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# *HUMANS, A GROWTH SPECIES*

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*From early stone tools to a planned base on Mars, humans have achieved remarkable things. Hamish Maxwell explores our species' urge to know more and do more, and what it means for us as investors.*



An overview of our species might read something like the following: homo sapiens, or what we recognise as modern humans, evolved around 300,000 years ago in Africa. Humans then began to spread from that continent around 100,000 years ago and now call nearly every type of climate and terrain on earth 'home'. We've even created a habitation outside earth's atmosphere in the form of the International Space Station, and there are credible plans being formed to create a base soon on Mars. Rather impressive progress, we might agree.



Our journey has not always been smooth, though. Around 70,000 years ago, humans came very close to extinction. A climate event, caused by a massive volcano erupting and blocking out the sun, very nearly wiped us out before we'd even got going. Had we already formed the International Union for Conservation of Nature by then, it would have quickly classified us as an endangered species. There were only a few thousand of us left at this low point, clustered along the shore, clinging to life largely on a diet of shellfish (it's a wonder we can so much as look at oysters nowadays). A head count of life on earth would have ranked us as insignificant among the planet's faunae and a visitor to earth might not have even noticed us. We lived a local, unremarkable life, subsisting on whatever we could get our hands on by hunting and gathering.

However, environmental challenges such as this, and many others that we faced over the years, were overcome by what Charles Darwin termed the 'natural selection' of random mutations, or 'evolution', which equipped us with a very powerful set of physical, mental and cultural characteristics, that continue to define us today.

Thanks to these characteristics, a visitor to earth now could hardly miss us. These days, we are a planet-dominating, smartphone-wielding, space-travelling, genome-unlocking, super-species. Or 'growth species', as we'll coin it. Our ability to invent, innovate and improve seems to know no bounds. For instance, when

the phenomenal scientific motivating force known as Moore's law – the doubling in the speed and capability of computers roughly every two years – recently came up against the obstacle that microchips were becoming so small that electrons were leaking from them, some especially smart humans designed a miniscule insulator, offering 15 more years of easy Moore's law, as Dutch lithography company ASML put it. Also, as evidence began mounting that carbon emissions are seriously harming our environment, humans (driven by a visionary named Elon Musk) set about harnessing the chemistry of lithium and nickel (and some inventions of a long-dead visionary called Nikola Tesla) to propel not just clean cars, but potentially our whole clean energy future. And when we began ticking off the diseases we'd defeated through medical science but remained painfully aware of the threat posed by cancer, a Danish biotech company called Genmab harnessed the microscopic but tremendous powers of our own immune system to combat it, making very encouraging progress.

The list goes on. There are so many examples of us using our intelligence and propensity to innovate and invent to achieve the remarkable. Developments such as these, and countless others that we can lay claim to, have allowed us to grow in all sorts of ways. In population, life-expectancy, health, productivity and economy. Evolution has turned us into a growth species.



So, let's consider some of the evolutionary characteristics that make us a growth species. What are the things that, by making us human, give us our innate propensity for growth? Some of these characteristics are obvious just to look at. We're bipedal for a start, freeing up our hands to do other things besides crawling (crawling isn't a particularly value-adding activity). We also have opposable thumbs, so those freed-up hands can use tools. We have binocular vision too, allowing us to accurately assess things by sight. Plus we have large heads to hold big brains.

Mentioning our brains brings us to the next category of evolutionary characteristics that defines us as a growth species: our intelligence. We really are very clever. Humans can rationalise complex abstract ideas and use our memories and imaginations to form original thoughts and create solutions to problems, like no other animal can. We've also developed sophisticated means of communicating with each other (speech was such a game changer), allowing us to share solutions to problems and to pool our resources in other ways too. In fact, our minds are very much geared for us to be a sociable species, which helps us to scale our individual achievements across whole populations, combining strengths and insights to greater effect. There is clear evidence that no human can live truly independently, and most people live lives that are very far from independent. By working within a society, people can focus on a particular profession and skillset, thereby becoming

highly proficient in their work. A car technician, for instance, can become highly skilled because they know that others are taking care of architecture and healthcare. A technician can then train the next generation of technicians because we are sociable and have memories and ways to communicate.

Blended with our intelligence is avid curiosity, which has paid great dividends over deep time. By incessantly wondering and wandering, we diversified our species and invested in long-term growth. By contrast, our earlier evolutionary cousins, such as the Neanderthals, and lesser known Denisovans and Heidelbergenses, seem to have lacked in curiosity. They did not (or perhaps, could not) habitually ask 'what if?' The price they eventually paid was extinction. Archaeologists reveal that during another major climate emergency, about 40,000 years ago, some of the last Neanderthals retreated into a cave in the Rock of Gibraltar and perished. The poor ignorant creatures couldn't conceive that their means of survival may have lain over the mountain, or across the bay, or among their tools. Under the same circumstances, homo sapiens went looking for oysters and ways to open them.

If there is a lesson here, it is to embrace our curiosity and continue to invest in the big 'what ifs?' Fortunately, though, our curiosity is innate and drives us to understand things like anthropogenic climate change and to use our tools to find solutions, at home and among the stars.

In the 2019 book *Transcendence: How Humans Evolved Through Fire, Language, Beauty and Time*, Gaia Vince builds on our understanding of our evolutionary journey and makes observations that support my assertion that we are indeed a growth species. Vince argues that:

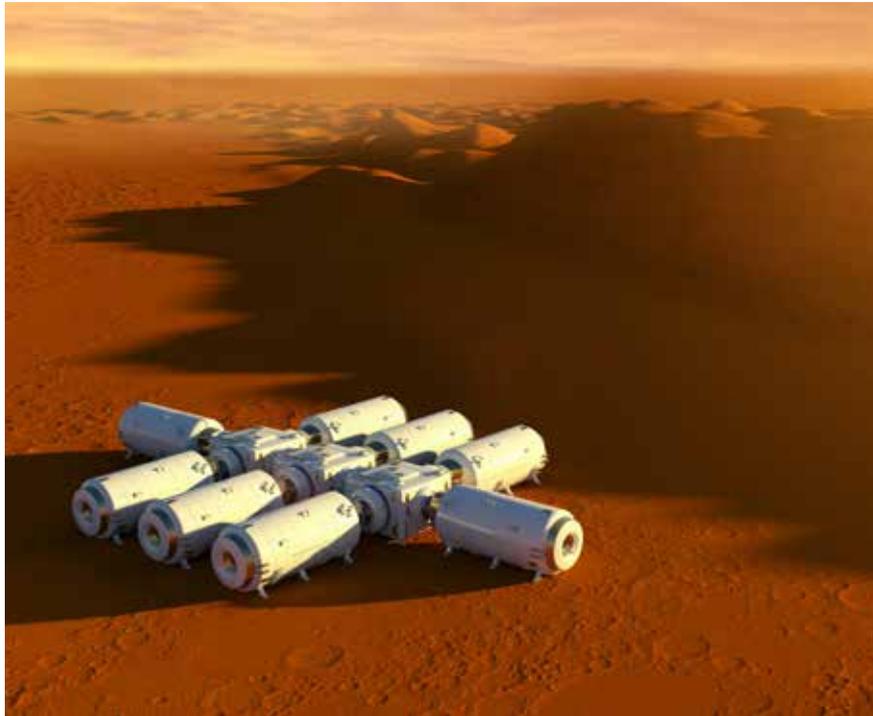
*Our unique ability – compared with other species – to determine the course of our own destiny rests on a special relationship between our genes, environment and culture going back into deep time. It is our collective culture, rather than our individual intelligence, that makes humans unique.*

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Cultural evolution then, not just physical and mental evolution, is a powerful force which allows us to grow in ways that other species cannot. Vince further argues that the key ingredients that make human progress exponential are large, well-educated populations, which are well enough connected to exchange ideas freely. It's no wonder then, that as human populations have grown and become better educated and connected, our growth has become explosive.

Consequently, our tools are now evolving exponentially too. We began with stone axes. But now consider the economist Brian Arthur defining 'combinatorial evolution' as new technological combinations arising out of the collection of previous ones; the philosopher Thomas Kuhn, describing the 'structure of scientific revolutions' as intermittent instances of genius which change paradigms for everyone; the development specialist Carlota Perez, explaining how powerful combinations of capital and science create regular and valuable industrial revolutions; and the futurist Ray Kurzweil, optimistically predicting our species' further evolution through artificial intelligence. Moore's law has already been mentioned but deserves repeated kudos.



So, ‘humans, a growth species’ – but what does this mean to us as growth investors? Rather a lot, actually.

It means we can understand what drives long-term growth in the businesses we invest in, not just at the economic and technological levels, but also at the atavistic, behavioural level. In helping us to understand how we arrived at this period of deep societal and economic transformation, it reminds us why growth investing yields such promise over the long term. Some scientists assert that we’re even living in a new epoch: ‘the age of invention and human influence on the world, called the Anthropocene’. Provided we make the Anthropocene sustainable, with greater concern for impact and social licence, the progress we could continue to make throughout the human epoch is tantalising.

It’s no coincidence that innovation abounds, and it’s not just a phase we’re going through. Rather, growth is part of our very nature. Innovation, invention and improvement are central to what it is to be human – tendencies we evolved to survive and beat the odds. As investors, therefore, I argue that it’s directly relevant that humans are a growth species, because over the long term we can expect a lot more growth: it’s what we do.

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Hamish joined Baillie Gifford in 2017 and is an international equities Investment Specialist in our Clients Department. Just prior to joining Baillie Gifford, he achieved an MBA from Cass Business School and was recipient of the EU Award. Earlier in life, Hamish also completed post-graduate Law at the University of Sussex, but a well-known economic event in 2008 encouraged him to pursue a different interest professionally, i.e., join the Royal Navy as a Commissioned Officer. Hamish served in aircraft carriers, mine-hunters and trident nuclear submarines and was awarded top-of-class by HRH Prince Edward.

