly drawn from similar backgrounds, and increasingly go through the same training. They are influenced by the same things, subject to the same trends and fashions, and are each aware of what others are doing. Taking a different point of view from everyone else is difficult, and potentially a career risk.

A more homogenous world is a more fragile world. That's one more reason it's important for the investment community to be diverse, and for independent thinking to thrive.

A globally interconnected financial world might sound cool. But it has its dangers as well as its benefits.

The title of the last article in this Investment industry section implies it shouldn't be part of a compendium appearing at the end of 2018 – let alone a compendium we hope will have a degree of shelf-life. All the topics within the article, however, have longevity – in fact it is not clear we will ever be finished with any of them.

Five key topics investors should consider in 2018

There has always been something special about the start of a new year. Whether it be the satisfaction of a past year well done or the regretfulness of wishing you achieved more, putting keystroke to machine and making a list always brings about a renewed sense of purpose and focus. Russian psychologist, Blum Zeigarnik, describes our tendency to have nagging thoughts about unfinished tasks – research shows that making a list of these things can help free us from anxiety. This Zeigarnik effect is well documented; the oldest sets of sequential signs discovered by archaeologists were etched into rock around 3200BC.

So what is your investment to-do list for 2018? We have come to the end of another eventful year: political elections in Germany and Japan, historic US tax reform, central banks world-wide shifting to tighter monetary policy and the meteoric rise in cryptocurrencies to name a few. A cursory review of literature reveals broadly general agreement on the future: the road ahead is more challenging. This provides an unsettling backdrop for even the most optimistic of investors. To ease our collective consciousnesses we have created our own list of five key topics investors should think about in 2018.

1 Sustainability and long-horizon investing

- The Future Fund and Willis Towers Watson 2017 asset owner study highlighted that while sustainability is an important emergent subject for leading asset owners, opportunities were being missed in the overlapping areas of sustainability, ESG, stewardship and long-horizon investing. Investors have to combine two drivers to build a successful sustainable strategy – investment beliefs and an understanding of their wider sustainability motives. Clear beliefs, policies and practices are critical to managing sustainability risks and thinking about long-horizon investing. Best practice models fully implement financial and extra-financial factors into portfolios while reconciling wider stakeholders and time-horizon pressures. We continue to see the pace of adoption for better sustainability practices quickening. Investors need to 'up their game' or get left behind. Linked to this, the old paradigm of investors managing risk and return is increasingly being extended by a third dimension which references the real-world impacts of the portfolio through the lens of the UN's Sustainable Development Goals. The prize for investors? A stronger social licence to operate, growing trust and the expectation of long-term better risk-adjusted returns.

2 Building a robust risk management framework

- While the VIX volatility index is at historic lows (indeed markets seem to be no longer surprised by the unexpected), the SKEW index suggests that investors are becoming increasingly concerned about low-probability, high-impact events (tail risk). Following a multi-decade developed market shift towards the political centre, the global financial crisis has reversed that trend and investors are likely to face heightened political uncertainty for some time. Indeed over 2018 we face elections in Russia, Italy, Mexico and Brazil, the October EU deadline for the EU/UK agreement on the Brexit deal, proxy wars between major oil suppliers, Saudi Arabia and Iran, and increasingly tense jousting between the US and North Korea. These localised risks have the potential to morph into high-impact systemic risks. The US approach on free trade and China's aim to deleverage its economy are further disruptors to the current regime.
- A robust risk management framework is key in this changing landscape. Building a deep understanding of scenarios, extreme risks and the investment ecosystem, being adaptable and employing coping mechanisms (such as tail risk hedging strategies) is vital to survival.

3 Diversity

- Biases in investment decision making are more numerous and deeply embedded than investors readily recognise. The subject of diversity is attracting attention at all levels of society with a particular emphasis on gender, age and background diversity. The merits of diversity and inclusion in an organisational culture follow from the values of fairness and integrity pursued by leading employers. Diversity also helps reduce group think and the value of improved diversity has now become generally accepted (indeed several funds have already started putting rhetoric into practice).
- At the Thinking Ahead Institute, we have also sought to understand the benefits of cognitive diversity on the performance of teams. The research we have considered has thrown off some practical ideas along the way to achieve this: work hard on equalising the verbal and non-verbal contribution of everybody in the room, and use the task context to guide the composition of the team. So how diverse is your investment board?

4 Technology

- Human decision making has its limitations. To reduce biases, investors need to make their decisions through a combination of human input (we refer to this as 'social technology') and systems/support (we refer to this as 'physical technology'). Recent research by the Thinking Ahead Institute on The Asset Owner of Tomorrow notes that the slow speed of change in social technologies (think committees) is being overtaken by the fast speed of change of physical technologies (think automation). Achieving balance and efficiency between these will require considerable effort and skill in the coming years.

- There are a number of new applications of technology that support better decision making, notably new platforms, new asset allocation processes, AI applications, machine learning and blockchain applications . We are also beginning to see an overall shift from products to platforms (where customised solutions are built from products); and from traditional core institutions to crowd-sourced versions (where peer-to-peer structures disintermediate). While the need for human judgement remains critical due to the complexity of data, leading investors must upgrade their technology to be competitive.

"Purpose, trust and value are all connected. We believe that the financial services industry will only thrive if end users have trust in the system and obtain fair and sustainable results from the services and actions of its agents."

5

Purpose and culture

- The CFA study, Future State of the Investment Profession, describes the scenario of 'purposeful capitalism' where the investment industry raises its game with more professional, ethical, and client-centric organisations. While the ongoing debate on the role of the investment industry is unlikely to be settled in 2018, there is growing consensus that 'the fundamental purpose of finance is to contribute to society through increases in societal wealth and well-being' (CFA). Pitt-Watson and Mann in their recent paper also note, 'a productive finance industry is one which fulfils its purpose effectively and efficiently, bringing benefits to all its customers and supporting economic growth'.
- Purpose, trust and value are all connected. We believe that the financial services industry will only thrive if end users have trust in the system and obtain fair and sustainable results from the services and actions of its agents. There is an increasing need for T-shaped investment professionals (that is, those with both breadth and depth), who are machine friendly, adaptable, and have the technical skillset to navigate our industry's complexities. Additionally, investment organisations are increasingly differentiating themselves by referencing their values and culture. Culture is inextricably linked to (1) the purpose and drive of the organisation, particularly in its passion for serving and (2) the people ethos – how the team is treated and behaves. Asset owners should first and foremost attend to their own culture. Collaborating with organisations whose culture and values are aligned should also become an important part of an organisation's cultural plan.

So that's our list. Hopefully it will serve you well and we welcome any thoughts on your organisation's key priorities in 2018 (or beyond...).

Organisational design

The link from Investment industry to Organisational design is a zeroing-in on asset owners, and the big picture challenges they face. Clearly, in the context of an evolving ecosystem, as they adapt their organisational design they will provoke further adaption by the other players in the industry.

Pension asset growth masks asset owner governance challenges

In the past decade the world's largest 300 pension funds have grown by over 50% and now total US$15.7 trillion, representing over 43% of global pension assets. While this is solid aggregate growth, especially as it coincides with the recovery period of the world financial crisis, it masks the challenges these systemically important funds will face in the next decade. How they organise themselves to search for attractively priced assets, at acceptable risk, will shape their fortunes and their ability to meet respective missions and objectives.

During this time, we have seen a plethora of investment strategy innovations undertaken by the investment community, while uncertain and often volatile outlook in capital markets have played on asset owners' minds. These strategies have sought to maximise and optimise outcomes through, for example, new approaches to risk diversification. However, there is a growing recognition by those at the forefront of industry thinking that an ability to adapt to a fast-changing landscape is critical, and that this is best achieved by sharing and implementing best-practice. Funds which are able to demonstrate more effective decisions through improved cognitive diversity and board-executive engagement, combined with better sustainability and risk management, are the ones emerging as leaders at the vanguard of the global asset owner industry. In brief, self-awareness is emerging as central to the evolutionary success experienced by the world's leading asset owners.

These characteristics were highlighted in our recent research, sponsored by the Future Fund, entitled Smart leadership, sound followership. In it we sought to benchmark and compare practices across 15 world-leading asset owners, chosen from the North American, EMEA and Asia-Pacific regions and based on their global reputation, strong governance, significant size and thoughtful, outward-looking perspectives. Other findings of the research include:

- The importance of cognitive diversity – research is revealing that biases in investment decision-making settings are more numerous and deeply embedded than investors readily recognise. Using diversity effectively can help in reducing the impact of biases
- Sustainability and long-horizon investing is currently too shallow – sustainability is a critically important emergent subject, yet opportunities are being missed in the overlapping areas of sustainability, ESG, stewardship and long-horizon investing
- Boards are having trouble being strategic – boards seem strong in interpreting their fund's mandates and in ensuring executive accountability, but less so in their development of a strategic dialogue with their executive. This is work in progress, revealing an opportunity for organisations to improve

"The overriding lesson from this study is that self-awareness and cognisance of peer groups has played an intrinsic role in the evolution taking place across the world's leading asset owners."

- Risk management is key as the business landscape is changing – to manage risks there is merit in scenario analysis. Studying the investment ecosystem, not just the markets, is critical to anticipate some transformational changes ahead
- Funds are evolving their mix of internal and external intellectual property – there can be a better grasp of how to optimise the value chain, including the nature of external strategic relationships. Technology and increased sophistication make network opportunities across funds potentially more valuable than ever.

The overriding lesson from this study is that self-awareness and cognisance of peer groups has played an intrinsic role in the evolution taking place across the world's leading asset owners. We believe that this will only become more important in the future, particularly given the scarcity of investments that meet the current risk and return targets of many funds.

If asset owners are to repeat the growth attained in the last decade, it is imperative that they continue to expand their skill-sets, particularly in a continued lower return environment which looks set to remain a feature of the industry going forward. Leader funds have set themselves apart through their ability to innovate, rather than to rely on practices which may have worked in the past. This will be a particularly desirable characteristic for all asset owners in the decade to come.

The next article contains widely dispersed elements, and so could be put elsewhere in the flow of this compendium – but the dominant thought concerns continual productivity improvement, and so Organisational design is where we have chosen to place it.

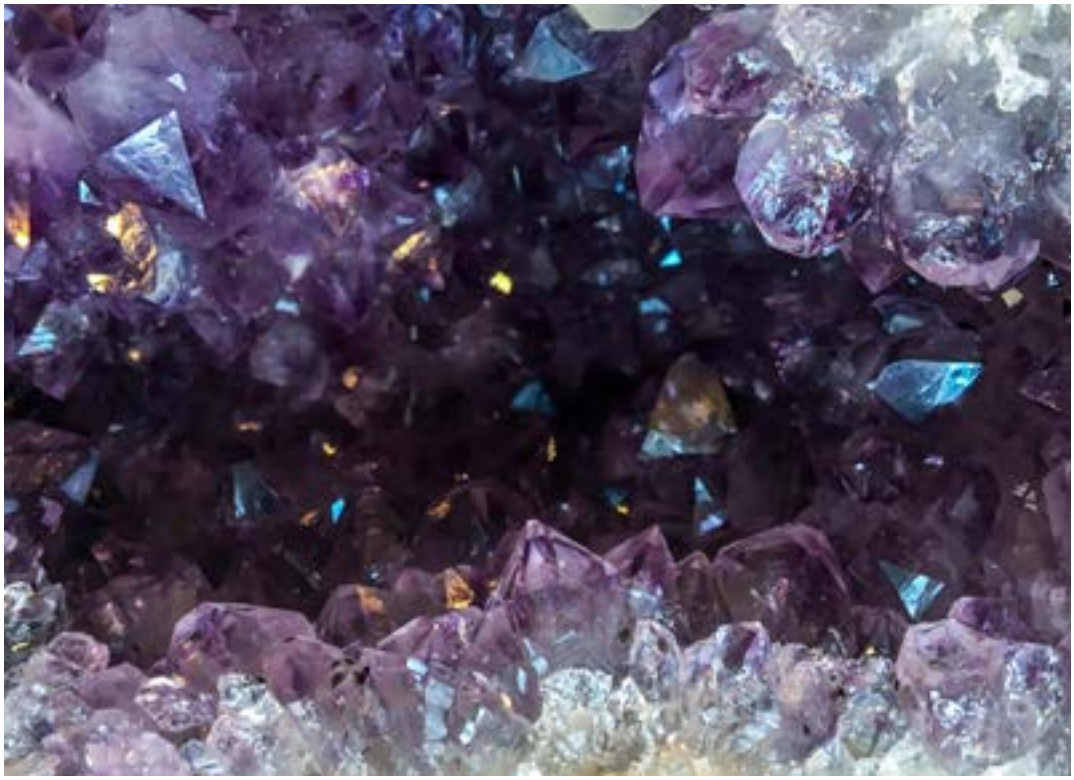
The productivity paradox: too busy to get anything done?

I attended a seminar in Cambridge considering this issue from four (very) different angles: macroeconomics, entrepreneurship, neuropsychology and mindfulness. The UK productivity statistics are not good. The Office for National Statistics reports that, post-GFC, UK productivity is 20% lower than it would have been had the previous trend been maintained. It is argued that not much real progress has been made since 1953. Within UK firms, the 99th percentile (top 1%) have shown strongly improving productivity while even the 90thpercentile (top 10%) is largely static.

It was back in 1965 that Intel's Gordon Moore proposed his 'law' suggesting the number of transistors per unit area of circuit board would double every two years (currently two and half years, and likely set to slow). So the exponentially increasing power of computing technology seems not to be showing up in aggregate productivity statistics, and may be only benefiting a small subset of firms [aside: there is a separate possible debate on whether these statistics continue to measure productivity accurately in a de-materialised world]. The micro, or firm-level, perspective was built on by the serial entrepreneur. The key point was a mind-set (obsession could be more accurate) of continual productivity improvement. While this starts with leadership, the goal is to 'infect' all staff with the mind-set. So the importance of de-briefs was emphasised, and within them ensuring that all voices are heard – no matter how junior, or how small the improvement idea. It is interesting to reflect on the fact that the entrepreneur spoke as if the only point of productivity improvements was to allow the price of the product to be lowered. Technically the firm could retain the benefit in the form of higher margins, but this thinking seemed to be absent from this individual. To them, the point of continual productivity improvement is to compound the cost reductions year after year, allowing a business to "thrash the competition" as after a while they cannot compete on cost. It is not obvious, to me at least, that the investment industry in general has shown much interest in this mind-set. That said, this is an interesting lens through which to view the growth in index tracking.

The seminar's focus then shifted to personal productivity. The professor of clinical neuropsychology apologised that her talk would not add much if you were already prioritising sleep and exercise. Beyond that, it does appear that Modafinil – a drug for wakefulness – enhances cognitive ability. Apparently, a lot of academics take it. She also drew the distinction between 'hot' and 'cold' decision making – with 'hot' being emotional, social and more risky. This seems to have parallels with, but also be different to, Kahneman's system 1 and system 2 thinking. The five ways to mental well-being were given, presumably in order of importance, as:

1. Exercise
2. Keep learning
3. Connect to people around you
4. Mindfulness (being aware)
5. Give (it is its own reward as far as mental health is concerned).



"It was further suggested that evidence is beginning to emerge that a wandering mind is associated with unhappiness."

The final perspective was on mindfulness which originated in Buddhism but 'went clinical' in the 1970s (MIT and Cambridge, UK). It was argued that technology has shortened attention spans, down to the current 8 seconds ("source Microsoft" apparently?!). This factoid doesn't sit too well with the next claim – that it can take 20 minutes to return to focussing on a task after interruption (if our attention span is 8 seconds, it is a wonder we ever get back to a task). It was further suggested that evidence is beginning to emerge that a wandering mind is associated with unhappiness. And that the UK's NICE (national institute for health and care excellence) report that 8 weeks of mindfulness training cuts the rate of relapse into depression by 50% (same as maintenance level drugs).

What can we make of this for the investment industry? The last two sessions are for personal consideration, although the point about lifelong learning shouldn't be too controversial as an industry requirement.

The entrepreneur's idea of 'continuous productivity improvement', again, should gain wide support. At least in principle. I suspect this practice is what confines the gains to the few. What does pursuing continual productivity improvement look like for TAG? On the research front, it would involve taking less time to produce papers of the same quality – so better processes, leveraging the wisdom within working groups, fewer words and shorter sentences. For our events it will involve listening to feedback, holding team debrief meetings, and making a host of changes – most small and incremental. And what would continual productivity improvement look like for asset managers? I have already noted that the idea was expressed as the means by which price can be reduced. Applying this logic to an oversimplified statement that "humans are expensive and computers are cheap", would suggest that the future path for active management should involve less human input, and more computer input, allowing fee rates to fall as the competition basis shifts to market share. Hand-built portfolios would still be available, in the same way that hand-built cars are still available – just not for the masses. And what about asset owners? We have just released a research paper – The asset owners of tomorrow – that contains a myriad of ideas for improvement for them to be fit for a rapidly changing future.

The secret sauce to make your organisation smarter, collectively | my reflections on reading Big Mind

If you have a managerial role in an organisation or significant investment stakes in other businesses, I am going to unreservedly suggest: this is a must-read. The principles discussed in this book concern the sustainability of competitive edges of any business. For others, this is still a highly-recommended book. It is important and influential.

This is not the easiest book or the most entertaining book to read. But that is not a comment on Mulgan's ability to write eloquently. Unlike many other books, which often exploit the power of storytelling to make a small number of, sometimes just one, ideas[20], this book is like a machine gun. Rounds of ideas fire again and again in every chapter, page and paragraph. While reading the book, I often found myself pausing to digest and reflect.

For that reason, this review gives only a snapshot, highlighting a handful of the great ideas that I think are most relevant to investment professionals. It is not a head to toe summary of the entire book. I will leave that task to Mulgan himself[21].

Cognitive system and collective intelligence

A cognitive system[22] performs the work of knowing, understanding, planning, problem solving and decision making. At the micro level, this can be one human brain with its system of 100 billion neurons. It can be a group of people collaborating, without or with access to machine intelligence. At its grandest level, it encompasses the whole of human civilisation and culture. In this sense, an investment organisation is a cognitive system that operates within the larger ecosystem that defines the investment industry.

Similar to the concept of general intelligence for an individual, collective intelligence defines the capacity of groups to make good decisions through a combination of human and machine capabilities.

The concept is simple. The challenge is big. Because to develop genuine collective intelligence, it is more about integration than aggregation.

With sufficient capital, one can amass the cleverest people and smartest computers to build a business but it can still fail. Many organisations can be very smart within narrow parameters or shorter-term framing, but far less so when dealing with the bigger picture or long-term vision. What is the secret to organising and integrating the individual components of intelligence, humans and machines, so that an organisation can be smart in solving problems? That is the key contribution of "Big Mind".

[20] This is by no means a criticism on this style. As long as the ideas are great, it can be very effective in influencing people's thinking

[21] Here is the link to the video stream of an evening reception at Nesta, where Mulgan spoke about the book's key themes

[22] What is a cognitive system?, Gavan Lintern, 2007

Key elements of collective intelligence

Let's start with some building blocks. Big Mind describes ten main elements of collective intelligence, which together allow for thoughts and actions to happen on a large scale:

1. **A model of the world** – how it works, how things cause other things to happen
2. **Observation** – noting that what we know influences what we see as well and vice versa
3. **Attention and focus** – from an organisational perspective, this can be shown as the ability to kill off the projects that are interesting yet ultimately a distraction
4. **Analysis and reasoning** – a key area for machine intelligence
5. **Creativity** – the ability to imagine and design new things
6. **Motor coordination** – the ability to act in the physical world
7. **Memory** – both short- and long-term memory and the key challenge being to access the right memory at the right time
8. **Empathy** – the ability to understand the world from another's perspective
9. **Judgement** – the ability to make decisions, both rationally and emotionally. The book emphases the role of emotions to guide us in light of scarce and contradictory information (big minds need to be matched with big hearts)
10. **Wisdom** – the ultimate kind of judgement; more contextual than just reasoning; integrating ethics and attending to appropriateness.

What is important to recognise is that building capability in each of these elements takes energy and time. That means there are trade-offs between them. The art of orchestrating various elements is therefore about finding the sweet spot.

Too much memory leads to being trapped in the past. Too much reasoning leads to being blind to intuition and emotion. Too much creativity leads to reduced ability to act or learn. Too much focus leads to ignoring the bigger and longer-term picture and failure to spot the novel pattern.

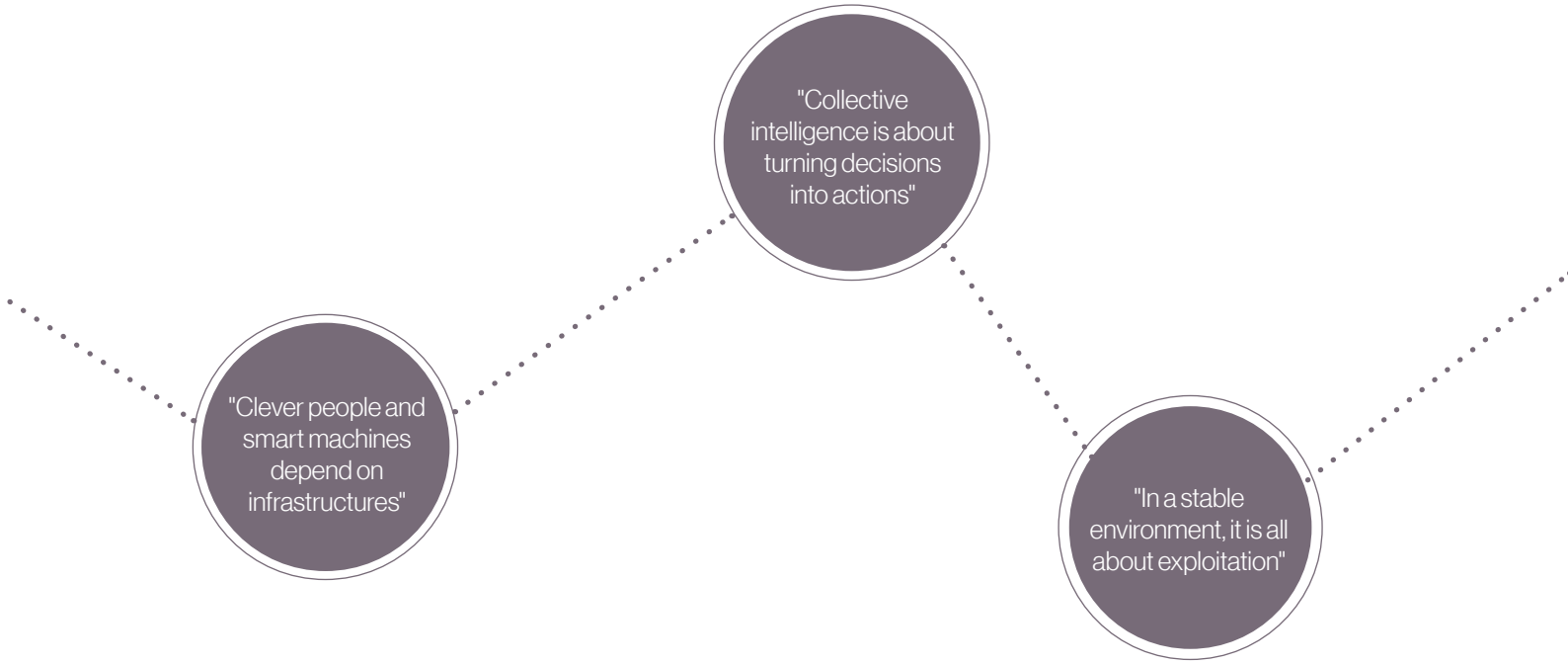
Introducing machine intelligence to the mix helps strengthen some of the elements (eg memory and analysis), but it can potentially create an imbalance. It is hard to envisage machines developing empathy. They are, at least for now, weak in creativity. And one can argue that wisdom is ultimately a human trait.

Assessing the investment industry against these elements, the picture is not particularly cheerful. There are important gaps that require a collective effort to fill. For a start, the theoretical foundation that guides the industry's thinking and actions is weak. As a result investment decision making relies heavily on accepted and established practice ("folklore"[23] really) which is essentially backward looking. We in the Institute have long argued that a better model of the world is one of investment as a complex ecosystem[24].

Regarding observation, there is a bias towards what is easy to observe – eg short-term investment performance – and little effort spent on observing what is critical in driving long-term outcomes. The examples of the latter include the deterioration or improvement regarding the competitive edge of the investee companies or the strength of investment governance or culture. Similar weaknesses are evident in the rest of Mulgan's list: too much attention is given to managing the short term even though long-term success requires a different mindset; innovation and creativity is almost exclusively applied to product proliferation instead of solutions that align with end savers' best interests.

[23] Folklore of Finance, State Street, 2014

[24] Stronger investment theory, Thinking Ahead Institute, 2016



Supporting infrastructures

Another key concept raised by Mulgan is that of infrastructure. Clever people and smart machines depend on infrastructures, both physical and virtual, to coordinate and collaborate on a large scale. One vital infrastructure is a set of agreed rules of standards – the common language. For example, the CFA Institute has come to play an important role in setting and refining common standards for the investment industry.

However, some elements of this common language lead to distorted use of our collective intelligence. Benchmarks can produce an obsession with relative returns and a short-term focus. Value at risk (VaR) reduces a multi-faceted concept to a single dimension. The taxonomy of asset class masks the true drivers of return and sources of risk. And the concept of alpha is probably our biggest enemy: it diverts intellectual resources to competitive fields rather than cooperative ones.

Organising principles

Given the elements and supporting infrastructure, how does an organisation cultivate the development of collective intelligence? We can start with autonomy. This is about how much the elements of intelligence are allowed to develop freely so they are not subordinated to ego, hierarchy, assumption or ownership. It is about allowing arguments to grow and become more refined. It is about seeking out alternative views / assumptions / models and counterfactuals as a way to sharpen understanding.

There also needs to be a balanced use of all elements of collective intelligence which I have already alluded to earlier. Third, the organisation needs to master reflexive learning. “Big Mind” talks about three loops of learning:

1. First loop: begin with models of how the world works; observe what the world does; adjust our actions and the details of our models in response to the data, within an existing framework. This loop of learning is largely reactive
2. Second loop: there are too many surprises; our current models no longer work; now we need new categories and models to think with; this loop also involves reflecting on goals and purposes and is proactive
3. Third loop: systematise new way of thinking; at its grandest it may involve the creation of a new field of science.

Circulating back to the investment industry, most of our learning focuses on the first loop. It is my view that we seem to spend a lot of effort in refining models that are fundamentally broken while not working hard enough on learning beyond this loop.

This would be less of a problem if the environment were stable. In a stable environment, it is all about exploitation – making best use of the winning formula. But in an evolving world, exploration (second and third loop) is needed to survive. We sometimes have to take risks, and accept failures even when our current models appear to be working. Building redundancy into the system instead of trying to achieve optimal utilisation of existing resources is the key to adaptability.

Last but not the least, collective intelligence is about turning decisions into actions. As Mulgan puts it, it is not enough to think great thoughts and host glorious arguments. Life depends on action.

Looking beyond Big Mind, I will close this extended review with a few principles borrowed from another brilliant book – Superforecasting by Philip Tetlock and Dan Gardner.

Master Bayesian belief updating. Skilful belief updating requires extracting subtle signals from noisy information flows by incrementally adjusting probability eg moving from probabilities of say 40% to 45%.

Study past errors / successes. Conduct post-mortems to understand what exactly went wrong. Strike the balance between learning too little from failure (eg overlooking flaws in basic assumptions) and learning too much (sometimes bad outcomes really are just bad luck). And conduct project review on successes too as a good outcome does not necessarily mean there are no lessons to learn.

Concluding thoughts

This review by no means does full justice to all the great ideas from Big Mind. There is, for example, a very interesting chapter on meetings in which Mulgan makes a bold prediction: soon we will use computer facilitators to regulate time, ensure everyone has a chance to speak and even suggest strategies to overcome impasses and monitor emotions!

If there is one key takeaway, it is that collective intelligence can be improved, even though it's more of an art than a science. The best approach is discovered through trial-and-error, and **constantly evolves** with the environment. Mulgan argues that the finance industry (among others) has failed in this iterative shuffling process and therefore become locked into configurations that keep it less effective than it should be. We need to change this. And we can, especially if the industry takes to heart the many insights scattered throughout this important book. I encourage you to read it.

Bring out the best in others. This relates to mastering the art of team management:

- Perspective taking: understanding the arguments of others so well that you can reproduced them
- Precision questioning: helping others to clarify their arguments so they are not misunderstood
- Constructive confrontation: learning to disagree without being disagreeable
- Social perceptiveness: reading between the lines.

Culture

The first article in this section is an almost perfect bridge between Organisational design and Culture. The attentive reader may be starting to notice that while the dedicated Technology section was not large, the theme of technology is showing up everywhere – here included.

How to build a leading fiduciary business

Fiduciary management is growing. Yet despite this, many asset owners are unable to differentiate between providers. Improving your business' technical infrastructure and promoting a strong positive culture are the keys to success.

Fiduciary management has been a significant growth area in recent years – so much so that the Competition and Markets Authority (CMA) has been asked to review the field. Interest appears set to continue growing. In Aon Hewitt's 2017 study of fiduciary management for UK DB pension schemes, of the £255bn of assets surveyed, 48% of schemes have a fiduciary mandate (compared to just 18% of schemes seven years prior). Part of this growth has been driven by a high take up among small/medium (<£1bn) schemes debunking the myth that fiduciary management is the sole preserve of larger schemes. Further, the survey points to a further 26% of schemes as willing to explore fiduciary management in the future (with 13% of surveyed schemes not yet having considered it).

So why is there increasing demand for fiduciary management? The availability of a wide range of solutions, increased tailoring of products and the general increase in the complexity of investment arrangements, while increasing demand, have all added strain to the already diminishing time faced by trustee boards to govern schemes effectively. Aon's survey points to 73% of trustees now having less than five hours each quarter to dedicate to investment matters. For the most part, trustees are able to clearly articulate what they are looking for in fiduciary providers (clear processes, proven track records, experience, dedicated teams and the ability to be nimble), but perhaps surprisingly they have difficulty comparing providers – partially explaining the increasing use of independent advisers. KPMG's 2017 UK fiduciary management survey supports this by pointing to the 60% of new appointments being advised by an independent third party. This suggests the need for fiduciary managers to 'up their game' and ensure that their value proposition is clear.

Is there a secret sauce?

In short, no – organisations need to ensure that they are providing meaningful solutions to their clients based on their own intellectual property. The two key challenges for fiduciaries are:

1. *Technology challenge:* ensuring the viability of their solutions platforms through scrutinising their physical infrastructure and improving decision-making processes
2. *Culture challenge:* building a solutions-based business while preserving/evolving the current business structure requires adaptation of the firm's overall culture while preserving some sub-cultures.

The technology challenge

Ensuring that the technology behind solutions platforms – operations, risk/analytics, portfolio management, client engagement etc – remains competitive is critical for organisations who want to build a strong fiduciary business. Organisations can now draw on a library of technology which uses big data for their competitive advantage. A recent top1000funds.com article cited APG, Europe's largest investor at €473bn, as developing its business model through the use of artificial intelligence. Unlike classical economics, technology adheres to the law of increasing returns (see Brian Arthur's piece on this). Investing more than competitors can define the standard, dominate the market and lead to higher profit margins (think Google). And unlike biological evolution, technology not only builds on previous advances but is also able to combine features that developed separately. This combinatorial layering is key – what businesses develop now to improve solutions will serve as building blocks for the future.

Many successful organisations would have seen this layering as a key contributor to the growth of their solutions platforms. Arthur welcomes us to the distributive era of economics, where production matters less and access to what is produced matters more. Organisations must keep in mind that it's not just about how good their solutions are – it's about how readily they can be accessed, fit into clients' existing needs and, to be sustainable, how these solutions create change for the wider industry.

Superior technology, investment insights and rigorous analysis do not automatically turn into sound investment decisions without an effectively organised and well executed decision-making process. In a low return environment and with the continued shift to passive investment, solutions based organisations can gain a competitive edge by harnessing the value of better decision-making processes and counteracting biases – a productive partnership between human and machine intelligence can help to do this.

The culture challenge

Roger Urwin, Willis Towers Watson's global head of investment content, notes that culture is a unique and highly influential ingredient in the recipe for competitive advantage among investment firms. It can be assessed, codified and developed over time. Culture can influence the amount of value an organisation creates through improving (i) the client value proposition (policies that deliver value to clients) and (ii) the employee value proposition (policies that attract, retain and develop talent).

The consulting and asset management models each bring different competencies and cultural features to the fiduciary management approach. Investment consulting supports clients as they address their investment problems and asset management provides components that clients can use to address their investment problems. An effective fiduciary management firm not only needs competencies to (i) understand the client's investment problem and (ii) provide a complete solution to the problem; but also a culture that supports excellence in both of these dimensions.

This requires the combination of three areas of culture:

1. Client centricity: listening/empathy, trust, solutions integrity
2. Investment focus: accountability for outcomes, resilience to performance noise, awareness of value for money solutions, respect for investment skills
3. Team approach: client relationships require unique skills which are developed through respect, trust and reliance between colleagues.

People are investment firms' single strongest dependency in delivering culture and implementing technological solutions. This points to the need for organisations to train and recruit T-shaped professionals (that is, those with both breadth and depth) who are machine friendly, adaptable and have the technical skillset to navigate our industry's complexities. And we need a culture of fairness. A short-term results-only culture easily converts to a blame culture; narrative is important. Organisations need to work harder to better attribute performance and show how results contribute to clients' value add.

These attributes should help clients better differentiate between investment solutions providers.

One of beliefs is that many more things can be measured than are measured. In fact it might be possible to measure anything. Sure, the measurement gets increasingly soft – but (1) measurement gives a subject respect and (2) what gets measured gets managed. We think culture needs to be managed, therefore it needs to be measured. By happy coincidence we have a toolkit to measure culture...

Culture can be a measurable edge for investment organisations

Think of the organisation you work for. If I wanted to understand it – its strength, its durability – would I learn more from studying its strategy, or its culture?

We asked a version of that question to attendees at a recent Thinking Ahead Institute public forum – and roughly 90% chose culture[25]. As the old saying goes: "Culture eats strategy for breakfast"[26]. Strategy is, obviously, important. So is breakfast. But culture... well, that's where it really all begins.

The importance of culture for investment organisations – both asset owners and asset managers – is something that few in the industry would deny. But culture has tended not to be consciously nurtured, or even given much thought most of the time. That's a shame, and there are signs that this is changing.

Perhaps the reason culture stayed largely off the radar for so long is that any measures of culture are inevitably associated with soft, rather than hard, data. It's a bit squishy. But many of the most important things are.

Culture is finding its way onto the radar at an increasing number of investment organisations. Its potential to offer an edge is being taken more seriously, and measurement (albeit soft) is playing a part in that.

The Thinking Ahead Institute's 2015 paper *The impact of culture on institutional investors* lays the groundwork for organisations who want to be more deliberate in their approach to this area. Drawing on several case studies, this paper found no single best practice – the right culture is context-dependent – but plenty of themes.

One application of that work is described in a new paper *Measuring culture in asset managers* from Willis Towers Watson. The WTW manager research process now formally incorporates an assessment of culture.

Culture begins with values and beliefs. As David Pitt-Watson and Hari Mann noted in the pension insurance corporation's 2017 *The Purpose of Finance*, "strong culture comes from a strong sense of purpose". The link between leadership and culture is important, but, unlike strategy, culture is not centrally dictated. It is not amenable to heavy-handed manipulation: leadership's actions matter far more than its words in determining culture.

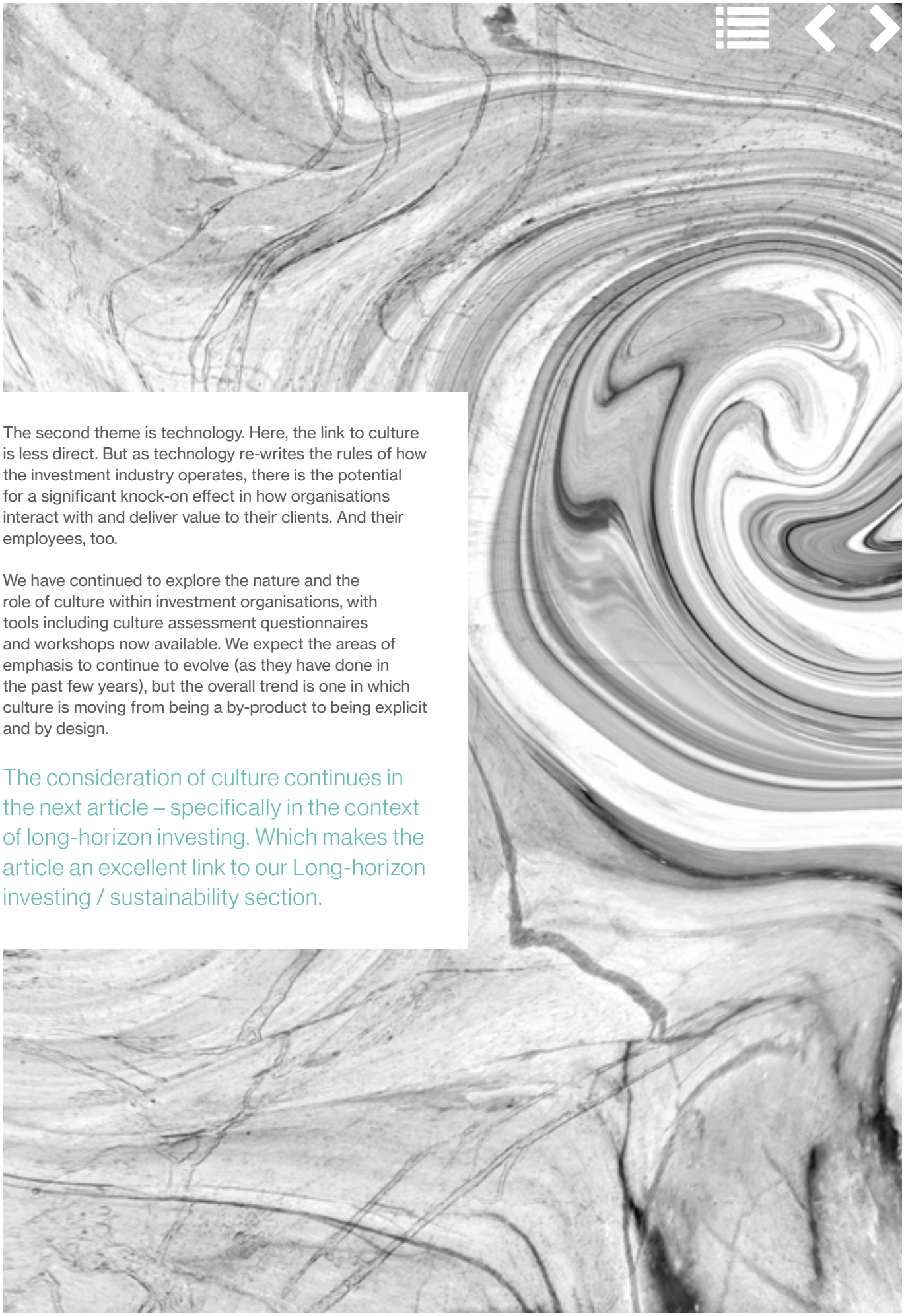
As Roger Urwin points out: "Good culture gets to a sweet spot; it is not a respecter of excess. And good culture regresses if it is neglected." The necessary conditions for a good culture can arise as a by-product of enlightened leadership, but when a conscious and deliberate effort is made those conditions are more likely to arise, more likely to extend throughout the organisation, and more likely to persist.

Looking at investment organisation culture in 2018, two themes have become more prominent since the Institute's 2015 paper was published.

One theme is diversity, a topic that has moved up the agenda of many organisations in the past couple of years. Culture and diversity are strongly linked. Efforts to improve diversity in the industry are unlikely to be effective if not supported by a shift to a more inclusive culture; respect and common sense go a long way.

[25] Thinking Ahead breakfast seminar, October 2nd 2018. In response to the statement: "To judge the strength of an organisation, culture tells you more than strategy", 37 of 102 respondents (36%) responded "strongly agree"; 53 (52%) "agree"; 7 "neutral"; 3 "disagree"; and 2 "strongly disagree"

[26] This quote is often attributed to Peter Drucker, and I won't use up my word count dissecting its true provenance here



The second theme is technology. Here, the link to culture is less direct. But as technology re-writes the rules of how the investment industry operates, there is the potential for a significant knock-on effect in how organisations interact with and deliver value to their clients. And their employees, too.

We have continued to explore the nature and the role of culture within investment organisations, with tools including culture assessment questionnaires and workshops now available. We expect the areas of emphasis to continue to evolve (as they have done in the past few years), but the overall trend is one in which culture is moving from being a by-product to being explicit and by design.

The consideration of culture continues in the next article – specifically in the context of long-horizon investing. Which makes the article an excellent link to our Long-horizon investing / sustainability section.

What could a long-horizon culture look like in an investment organisation?

More and more investment organisations have begun to embrace the distinctly important role of a strong culture and actively build one. So what is culture?

Think genetic code in DNA. It is a set of rules that define the development and function of living organisms. Similarly, culture is the written and unwritten organisational "code" that defines "the way we do things around here". It is the collective influence from shared values and beliefs on the way the organisation thinks and behaves.

For an investment organisation striving to be a long-horizon investor, what kind of organisational culture should they build?

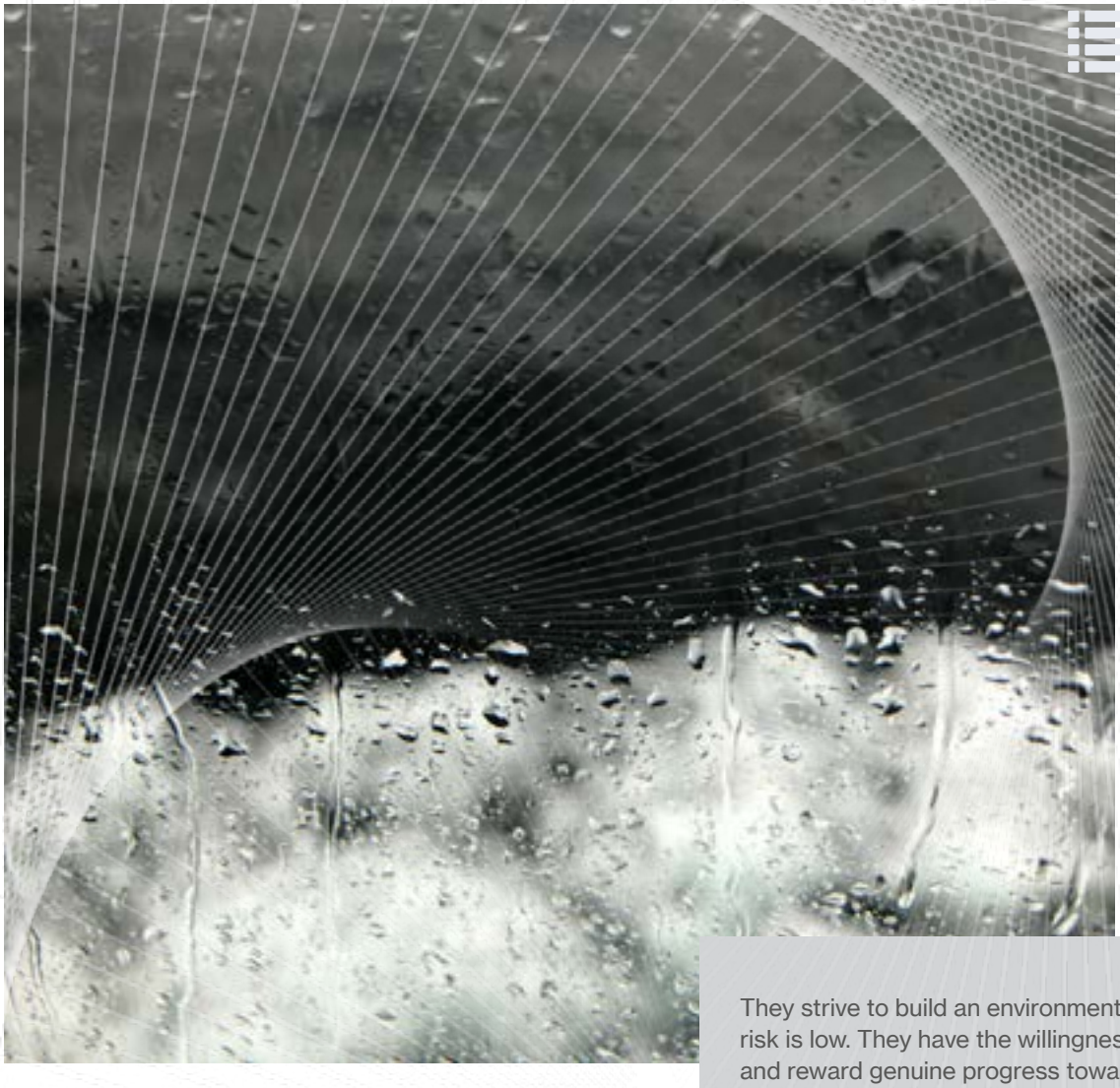
Let's not lose sight of the fact that culture is unique to individual organisations. There is no such thing as the best culture model. That being said, I am hoping to offer a few ideas for long-horizon investors to adopt as part of their own "genetic code".

Let's start with hiring the right people. The foundation of a strong long-horizon culture is to employ people who genuinely believe in long-horizon investing and act accordingly. Extrinsic (monetary) incentive design can influence behaviour. But it is my belief that intrinsic characteristics – innate to an individual's values, perspectives, knowledge, experiences and way of thinking – is more powerful for achieving alignment and producing desirable outcomes. The tendency to "do the right thing" (as opposed to just "doing things right") should be a prominent criteria in hiring. For example, this includes the willingness and ability to challenge the consensus position.

Once the right people are hired, the organisation needs to demonstrate long-term commitment to their growth and development. One of the challenges in practice is that the tenure of some long-horizon investments can be a lot longer than the tenure of the individuals involved in the initial decision to invest. That mismatch can be, at least partially, addressed by encouraging longer tenures. When it comes to assessing people, the key is to reward long-term thinking and behaviours instead of short-term investment performance, which is inherently noisy.

Given the right people, it is important to think carefully about how to put them together in a team. The goal, in my view, is to build cognitive diversity through team composition and process. Institutional investing is all about group decision-making. Under most circumstances cognitive diversity helps improve investment decision making.

A long-term investment journey is bound to be bumpy. When adverse performance inevitably comes, a team rich in cognitive diversity supports an environment where non-consensus views are actively solicited and the willingness to "go against the crowd" is encouraged. It can also lead to information-processing advantages and greater cognitive resources (skills, perspectives, knowledge, and information). All these benefits facilitate a more accurate assessment whether the investment thesis is still valid. If the answer is still yes, then staying on course becomes a straightforward decision. If the assessment indeed results in a higher chance of value trap, the organisation should not blindly stay put.



However, it is worth noting that diversity is not completed without inclusion and integration. There is a balance to be found between promoting cultural unity and avoiding everyone thinking and acting the same. Highly diverse teams, without good integration, can indeed lead to more dissenters when times get tough, causing distractions and value-destroying decisions. Patterns of working together within a team should be set early on, and good integration can be fostered by introducing appropriate behavioural checklists.

Leaders are hugely influential in the creation and evolution of culture. Good leaders recognise that left to its own devices culture declines overtime and therefore actively work to maintain its level. They lead by examples they set, what they choose to focus on, and what they are not willing to tolerate. They seek a deliberate alignment of culture to long-term strategy and take every opportunity to advocate the importance of a long-term approach. They engage in building peer-to-peer relationships and mutual respect with the board. In times of underperformance, this relationship ought to provide a buffer and enhance understanding.

They strive to build an environment where career risk is low. They have the willingness to "look wrong" and reward genuine progress towards long-term objectives. They make sure the entire organisation is in sync regarding the benefits of investing for the long run and the expectation of a bumpy ride.

And they communicate clearly and regularly. Lim Chow Kiat, CEO of GIC, Singapore's sovereign-wealth fund, spoke about how they are very careful about the exact words they use when they communicate. They prefer "sustainable results" to "consistent results". They correct anyone who uses or likes the phase "the long term is but a series of short terms". In his view, the wrong words can corrode or even corrupt the process.

Long-horizon investing is rewarding and yet challenging. But if there is such a thing as a "secret sauce", it is about building a long-horizon culture as a competitive edge.

Long-horizon investing/ sustainability

Long-horizon investing and sustainability were both major research streams in 2017, and so featured heavily in our previous compendium. As these compendiums do not run to a calendar year, we have some late 2017 articles appearing in this edition. We consider the necessity of patience, look back at the 2017 long-horizon research (and what still needs to be covered), and consider the limits of divestment to achieve public goals.

Patience: a depreciating asset - take 2

For the curious, my first article on this topic is entitled Patience not merely a virtue.

We believe there is a strong link between patience and successful long-term investing, for two reasons. First, patience differentiates between long-horizon and short-horizon investors. Second, patience must be seen as a depreciating asset. Left unmanaged, patience will erode and lose its value.

Our thesis comes from *Patience: not merely a virtue, but an asset* – a paper co-written with Geoff Warren of Australia National University and Liang Yin of the Thinking Ahead Institute – and has two main components:

1. Patience has value, because it: (a) supports the ability to invest for the long term, and (b) allows the maintenance of (initially) losing positions.

2. Patience running out is bad, because it: (a) can trigger a value-destructive sale (capitulation), and (b) sends the wrong signals, which can undermine capacity to exercise patience in future.

We consider an investment that has a high chance of delivering a very handsome return. The only problem is that we don't know when. The return could materialise tomorrow, or years down the track. What type of investor would pursue such an investment? Clearly, they must have patience. They must not be too concerned with when the payoff might arrive, although they should worry if it will eventually occur. They must be able to stay the course if the payoff is delayed. Being able to pursue such investments opens a class of potentially rewarding opportunities that an impatient investor may overlook.

Our thesis suggests a straightforward question: how does an organisation build and sustain patience? The question becomes somewhat more complex when there are multiple levels of two-way relationships, and there is the need for patience to span those levels. Nevertheless we suggest that a simple, generalised model with four elements can be used to explore the question:

1. Two levels – such as principal / agent, or governor / executive – but more generally a high-level party and a low-level party. We exclude the single-level case of the principal investing on their own behalf. The two-level idea applies variously: within asset owners (board and in-house executive); between asset owners and asset managers, and/or within asset managers (boss-employee).

2. The stock of patience resides with, and is controlled by, the high-level party (eg principal).

3. The low-level party (eg agent) operates under a mandate while the stock of patience remains positive. The manner in which this is done influences the principal's stock of patience.

4. There may, or may not, be a shared understanding of the presence of patience, let alone agreement over the role it plays. However, we assert that the best relationships and investment outcomes will involve mutual agreement over the need for patience.

An investor has, broadly, three options for allocating their capital:

1. Risk-free assets – these give a 100% likelihood of a (very) low return.

2. Price-to-price investing – this is Keynes's beauty contest game. It entails predicting the movement of psychology of the market. What matters is the price bought at, and the price sold at.

3. Price-to-value convergence – here there is a high likelihood of an attractive payoff, and skill relates to accurate assessment of the value. But there is also the possibility that price and value remain divergent. The divergence might even get larger before convergence occurs.

Clearly for the first option, patience makes no difference. The second option is a noisy, zero-sum game and so doesn't seem a natural place for patience to make any difference. For price-to-value convergence, however, we argue that patience is everything.

If price diverges from value the investor has three options: (a) sell, concluding that their analysis of value was wrong, (b) do nothing, or (c) add to the position as the prospective return has increased. It is patience, an intangible asset, that allows an investor to pursue options (b) or (c).

We believe the benefits patience brings are an expanded opportunity set; protection against value-destructive short-horizon behaviours such as selling low; and reduced transaction costs as a consequence of lower portfolio turnover.

We assert that, in all but trivial cases, patience will be tested. This is why it should be viewed as a depreciating asset. Hence it is important to understand what causes patience to wear thin, and what can be done to build and maintain it. We recommend organisations build the stock of patience from the very start through: gaining organisation-wide buy-in; creating a long-horizon oriented investment process; hiring the right people; and building a long-horizon culture. The stock of patience then needs to be maintained by: working on retaining trust; offering the right incentives; framing performance in the context of long-term objectives; and having leadership from the top.

We do not argue that long-horizon investing is easy. Nor do we claim that it is the only way to generate strong investment performance. Or that it is appropriate for all. Nevertheless, long-horizon investing can be well worth the effort for organisations that manage on behalf of savers with long-horizon goals, and that are capable of positioning themselves to do so. For such organisations, we believe it is helpful to view the building, and maintainence, of a stock of patience as a, or the, key foundation.

2017 TAI long-horizon investing research – looking back; looking forward

In early 2017, eight Thinking Ahead Institute members (three asset owners, four asset managers and one asset consultant) decided to come together and form a research working group. It was driven by a shared belief that the issue of short-termism in our industry requires addressing. All together we had more than 230 years of industry experience. We thought we could turn that experience into a practical framework for implementing long-horizon investing.

Now 12 months later, what have we delivered? In short, five research papers and one toolkit.

We felt that it was natural to start with the question whether long-horizon investing is even worth undertaking. Because if we cannot be at least reasonably certain that we will be rewarded, then why bother? That led to the production of our first research paper *The search for a long-term premium*. This paper is, to the best of our knowledge, the first attempt to quantify value-creation via long-horizon investing in incremental investment returns.

In the paper we propose eight building blocks – investment strategies and behaviours that are only compatible with a long-horizon investing approach. Together, they provide evidence of a sizeable net long-term premium of 0.5% to 1.5% pa depending on investors' size and governance arrangements.

Having addressed the question of "why", the next question we asked ourselves was: where should investors start on this journey?

We settled on a set of strong long-horizon beliefs, shared across the entire organisation and applied in decision making at all levels. Our second paper *Converting the 99: long-horizon investing beliefs* discusses the process of building strong beliefs. It also proposes nine core long-horizon beliefs for investors to consider and adapt.

Having strong beliefs is, of course, just the first step. What you think, you become: a practical guide for asset owners to build a long-horizon mindset addresses many more aspects that asset owners can work on (eg decision-making process; measurement; alignment; risk management and culture) to think, and consequently behave, like a long-horizon investor. The paper lists 42 concrete steps asset owners can take to develop a long-horizon mindset and set themselves on a path to harvesting the long-term premium.

In the long-term premium paper, factor investing was identified as one of the building blocks. Amundi Asset Management, a member of the long-horizon investing working group, have been working closely with the Thinking Ahead Group over the last few months to provide some practical guidance on implementing this specific long-horizon strategy. The paper Investing in equity factors for the long run proposes a four-step process for long-horizon asset owners to develop a factor-based approach.

While long-horizon investors can / should be active and adaptive when circumstances change, there is no doubt that patience has immense value for them (see above post). It supports the ability to invest for the long term, and allows the maintenance of a (currently) losing position. Left unmanaged, patience will erode and lose its value – it must be seen as a depreciating asset. Patience: not merely a virtue, but an asset, a co-authored paper by my colleague Tim Hodgson, Dr Geoff Warren from Australian National University, and myself, recognises the importance of patience. Furthermore, it puts forward a number of ways of building and maintaining patience in a principal-agent environment.

Together, these five research papers offer a long list of ideas – almost intimidatingly long. So how should an asset owner implement them? They will need to consider their unique context and constraints before they can develop a tailored implementation plan and change programme. We have built a gap-analysis *toolkit to help measure an investors' true time horizon* and identify what needs to be improved. We encourage investors to undertake this exercise to start their individual journey of bridging the gap between an attractive concept and desirable outcome of long-horizon investing.

"We encourage investors to undertake this exercise to start their individual journey of bridging the gap between an attractive concept and desirable outcome of long-horizon investing."

So that was a not-so-brief looking back. It would be hubristic for us to claim that research is now "done" for this area so let me offer a look forward. I see at least three areas that require further in-depth research:

1. So far our papers are largely about providing guidance to help asset owners address the governance challenge of long-horizon investing: how to stay patient and on course? how to build strong beliefs? how to align interest? On the other hand, asset owners can certainly also benefit from a guide to building long-horizon skillsets to identify long-term attractive investment opportunities in the first place

2. I am often given feedback that is along the line of "this is great but we can't really afford to be a long-horizon investor because of our constraints". While it is convenient for us to talk about long-horizon versus short-horizon investors in our papers, we fully recognise that in reality the practice of almost all investors has both elements. My belief is that all investors can benefit from moving towards a (sensible) longer time horizon, regardless of their constraints. For example, they can benefit from simply stopping doing value-destructive short-horizon activities. A further investigation and understanding of practical constraints that prevent investors from adopting long-horizon investing practice is, to me, a fruitful area for research

3. When it comes to measurement there is a dilemma in our industry. We measure what is easy to measure (eg past returns). And we don't really measure what matters (eg state of culture; strength of governance). We should fundamentally change our focus of measurement. There is a need to develop a more holistic measurement framework – potentially a balanced score approach – to support long-horizon investors. I would also like to see progress towards long-termism, for us as an industry, measured appropriately and monitored.

Long-horizon investing is hard in practice. As Keynes said "There is a peculiar zest in making money quickly". That is probably why it is so rewarding, and will continue to be rewarding. I hope our research is useful when you embark on this journey towards a better long-horizon investment approach.

Tobacco-free portfolios: what's possible?

I have previously quoted Keynes on liquidity: "There is no such thing as liquidity of investment for the community as a whole". In fact, this article is an extension of my previous article in which that quote appears - Should we deliberately strand some of our assets? We will deal with this macro position at the end. But first we need to lay out the ground work.

Arguably the movement to divest tobacco holdings from institutional portfolios can be traced to an individual (well, it makes for better story – multiple influences within a complex system makes for poor narrative). Dr Bronwyn King is an Australian radiation oncologist who was treating lung cancer suffers and is now CEO of Tobacco Free Portfolios: "It was only during a meeting with a representative of her superannuation fund in 2010 that Bronwyn learnt some of her money was flowing to tobacco companies through the default option of her superannuation fund" (Source). This is a flaw in the narrative, but a perfectly forgivable one. No money was flowing to the tobacco companies. Existing ownership rights were being shuffled between willing buyers and sellers, that's all. Another quote from Dr King takes us back to the narrative: "In recognition of the profound death and disease caused by tobacco, there are 181 parties to the UN Tobacco Treaty, vowing to implement robust tobacco control regulations. In contrast, the global finance industry still invests in, and profits from tobacco. But this is changing...".

So we have an industry that causes harm (yes, it can be argued that individuals exercise free will and harm themselves – true, but we tend not to give knives and matches to very small children). There is therefore an ethical case against the tobacco industry. But most of the global finance industry operates under a fiduciary duty, which comes from a history of ethics-free, finance-only decisions. So what does the financial case look like? History shows that these have been extraordinarily successful investments – if customers are compelled to buy your product (physiological addiction) it shouldn't be too hard to make super-normal profits. So we will need to argue the future will be different in order to build a case against holding these assets. To me there are two, relatively clear components to the future returns. A very attractive stream of cash flows being thrown off by an existing business model supported by tied-in customers.

And a very unattractive set of 'externalities' (essentially litigation or regulation) that could take most, if not all of those cash flows away. It would take a brighter mind than mine to combine those two elements into an expected value. My thinking would be more simplistic. I hold a diversified portfolio when I don't know which assets will 'go to zero' (but some of them will). But if I know that a tobacco asset has a positive probability of going to zero over my investment horizon (and the cumulative likelihood grows ever larger as the horizon lengthens) why hold it? Part of compounding wealth is about avoiding drawdown, and there are lots of other assets I could hold instead, so why take the risk? So I believe I can construct a valid, financial-sounding (but in reality, ethics-infused) case for divestment. All good, but we are not done. There are bigger fish swimming here.

Back to Keynes. I can divest tobacco from my portfolio, but society can't. If I sell my securities, I can only do so if there is a willing buyer on the other side. And so the tobacco business model continues largely unimpeded. It's just that the returns and the risks now affect someone else's portfolio. As a bit of an aside, Dr King's superfund contributions were not funding this industry. But a previous generation of financial industry participants did fund it. Only back then, there were credible claims that smoking could even be good for you. The learning points from this aside would include humility regarding the limits of our knowledge, and the importance of genuinely long-term thinking. It is better not to fund an industry that causes harm, than to try to shut it down when it exists (and can lobby). But this would represent incredible foresight.

Back to the main narrative. This, the shuffling of ownership but continuation of operations, is not the result that Dr King desires, I presume. It can be argued that if enough people decide to divest there is an impact on the cost of capital to tobacco companies. Fine, but (1) they are no longer allowed to give money to advertising agencies, and (2) there is no point in capital expenditure to expand production. In short, they don't need capital and so are unlikely to be bothered by a higher cost of capital. The truth is, tobacco is a dead business, and everyone knows it. You can in fact make a case that the returns from tobacco went from merely excellent to extraordinary at the time it became generally recognised that it was a dead business. There was nothing to do with the cash thrown off by continuing operations other than return it to shareholders. So, for me, divestment doesn't achieve what is aiming for – the ending of this form of human suffering. The answer is to shut down the business model – which would entail a deliberate choice by brave shareholders to strand (short-term) financially-attractive assets. Or..., or.... we could persuade governments to nationalise the tobacco companies. This would give society the liquidity, the out, which is otherwise only achievable by stranding. And it would allow a government to manage the asset-liability problem as it saw fit, over the time horizon it deemed practical.

My final point relates to scale. Tobacco is a $517bn problem (global market cap). To me, fossil fuels are the same type of problem but an order of magnitude bigger ($5 trn). To the extent that we were able to agree that fossil fuels equally cause human suffering (or are about to), then we have exactly the same private divestment vs public externality problem. Therefore, we should probably start thinking about engaging with governments to nationalise fossil fuels under a mandate to wind them down. The private capital windfall could then be applied to funding new industries – hopefully with greater knowledge of potential future externalities.

Our bridge between the sustainable long term and value-creation is a consideration of the productivity paradox (yes, the title is very close to another article in this compendium – but this one concerns the high-level functioning of the economy). More specifically, this article asks whether the investment industry should (or will) take a more active role in shaping the set of investment securities – rather than being a passive recipient. This question absolutely points to value-creation, but also hints at individual and system purpose as considered earlier.

The productivity paradox

"You can see the computer age everywhere but in the productivity statistics"

Robert Solow[27]

In a recent lecture, Adair Turner takes on Solow's paradox: why, given that computers give us such massive productivity gains, are the national productivity statistics so disappointing? Turner answers the paradox by explaining what else is going on in the economy. Given the advance of technology over the 30 years since Solow's observation the implications are now even more important.

Our mental model comes from history

Our mental model of productivity growth is likely to be based on the historic transition from agriculture to manufacturing. Strong productivity growth on the farms meant fewer labourers were required to produce the same amount of food, so the displaced workers headed to the city and found work in a factory. The production line was mechanised somewhat, so the factory workers became more productive alongside the famers (who continued to experience strong productivity growth). Consequently the productivity of the overall economy was very strong.

Consider an alternative history, where there was no city and no factory to absorb the displaced farm labourers. Instead the farmers hire the former labourers as domestic servants. As the role of domestic servant cannot be automated, the productivity gains will be very small – it will take about the same time to prepare a meal or iron a shirt in 5 years' time as it does now. In this case, the strong productivity growth within agriculture will be diluted by the slow growth in the other sector, and so the economy will show muted productivity growth. Worse than that, the passage of time means that the share of labour in high productivity farming will fall (fewer labourers are required each successive year) while that in the static productivity sector rises, meaning that the economy's overall productivity will progressively decline.

This has implications for our current economy. It seems clear that the digital revolution and rise of the robot will bring very strong productivity growth to certain sectors. But the productivity of the overall economy will depend on what the displaced workers end up doing. The worry is that the new jobs will be in services or the gig economy which are hard to automate.

The growth of zero-sum activities

The second strand of Turner's argument is that there will be an increase in zero-sum activities. These are activities 'in which different people compete against one another for a share of the economic cake, but where all of their activity adds not at all to the sum total of goods and services'. To be fair, he doesn't label this as unambiguously bad, partly because he sees himself within the zero-sum category. The point, however, is that these activities do not raise aggregate human wellbeing.

To illustrate, assume that the displaced farm workers above do not have the option of becoming domestic servants. Their choice now is either to become a criminal, or a police officer. The same amount of food is being produced, so there is no increase in human welfare, but the farmers now need to pay the police to protect them against the criminals. Yes, the police are valuable – but only because the criminals destroy value. We are now in the territory of distributing value rather than creating value.

[27] Awarded the Nobel memorial prize in economic sciences in 1987

Applying this to the modern economy, Turner supplies a long but not exhaustive list of zero-sum activities including cyber criminals / defenders, tax accountants and lawyers, marketing / advertising / communications consultants, lobbyists, "much of financial trading and some of asset management". Some of the zero-sum activities may be admirable (eg campaigning for cause A) but all of them distribute rather than create value. In this context, it is striking how large a proportion of the zero-sum activities are well-paid, which means that a large component of an economy's high quality talent is competing over the distribution of total income, rather than creating new income. And, as a bonus, the zero-sum activities look less vulnerable to automation – making them an even more sensible career choice.

The value of nil- or low-cost products is mismeasured in GDP

Turner discusses a third effect of technological progress, namely that accurately incorporating the true benefits of free technology services in GDP is "impossibly difficult"[28]. Combining the three effects can fully explain Solow's paradox – it is perfectly possible to have strong productivity gains in parts of the economy, while the overall economy has low, and possibly falling, productivity growth rates in its official figures.

Why is this important?

There is no better way to express the importance of productivity growth than to quote Paul Krugman[29]:

"Productivity isn't everything, but, in the long run, it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker."

At its best, the investment industry can fund economic growth and development that raises living standards (wealth and wellbeing) for everyone. Given the logic above this would involve allocating new capital to positive-sum, value-creating businesses, and depriving zero-sum businesses of new capital[30]. It also supports engagement and acting as an owner. However, is this a values-based position, like impact investing, or a finance-based position that can pass the fiduciary test? It ought to be finance-based, as over long periods price should reflect fundamentals – suggesting that the market beta reflects the aggregate value-creation of the mix of businesses. But the price of a share in a relatively efficient market should create roughly equal expected returns for all businesses. If true, then a bias to positive-sum businesses should not need to come at a cost to returns (unless we believed they had become systematically overvalued).

For me, the key idea to come from these considerations is whether the investment industry should (or will) aim to increase its societal influence by being an active shaper of an evolving investment opportunity set, or whether it will be a passive taker of the set of securities available for portfolios. This shaping could be at the security level, at the sector level (exercising biases towards value creating sectors and/or against sectors that are at risk of stranding), at the asset class level (in preferences between public and private markets) or in real asset choices (for example in favouring real estate choices that have certain sustainability characteristics).

[28] Professor Martin Feldstein, The US underestimates growth, Wall St Journal, May 18th 2015

[29] Awarded the Nobel memorial prize in economic sciences in 2008

[30] Reality is more complicated, as some zero-sum businesses will be better competitors than others and therefore are likely to offer good investment returns – at least for a while

Value-creation

Having worked on value-creation for a while now we can confidently state that this is a difficult area! We start simply with two case studies that the Future Fund of Australia kindly allowed us to write up. The actions taken by Future Fund are beneficial for the end saver (the Australian tax payer in their case), but reduce the revenue of the investment industry – hinting at the difficulties that arise in this area – for whom are we creating value? Or, are we redistributing value as discussed in The productivity paradox article? We then dive in deeper and consider the creation of system value, and the implications of the value-creation boundary. We end our journey by pulling back to a more practical position, and introduce a balanced scorecard approach for measuring value-creation – which links us back to Measurement near the start of this particular journey.

Disrupting the fee chain | listed equities

In a recent meeting with the Future Fund we discussed how to achieve greater impact in improving the value proposition for the end saver. In the spirit of collaboration Future Fund gave us permission to write up a couple of case studies describing how they have sought to increase the flow of value to their fund. This case study concerns listed equities.

The background

The Future Fund has an absolute return (inflation-plus) return objective. The role of listed equities in their portfolio is therefore, partly, to help meet that return objective. In addition, globally-diversified listed equities are seen as an efficient way of harvesting the equity risk premium, and they also provide a source of liquidity if or when needed.

The listed equities program started in 2007, and following the global financial crisis equities offered strong prospective returns. The program consisted of external active and passive long-only managers, although a short portfolio was added in 2010. Since inception, the program outperformed its benchmark net of fees.

The changed environment

Following years of strong equity returns, forward-looking returns compressed significantly, meaning that fee drag became a much more significant issue. In addition the lessons the Future Fund took from their experience included:

- Macro factors (eg declining interest rates) dominated individual stock-picking
- Listed equity managers in general weren't particularly good at making macro calls
- Managers were knowingly, or unknowingly, taking significant factor positions
- Managers often had opposite positions which netted out in Future Fund's aggregate portfolio, therefore offering no value.

The Future Fund are happy to pay for manager skill, but are not happy to overpay for exposures they can buy more cheaply via another route.

The revised approach

Following a substantial review, the board of the Future Fund redefined the objectives for the listed equity program as below:

- Capture the equity risk premium over the long term (beta) and be a tool to adjust total fund risk
- Harvest long-term equity factor premias (alternative beta), which may vary through time
- Deliver good risk-adjusted, skill-based returns with low correlation to market returns over the long term (alpha), and
- Allowing them to access desired exposures from a whole-of-fund perspective.

As a result the executive have substantially reshaped the listed equities portfolio, and almost all long-only active managers have been removed. Exposure is now via market-cap index tracking, factor index tracking, and long-short market neutral hedge funds. On reflection, if an investor of the size and sophistication of Future Fund has divested completely from long-only active listed equities this could be a defining moment for the industry.

The shift is partly about a more efficient fee budget, more efficient risk allocation, and targeting return with zero correlation to equities to protect during market falls – but it is also about the reality of the advance of technology. The hedge funds they now use are not the ones they used to use. The hedge funds they now use have some of the world's largest supercomputers, purchase thousands of independent and proprietary data sources, employ more than 1,000 coders or quants, and invest around A$1 billion per annum into their business (largely on technology).

Why is this important?

I infer from this case study that the Future Fund have a smart and edgy investment belief: the current and prospective technological reality means that the traditional route to producing alpha will no longer work – instead it is about access to data and the computing power to process it. If this belief is true it suggests substantial, perhaps transformational change for long-only listed equities managers.

Not all asset owners will be able to follow the Future Fund's example here – nor should they. But they should reflect on it, and be clear about what their listed equities exposure is for, and how it should be structured in the light of shifting value propositions.

Disrupting the fee chain | infrastructure

In a recent meeting with the Future Fund we discussed how to achieve greater impact in improving the value proposition for the end saver. In the spirit of collaboration Future Fund gave us permission to write up a couple of case studies describing how they have sought to increase the flow of value to their fund. This case study concerns infrastructure.

The background

Approximately six years ago there was an opportunity to acquire large stakes in two Australian airports. The Future Fund were offered these stakes by several managers, all of whom offered them wrapped in an illiquid vehicle that locked in the manager, effectively forever. The CIO's previous experience with managing airports such as London's Gatwick made it clear that these were very attractive assets with significant value-creation potential – but too much of that value would be captured by the manager for too little effort (more below).

Future Fund consider themselves genuine long-term investors, which requires the ability to sell fully-valued assets as well as to buy under-valued assets. An illiquid structure would prevent them from being able to sell at the point of their choosing, and so a different solution was required.

The decision

The Future Fund decided to buy the assets directly, and drew up contingency plans to hire an internal team to manage the assets. Again, this option was less than ideal as it would present an HR headache at the point of selling the assets. However, it showed them how much it would cost them to manage the assets internally. They then put the management of the assets out to tender.

The terms

The Future Fund required bids to demonstrate expertise in retail, car parking, capital investment programs and land development. Quite often the manager had the expertise, but sitting in a separate real estate silo (or siloes) – so they were effectively engaged in silo busting.

Given the known cost of managing internally, the Future Fund asked for a fixed fee basis with full transparency, including the extent of profit margin.

They also asked for the flexibility to terminate the contract at any time, allowing them to sell the assets if valuations rose rapidly – but, they recognised the upfront implementation costs and so offered protection against losses in the event of early termination.

The final element was a performance fee related to the fundamental performance of the assets, not their valuation (after all the Future Fund had decided the entry price, and would control the decision over the exit price). In our minds this is akin to the origin of smart beta / factors – why pay a hedge fund 2+20 for systematic returns that could be captured for 20 basis points (historic pricing). So any returns attributable to declining bond yields would not be compensated as if generated by manager skill. So a performance fee is instead payable if various key performance indicators increase. These include:

- Retail spend rates per passenger
- Revenue from the property bank over time
- EBITDA margins
- Capital programs delivered under budget and on time.

Why is this important?

It turned out that one of the successful managers was already managing the assets. Only now they were bringing a new and focussed team to the management of the assets, they were incentivised to create real fundamental value, and Future Fund were paying a much lower base fee – and one that didn't credit the manager with changing economic conditions. In short the end saver, in this case citizens of Australia, are receiving significantly more value from these assets.

A further personal musing: this case study shows a disruption of the traditional asset management function of combining transactions and ongoing management. Can we imagine a transfer of this concept to listed equities (and potentially other asset classes)? Here the asset owner would use their own valuation tools to decide on the buying and selling of individual equities, and would use the asset manager to, well, manage the assets ie vote and engage. I am not suggesting this is currently practical, but it would be highly disruptive to the current value chain.

Creating system value: organisational purpose and value-creation

The returns we need can only come from a system that works; the benefits we pay are worth more in a world worth living in[31].

There is a fundamental shift occurring in the relationship between companies and society. Whereas previously, profit maximisation was seen as the dominant purpose of a business, increasingly it is now being regarded as an outcome of a company's broader purpose. The idea behind creating shared value was discussed in Porter and Kramer's 2011 work where it was argued that the competitiveness of a company and the health of the community around it are mutually dependent. This bridged the gap between the long held dichotomy of creating value for shareholders and creating value for stakeholders. Robert Eccles also tackles this idea by noting that companies have two basic objectives: to survive and to thrive. He argues that shareholder value should not be the objective of a company but the outcome of the company's activities. In other words, rather than profit being the purpose, profit comes from pursuing a purpose that benefits society.

These considerations are shockingly important when you consider the size and impact of some companies. In 2016, 69 of the world's 100 top economic entities were corporations rather than countries and the world's top 10 corporations had a combined revenue greater than the 180 poorest countries combined (a list which includes Ireland, Israel, South Africa and Greece)[32]. These 69 corporations clearly help shape the social foundation of our societies[33]. The investment industry has an immense opportunity to influence how these corporations are run, and perhaps even, fund the 70th.

Building a better social foundation for societies

Kate Raworth, in her book Doughnut Economics, sets out a visual framework for sustainable development by combining the complementary concepts of planetary and social boundaries. In 2009, Johan Rockstrom, executive director of the Stockholm Resilience centre, outlined nine planetary boundaries that are critical for keeping the earth in a stable state beneficial to life as we know it and attempted to quantify how much further we can go before there is a risk of "irreversible and abrupt environmental change". Human survival clearly requires the sustainable use of these planetary resources and complementing the planetary boundaries are social foundations below which there is unacceptable human deprivation. The 'doughnut' (shaded green) represents the safe operating space for humanity: a social foundation of wellbeing that no one should fall below, and an ecological ceiling of planetary pressure that we should not go beyond.

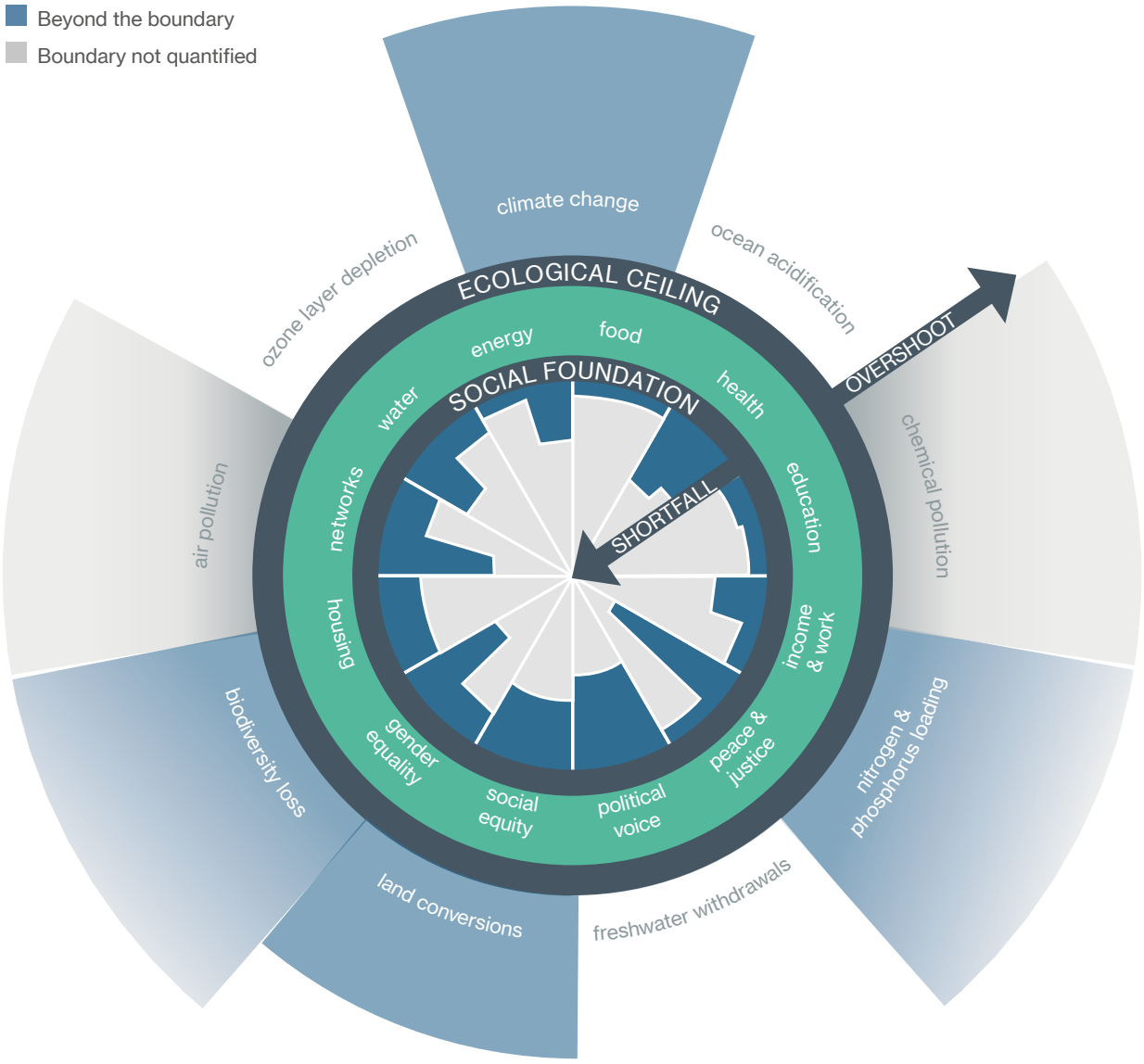
For a clear statement of what societal wealth and well-being includes, a good place to look is at the UN's sustainable development goals (SDGs). This universal set of goals, targets and indicators has been agreed by 193 member states, and covers a broad range of social and economic development issues expected to frame government agendas and political policies at least until 2030. The SDGs address the most pressing systemic social, economic and environmental challenges in our

[31] Dutch pension fund. Source: Roger Urwin, Thinking Ahead Institute roundtable

[32] Source: 10 biggest corporations make more money than most countries in the world combined, Global Justice Now, September 2016

[33] All companies will have an impact on their local community

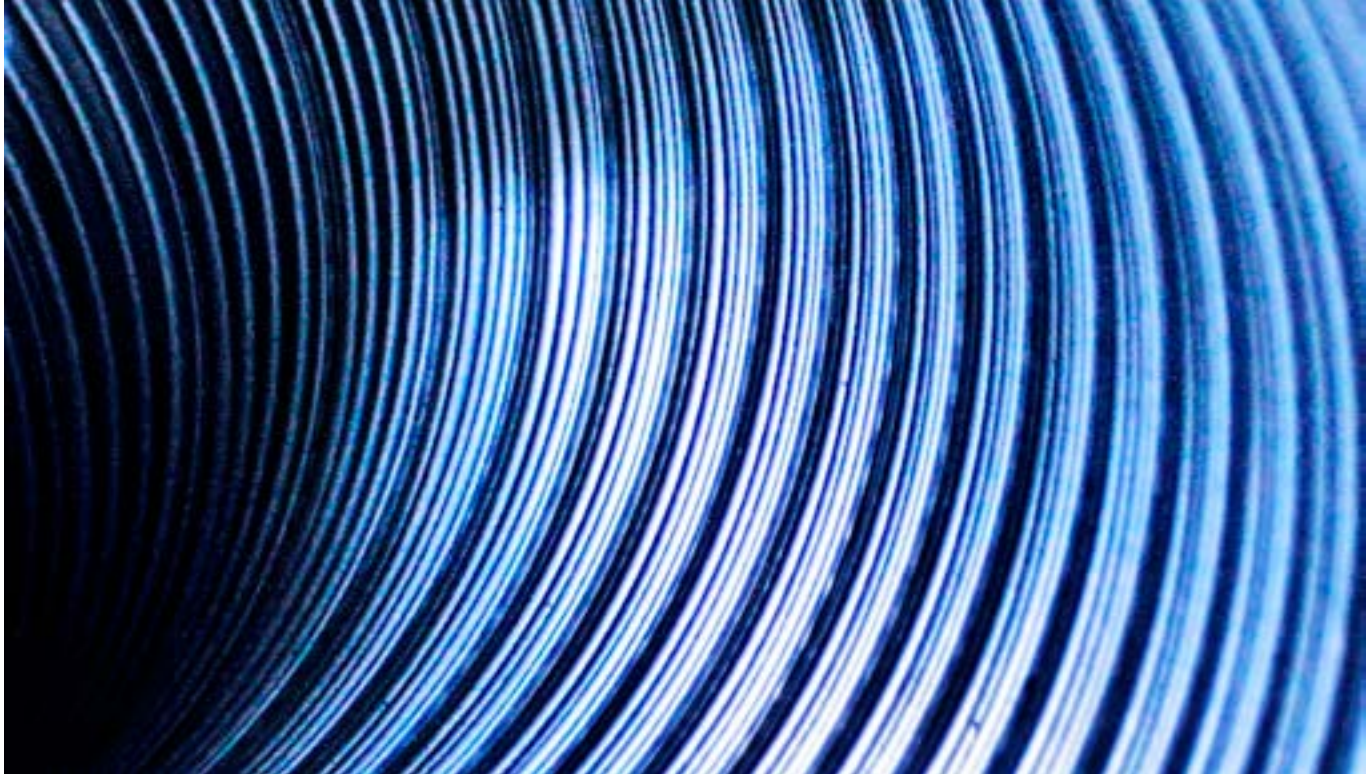
Doughnut economics – **balancing planetary and social boundaries**



Source: Doughnut Economics, Kate Raworth, 2017

world today and are arguably the most objective reference point for determining what is good for society. With goals such as ending poverty, and hunger, achieving gender equality and improving access to clean water and sanitation, the SDGs point to a common language which the great majority of economies (and hence industries and organisations) can rally around.

However, it is estimated that meeting the SDGs will require $5trn to $7trn in investment each year from 2015 to 2030. The UN has put out a strong call to action for the private sector to play a fundamental role in achieving these SDGs. While government spending and development assistance will contribute, they are expected to make up no more than $1trn per year and so "new flows of private sector capital will be key, either through new allocations or by re-routing existing cashflows".



In their 2017 report, The SDG investment case, the UN PRI argues that investment organisations should consider the SDGs when making strategy, policy and active ownership decisions based on a fiduciary duty to consider the risks and opportunities generated by sustainability risks. In short, the SDGs can be used as a framework through which investment decisions can be made, in keeping with an investor's fiduciary duty, while offering opportunities for global economic growth that could lead to better investment outcomes for beneficiaries over the long term.

Creating system value

The idea of shared value has since been extended by the concept of creating 'system value', a term first introduced by the Future-Fit foundation[34]. A system value perspective places a business within society – it is a subcomponent – and places society within the environment. The logic is unarguable. And the perspective shows that a business cannot be considered as independent from either society or the environment. It will affect both of them – for better or for worse.

From shareholder value to system value

Shareholder Value

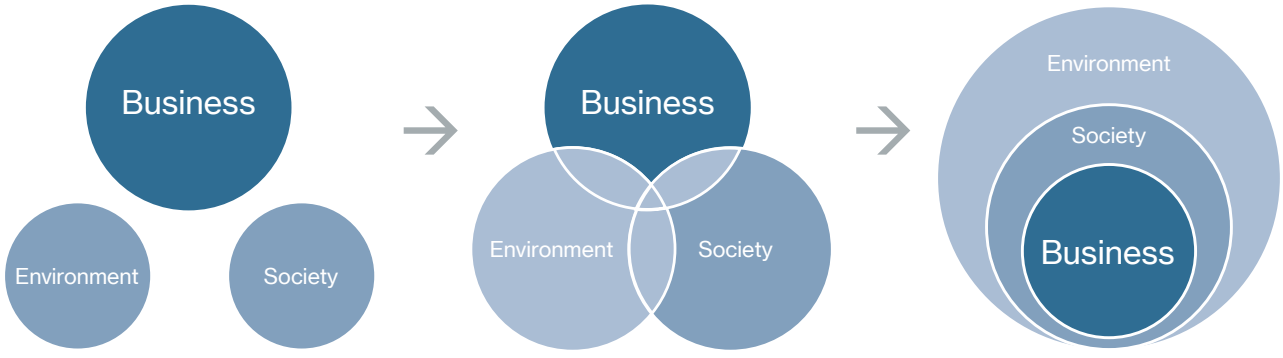
Financial returns are all that matters: companies privatise gains and externalise losses

Shared Value

Business comes first: negative impacts are often not sufficiently internalised, or are justified by 'doing good' elsewhere

System Value

Business addresses societal challenges in a holistic way, while not hindering progress toward a flourishing future



Source: Future-Fit Foundation

[34] For further information, see paper, Creating system value: concept note, Future-Fit Foundation, April 2017

To understand how an organisation creates system value, one has no look no further than how it designs its business strategy and executes its operations to benefit its stakeholders, using its various sources of capital (financial, human, social, manufactured, intellectual and natural). Admittedly the bar for achieving true system value is high, however we believe that organisations can contribute to this target by pursuing activities which help create better societies and a more sustainable environment. We provide an example below.

An example of achieving system value within the investment industry

System conditions

The conditions that must be met for society to flourish

Nature is not subject to systematically increasing degradation

System value principles

Principles an investment firm can follow to create system value (increasing levels of impact)

The firm eliminates its contribution to environmental degradation

(eg carbon offsetting, sustainability focussed investment)

The firm helps others to avoid environmental degradation

(eg collaboration with other firms to promote LH investing)

The firm acts to reverse the effects of environmental degradation

(eg industry coalition to actively divest/ strand assets and lobby governments to regulate)

Source: Adapted from Future-Fit Foundation

The value-creation boundary

It is worth stating up front that, for us, the value-creation boundary is an abstract concept rather than an actual, discoverable thing. It is more of a thought experiment and so its value lies in how it might change our thinking and worldview.

We start by asserting that we value order in our lives. We will pay to have our homes cleaned, but not to have them messed up. It is similar for goods. We will pay up for the highly-ordered final product, but not for the raw materials it is made of. Next, we note that economics has long recognised the concept of externalities – costs or benefits that fall on people not directly involved in the economic activity. From here two things follow. First, that there is a value-creation boundary which lies between these innocent bystanders, and the parties involved in the economic activity. Second, that value is created inside the boundary and destroyed outside it[35]. In other words, the externalities are, in aggregate, negative. Several questions spring to mind: who are the insiders, and who are the outsiders, and do they tend to be the same people? Where should we draw the boundary, and are there consequences to that decision?

The planetary reality

The tightest local boundary we can draw is around a single individual, for a single good or single service. So I derive value from my home being cleaned but tend not to think about the impact outside my boundary. These impacts include, first, the production of chemicals used to clean my home, and their escape from my home as waste; second, my share of CO2 emissions from the electricity powering the vacuum cleaner; and, third, the fact that most of the vacuum cleaner will end up in land fill at the end of its life. Having considered my impact outside the boundary I have a choice to ignore it, or to adjust my cleaning mandate (only lemon juice and vinegar? More sweeping and less vacuuming?).

Switching to the widest pragmatic possibility, we could draw the boundary around the earth's atmosphere. Expanding the value-creation boundary to this fullest practical extent echoes the logic of ecological boundary conditions. Further, I would argue it is the true heart of sustainability. In this framing, we recognise the earth as a largely-closed system (so a good idea to maintain the life-support systems) with the free input of solar energy, and the ability to costlessly dump excess heat into the universe[36]. If I adopt this mindset then I probably do need to limit my cleaning chemicals to lemon juice and vinegar, and in aggregate we will only be able to extract lemon juice at the rate the earth is able to replenish the crop. In addition, I ought to ensure my electricity comes from renewable sources, and that my vacuum cleaner was designed with a circular economy mindset (rather than a linear use-then-throw mindset).

Where to draw the boundary?

If we were employed in almost any other industry we would have a product or service and we could consider whether to draw our boundary around just our customers, or whether to include their families, their communities, the local ecosystem, or take a whole of planet, whole of humanity stance. As investment entities we start there, and then need to consider our portfolio and the investee companies represented within it.

The logic of the value-creation boundary is that the more tightly we draw it, the larger the domain over which we are having a negative impact (this doesn't mean the negative impact gets bigger). Further, this engenders an adversarial, negative-sum environment. To create value for our small group, we need to be able to dump harm on some other group. However the other groups know this, and have the same incentives. In case this is too abstract, think about the choice between divestment and engagement.

[35] This second statement should be challenged by any enquiring mind. If we have stated that externalities can be costs or benefits why do we jump straight to a net cost? First, we could breach (or amend) our first statement and move any defined subset of bystanders that are net beneficiaries within the boundary. In this case we reinforce value being created witin the boundary and leave all the value destruction outside. Second, we could introduce the passage of time and recognise that short-term, positive externalities can become negative in the long term. Third, we could argue that any economic activity produces waste alongside the intended output. The intended output is priced and sold inside the boundary, the externality is unpriced waste which is dumped outside the boundary. If those arguments fail to satisfy the enquirer, the author would resort to an argument invoking the second law of thermodynamics. In this case, by analogy, the value destruction is the outside-the-boundary increase in entropy which must be at least as big as the value-creating reduction of entropy within the boundary

Divestment is nothing other than the discovery of a value creating opportunity for my group by dumping the unattractive securities on another group. Not wrong, but not positive sum either. Engagement runs the risk of still holding securities with a collapsing value before business models can be adapted. But it can be a positive sum activity, and it signals a 'wider boundary' mindset.

The more we expand the boundary the more of humanity we include. This carries the advantage of reducing the antagonism between groups, but the substantial disadvantage of removing cheap dumping grounds for the waste of the economic activity we invest in. We return to this thought below.

If we choose not to draw the value-creation boundary that widely, we are identifying that we hold one or more of the following beliefs or values:

- My investment time horizon is sufficiently short that I do not have to worry about potential negative consequences over the longer-term
- I am subject to fiduciary duty, which I interpret to mean my responsibility is solely to maximise the next period's risk-adjusted return
- I am powerless to influence externalities so there is no point expending any such effort
- I recognise the importance of addressing externalities but prefer to be a free-rider on the efforts of others
- My ideology does not support this action. I believe unconstrained free markets produce the best outcomes, so if the externalities matter that much someone will create a profitable business to address them
- My values do not support this action. I care passionately about my group [ie clients / members] but have no regard for anyone outside this group.

The above list is not our values and beliefs, but they are valid – at least somewhat. The point is that the value-creation boundary is a thinking device. Each investment organisation, whether asset owner, asset manager or other service provider, will need to work out where to draw their own. In the next section we disclose our values and beliefs in this matter – and 'our' here includes the authors and the members of the value-creation working group.

Back to the planet

There is a growing recognition of the validity of ecological boundary conditions. The ecological ceiling representing the outer ring of Kate Raworth's 'doughnut'[37] is based on the scientific paper published by Johan Rockström in 2009[38]. Due to the scientific foundation of these boundary conditions we do not need a values-based discussion to support them. We accept that beliefs may differ but, by definition, valid beliefs must be consistent with the available data, and so the range of disagreement is constrained.

If we return to people, then drawing the value-creation boundary around the atmosphere includes all of humanity. We are saying that value must be created for all humans, not just subsets. This is the social foundation, and inner ring, of Raworth's doughnut. It is also the UN's sustainable development goals. Accepting some degree of responsibility for these social goals is necessarily (but not exclusively) values-based. And values can legitimately vary widely. For our part (authors and working group), we believe that all investment organisations should develop the beliefs and values to support this social floor, as well as the ecological ceiling.

So what?

Where we choose to draw the value-creation boundary will clearly have implications for our subsequent actions. It will determine which business models are appropriate to be in the portfolio, and which should be excluded. It will influence decisions over the provision of new capital. And how seriously to take voting and engagement. It may influence new thinking over the structure of incentive arrangements. And quite possibly have other effects we haven't documented here. But that seems enough to be getting on with for now.

[36] Given the size of earth relative to the universe this would appear to be a sustainable strategy for the 5 billion or so years before earth is consumed by the expanding sun. We also obey the second law of thermodynamics as the increase in entropy (our excess heat) is carried by the universe

[37] Doughnut Economics, Seven Ways to Think Like a 21st-Century Economist, Kate Raworth, Penguin Random House, 2017

[38] A safe operating space for humanity, Rockström et al, 23 September 2009 (linked here)

Measuring value-creation: introduction to a balanced scorecard approach

For long, value-creation in the financial services industry was often viewed as the result of winning the competition on organisational efficiency and functional excellence. Better operations, better distribution networks, better servicing – all were seen as main factors in improving market share, creating value for customers and therefore creating shareholder value. But, as argued in Melnick, Nayyar et al's 2000 paper, Creating value in financial services, customers do not care about functional excellence, nor do they care about whether an organisation has unique resources to take advantage of scale or networks. Customers care about whether the product or service is of utility to themselves and (in some cases) to the wider society. This recognition has led to a renaissance in organisational strategies focusing on anticipating, understanding and responding to customer needs and developing long-term relationships with them.

Value-creation is not only an outcome but also a process. In the case of Melnick and Nayyar et al, this process involves creating customer value focused strategies, services, systems and measures of success. In the case of the International Integrated Reporting Council (IIRC), this process is more generally defined in the context of its integrated reporting (<IR>) framework as follows:

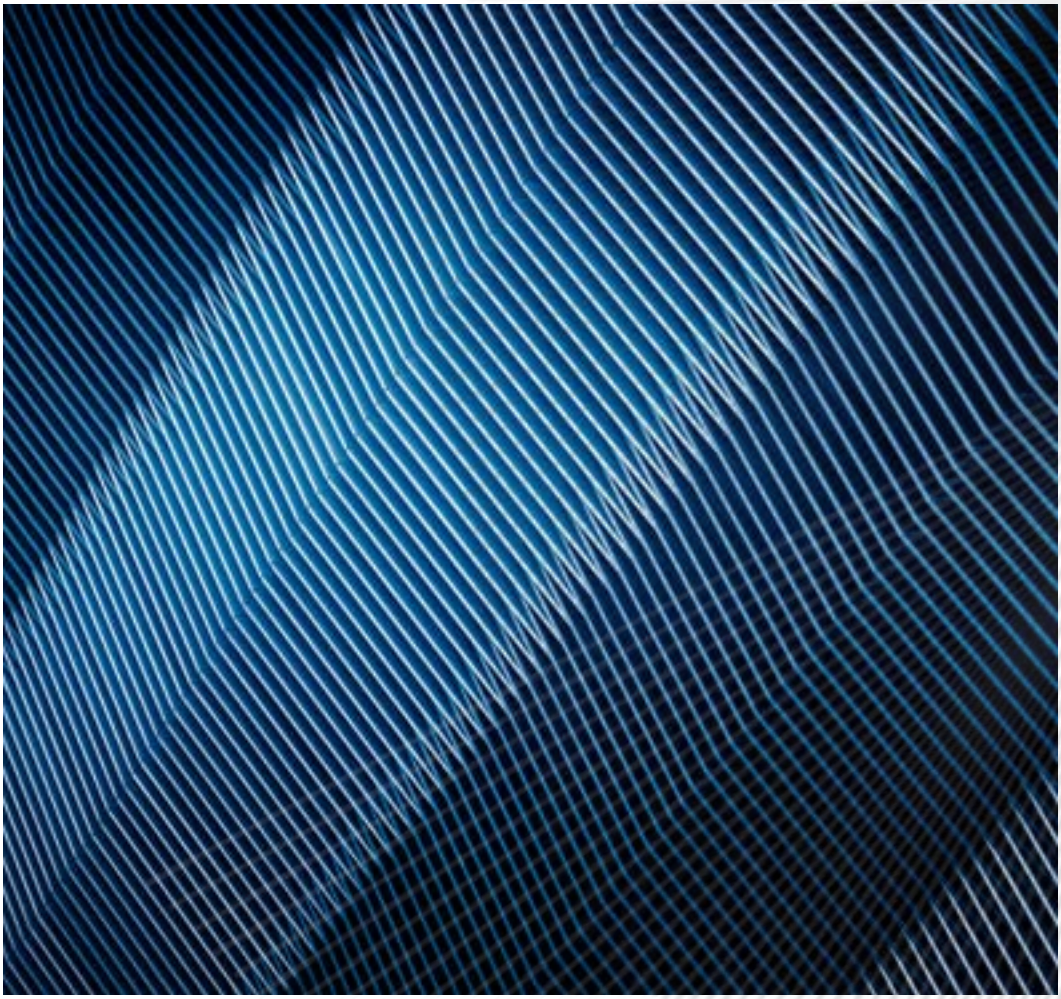
'Value is created through an organisation's business model, which takes inputs from the capitals and transforms them through business activities and interactions to produce outputs and outcomes that, over the short, medium and long term, create or destroy value for the organisation, its stakeholders, society and the environment.'

This definition breaks apart the historically narrow focus of value-creation as being the sole deserves of shareholders and, more recently, customers. So for whom should value be created and how can we measure it?

Organisations have a wide range of interactions within the regulatory, societal and environment context within which they operate. This ecosystem promotes relationships between the organisation and its shareholders, consumers, employees, regulators and other stakeholders. The long held dichotomy between creating value for shareholders and creating value for stakeholders was discussed in Porter and Kramer's 2011 work on Creating shared value. The central premise is that the competitiveness of a company and the health of the communities around it are mutually dependent. Robert Eccles also tackles this idea by noting that corporations have two basic objectives: to survive and to thrive. He argues that shareholder value should not be the objective of a company but the outcome of the company's activities.

At the Thinking Ahead Institute, we propose a balanced scorecard approach to better understanding for whom value is being created for and, equally, for whom it is being eroded. Firstly we define four key terms:

1. Owner value proposition (OVP): this is well represented by traditional reporting (balance sheet, profit and loss accounts) and is the value produced for the owner
2. Stakeholder value proposition (SVP): value created for the society and environment in which an organisation operates. This is usually outlined to varying degrees in corporate social responsibility (CSR) reports
3. Client value proposition (CVP): policies and actions that deliver value to clients in services and products
4. Employee value proposition (EVP): policies and actions that attract, retain and develop employees and teams.



Measuring the value created by an organisation needs to take into consideration all four areas. This requires organisations to use new measurement techniques that move beyond traditional accounting and CSR reports. Traditionally EVP and CVP have not been measured and at the Institute we have created a toolkit to help organisations assess these. There is no strong client proposition without a strong employee value proposition so these should equally be considered in an organisation's mission and strategy.

In a previous article, I referred to John Elkington's 1997 phrase "the triple bottom line". He argued that companies should not only focus on the economic value that they add, but also on the environmental and social value they add (and destroy). Companies are increasingly seen as needing a 'social licence' to operate, the deterioration of which is linked to tangible reductions in shareholder value and in turn, portfolio return. Understanding the impact and the creation of value by companies is at the heart of modern day initiatives such as the IIRC framework. This framework encourages companies to think about value-creation (and destruction) through the lens of multiple capitals over multiple time horizons. The Global Reporting Initiative's (GRI) Sustainability Reporting Standards leadership on non-financial disclosures also provides an industry trusted framework to enable organisations to publicly report on their economic, environmental and social impacts. However we believe that there is more work to be done to understand how we can better measure value-creation of companies – the balanced scorecard framework proposed above provides a first step towards this.

So, that is 'wot' we wrote in 2018[39]. We hope you have enjoyed the journey as much as we enjoyed discovering the pathways.

[39] Technically, the 12-month period from October 2017 to September 2018

Limitations of reliance

Limitations of reliance – Thinking Ahead Group 2.0

This document has been written by members of the Thinking Ahead Group 2.0. Their role is to identify and develop new investment thinking and opportunities not naturally covered under mainstream research. They seek to encourage new ways of seeing the investment environment in ways that add value to our clients.

The contents of individual documents are therefore more likely to be the opinions of the respective authors rather than representing the formal view of the firm.

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About the Thinking Ahead Institute

The Thinking Ahead Institute seeks collaboration and change in the investment industry for the benefit of savers.

It was established by Tim Hodgson and Roger Urwin, who have dedicated large parts of their careers to advocating and implementing positive investment industry change. Hodgson and Urwin co-founded the Thinking Ahead Group, an independent research team in Willis Towers Watson in 2002 to challenge the status quo in investment and identify solutions to tomorrow's problems.

What does the Thinking Ahead Institute stand for?

- Belief in the value and power of thought leadership to create positive investment industry change
- Finding and connecting people from all corners of the investment industry and harnessing their ideas
- Using those ideas for the benefit of the end investor.

The membership comprises asset owners and asset managers and we are open to including membership of service providers from other parts of the industry. The Thinking Ahead Institute provides four main areas for collaboration and idea generation:

- Belief in the value and power of thought leadership to create positive investment industry change
- Working groups, drawn from the membership, and focused on priorities areas of the research agenda
- Global member meetings
- One-to-one meetings with senior members of the Institute.

About the Thinking Ahead Institute

The Thinking Ahead Institute seeks to bring together the world's major investment organisations to be at the forefront of improving the industry for the benefit of the end saver. Arising out of Willis Towers Watson's Thinking Ahead Group, formed in 2002 by Tim Hodgson and Roger Urwin, the Institute was established in January 2015 as a global not-for-profit group comprising asset owners, investment managers and service providers. Currently it has 46 members with combined responsibility for over US$12 trillion.

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