

Tech Abundance

Q3 2025 Client Letter

Technology now touches every corner of the global economy, driving improvements in quality, productivity, and profitability across industries. Computers that once filled entire rooms now fit in our pockets, and what seemed cutting-edge just a few years ago is quickly obsolete. Today, we believe it's worth taking a closer look at artificial intelligence, the next great driver of technological change. For decades, artificial intelligence felt like a car stuck in first gear. It could move forward, but progress was painfully slow. Around 2010, it finally shifted into higher gear, and progress began to accelerate in a noticeable way. That turning point came with what's known as "deep learning." Three forces collided at once: the explosion of data from smartphones and the internet, powerful new hardware originally designed for video games (GPU's), and smarter algorithms that could recognize patterns on their own. Almost overnight, computers went from clumsy guesswork to identifying faces, understanding speech, and translating languages with accuracy. Since then, progress has been nothing short of exponential. In fact, the compute power behind AI is advancing so quickly that capabilities are leaping forward not every decade, but every year. What this means is that AI is now a driver of real-world change at a pace few industries (or governments) can ignore. Nowhere is this acceleration more striking than in the evolution of the chips themselves, the engines powering today's AI revolution. Back in the 1990s, NVIDIA's first chips were manufactured on 350-nanometer technology. That was cutting-edge then, but crude by today's standards. Those early GPUs packed millions of transistors and could take months of workstation time just to render seconds of graphics. Fast-forward to today: thanks to advances in semiconductor manufacturing by companies like TSMC and ASML, chips are now etched at 2 nanometers, with tens of billions of transistors. To appreciate that accuracy, imagine firing a laser from Jupiter and landing it on a quarter sitting on a sidewalk in Arizona — and doing it billions of times over flawlessly. It's hard to overstate how far we've come in a few decades.

From a long-term perspective, technological progress has consistently been a story of dematerialization. We've seen it before: music, movies, maps, and even financial transactions have moved from physical form to digital. That same shift is now happening in more serious arenas. Wars are increasingly fought not just with tanks and planes, but in cyberspace, where code can be as destructive as a missile. Companies no longer need factories full of equipment to create value. They can build multi-billion or even trillion-dollar platforms out of software that helps make life easier daily for businesses and individuals. Even knowledge itself is being reorganized and redistributed by AI systems that can learn, generate, and reason. This technological progress and growth is the product of entrepreneurs and the free market competing relentlessly each day to deliver more and more value to society. And paradoxically, the more challenges the world faces, the faster innovation accelerates, as competition and necessity push breakthroughs forward at an accelerating pace.

The sheer pace at which technology continues to grow raises a question we must consider as investors and protectors of wealth: what does the world look like in ten or twenty years if this AI curve continues? Is there a point where the growth begins to flatten out, such as a normal technology adoption S-curve, or does it just keep moving out aggressively (Moore's Law-like exponential growth)? It is very likely that entire industries we take for granted today could look unrecognizable in that 10–20 year timeframe. The ways we produce energy, treat disease, conduct commerce, and even govern societies are being reshaped by this wave of digitalization. With so much change, there will be disruption, but also extraordinary

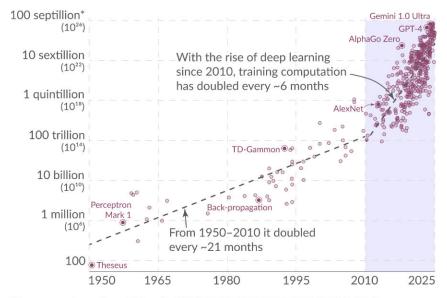
opportunity. By keeping perspective on both the risks and opportunities of this transformation, our goal is to help position your portfolio thoughtfully for both today and the decades ahead. Much of what we currently think of as physical power (borders, armies, factories) is being reframed into digital infrastructure. Trade flows move less with ships and more with code and computation. Currency itself is detaching from paper and coin, migrating to digital ledgers and possibly state backed tokens. Again, this is simply a dematerialization of many functions once rooted in the physical world. Lately we've been struck by how rapidly computing power and Al capability are advancing, growth that now appears almost vertical. Before the deep learning breakthrough in 2010, Al progress was advancing at more of a steady pace. Compute usage doubled about every 18–24 months, similar to the pace of Moore's Law. Since deep learning, that rate of growth in compute has doubled every 6–10 months. Even metrics based on Al agents' ability to perform tasks, tasks that once took humans days or weeks, are seeing the same steady exponential gains. These are not "someday" projections, they are current trends. And in the coming decades, we are poised to witness the most dramatic technological leap in human history, on par with the steam engine reshaping industry, the airplane shrinking the world, or electricity transforming daily life.

Over the next decade or two, nations that build resilient compute infrastructure and secure energy and critical material supply chains will likely be the ones that hold significant advantages. We are already seeing the U.S. take these very steps—building equity and option stakes in key chipmakers like Intel, tightening export controls, and offering incentives to reshore semiconductor and critical mineral production. These moves send a clear message: computing power is now viewed as strategic infrastructure, essential not just for innovation but for national security and economic leadership. The next step will likely be governments and private actors relentlessly competing to build out the energy supply and infrastructure that will enable compute at scale: cooling, transmission, on-site generation, battery storage, etc. Global supply chains are being rapidly realigned to meet this reality, which is not something that happens overnight either. Reliance on Taiwan for leading-edge chips, or on foreign sources for rare earths and critical inputs, is being viewed as a vulnerability. Whether something is made domestically, or in a trusted allied country, might matter almost as much as what it costs.

The computation used to train notable AI systems has doubled every ~6 months since 2010



Training computation is measured in total floating-point operations (FLOP). Each FLOP represents a single arithmetic calculation, such as multiplication. Shown on a logarithmic scale.



*For comparison, 1 septillion (1,000,000,000,000,000,000,000,000) is the estimated number of stars in the universe.

Data source: Epoch (2024) CC BY

Another popular, yet important, talking point on Ai is how its rise will reshape the workforce. A company that traditionally hires multiple employees to handle routine tasks (emails, reports, data entry) might now accomplish the same work using AI tools that operate faster and around the clock. While this can significantly reduce costs and improve efficiency, it also means that some roles may shrink or disappear, and the skills in demand will shift toward creativity, judgment, and oversight of AI systems. As humanoid robots become more capable and more affordable, declining workforce growth won't necessarily mean declining output (productivity) however. Instead, robots powered by AI will fill many gaps, allowing industries to maintain productivity while humans re-allocate toward higher-value, more creative, or oversight roles. Countries with weak supply chains, high dependencies, or under-investment in compute/energy may struggle to keep up.

Of course, like every breakthrough in history, significant AI adoption comes with both benefits and tradeoffs. The upside is enormous: it can boost productivity across industries, automate routine tasks, and allow people to focus more on creativity, strategy, and human connection. It has the potential to accelerate medical research, improve supply chain resiliency, and help businesses of all sizes operate more efficiently. At the same time, there are real challenges to watch closely. Relying too heavily on machines could make us less practiced in critical thinking, more dependent on algorithms we don't fully understand, and more vulnerable to misinformation going on in the world. The key for workers and businesses alike will be adapting to these changes, focusing on areas where human insight and leadership add the greatest value. Artificial intelligence will make many aspects of life better, but it will also test how well we adapt. It is key to recognize both sides - to embrace the opportunity while staying mindful of the responsibility that comes with it. Peter Lynch's tenure as manager of Fidelity's Magellan Fund from 1977 to 1990 is legendary. During that period, the fund delivered an average annual return of 29.2%, more than doubling the S&P 500's 15.8% return. We are reminded of his words: 'The strength of our economy is that it is dynamic and always adapting to changing conditions. That's our advantage in the world.' As we navigate this period of unprecedented technological and economic transformation, we remain focused on helping you position wisely for the future while staying grounded in the investing principles that have stood the test of time. We hope you've enjoyed the summer months and look forward to connecting with you soon.

Warm regards,

Dan Twogood, RICP®, Grant Twogood, CFP®, Jordan Twogood

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