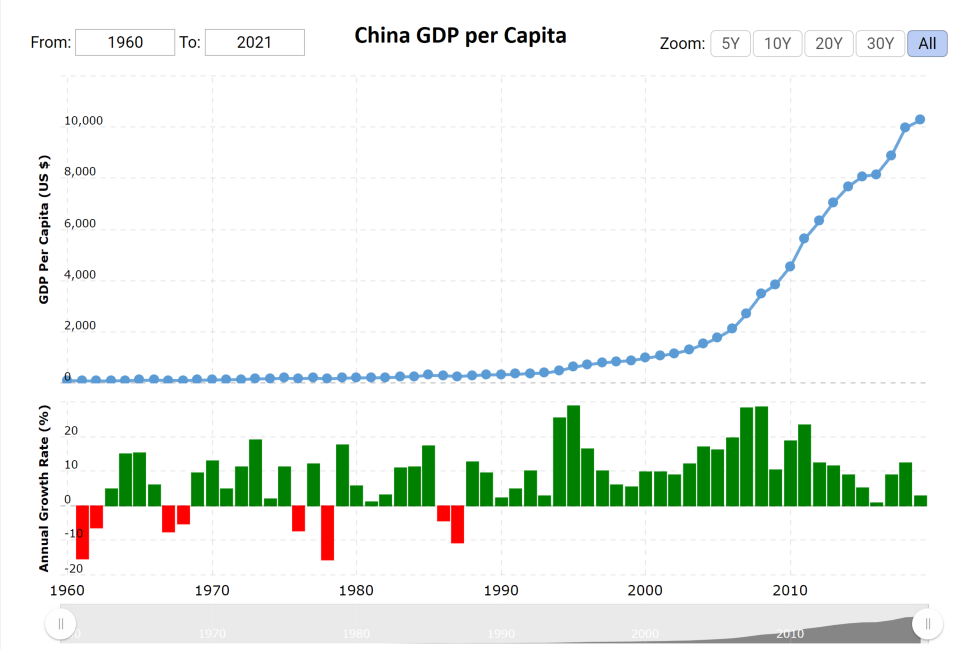
**China**

The United States and China competition in big tech is becoming fiercer. Both the United States and China have duties of self-improvement, which is beginning to put the countries at odds with each other in the growth of each country’s technology infrastructures and advancements. The intensity of competition and desire to become the undisputed global leader in technology has created several conflicts of duties between China and the United States, as well as several internal conflicts of duties for reach country.

First, China and the United States have the duty of self-improvement. China’s GDP since 1960 remained just about constant at $300 (US Dollars) per capita for almost 40 years. It was not until the late 1990’s and early 200’s that the China GDP per capita began to skyrocket. The benefits of this GDP growth largely benefitted China’s people and lifted the standard of living for many of its citizens and China enjoyed more global influence. In the same period that China has enjoyed GDP growth, the USA has seen continual, linear improvement in GDP per capita. The current GDP per capita in China is about what the USA experienced in 1980. Both countries are well-fulling their duty of self-improvement, yet other duties are less clear.

The Chinese Communist Party (CCP) is willing to bend the rules and flex its unfair advantage when it comes to promoting the Growth of China. From the perspective of the United States, the CCP is willing to violate its duty of justice, non-injury, and fidelity evidenced by state sponsored cyber-attacks on US to cripple business and steal trade secrets. The CCP has a conflicting duty of Justice and Self-Beneficence and has shown that it values self-improvement over justice. Thanks to many of these attacks, China has gained valuable information that it has used to help in one of its greatest technological weaknesses- computer chips. Currently, China is about 5-7 years behind in its technological development for computer chips and is unable to meet its demand for computer chips thanks to the quick growth in technologies. The trade secrets China has stolen from the US has helped China play catch up.

The United States is not alone in unfair advantage. China’s huge manufacturing deficit for computer chips has created a dependence on the United States. The United States is in a unique situation because it can sell computer chips to China for a profit- potentially putting China in a better position to overtake the USA in long-term tech advancement- or it can elect to exercise unfair advantage and restrict sales of computer chips. The United States is put in a weird position here because it obviously wants to gain self-improvement through the sale of the chips but doing so might jeopardize the nation’s long-term self-improvement. Due to this conundrum, there is no right or wrong solution to this conflict of duty to self.

In the discussion of unfair advantage, it is important to outline another situation where China will have unfair advantage over the USA. Thanks to the China’s geographical location, it has the opportunity to make money from many of the smaller, poorer surrounding south-east Asian countries. China recently invested in a $1.4 Trillion package to beef up the country’s technological infrastructure. This funding is available to both government and private companies. A major component of this plan is to increase China’s 5G cell tower and other civilian tech related infrastructure. After much of the construction has taken place, China will be in a situation to sell its cell phone coverage to smaller countries who are incentivized to do business with China because they are weaker and less able to say no to such a powerful neighbor. This creates a more tense situation for China to coerce its neighbors into doing business. Thanks to this potential for future business, China will be fast tracked in its technological development.

China and the United States have different relationships with their big tech companies. The United States has worked hard to protect its economy and citizens against monopolies and invasive power. Lawsuits against Facebook and Google have been commonplace. There is much discussion about what legislation is appropriate for the US big tech companies. However, the US has taken a fairly liberal approach compared to China. In China, the government is more centralized, and monopolies are not necessarily seen as legal dangers. China is very interested in seeing its large tech companies perform well in hopes of driving China to global dominance. For China, the conflict between big tech companies and government happens when The CCP believes that big tech companies are too concerned with company growth and power and less concerned about advancing China’s interests. In 2019, the CCP began embedding officials inside of major tech companies, such as Alibaba, efforts to monitor and control these companies.

Due to these conflicting viewpoints on big tech and government involvement, many conflicts of interest and opportunities for unfair advantage arise between the USA and China. China has the opportunity for unfair advantage in the tech sector because it can coerce its big tech companies into acting as an arm of the government. China has already begun that process. The United States honors companies’ rights to be independent bodies that are not governmental puppets. The CCP exercises unfair advantage over its tech companies to promote state interests. The CCP rationalizes its actions by an appeal to higher loyalties – government over a single company’s interests. In the United States, individualism is more valued than collectivism, so the CCP may be able to justify its actions easier in a collectivist, Chinese culture.

In review, China exercises holds many opportunities for unfair advantage. First, China exercises unfair advantage through state sponsored cyber attacks on the USA. This is an unfair advantage because the United States has not proactively attacked China in an effort to maintain relationships because of its dependence on Chinese manufacturing. Secondly, China has exercised unfair advantage over its own companies by forcing them to advance state interests by planting secret government employees in its powerful companies. China will forcefully control companies through coercion and will retaliate against companies that do not wish to comply with the CCP’s interests. Third, China has exercised unfair technological advantage over its neighboring countries by developing an technological infrastructure in plans to coerce these weaker countries into doing business with China to improve its global dominance and economic power.

In review of the United States, the US exercises unfair advantage over China in the operation of its sales of computer Chips. The USA does not want to lose any advantage or footing that it has over China in the superconductor realm, so it limits its sales of computer chips to China. From the United States perspective, this is good business because the scarcity will increase the price at which they can sell to China, and the exclusivity means that China can only satisfy its computing needs as much as the United States is willing to let them. For this reason, China has stolen trade secrets for computer chip manufacturing and is working hard to develop its own technological prowess by creating Chinese equivalents of IBM, Oracle, etc.

It is my personal opinion that as the gap in technology between the USA and China narrows, the gap will exponentially close. China is willing to play the long game. It has invested in its technological future and has made the advancement of Chinese big tech a matter of state defense, not only an economic priority. I believe that as time goes on, China will gain more power, and with that greater power will come greater unfair advantage. Because China has already been exercising unfair advantage in the tech race, I believe that China will not break from its pattern of behavior and will only gain more power. To the USA’s top big tech figures such as Jeff Bezos and Mark Zuckerberg admit that the United States might lose its technological supremacy to China if changes are not made.

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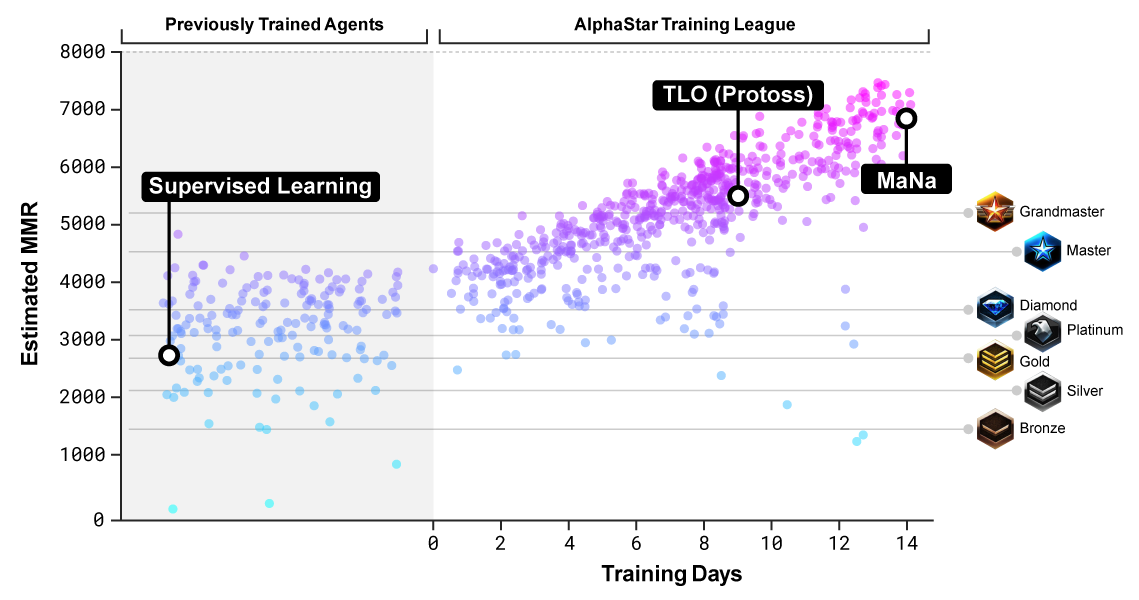
**Starcraft AI Bot**

A recent trend that has been occurring in the CS world is the creation and use of bots. Bots can be used for a variety of things, from trying to reserve a high demand product when it is released (like the new Xbox and PS5), automating tedious and mindless work (I used this for some conversions at work), or even for creating opponents in video games.

Bots in video games have technically been around for a while. When computers were first created, there was quickly interesting in creating an AI that could play chess. Also, most single player games have some form of AI used in enemies that the players have to overcome. More complicated AI can be used to simulate other players in competitive strategy games such as Age of Empires.

However, with the recent popularization of Deep Learning, the heights that AI can reach has vastly expanded. Recently, DeepMind created a Starcraft bot called AlphaStar with deep learning. What this essentially means is that AlphaStar was shown thousands of examples of StarCraft games, and with that data used algorithms to create ‘neural connections’ and with that information make informed decisions on best how to play.

It would be an understatement to say that it was successful. As you can see from the graph below, it managed to increase its ranking past grandmaster in less than 2 weeks. If you play competitive games, you start to see how astounding this is. I personally don’t play Starcraft, but I play chess competitively online and if I’m doing unusually well, it takes me about 2 weeks to jump up 100 points in rank. Granted Starcraft is a different game and has a different scale, but the point is that it takes a lot of dedication to get good at these competitive games. Technically speaking AlphaStar did do a lot of grinding since it had to process through all that data, but it is also a computer so it doesn’t get tired and can work much faster than a human can.



The ethics of using this bot against real players does raise some ethical questions, the main one being of unfair advantage. Is the playing field of this bot really the same as the human players? DeepMind did state that they did take steps to ensure that it played like a human. One example of these steps is when AlphaStar receives information that it can act on, there is a small delay inserted to simulate the processing time of a human. With a bunch of these limitations in place, you could argue that they’re on the same playing field.

However, there are still some gaps between how the computer sees things and how human players see them. For example, when human players are playing StarCraft, they can only see the part of the map that is enclosed in their monitor. AlphaStar on the other hand can see the whole map at all times (granted, only the parts of the map that have been explored by its troops). This could be seen as unfair since AlphaStar would be more aware of incoming enemy troops and would thus be able to respond faster.

This issue of speed comes up rather frequently. Another example of a human limitation that AlphaStar avoids is when a player spam clicks a location for their units to move. It’s a very human thing that a lot of people do but wastes lots of time. AlphaStar is very efficient in just telling the unit to move once, and then goes to work on other things. In more complex battles, AlphaStar could also micromanage the individual units much more efficiently than a human could.

There are a bunch of advantages that AlphaStar has over humans, but it also has some limitations which adds to our questioning of the even playing field. One limitation is the fact that AlphaStar has only been trained on one faction. If AlphaStar was to play as another faction it would most certainly lose just because it hasn’t trained on data with that faction yet. AlphaStar can also only deal with things it’s encountered before, if it sees a completely new situation it wouldn’t be able to take what it’s learned previously and apply it, it would just be confused and potentially freeze.

Let’s jump into the ethics a little deeper and talk about some of the prima facie involved. The first one would be Non-injury. This is a bot, playing a video game. One could argue that it is hard to see how what harm it would do beyond bruising a gamers ego. However, things could get more complicated. What if the bot was used in a competition that involved money? If it is true that it’s not on an even playing field, then it is essentially cheating another human player out of their prize money. I think the overall importance of the Non-injury prima facie is predicated on what this bot will be used for.

The second prima facie, which I feel like highlights the benefits of AlphaStar would be self-improvement. We are always trying to expand the limits of computers, and AlphaStar shows great promise in the field of Deep Learning. Granted, having a machine being really good at a video game isn’t in itself useful, but what the researchers learnt and published while creating this bot could be used to create a bot that would be helpful to society. For example, maybe in the future they could create a bot that would analyze economic markets and could better inform consumers. Of course, having a bot opens up a whole new can of worms in regards to ethics, but the point is by exploring the use of deep learning with video game bots, we could open up a lot of possibilities as a society.

The last prima facie that comes into question is veracity. This seemed to be a point that was focused on a lot in the ‘Don’t Expect AI to Play Like a Human’ article. One of the biggest issues with AlphaStar is that it’s playing a competitive game with humans but has extra advantages. This was discussed earlier, but this bot is somewhat expected to behave like a human but is able to cut corners with it’s processing power, unlimited map view, data API’s ect. In a sense AlphaStar could be seen as lying about what it really is and is in violation of the fidelity of the playing field which is expected from players on competitive games.

Lots of these prima facie come connected with potential neutralizations. For example, the prima facie of non-injury naturally comes with denial of injury. This argument was highlighted earlier, but one could argue that a bot being really good at video games doesn’t harm anyone. Another rationalization that is tied with an already explained argument is appeal to higher loyalties. This argument could easily be tied with the self-improvement prima facie. The creation of this bot and this lesson learnt could have higher implications than just being able to play a video game. For example, if this bot could be considered unethical in the gaming community, it doesn’t matter because it’s research for something more important than video games.

A potential neutralization whose argument hasn’t already been explored with prima facie could be denial of victim. Lots of gamers can be arrogant, and the ones at the top might feel like their better than everyone else. People who play competitive games know that elitism can get out of control and makes it hard for new players to get started. Some might say that these really good players deserved to be beaten by this bot because they could use a slice of humble pie. I personally don’t think this is a very strong neutralization, but it still could be one that comes up.

In conclusion, AlphaStar showcased some very exciting technology, but with new technologies comes the questions of ethics. Is it okay for this to be introduced into the gaming world, or could it be considered unfair? I think as deep learning continues to progress, we will see more of these bots in the future and will have to answer these questions.

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