

# Reflections

Second Quarter 2023

Researchers at the Smithsonian Human Origins Program have been poring over a 139-metre-long core of sediment extracted from Kenya's Great Rift Valley. This tube of soil is only four centimetres in diameter, but it contains golden insights into evolving climatic conditions over the past million years because it comes from the home to some of the oldest evidence of human activity in the world. A specific juncture around 420,000 years ago is of particular interest because temperatures rose sharply following a relatively benign and stable period. At that point, fluctuations in water supply triggered massive shifts in vegetation, cultures and human behaviours. Hand axes were superseded by more sophisticated projectile-based weapons. The fauna evolved as a result. Communications with distant groups expanded. The broader ecosystem changed accordingly.

The Smithsonian team's deep dive leads them to believe that humans may be the most adaptable species to have ever existed. In the coming years, this trait of adaptability looks set to be tested like never before because humankind faces a heady cocktail of environmental swings which look set to endure for the foreseeable future. These shifts extend beyond the physical environment. They include geopolitical fractures and structurally more expensive capital. That's why, as stock pickers, our assessment of corporate cultural adaptability is a crucial determinant of a company's valuation – even though it cannot be neatly modelled in a spreadsheet.

We have a consistently high bar for growth in Long Term Global Growth. But the stocks within the portfolio have always grown in different ways and at different rates. The 11 stocks that have quintupled or more since inception have reached that hurdle over different periods. Tesla, for example, first quintupled within two years of its initial purchase, NVIDIA within four years, while Kering and Intuitive Surgical took almost 10 years. With different rates and stages of growth come other challenges, so it is interesting to reflect on where the portfolio holdings find themselves at the current juncture.





## Lighting the touchpaper

A growing cohort of companies in our portfolio have had the blue touchpaper lit under their growth over the past year or so. Adyen, The Trade Desk, Cloudflare and CATL are all young companies. And each is enjoying a growth spurt not despite current economic, geopolitical and environmental travails but because of them.

Demand for Adyen's payment processing services is accelerating because the platform is driving improved sales outcomes for merchants in an environment where every transaction matters. Existing customers are prepared to pay for extra features as they unshackle themselves from the creaking online infrastructure of legacy banks. Adyen needs to grow its headcount to keep up with demand, but it recognises that any compromise on the quality of new employees will dilute its culture and skill. This prudent approach to recruitment may drive a slightly slower growth rate (currently 30 per cent year-over-year), but it's the right approach for the long term.

Meanwhile, The Trade Desk is benefitting from the need for companies to maximise the return on their advertising budgets in an environment where ad spend needs to be very carefully managed. This holding's key edge relates to its software platform which allows corporate customers to deliver highly targeted advertising as it expands. To give a sense of scale, The Trade Desk scans 14 million advertising impressions every second, buying around 1,000 of the most relevant ones. Having recently signed Ocado, Walmart, Target and Walgreen as partners, this portfolio holding is growing three times faster than the advertising market. Perhaps the biggest risk is that machine learning allows competitors to replicate some aspects of their technology, which is why we're reassured to see Jeff Green and his team spending 20 per cent of sales on research and development.

Cloudflare's rapid growth is largely driven by surging demand for cyber-security services – a partial function of geopolitical strife. The company blocks over 100 billion cyber threats every day and is increasingly seen as the immune system for the internet. The customer base is growing, and, once again, existing customers are spending more on this platform. The blemish for us to keep an eye on here relates to executive pay, where (as with a couple of other holdings), we have voiced our concerns to the company over options repricing and the lowering of various compensation hurdles. Cloudflare's board needs to show backbone on such issues if the company is to remain adaptable.



CATL is not quite a teenager yet but having grown to become the world's largest battery manufacturer, it operates at a different scale. With over 80,000 employees, it is now the destination of choice for the smartest graduates in China. Over the past year, revenue has grown over 80 per cent and profits are up over sixfold. CATL's ongoing adaptability revolves not just around the need to secure long-term sources of supply-constrained inputs such as lithium and nickel, but also their ability to overcome environmental and supply constraints entirely thanks to leading research into sodium-ion batteries. As with the other Chinese holdings in the portfolio, it is imperative we must ensure that potential upside adequately compensates for the potential downside risks (a dynamic that we've been discussing at some length across the broader portfolio).

## Post-pandemic readjustments

Roblox, Shopify and Moderna are at a different point in their growth trajectories. This trio of companies enjoyed explosive growth during the pandemic. Still, each has subsequently needed to pivot as daily life has returned to some form of normality and in each of these cases, we've seen encouraging signs of adaptability.

Online gaming ecosystem Roblox inevitably saw lumpiness in the user numbers as the world emerged from Covid-19. But stepping back from the noise, the platform has far more daily active users than before the pandemic. This is no longer the sole preserve of slovenly teenagers loafing on couches while covered in crisps. Roblox now has over 30 million different experiences. Pet simulator 'Adopt Me' has amassed over 35 billion visits, while, in Kering's fantastical virtual world Gucci Town, users continue to enthusiastically accessorise their characters with sunglasses, perfume and clothing. Machine learning provides perhaps the biggest disruptive force to Roblox, but David Baszucki and his team are adaptably leaning into the rapid change by incorporating simple text prompt features (eg 'Make it rain') that allow content creators to enliven games without the need for hardcore coding skills.

Shopify has had a tough time over the past couple of years with extreme pandemic demand growth tailing off as the world reopened. Tobias Lütke, the founder of this online commerce platform company, has cut more than 10 per cent of his workforce and admitted to mistakes. But we've engaged with Shopify extensively over the past 12 months or so; we're prepared to give the company time to adjust its business model and fulfilment strategy. Having successfully pushed through price hikes for its lowest subscription tier (the first for 13 years), the platform has clear pricing power. High teens growth for the very long term (so 5x over 10 years) seems like a reasonable central case.

Moderna's post-pandemic readjustment has entailed refocusing on the development of its extensive pipeline beyond Covid-19 treatments. The company is recruiting 2,000 additional employees, building a new manufacturing plant in Africa, and preparing six new product launches. With over 30 candidates in clinical trials that build on the company's ever-expanding messenger RNA platform. Respiratory diseases such as RSV and flu are most imminently in the crosshairs, but recent results from Moderna's cancer trials have also been

highly encouraging. The market remains seemingly incapable of properly valuing these huge future opportunities. That's why Moderna remains one of the largest holdings in the portfolio.

Not all holdings are quite out of the woods yet, though. The jury remains out on Netflix. Its new advertising-based 'freemium' tier has been rolled out with impressive speed, but we need to wait and see whether it will unlock sufficient new users to deliver the growth that we look for. Equally, we're keeping a close eye on Amazon's culture and adaptability. Andy Jassy has been CEO for a couple of years now, will he quietly preside over a quintupling of the market cap as Tim Cook has done at Apple, or do employee grumblings over the post-pandemic return to work policy suggest broader cultural challenges?

## Proving profitability

Fundamentally, the transition from an era of cheap capital to one of tighter monetary conditions should be good for the adaptable companies we seek out as stock pickers. With deadwood being burned, the disciplined outliers should be in a position to forge ahead and win share from those in retreat. To check that this is the case, we have been continuing our dialogue with the investment risk team around cash runways, and it's reassuring that only one of the cash-burning holdings (BeiGene) has less than three years' net cash.

We've also been keen to ensure that the portfolio holdings are cutting their cloth to suit their means. By way of example, SEA, the Asian gaming, commerce and finance platform, has acknowledged the importance of proving the inherent profitability of its business model by reining in costs. The company reported profitability for the first time a few months ago. Meanwhile, Spotify is under our microscope because, while the music streaming platform has done a decent job of growing users, operating expenditure has grown much faster than sales due to poor cost discipline. We're looking for a more adaptable approach to execution and monetisation here.

For auto holdings Tesla and NIO, it's a question of keeping a close eye on unit economics. With over 100 emergent EV brands in China alone, competition is intensifying. NIO has been strengthening brand appeal within China (its stand at the Shanghai Auto Show was mobbed when a couple of team members visited), but they're still having to follow other manufacturers in cutting prices. Against this backdrop, Tesla's higher margin structure (a function of its radically more efficient manufacturing and distribution model) provides it with the financial headroom to take incumbents to task by cutting prices further if it wishes.

In a couple of cases, we've sold holdings whose return structures look impaired or set to deteriorate. Carvana is struggling to generate the demand volume to drive profitability, so we've moved on from this auto distributor – a relatively short-lived holding by our standards. Salesforce, meanwhile, is facing an early midlife crisis as it approaches its 25th birthday. With two failed attempts at succession planning for founder Marc Benioff, there are cultural and execution concerns. The company exits the portfolio after a roughly 450 per cent return during our 12-year tenure.

## Serene compounders

Another cohort of companies in the portfolio is loping along more serenely. Glucose monitoring company Dexcom is quietly growing at a rate in the high teens and increasing their headcount as the regulatory backdrop continues to coalesce favourably around their technology. Despite being the clear leader, the long-term opportunity remains vast because Dexcom still has less than 2 million customers out of a possible 400 million or so. Meanwhile, our luxury goods holding Hermès is enjoying similarly effortless growth in the low 20's. The brand is as carefully managed as ever, and its allure is allowing Hermès to continue pushing through pricing increases.

With structurally huge demand for gene sequencing services, Illumina (briefly a 10 per cent holding for LTGG back in 2015) should really fit into this category as well. But we have significant and growing questions from a competitive advantage and governance perspective. The company is ailing, and we have been engaging with the evolving management team as we consider next steps from a portfolio perspective. These conversations will continue in light of CEO deSouza's recent departure.

## Adapting to a new general-purpose technology

It is clear from these musings that the portfolio holdings face different opportunities and challenges, but the Schumpeterian gales of machine learning will affect all of them in some way (and indeed every company in the index) over the coming years. The adaptability and thinking skills of a company will determine whether those gales are blowing on their back or into their face. We've been thinking about machine learning for a number of years, but the rapid public adoption of Large Language Models in recent months has raised broader awareness of the power and potential of distributed artificial intelligence. Two months after its launch, ChatGPT, the fastest-growing consumer application in history, was being used by more than 100 million people. We're seeing the rapid democratisation of machine learning tools that, until recently, were available only to the largest and wealthiest of organisations.

A few cultural and business model consequences are already revealing themselves – some trivial, others less so. The musician Grimes says that anyone using machine learning to mimic her voice can do so if they split the royalties. Those who used to make money writing outsourced essays for indolent college students are losing out. Last month, an AI-generated image of black smoke billowing from the Pentagon circulated on the internet, briefly sending stocks tumbling before it was revealed as a deepfake. The portfolio holdings are incorporating these capabilities as well. BioNTech and Moderna are using machine learning to accelerate drug development, while Atlassian is using the technology as a co-worker that allows coders to automate software checking.

For all of the headlines around this machine learning, we need to take time carefully consider the implications rather than rushing to certain conclusions. However, it seems reasonably clear that advances in this area will cement the position of both ASML and NVIDIA. ASML manufactures the machines that make the chips that underpin machine learning. ASML's secret sauce relates to its systems integration expertise – an ability to coordinate byzantine global supplier networks before assembling probably the most complex tools on the planet. This portfolio holding is currently sitting on a record EUR40 billion order backlog (a function not just of the high-end lithography applications that underpin machine learning but also of direct ultraviolet lithography machines that underpin growth in electric vehicles and solar equipment).

NVIDIA, meanwhile, seems likely to have a hammerlock on the deep-learning market for the foreseeable future and is boosting production to meet surging demand. Around 90 per cent of generative AI programs are trained on NVIDIA hardware, and 3 million of the world's machine learning engineers (that's nearly all of them) have become accustomed to using NVIDIA's CUDA tools to design new neural networks. NVIDIA's revenue is currently less than a 10th of Apple's, and long-term revenue growth of 30-50 per cent per annum seems eminently plausible to us, but we've learned from experience over the last seven years, that market sentiment tends to veer sharply between euphoria and despair, which is why we've been more inclined to add and trim than has been the case for some other portfolio holdings (cumulatively, we've put +2.3 per cent in and taken 2.8 per cent out of this circa 8 per cent position).



## Our own adaptability

Just as companies need to adapt to changing investment environments, so do we. Our whole *raison d'être* is to continuously improve as investors. There are always lessons to be learned and improvements to be made, regardless of the performance backdrop. We've tended to make one or two process-tightening improvements every year since the inception of Long Term Global Growth. This year is no exception, and recent improvements focus on a trio of areas, incremental adaptations rather than anything more wholesale – but nonetheless collectively helpful in the spirit of marginal gains:

### Experimenting with the tempo of idea generation:

When it comes to new ideas for the portfolio, we're finding that both fundamentals and valuations are swinging around markedly at present. In some cases, stocks that we'd previously left alone because they were too expensive have now fallen sharply and look much more attractive. Datadog is a good case in point. We're seeing surging demand for its monitoring tools which improve the efficiency of IT networks, but the share price has afforded us an opportunity to take a new holding in this rapidly growing company at half of the valuation of 18 months ago.

Given the fast-changing backdrop, we need to ensure that from a process perspective, our idea generation flywheel spins sufficiently fast without compromising on analytical depth and rigour. In a quest to manage this tension, we've been experimenting with idea generation forums where we discuss a number of 'thin slice' notes (typically two pagers) on new stock ideas. This serves to broaden the top of the idea funnel. It allows us to cast the net wide but then efficiently filter the names for a deep dive shortlist. This process experiment has been working well so far, and the ideas pipeline is gushing strongly. Recent ideas include Procure (construction management software), Allkem-Livent (lithium mining), Cognex (computer vision tools for industrial automation), Nubank (Latin America challenger bank), Symbotic (warehouse automation), and Align Technology (digital dentistry). There are many others.

### The sizing of early-stage holdings:

We recently asked our colleagues in the investment risk team to challenge our approach to position sizing for earlier-stage portfolio holdings. Their inertia analysis around this cohort suggests that we've been a bit trigger-happy in adding to early-stage holdings that experience undue volatility. In some cases, this has added value (e.g. our addition to NIO when it fell 90 per cent after the IPO in 2018 proved prescient) but in others, it has destroyed value (e.g. our additions to Peloton on weakness before we ultimately sold). Our process improvement on the back of this finding is to classify early-stage stocks with unproven business models as 'R&D holdings'; we're not allowing ourselves to add to these until their business models are sufficiently well proven and we agree that they can 'graduate' out of this bucket. In the first instance, we've assigned seven stocks (Roblox, SEA, Joby, Samsara, Datadog, Ginkgo Bioworks and Affirm, collectively circa 5 per cent of the fund) to this bucket. While there are no hard and fast rules about the aggregate percentage of the portfolio that might fit into this bucket, too few 'R&D' classified holdings might indicate excessive aversion to early-stage 'binary outcome' uncertainty on our part. Too many could suggest that we were lacking patience in hanging onto longer-standing holdings with well-proven business models.

<sup>1</sup> LTGG's strongest correlated pairs of stocks over the past three years include Shopify and SEA, Tencent and Meituan, and SEA and Mercado – all of which have exhibited correlations above  $r=0.65$  over the last 3 years, but none of which are grouped together in the Euler diagram. Of course, correlations in themselves don't necessarily tell us much about risk over the timeframes we care about because technical factors can overwhelm fundamental factors in the short term. But the evident deviation between the Euler and empirical clustering of share price behaviour over a 3-year period has prompted self-scrutiny.

## Better understanding and representing portfolio exposures:

We've been reflecting on our approach to assessing portfolio diversification. In 2011, we started using an Euler diagram, which helped move us away from externally imposed and backwards-looking sector classifications. But having used the Euler diagram for over a decade now, our self-critique would be that the Euler diagram is primarily an exercise in renaming categories rather than a tool for expressing risk. There are two issues here. The first is that the most highly correlated stocks in the portfolio, in terms of share price, share no common groupings within the portfolio<sup>1</sup>. The second is that the Euler diagram circles have not historically expressed specific contentions about which we can be wrong – so they do not help us to understand LTGG clients' exposure if a particular structural trend fails to play out. With the aim of adding more directional specificity, we have therefore mapped the portfolio holdings to a number of falsifiable statements. You can see the output a bit later on in this report, and we will adopt this concept on a permanent basis.

## The overall picture

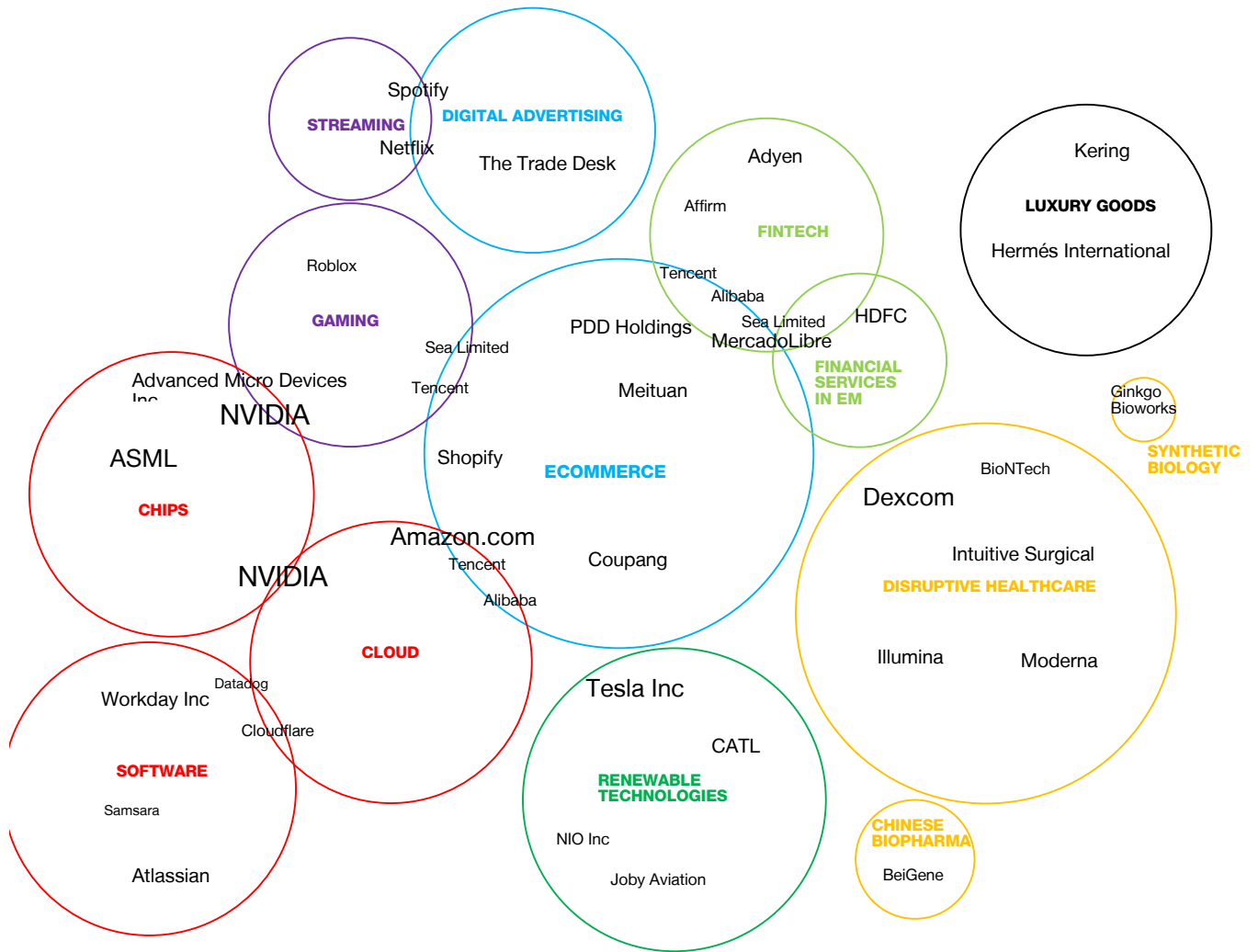
As we look ahead to the second half of the year (slightly agog at how rapidly the 20th anniversary of Long Term Global Growth is approaching), we have a growing sense that the portfolio is well-placed to thrive – not in spite of the challenging economic conditions but because of them.

This is partly because the portfolio holdings are, on average, markedly better capitalised than the index. It's partly because we've observed a healthy circa 20 per cent average top-line growth clip over the last 12 months. And it's also because (with all the usual caveats that apply to market estimates) analysis from our investment risk team suggests that over three-quarters of the LTGG portfolio is in the top quintile of MSCI consensus three-year forward sales projections.

Most market participants continue to flutter like moths around the torchlight of the Federal Reserve. They're missing the bigger picture, and the long-term growth prospects of our portfolio holdings are not being properly recognised in share prices.

The Smithsonian team has observed that as African environments swung around on the back of climate change all those years ago, our ancestors began to walk upright rather than crawling because the ability to walk long distances paid off in the increasingly diverse landscapes they encountered. As conditions changed further, Homo's evolving brain began to deal with richer and more complex surroundings. Any improvement in the ability to process information and forge new thoughts could have made the difference between survival and extinction. The most successful species depend on keeping their options open and adjusting to the inevitable trials and opportunities that emerge over time. The same applies to companies today. Our holdings are quietly spending over three times more than the index on Research and Development as a proportion of sales. All things being equal, that will only strengthen their competitive advantages and enable them to emulate the adaptability shown all those years ago by our Kenyan ancestors.

The LTGG portfolio is fit for the future – and despite a bit of a bounce in performance – it remains on sale.



As at June 30, 2023. Based on a representative portfolio.

# Important information and risk factors

## Annual past performance to 30 June each year (net %)

	2019	2020	2021	2022	2023
LTGG Composite	0.1	56.4	61.7	-48.9	24.2
MSCI ACWI Index	6.3	2.6	39.9	-15.4	17.1

## Annualised returns to 30 June 2023 (net %)

	1 Year	5 Years	10 Years
LTGG Composite	24.2	9.9	15.9
MSCI ACWI Index	17.1	8.6	9.3

Source: Baillie Gifford & Co and MSCI. Net of fees, USD. Changes in the investment strategies, contributions or withdrawals may materially alter the performance and results of the portfolio. All investment strategies have the potential for profit and loss.

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