BACKING INNOVATORS WITH MORE UPSIDE THAN AMAZON, MICROSOFT AND APPLE

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The horrific moment that triggered May's mass protests across the US was captured by police body cameras, technology that Perpetual's Thomas Rice in 2017 tipped would explode.

From a loss-making side venture in a company whose main business was making Tasers, the uptick in camera adoption by global law enforcement has led the company to exponential growth. In 2018, it was the largest contributor to the Perpetual Global Innovation Share Fund performance and is now the biggest holding.

Supersonic and space travel is the core business of another NASDAQ-listed company in the portfolio. But Thomas and his team are equally focused on innovators that bring new thinking to old sectors such as ports and shipping, construction, auto manufacturing and drug development – where augmented reality, AI and semiconductors are transformational.

In this article, Thomas reveals some of the star performers his team identified and invested in early and explains how he picks successful companies before they've turned a profit.

The term innovation is more commonly associated with growth-style managers than with value managers. So, as a value manager, how does your approach to innovative companies differ to that of a growth manager?

I'd describe myself as a bottom-up, fundamental stock picker who's willing to look across a range of styles.

To me, the value of any business – regardless of its stage of life – is the discounted value of its future cash flows. I'm equally comfortable looking at early-stage companies that are unprofitable but growing quickly, and mature companies generating and paying out a lot of cash. Ensuring it is cheap on a fundamental basis is one of my key criteria.

While most Perpetual equity funds have a value bias, this fund's focus on innovation and change gives it a growth bias. But a willingness to own more mature businesses is a key distinction of the Perpetual Global Innovation fund versus other growth strategies. For example, it currently owns **Deutsche Post** and **Cargotec** – two lower growth businesses that will benefit from the rise of e-commerce and automation, respectively. A fundamentals-focused understanding of the businesses behind the stocks and how to value them appropriately is common across all Perpetual equity funds.

What are some "old-fashioned" sectors or industries that you expect to benefit from technological developments in the coming years?

Drug discovery is one example. Today the process is still largely trial-and-error and therefore limited by how many molecules can be physically synthesised, maybe 10,000 a year. We're now seeing simulation used more at the early drug development stage, where literally millions of potential molecules can be screened virtually as a starting point.

Our innovation strategy owns a company called **Schrödinger**, which runs simulations at the molecular level that really help with the drug discovery process. Companies increasingly use their software, and we expect the platform's capabilities to grow in line with the advances in computing power.

And in the age-old transport sector, port operations have been around for thousands of years. We're seeing greater adoption of automation technology, but penetration is surprisingly low given it is a relatively controlled environment. This means there's a lot of headroom for growth at companies like **Cargotec**, which is the dominant provider of automated port systems. Luckily, it gets more service business too due to the greater complexity of the equipment.

In a related space is car design, and we're seeing companies like **Siemens** provide software that virtually replicates the entire process – from initial conception, to laying out the factory, and monitoring in the real world.

Augmented reality is another technology that's shaking up the extremely mature construction industry. The world is shifting from two-dimensional blueprints to using AR on-site, enabling users to visualise where a wall should be built and ensure nothing has been placed inaccurately. We recently saw an example of someone using an AR "X-ray" application to improve building maintenance. With this application, you can walk through a building, stand in front of a wall and hold up an iPad to effectively "see" what's behind it.

When I look at technology development and innovation, it's not something that's limited to the technology sector but is affecting a wide range of industries.

Can you share an innovative product, service, or technology that you identified and invested in early? How did it play out? Are you still invested today, or has the opportunity been realised?

We invested in **Axon Enterprise** in 2017, when the fund started, and it was the biggest contributor to our 2018 financial year performance. At the time, the company was best known for making all the Tasers in the world, but also had an emerging police body camera business that was losing a lot of money.

That business was interesting to me because I had previously done a lot of work on machine learning and artificial intelligence. One of the takeaways of that work was that you could now make sense of video and photo data in a way you never could before, so I was primed to be interested in businesses with unique data sets – which I thought this was.

As we did more work on it, we realised that police body cameras were at an inflection point. They were going from a nice-to-have to a must-have and we really felt it would be ubiquitous.

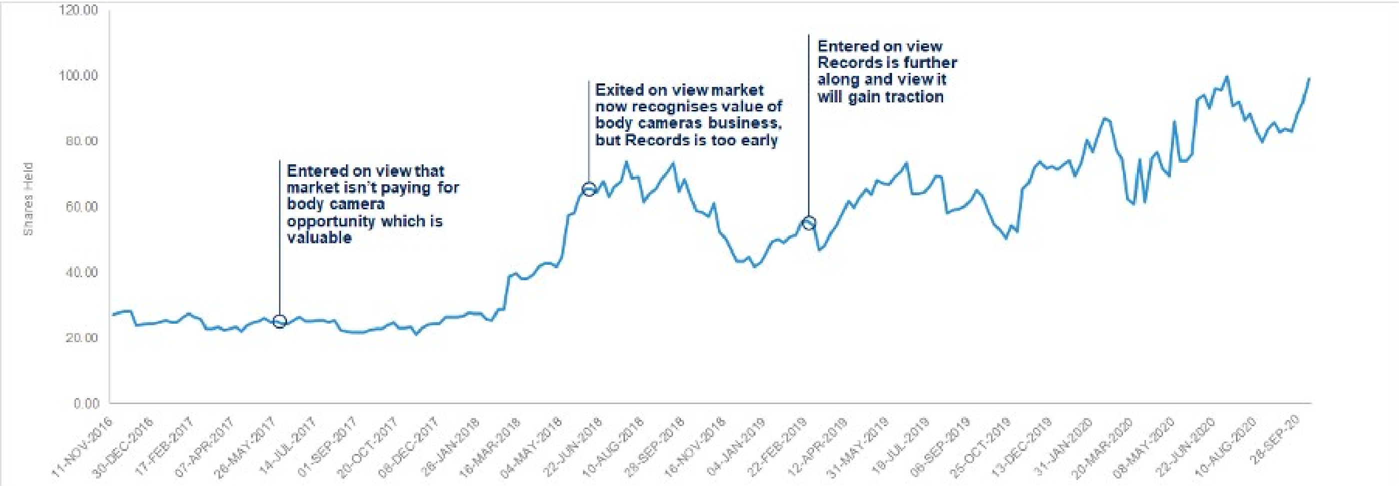
It's important to understand that the business of police body cameras is more about data management, rather than revolving around a one-off product like GoPro. It's about a police officer wearing a body camera, putting it into an Axon Dock at the end of a shift, and all of that data being automatically uploaded to a cloud platform they run called Evidence.com. It's a recurring revenue business which is higher quality. And over time they're adding additional services to help automate that process.

That played out well in the first year of the fund – we bought at $24 and sold at $65 as we felt the market was realising that opportunity.

We have since bought back into it because we're excited about where the company is going. It now has a records management product that takes the police body camera footage and makes it the heart of the police record. It is also going into a Dispatch business that leverages the strength of the latest body cameras that can track where police officers are in real-time into a live video feed of what's going on – which is important in high impact situations.

This is a company and a management team that has successfully taken its edge in body cameras and used that to expand into additional areas over time that have been value accretive.

Perpetual's Axon holdings since 2017



Source: Perpetual

Can you share another early-stage innovative product, service or technology company? How do you see the rollout progressing over the next few years? What are the major benefits or efficiencies that this product or service brings?

We're an investor in **Twist Bioscience**, a synthetic biology company that essentially makes DNA. This is not a new concept, but Twist does it in a unique way that leverages semiconductor technology to make them the lowest cost provider by a big margin.

Over time, the usage of synthetic DNA is increasing. Commonly used by companies like Ginkgo Bioworks (which makes organisms for fermentation or enzyme purposes), Twist Bioscience has recently extended its low cost into the next generation sequencing market, and is finding additional uses in drug discovery. The company is a great enabler of new science and we are seeing use cases expand as costs come down, so we're very excited about the future of that company.

Up to 30% of the fund can be held in companies that don't yet make a profit. How do you value such companies? What are some of the key attributes you look for in pre-profit companies?

The value of every company is based on the discounted value of its future cash flows, and that's true whether you're talking about either an early- or late-stage company. People tend to use different metrics based on the company's stage of life. Many will use price-to-earnings ratios; some growth software investors use price-to-sales ratios; others will look at book value.

All of these metrics are fine, but you need to remember they're all mental shortcuts that work in certain situations and don't in others.

Valuing an unprofitable company is about taking a long-term view about what cash it can generate. Ultimately, you're trying to work out:

- the value the company creates over time
- the value it brings customers
- its ability to monetise that value.

Each of these points are a factor of competition and differentiation. It's about getting confidence in that value-add, and appropriately gauging the size of that opportunity and the probability of success.

Three of the largest and most innovative companies in the world – Amazon, Microsoft, and Apple – are not held in your fund. Why didn't they make the cut?

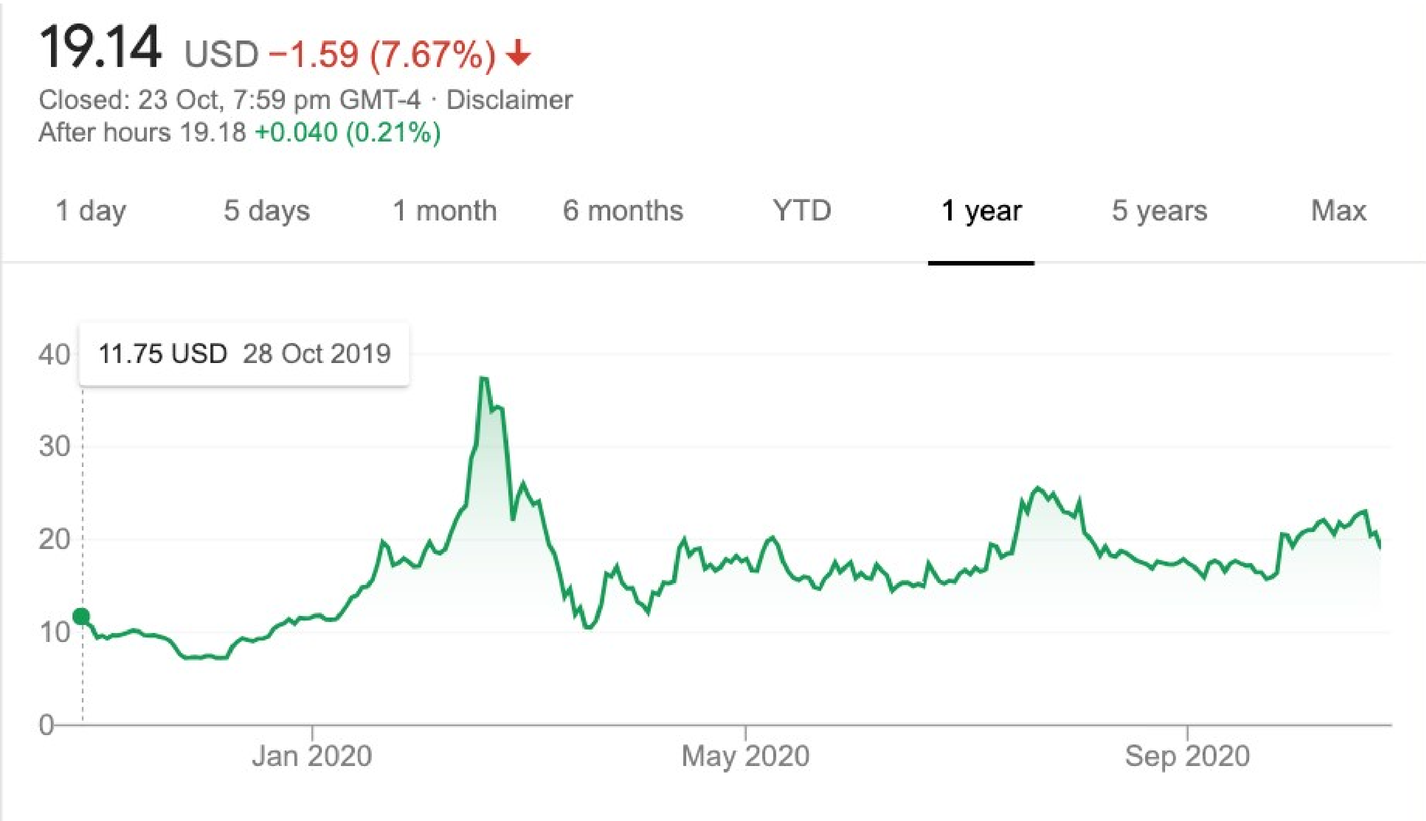
They're great companies and we've owned all three of them in the past. But they don't make the cut today simply because we think there are better opportunities in other stocks with greater upside at this point in time. But that doesn't mean we won't own them in the future.

Two years ago, a greater proportion of the fund was dedicated to large cap tech companies. But they've all performed incredibly well since then, and I don't think they'll be a key driver of performance in the near-term.

Virgin Galactic has been quite volatile over the last year or so, having spiked by about 350% in February before diving and ultimately rising again. What gives you confidence to look past this? Where do you see this company in five- or 10-years' time?

Virgin Galactic's a fascinating company. It has been developing the technology for the past 16 years and is now on the cusp of launching commercial space tourism operations early next year. I draw confidence from my belief the company is now past the major technology risk following successful sub-orbital test flights last year, and strong demand indicators in the form of 600 presold flights and the collection of initial deposits on another 700. This means it will be a supply-constrained company for at least the next one to two years.

Virgin Galactic share price movement over 12 months



Source: Nasdaq/Google Finance

The way to think about the space tourism opportunity is to view it as a luxury purchase for wealthy individuals that can afford the US$250,000 to US$300,000 price. Fewer than 600 people have ever been into space in human history; that number is set to double in the next couple of years due to Virgin Galactic's arrival.

As for where they'll be in the next five to 10 years, I think the core space tourism business will expand as it adds more spaceports and flights. We'll likely see a second spaceport in either the United Arab Emirates or Italy in the next few years.

The longer-term opportunity is to apply the knowledge developed already to suborbital point-to-point flights – a technology Virgin Galactic is working on now. Whether that leads to a commercial offering is yet to be seen, but there's a lot of value there if it can deliver on that. Here we're talking about supersonic flights from LA to Shanghai in two hours.

We're also very confident in the management team. George Whitesides, a former chief of staff at NASA, led the company for 10 years. Recently he stepped down from the CEO role and took on a new role as chief space officer, which means he's working on the next leg of technology for the company. The new CEO is Michael Colglazier, a 30-year Disney veteran. The management change reflects the company's transition from primarily a technology company (focused on whether they can do it) to a services company focused on delivering that amazing customer experience.

At the portfolio level, one appealing quality of Virgin Galactic is that it's very different from everything else we own. We're constantly trying to diversify the drivers of the fund's returns, which often leads to holding a number of idiosyncratic ideas.

What excites you most about your role?

It's challenging and competitive, which I like, but it's also a role where you're constantly learning about new things.

Visit the Perpetual Global Innovation Share Fund to learn more about the fund, fees and performance.