Applying the Law of Accelerating Returns

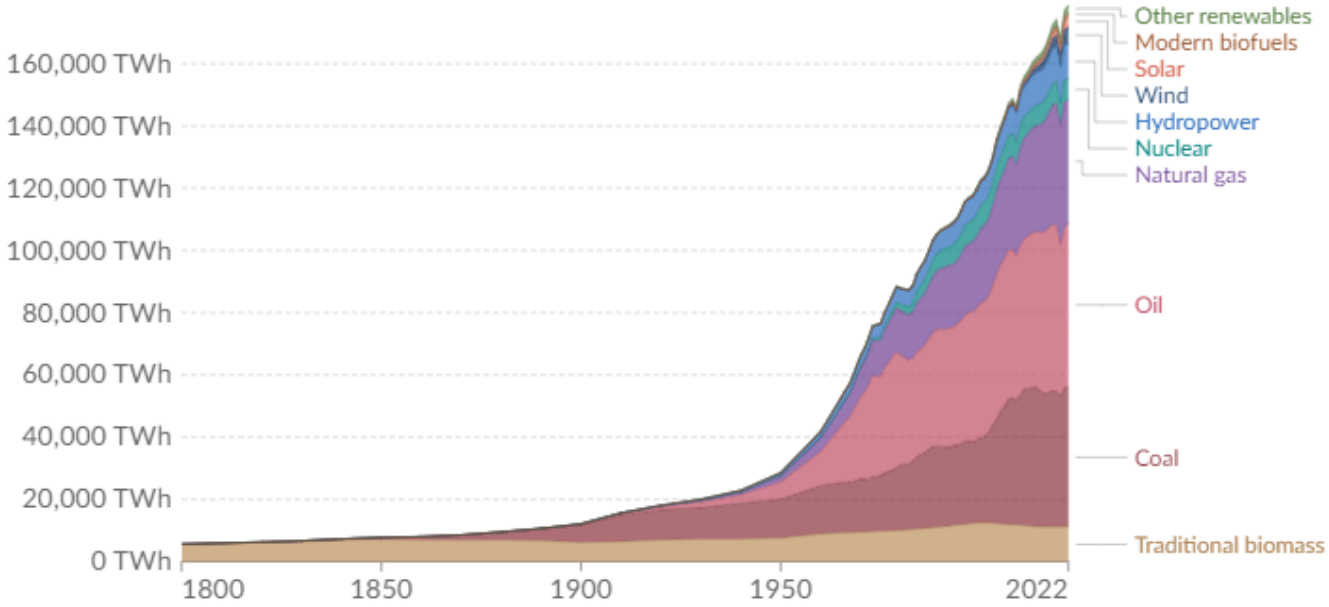
Sep 22, 2023 • Christopher Kalitin

I've read a few of George Hotz's blog posts. So I'm starting a blog. This is a first, late-night, attempt at a blog post.

In predicting any part of the future, I aim to be as accurate as possible. Emotions are the antithesis of this, emotions are not accurate. Predicting the future of humanity has nothing to do with my optimism or pessimism about it. I want to be right.

I do not solely aim to spend my life predicting what others build, but before you can build the future you have to know what to build. Kurzweil says it well, "As an inventor in the 1970s, I began to realise that my inventions needed to make sense in terms of the enabling technologies and market forces that would exist when the invention was introduced as that would be a very different one from the one in which the way was conceived."

The Law of Accelerating Returns is the most fundamental aspect of technology that everyone needs to understand. I have seen friends say "we won't have electric trucks for 20 years" or "AI cannot take over the world". These points fundamentally misunderstand the exponential growth of new paradigms, the S-curve. Furthermore, these points miss the exponentially increasing growth rate of humanity, see the energy chart. Humans are bad at understanding exponentials.



Source: Energy Institute Statistical Review of World Energy (2023); Vaclav Smil (2017)
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Why is wood still used?

We need to use more energy. Energy consumption is closely linked to quality of life and life expectancy. Using more energy saves and improves lives.

Furthermore, I believe advancing up the Kardashev Scale is a moral imperative for humanity. I do not see any other goal for humanity than understanding the universe and becoming a galactic civilization helps us do this. The more energy we have at our disposal, the more can be learned about the universe. Put differently, we must use energy to meet god.

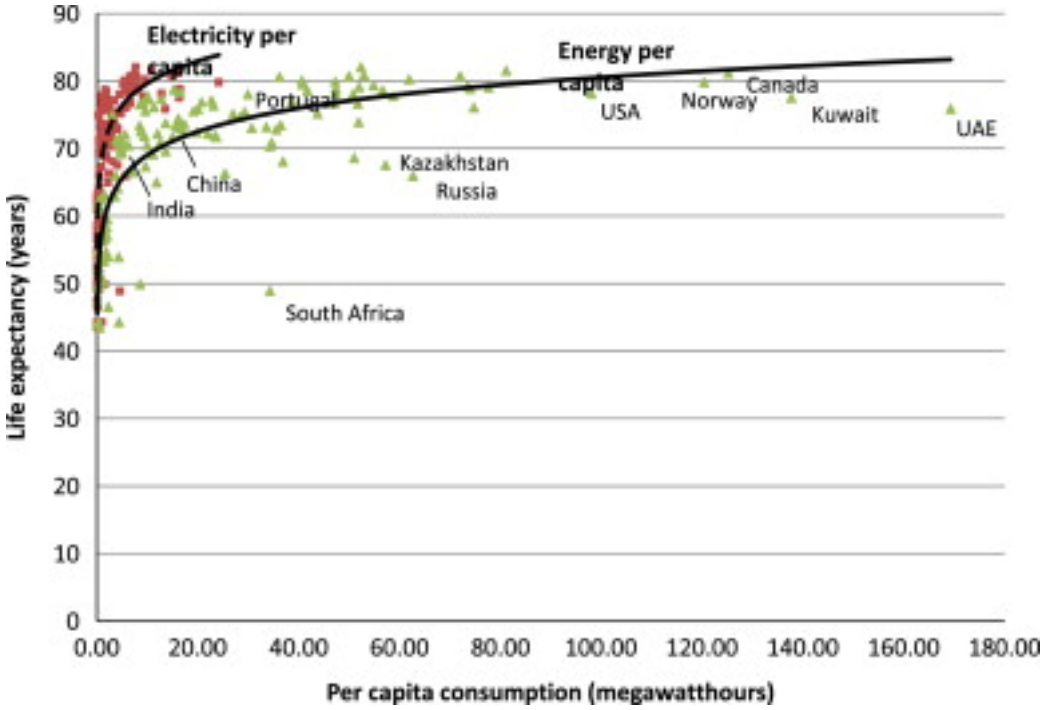
The only way to progress on the Kardashev scale is to produce more energy. How will we incentivize this increase in energy production? Simple, increase demand for energy. Use Air Conditioning when you're not home, run all the TVs in your house all day, the lights too, keep your stoves running to burn more gas, and keep computers running at full capacity at all times. This is a moral good for the future of humanity.

It is a damn shame the chart of energy consumption hasn't grown faster. Let's fix that together by using as much energy as possible. Damn the efficiency, the Kardashev scale only measures production!

A note on climate change: I don't care if some Pacific island nations get flooded. The Kardashev scale is more important. Also, I will personally kill every endangered species within 100km of Starbase if it means Starship launches 1 month sooner.

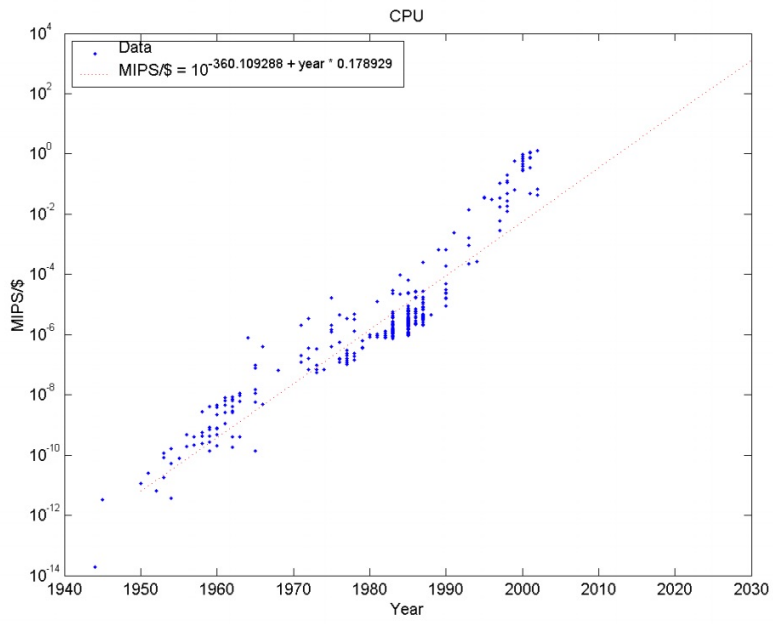
Climate Change will not kill us. The rapidly advancing paradigms of clean energy will take over the world and save us from climate change for a simple reason: they're cheaper. Installing new

solar is cheaper than coal. EVs are cheaper than ICE. My prediction for EV new car market share is ~50% in 2026 and 90% in 2030. S-curves are easy to project into the future.



The long tail of life expectancy is not ideal. Hopefully, we'll start living longer soon.

I have seen no particularly eloquent and condensed definitions of the Law of Accelerating Returns in my Google search of the definition. This is my definition: The growth rate of technology is exponentially increasing. S-curves are getting faster. Our kids will grow up in a drastically different world than our own. Better have them quickly!



MIPS per dollar, Log Scale. Moore's law isn't dead. Strangely, it hasn't accelerated.

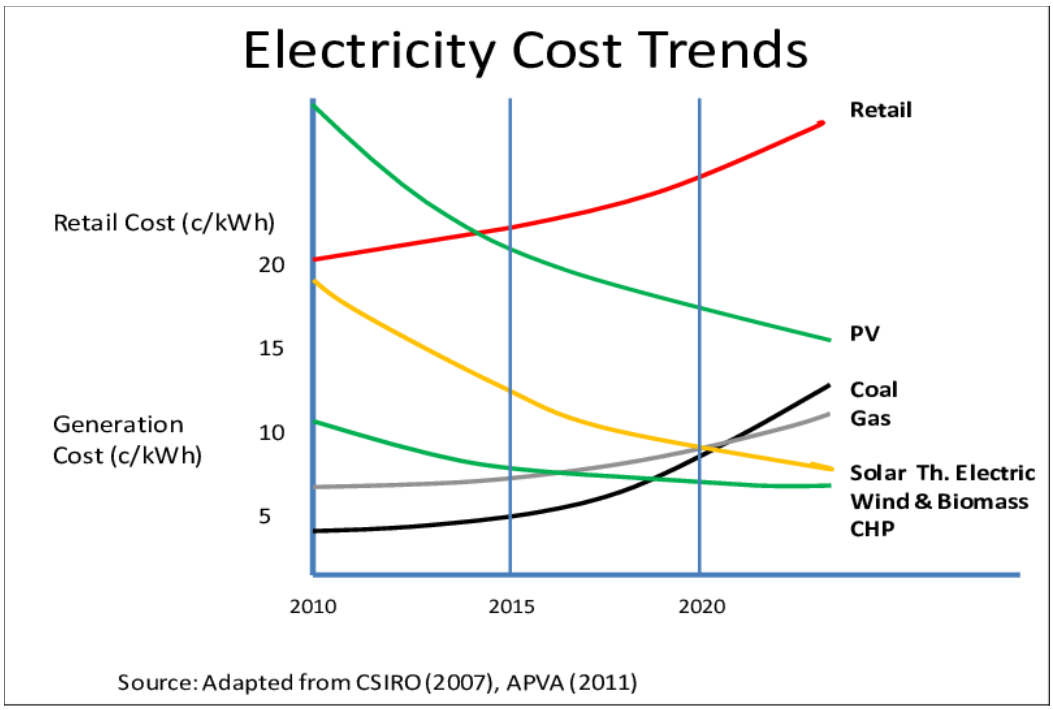
The accelerating growth of humanity and the accelerating pace of S-curves are certainties in my mind. Fundamentally, for a new and improved paradigm to take hold the legacy paradigm must come to an end. Energy is the prime example.

The stagnation of the cost of energy is described in The Singularity is Near. Coal, Oil, and Natural Gas produce most of our energy and they are evolved technologies. Their growth rates are so slow that the increasing fixed costs cause the price of energy to increase. Or maybe the companies just like money, Capitalism isn't always perfect.

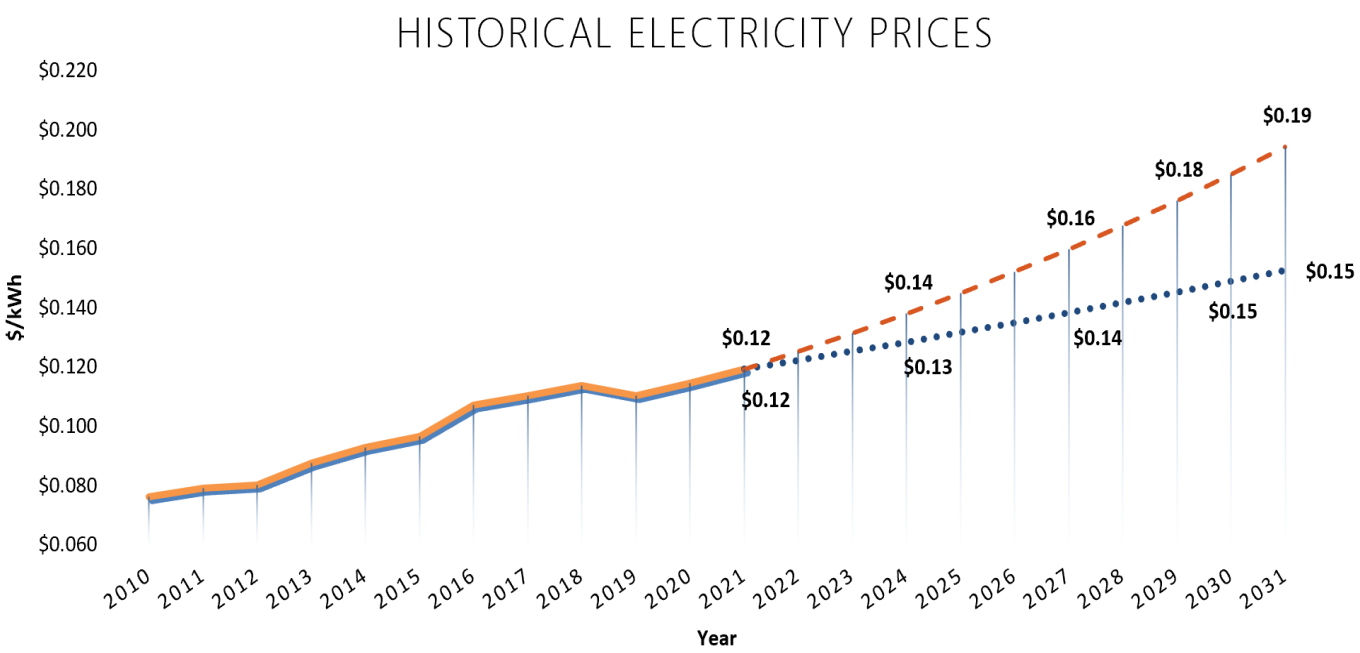
Renewable energy fixes this. Solar and wind energy generation are on declining cost curves. We are currently at the inflexion point where installing new solar is becoming cheaper than fossil-fuel-based alternatives. Soon, Solar will take over the world. In some geographics wind or hydro will be more effective. But even in BC - where BC Hydro produces the vast majority of our energy - installing solar panels on your home is a profitable long-term financial decision.

Other stagnant fields ripe for disruption are Internal Combustion Engine Vehicles, Healthcare, Education, Rural Telecommunications, Government, centrally controlled currency, etc.

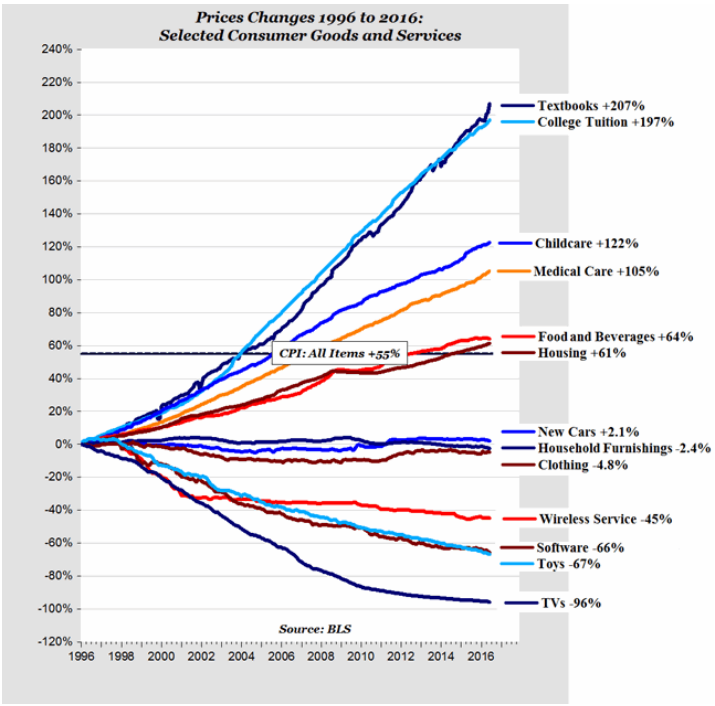
Crypto is excellent for regulatory arbitrage and fighting authoritarianism. Take the power of printing money away from the government and give it to no one.



Solar ftw, retail cost explains BC Hydro graph below.



BC Hydro is increasing energy prices. We will put them out of business with solar. Only evil people increase the price of energy.



Anything above the line should be disrupted. Housing too. Buy Tesla stock, not real estate.

The question of how exactly AI will impact our lives in 50 years is a very difficult one. The growth of AI is too fast to predict its impacts long into the future. Luckily I don't need to know the exact use cases of AI in 50 years to work on it today.

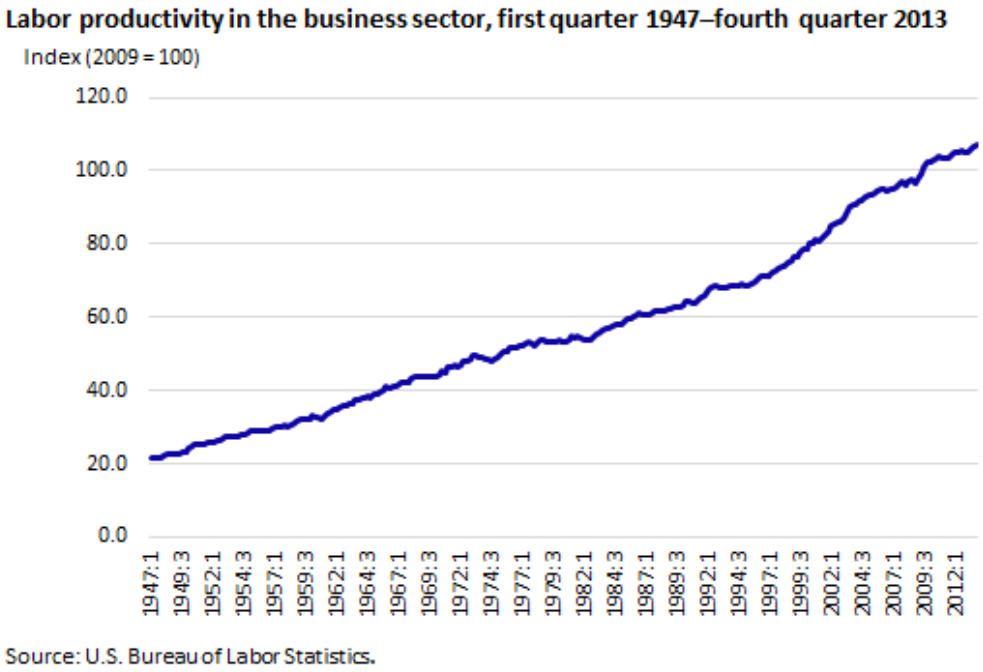
The exponential growth of AI should strike fear into everyone's hearts. ChatGPT did this for a

while, then it became normal.

A very intelligent scholar on Twitter explained the recent progress of AI well, “In 2024, AI advancements will be more numerous and happen faster than in 2023.” This will be true for every year long into the future barring any humanity-scale catastrophe.

The current paradigm of using AI systems as tools is fairly easy to broadly predict. AI tools will replace large parts of many workflows and allow for more output per hour in applicable fields.

Workers will become more efficient. This is usually put into one of two categories: companies will need fewer workers and fire those not needed or the productivity increase will allow for more work to be done. One of these scenarios increases the size of the economy, the other does not. I lean towards the scenario that increases the economy being more true than the alternative.



Increasing worker efficiency is not a new thing.

There is agreement between George Hotz and Elon Musk that Kurzweil is right in his 2029 prediction of a functional simulation of the human brain. The Singularity. I will use this 2029 date.

This means in 2029 silicon-based intelligence will be able to do the work of biological intelligence. It is not a perfect, overnight transition, but that is precise enough for my purposes.

What happens after this?

For many paradigms, it seems impossible to accurately predict AI’s impact. So, I won’t.

It is also impossible to accurately predict the colonisation of the universe. But the Kardashev scale

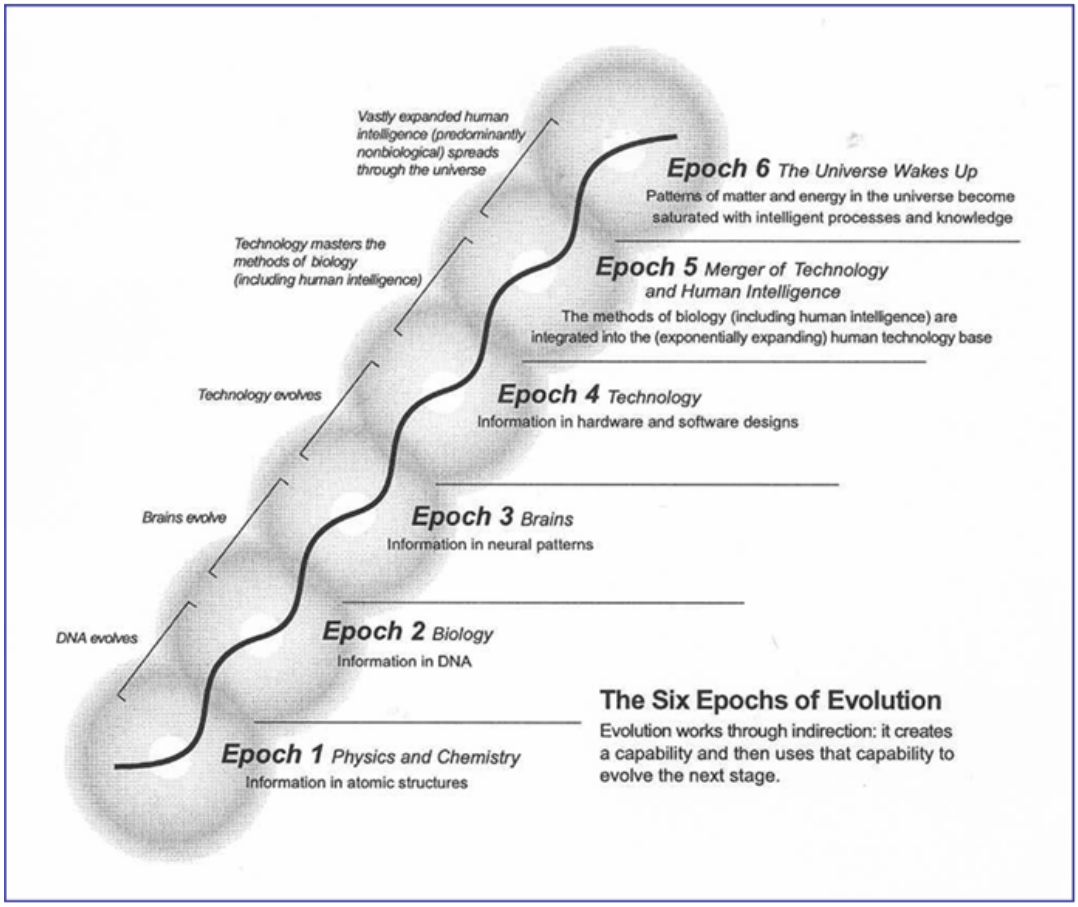
gives us a framework and the speed of light sets an upper limit.

What is the framework for predicting the rise of AI? I believe it is intelligence.

AI will greatly increase the amount of intelligence in our part of the universe. This will make progress on the tech tree much faster. This will allow us to meet God - whatever created the universe - faster.

This is the extent of my predictions on the future of AI. At the moment, I do not see any other accurately predictable outcomes.

If this is too abstract for you, read The Final Question by Issac Asimov.



Epoch 6 is the important one for meeting God.

Aside from a Yudkowsky-style Authoritarian halt to AI progress or a Butlerian Jihad I see no way to stop AI. The advancement of technology has never been stopped in the history of humanity, it has only been briefly delayed.

Slowing down AI progress is certainly a safer approach than progressing at full speed. 6-month moratoriums are not enough for this. Regulation helps to prevent our death at the hands of AI, but I am not a fan of increasing the power of the government. So, this is again an unsatisfactory

solution.

I currently have no concrete answer as to how to prevent the potential negatives of AI. The right people must be in charge. ClosedAI are not the right people.

To conclude I will summarise my beliefs/predictions.

1. The goal of humanity should be to uncover what created the universe. Meet God.
2. Advancing up the Kardashev scale helps us meet god.
3. If The Law of Accelerating Returns is understood, it is trivial to predict the growth of some paradigms. Clean Energy, EVs, etc.
4. The advancement of technology cannot be stopped.