My love for the interdisciplinary understanding of quantum physics and mathematics ignited my curiosity of the practical application of these fields in human affairs.
I view the world with entropy, swings of pendulums, and wave-length particle duality.
'Cycles: The Science of Prediction' by Edward R. Dewey and Edwin F. Dakin reinforces my perspective.
I was fascinated to see the recurring rhythmic pattern observed across all aspects, from the population growth to stock prices.
This common growth graph seems similar to y=arctan(x), which has horizontal asymptotes.
It was interesting to see the dependent variable violently oscillate as it approaches the asymptote.
If extrapolation of data with these frameworks of pattern recognition can forecast volatility of share prices, it would revolutionize how we manage risk and analyze data.
This was what former codebreaker Jim Simons achieved.
A Ted talk, 'The mathematician who cracked Wall Street | Jim Simons' led me to read 'Physics of Wall Street' by James Owen Weatherall.
He cracked the "code" of the stock market by leveraging his background in topology to create a sophisticated algorithm.
Ten minutes into the talk, Jim mentions how commodities exhibit a tendency to trend, which was the main principle suggested in the book 'Cycles'.
While Edward R. Dewey offered a macroscopic view of pattern recognition in data, Jim utilized these patterns to create an automated system.
I am halfway through 'Mathematics for Economics and Finance: Methods and Modelling', by M. Anthony and N. Biggs of Cambridge University.
In Chapter 5, the cobweb model demonstrates how external shocks are naturally alleviated within the market, which seemingly advocates the laissez-faire.
The amplitude of the price and quantity's vibration is mitigated as the market converges towards the equilibrium set, exhibiting a logarithmic spiral pattern.

Studying the cobweb model raised a couple questions.
First, how can we quantify the customers' willingness to pay?
How is a qualitative variable like willingness, converted into quantitative data?
Article 'Willingness to pay (WTP); What it is and how to calculate' by Tim Stobierski mentions how this WTP is estimated.
Direct surveys and auctions appear prone to hypocrisy of customers, because actual purchasing behaviour could differ from what they say.
Hence, using revealed preference of how they react to price changes are more credible data for predicting the WTP.
Also, convergence towards the equilibrium set occurs only if the absolute value of the supply line's gradient is greater than that of the demand line.
I wondered; How can we solve the reverse situation, where demand is more elastic than supply to quantity change?
In this case, customers being more vulnerable than suppliers, external change would amplify the swing of price and quantity, resulting in market disaster.
Using inductive reasoning, I tried to derive generalizations from recent epochs. I recalled the Great Recession.
This stock market crash was triggered by a discrepancy of actual market value and the perceived value of assets.
The real estate bubble popping snowballed into a tidal wave of panic.
More recently, COVID-19 stirred up a climate of chaos and a surge in WTP for medical supplies; people, including myself, extended price tolerance for vaccinations and masks.
The scarcity of resources exacerbated desperation of the masses.
To synthesize these examples, the steepness of the demand graph must decrease, and this stabilization of the market sentiment is attained by government intervention through applying new fiscal policies and monetary regulations, implicit of the limitations of a free market.
I agree with Hayek and Hegel that conflict is a catalyst for growth.

On the canvas of physics, I envision economics as a masterpiece, waiting to be painted with the delicate brushstrokes of mathematics and statistics.

I look forward to gaining insights and applying it within and beyond the classroom.