The New Cold War

The New Cold War:

A Case of History Repeating Itself?

By

John Glenn

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CHAPTER ONE

HOW DID WE GET HERE?

Introduction

This is a revised edition of a book that was published as Jack Green - "The New Cold War: China versus America", published with Amazon in 2021. As the earlier version attests, even before Russia's second invasion of Ukraine in February 2022, the central argument of this book was that we are entering a new cold war. However, Russia's actions have acted as an accelerant with attitudes hardening and military alliances consolidating. Since the invasion, NATO has welcomed Finland as a new member and with Sweden following a year later (March 2024). On the other side of the divide, although not entering into a formal military alliance, China and Russia have held joint military exercises in various theatres, including the South China Sea, the Gulf of Oman (with Iran) and even into the Alaskan air defense identification zone.[1] Both President Xi and President Putin view their partnership as heralding the beginning of a new world order.[2] The world is once again becoming divided into two antagonistic camps.

However, the argument of this book is that the new cold war has one very obvious difference with the old Cold War. It is an inverted mirror image of the previous one - whereas previously Russia was the major partner in the Sino-Russian alliance, it is now China that is the most technologically advanced and economically far more powerful. It may initially seem a rather odd claim that China and America are the key protagonists this time given that Russia is currently at war with Ukraine, but we need to analytically

[1] Kathrin Hille and Max Seddon, "Russia and China fly joint air patrols near US for first time", Financial Times, July 25 2024. https://www.ft.com/content/b2ef8e97-55b1-474b-acbf-a44f55892a1e. Al-Jazeera, "China, Iran and Russia stage joint naval drills in Gulf of Oman", March 12 2024. https://www.aljazeera.com/news/2024/3/12/china-iran-and-russia-stage-joint-naval-drills-in-gulf-of-oman.

[2] Bloomberg, "Xi, Putin Building "More Just" World Order, Top China Envoy Says", September 13 2022. https://www.bloomberg.com/news/articles/2022-09-13/xi-putin-building-more-just-world-order-top-china-envoy-says?leadSource=uverify%20wall.

separate cold wars from hot ones. It is therefore worth revisiting what the old Cold War actually consisted of.

After the Second World War, the world divided into two camps: a larger capitalist system and a smaller but growing communist system. The two hostile camps centred on America in the West and Russia in middle Europe. Although the start of Cold War I began around 1947, the division of the world became even starker when the communists gained power in China in 1949. From 1947 to 1991, the world was divided by two opposing ideologies with remarkably little interaction between them in terms of flows of people, money and even, to some extent, ideas. A huge military build-up accompanied the division. This was most apparent on the borders of Eastern Europe where both sides faced off with vast amounts of soldiers, missiles, tanks, aircraft, rockets and landmines. At the same time, there was a build-up of their nuclear arsenals with tens of thousands of nuclear warheads and a bewildering array of delivery systems.

Yet, it may well be that because these missiles made Armageddon a certitude if either side decided to start a war, the tensions between the two sides remained at the level of a cold war rather than a hot one. In other words, the two sides were locked in an antagonistic relationship competing in terms of economic growth, technological and scientific discoveries, spheres of influence, military capability etc. These tensions often spilt over into "proxy wars" where America and Russia would intervene in warring countries or civil wars – each backing a different side. However, the antagonism remained as a cold war and never escalated to an actual hot war between the two main protagonists.

In hindsight, the Soviet Union's demise was marked by the 9th November 1989 when East Germans took to the streets and finally broke through the Berlin Wall that divided Germany into East and West for almost 30 years. The latter marked a major watershed in international relations, heralding the end of Cold War I and the division of the world into two ideologically opposed camps, both armed to the teeth with conventional and nuclear weapons. At the time, few, if any, foresaw that the Soviet Union's embrace of the "Sinatra Doctrine" (states could do things "their way') as a replacement for the centralism of the "Brezhnev Doctrine" (in which Soviet policies had to be followed) would lead to the final dissolution of the Soviet Union itself. But the effects of the springtime of nations in Eastern Europe reverberated throughout the Soviet bloc. By September 1991, most of the Soviet Republics had announced their independence and by the end of the year the Soviet Union officially ended.

But what was highly significant at the time was that, despite the tumultuous separation of Eastern Europe from the Soviet Union and ethnic separatism erupting within the empire, all-out war between the two sides failed to materialize. With the demise of the Soviet Union, it appeared a truly global world was emerging centred on capitalism. Although China continued to profess that it was communist, this was in name only – at least when it came to the economy (although, as we shall see, its political system remained largely the same).

The process of globalization gathered pace with the integration of these former communist countries alongside more and more complex production and supply chains spanning the world. As this book argues the most recent globalization involved a "great inversion' in economic relations. Previously, globalization essentially involved production sites in the core powerful states and raw material extraction in the less economically developed states. In the last few decades industrial production has been relocated to various sites in the developing world because of the cheap labour, land and energy. However, it is the contention of this book that, in a few decades, we may view the period from the late seventies to now as a blip - a high point of global integration and openness – one which is already in decline and soon to be replaced by a new cold war.

Cold War II

The benefits of globalization for the highly industrialized countries and for several developing countries has been great. The industrialized countries import super cheap raw materials and manufactured goods whilst several emerging economies have been able to go up the technology ladder producing manufactured goods for sale to a world market. This is no where more true than with the economic relationship between America and China; and it is not only America that has reaped dividends from China's development. Europe and East Asia have invested large amounts of money into the country over several decades. That investment has allowed large profits to be made by exporting back to one's home country and the rest of the world. In addition, as Chinese citizens have become richer, overseas companies have benefitted from a market made up of around 1.4 billion consumers – that's almost a fifth of the world's population. But more than this, in the seventies and eighties, Japan and the Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan) were coming under fire from the West for unfair trade because they were exporting far more products than they were importing. Just as these trade wars were heating up, Deng Xiaoping

announced the opening up of China to foreign investment. These East Asian States took full advantage of this serendipitous moment and shifted their factories to the Chinese mainland. They not only made super-profits from the cheap labour; their products were now stamped with China as the place of origin. They could therefore continue their export drive and China could take the blame for their trade imbalances with America to the point where, a few years ago, over half of all China's exports were not produced by Chinese companies but by foreign companies located in China.

Yet, arguments suggesting that greater trade and investment would bring China and America closer together on a permanent basis ran the risk of making the same mistake as Norman Angell who, just prior to the First World War, predicted a pacific future based on the increasing global integration at the time. Angell's mistake was to assume such closer relations would continue for ever.[3]

A more pertinent explanation of America and China's behavior is the enduring pattern throughout history of inter-state competition. Great powers tend to view each other as competitors or potential future competitors. Without an overarching authority with the military means to ensure peace at the international level (the UN has no standing army), states have to rely on their own military might to ensure their security. But this generates a continual dynamic within international relations of an action-reaction spiral where one state's accumulation of power engenders others to try and acquire the same degree of power – provoking the first state to intensify its efforts of being the stronger state – thus producing never ending competition.

Indeed, integration may promote close relations lasting for decades but, from a historical perspective, once an emerging economy reaches a level at which it can challenge the predominant state, it is highly probable that the lead state (in this case America) will no longer see the relationship in a positive light and will do everything to increase its economic and military wherewithal and to slow the growth of the rising power (in this case China).

This is not only because of the security dynamic outlined above. The benefits of controlling the international system are just too great to give up. Having the wherewithal to set the rules at the global level brings distinct advantages that no state would willingly forego.

We are now seeing an unprecedented military build-up by China as it tries to catch up with American might; similarly, the United States has responded

[3] Norman Angell, The Great Illusion, (New York: G.P. Putnam's Sons, 1910).

with significant increases in its military expenditure. Cooperation with certain Chinese technology firms that are viewed as security threats is now banned. Trading is not allowed with Chinese entities involved in Uighur human rights abuses. Each side is trying to forge alliances and allies across the world - often through the use of aid and military supplies. The seventieth anniversary of the Chinese communist revolution in 2019 proved highly symbolic given the rising tensions between these two great powers. The military parade in Beijing was taken straight out of the pages of the Soviet Union's play book with rows and rows of China's newest military technologies on display. If anyone held any doubts about the message the leadership wished to convey, President Xi Jinping dispelled them by bluntly stating that, "no force can shake the status of this great nation".[4]

Given the United States' history of ensuring that any challenge to its predominance is still-born, it is highly likely that this change of direction in American foreign policy will persist. However, there are and will be several important differences between it and Cold War I between America and the Soviet Union. It is the aim of this book to explore both the similarities and differences of these two cold wars. The book begins first of all by placing the new cold war in context by examining the meteoric rise of China's economy, because this is fundamentally at the heart of most of the issues that now divide America and China whether it be trade policy, intellectual rights, the South China Sea, or its military build-up.

Chapter Three then explains why America reacted so slowly to China's rise. Chapter Four examines the similarities of Cold War I and II. Namely: a military build-up on both sides; trade sanctions and embargoes; using aid to increase one's sphere of influence; human rights and ideology. Chapter Five, on the other hand, examines the differences with Cold War I: the existence of cyber space; the geopolitical landscape; globalization; and the absence of bilateral norms and agreements. Finally, the conclusion points to certain possible future scenarios based upon the similarities and differences identified in the preceding chapters.

[4] Gemma Graham-Harrison and Verna Yu, "China celebrates 70th anniversary as Xi warns no force can shake great nation", (The Guardian, October 1 2019. https://www.theguardian.com/world/2019/oct/01/China-celebrates-70-years-military-parade-xi-jinping-hong-kong

CHAPTER TWO

THE RISE OF CHINA

It is difficult to comprehend the incredible speed of China's development and the breath-taking changes this has brought about in terms of modernisation. Visiting the country in the early eighties, one was struck by its ageing transport system, basic domestic air service, its rudimentary road systems, high levels of poverty, ageing factories and the lack of industrialisation of agriculture. The absolute opposite is true of today's China. One is struck by the gleaming spires of glass and steel in every major city, its vast airline network, the unabashed affluence, its modern roads and rail system – especially its showcase maglev train from Shanghai's airport. In 1976, two years before Deng Xiaoping announced an open door policy, China's economy was shrinking rather than expanding at a rate of -1.5 per cent and the overall size of its economy was just $154 billion in terms of GDP. Although economic take off took some time to manifest after China actually opened - once it lifted off, its growth was exponential. Defying predictions that such vertiginous growth was unsustainable in the long term, China managed to generate a real growth rate of around 10 per cent every year over a period spanning more than three decades.[1] This has meant that the size of its economy has doubled every 7-8 years reaching an incredible $17.79 trillion in 2023.[2]

One of the main reasons for Deng's decision to permit private enterprise and to open the country to foreign investment and greater trade was the failure of the Soviet style centralised state economy – greatly exacerbated by self-induced political turmoil and misguided economic initiatives. The hope was that this investment would stimulate the economy and help

[1] Cai Fang and Wang Meiyan, "How Fast and How Far Can China's GDP Grow?", China: An Economics Research Study Series, 3, 2004, and World Bank, World Development Indicators, accessed August 03 2023. https://data.worldbank.org/country/China.

[2] World Bank, World Development Indicators, accessed August 03 2024, https://data.worldbank.org/country/China.

increase agricultural and industrial production thus reducing the abject poverty of the population.

China is now the largest manufacturer in tobacco, textiles, leather goods, apparel, rubber and plastics, non-metallic products, base metals, electrical machinery and cars.[3] With regard to the latter, in 2011 it overtook the United States (2011) as the world's largest automobile maker and now produces twice as many cars as Japan.[4] It is also the biggest producer of personal computers (90%), air conditioners (80%) and three quarters of the world's mobile phones.[5] But China's success is not simply down to attracting investment and increasing trade. Given that many countries before it had done the same without their economies experiencing China's vertiginous growth, this cannot be the whole story. It is to this puzzle that we now turn.

There is no one reason for China's exponential growth, rather a complex mixture of factors. However, China's policies promoting fast growth do bear a strong resemblance with other East Asian states. In fact, one can see that these countries have each mimicked the Japanese developmental model to a certain degree. First, countries like Taiwan, South Korea and Hong Kong copied at least some of Japan's economic policies, but at different times. Then came Thailand, Malaysia, and Indonesia, China, Vietnam and others. This is what Kaname Akamatsu referred to as the "flying geese" formation of East Asia in the sixties.[6] Akamatsu was mainly referring to the idea that the states in East and South-East Asia would economically develop as the lead industrial states in the region would seek cheaper production sites and cheaper sources of goods because of the rising labour costs in their home countries (as a result of their economic growth). Neighbouring countries in the region certainly did benefit economically because of this demand for their cheap labour, but it is equally true that their economic

[3] Donald Hepburn, Andrew Black, Matteo Ferazzi, Andrea Goldstein, David Hurst, Steven McGuire and Michael Owen, "The World's Industrial Transformation: A Chatham House Report", Donald Hepburn, Andrew Black, Matteo Ferazzi, Andrea Goldstein, David Hurst, Steven McGuire and Michael Owen, July 2013, accessed August 18 2024.
https://www.chathamhouse.org/sites/default/files/public/Research/International%20Economics/0713r_industrialtransformation.pdf. p. 3.
[4] Donald Hepburn, et al., The World's Industrial Transformation, p. 3.
[5] The Economist, "Global Manufacturing: Made in China?", March 12 2015.
https://www.economist.com/leaders/2015/03/12/made-in-China
[6] Kaname Akamatsu, "A historical pattern of economic growth in developing countries", Journal of Developing Economies 1(1), March-August 1962, 3–25.

success resulted from copying many of the economic development policies that Japan, Taiwan, South Korea etc. had followed.

In this regard, China is little different to many of the other "Asian Tigers". As we shall see in this chapter, one of the most obvious similarities is that of copying successful technology. As Robert Atkinson and Caleb Foote point out, for most East and South-East Asian states, their economic growth has come about because of vast improvements in technology – both in terms of its application in industry (thereby improving industrial efficiency and capacity) and the actual production of technological goods. According to these two researchers, climbing this technological ladder has involved several distinct phases. Stage one, involves acquiring technology either by demanding that foreign companies transfer technology as a condition of them operating in a country, or through licensing or simply by reverse engineering a product and copying much, if not all, of the product. The second phase is diffusion of the acquired technology throughout a country's industry, The third phase is adapting and improving this imported technology and the final phase is actually to develop one's own technology thus becoming a global innovator.[7]

As we shall see, China is no exception when it comes to this method of acquiring technology and production know-how. Indeed, it has been the most forthright country in the region when it comes to demanding technology transfer from foreign companies operating within its borders. If the multitude of press reports and security analyzes are to be believed, it has also obtained industrial information on an unprecedented scale through cyber-theft (see Chapter Five).

But technological leap frogging was not the only reason for the rapid growth of South-East/East Asian states. Their rapid growth is also attributable to the fact that they established special economic zones providing tax breaks for overseas companies, encouraging technological hubs to emerge that created synergies between domestic and foreign firms. Their economies were also essentially export orientated allowing economies of scale by tapping into world markets. State coordination of the economy was also very much apparent, providing much needed grants and cheap credit to their fledgling companies as well as coordination of economic activities. The details of these policies and the manner in which they were implemented in China are given below.

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[7] Robert Atkinson and Caleb Foote, "Is China Catching Up to the United States in Innovation?", Information Technology & Innovation Foundation, April 2019, 1-57.

Exports and Special Economic Zones

China's development in various industrial sectors has followed a similar path to the rest of the East Asian region. It has invited overseas companies to set up factories in the country to take advantage of its cheap labour, land and energy. However, in so doing, it has requested the transfer of technical know-how and overseas cooperation with Chinese companies. Those Chinese companies then branch out on their own competing with the very firms that they had cooperated with just a short time before. In order to attract overseas companies to the mainland, China set up so-called special economic zones (SEZs), luring foreign companies through special tax breaks. Initially, this project was limited in scope because, at the time, it was politically sensitive – inviting capitalist companies to establish themselves in communist China was far from uncontroversial and not uniformly approved of within the communist party. Therefore, in 1979 only two provinces and four cities close to the coast were allowed SEZs with the primary objective to promote joint ventures with foreign companies and to promote an export-oriented industrial sector. [8] Five years later, even more cities near the coast were opened up to foreign investment and by 1986 foreign companies no longer had to set up joint ventures in order to enter China. [9]

The companies that set up factories were not just attracted by tax breaks and cheap factors of production. In what must be one of the most fortunate coincidences of economic history, Deng Xiaoping opened China just as the countries surrounding it were looking to save production costs. The economic success of Japan, South Korea, Taiwan, Hong Kong and Singapore brought with it better standards of living, but this entailed rising wages. Economic development also brought significant inflation in energy and land prices. As a result, products from these countries became less competitive. The answer to this problem was clearly to move to China where super cheap labour, land and electricity would mean super cheap production costs and super profits for those that did so.

Moreover, in order to prevent a looming trade war with America and Europe, a vast number of overseas companies set themselves up on the Chinese mainland in order that their exports be registered as coming from China rather than, say, South Korea, Japan and Taiwan. Much of the foreign

[8] Shaun Breslin, China and the Global Political Economy, (Basingstoke: Palgrave Macmillan, 2009), 84.
[9] Shaun Breslin, China and the Global Political Economy, 84.

investment was through the network of expatriate Chinese from countries neighbouring China – a relationship that Deng Xiaoping deliberately nurtured. Many Chinese diaspora who invested still had relatives in China particularly in the coastal regions and these old ties were reignited smoothing the way for investment.[10]

This pattern of investment and the export orientated nature of these industries has had a lasting effect on China's trade. China exports far more than it imports, but someone has to buy these goods and it is the US that absorbs the most. In 2022, China exported around $536.3 billion worth of goods to America while only importing $154.0 billion, creating a trading surplus for China of $367.4 billion in 2022 (for both goods and services).[11] This would have been larger if it wasn't for the fact that America exports more services to China than it imports. The second greatest deficit is with the EU. However, it is also clear that the burden of this European deficit falls disproportionately on some countries and not on others – Germany, for instance, has managed to maintain a fairly balanced trade relationship with China and currently exports $28 billion more than it imports.[12] If we then reverse the picture and examine which countries are the main states exporting to China, it is striking just how much is sourced from the neighbouring region, resulting in a positive trade balance for these countries: Japan ($33 billion); Korea ($95 billion) and Malaysia ($17 billion) and Australia ($57 billion).[13]

Much of China's productivity improvements are due to the presence of foreign companies. This has therefore been a positive development story for China thus far because such business practices can be copied leading to more efficient Chinese companies. However, it has created a certain degree of dependency on these companies with total investment over the years amounting to around $1.5 trillion and explains why the Chinese government

[10] Wang Wangbo and Lin Zhiqing, "Investment in China: The Role of Southeast Asian Chinese Businessmen" in Emile Kok-Kheng Yeoh and Joanne Hoi-Lee Loh (eds), *C*hina in the World: Contemporary Issues and Perspectives, (Kuala Lumpur: Institute of China Studies, University of Malaya), 147-160.

[11] United States Trade Representative, "The People's Republic of China", accessed October 02 2024.
https://ustr.gov/countries-regions/china-mongolia-taiwan/peoples-republic-china.

[12] World Bank Group: World Trade Integrated Solution, accessed May 25 2018.
https://wits.worldbank.org/CountryProfile/en/Country/CHN/Year/2018/TradeFlow/EXPIMP/Partner/by-country

[13] World Bank Group: World Trade Integrated Solution, accessed May 25 2018.

has been keen to push policies that increase home grown innovation (see section below on indigenous innovation).

Capitalist Coordination: The role of the state

It is worth remembering that, just a few decades ago, China's industry was completely run by the state. The whole economy was run on a highly centralized model that used a basic measure of success, that of gross industrial output leading to extremely low quality and often unusable produce in all areas of the economy. The challenge that confronted the leadership was how to reduce state involvement in the economy without destabilising the economy with high unemployment and also risk a political backlash from diehard communists. The first phase of reform therefore concentrated on foreign investment alongside some town and village enterprise initiatives which essentially acted as a spur to the economy but left much of the state owned sector alone (apart from some minor reforms). Indeed, one of the advantages of establishing special economic zones was that it kept what was seen as a radical economic experiment limited to specific enclaves within the country.

However, as private Chinese enterprises, joint ventures and wholly foreign owned companies became more and more successful, the government felt that it could take the politically risky move (because, after all, it was supposed to be a communist country) of dealing with many of the loss making state owned enterprises. So, in 1997, small and medium sized State Owned Enterprises (SOEs) were given permission to be privatised under the so called policy initiative "Grasping the Large, Releasing the Small" in the hope that these companies would become profit making on their own.

Once the government's policy of "Grasping the Large, Releasing the Small" had had its desired effect, the government moved on to the large state enterprises, offering shares in these companies, thus generating revenue for updating their plants. Frequently, debt for equity deals were made with major (often foreign) corporations where their debt was paid off for a significant share in the SOE.[14] However, although these are listed companies on the stock exchange, the government usually retains a controlling share. It is difficult to ascertain just how many companies remain state owned enterprises in this manner because of the various categories of shares

[14] The information for the above passage has been taken from Zhang Chunlin, "Revisiting China's SOE Reform Strategy", (China: An Economics Research Study Series) 46-60.

created for Chinese IPOs. A recent report highlighted the fact that of the 109 Chinese corporations listed on the Fortune Global 500, only around 15% are privately owned in the proper sense of the word.[15] State owned enterprises are still very significant players in the economy with "51,000 state owned enterprises still remaining and collectively worth $29 trillion". [16]

Many Chinese state companies are clearly on par with overseas competitors often because of either their access to natural resources or access to strategic infrastructure. For example, the largest Chinese company on the Fortune 500 list, State Grid is number three, just behind Walmart and Saudi Aramco. China National Petroleum's revenue of $483 billion easily beats its Western oil competitors like ExxonMobil ($413 billion) and Shell's ($386 billion).[17] Similarly, China Mobile has the largest telecommunications network in China as a result of its state ownership and it is therefore no surprise that it is placed number 27 in Forbes list of top companies in the world (Global 2000). Indeed, the top 12 Chinese companies listed on the Fortune 500 list are in fact state owned to one degree or another.[18]

It is not only government loans that give Chinese companies a competitive advantage, it is also the high degree of state coordination of the economy both in terms of regulations and critical infrastructure development. One of the best examples of this is its battery powered vehicle sector. Overall, it has encouraged cleaner technology in the automobile industry by imposing emission reductions – if companies fail to meet their targets they have to buy credits from other car companies. At the same time, the government has helped electric car companies like NIO and BYD by investing huge amounts via state owned funds ($1.4 billion in the case of NIO) and providing subsidies to consumers when they buy electric cars (around 40 per cent of the price in some cases).[19] In tandem with this initiative, the government is creating a national network of charging stations to support the surge in the

[15] Amir Guluzade, "Explained, the role of China's state-owned companies", World Economic Forum, May 07 2019. https://www.weforum.org/agenda/2019/05/why-Chinas-state-owned-companies-still-have-a-key-role-to-play/
[16] The Economist, "Technology Quarterly", January 04-10, 2020, 4.
[17] Wikipedia, 'Fortune Global 500', accessed August 18 2024. https://en.wikipedia.org/wiki/Fortune_Global_500
[18] Scott Cendrowski, "China's Global 500 companies are bigger than ever—and mostly state-owned", Fortune, July 22, 2015, accessed September 20 2015. https://fortune.com/2015/07/22/China-global-500-government-owned
[19] Katrina Yu and Dan Sagalyn, "How China is driving the future of electric cars", (PBS Newshour, Oct 2, 2019).

number of electric vehicles. America now trails in this market with Chinese sales at five times that of the United States (2021).[20]

Five Types of Knowledge Acquisition

Much of the current friction between the United States and China concerns the degree of copying that Chinese companies are said to engage in. From the United States point of view, copying of patented intellectual property needs the permission of the inventor/license holder and royalties should be paid. However, there are in fact several different types of knowledge acquisition, some legitimate and some less legitimate (cyber-theft is actually covered in Chapter Four but it is a sub category of the copying detailed below). The first of these is the simplest and most obvious – outright replication. China is number one in the world for counterfeit goods in terms of output, to the point where highly industrialized countries struggle to keep up with the sheer volume coming in at their borders. The most visible signs of this can be found in China's street markets where knock-offs can be bought at knock-down prices. Legal action by famous brand names has simply meant the goods being taken off display but still available "under the counter".[21]

But it is not only high fashion where China has been engaged in unbridled replication. More importantly, at least in terms of its developmental path, China has been intensively engaged in so-called reverse engineering. This literally involves taking heavy machinery, automobiles, computers, semi-conductors etc. apart, working out how it works and then reproducing it on a grand scale. Such activities have been greatly aided by globalization. These days, most companies out source a huge number of parts that go towards creating their final product. The average computer will have screens made in one country, their drives in another, the keyboards in yet another and the actual microchips and circuits somewhere else. This revolution in production only really began in earnest 45 years ago and it has made it very easy for China to technologically leap-frog up the development ladder. If a Chinese company is incapable of making certain parts, it can simply buy it off the shelf on world markets.

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[20] Wikipedia, "New energy vehicles in China", accessed August 18 2024. https://en.wikipedia.org/wiki/ New_energy_vehicles_in_China

[21] Jonathan Watts, "European luxury brands challenge Chinese pirates", The Guardian, November 4, 2005. https://www.theguardian.com/media/2005/nov/04/marketingandpr

How on earth has China managed to get away with copying for so long? There are three main reasons: market access; utility patents and the World Trade Organization (WTO). With regard to the latter, China only became a member of the WTO in 2001 and so could not be compelled to follow the international agreement on intellectual property rights that the organization oversees before that time. The other issue is market access. Even after acceding to the WTO, China continued copying on a vast scale – either with or without the permission of the companies who owned the patents. The reason such companies didn't protest is that they knew that if they did, access to the huge Chinese market would become difficult. Companies have all too often being worried that if they take assertive action against such practices, China will shut them out of a market of 1.4 billion consumers. So, most foreign car companies continue locating their factories in China. This is despite brand "lookalikes' of Volkswagons, Hondas, BMWs, Minis, Kias, Porches etc. being produced on a continual basis – even a similar model to the Rolls Royce Phantom produced by the Chinese motor company Geely was presented at the Shanghai Motor Show just yards from the original.[22]

The third reason moves us on to the second type of copying – incremental innovation. Taking an original design, copying it and then adding various amendments is seen as legitimate in many countries (including Germany and Japan) and is covered by law under the term utility patents. This partly explains the exponential increase in inventions being registered at China's National Intellectual Office as it is far easier to modify an existing invention than to come up with something entirely new.

The fourth type of copying is another "legal" form – knowledge transfers. Much of China's production know-how has come from requiring foreign companies to enter into joint ventures with domestic firms. In return for jointly producing goods for both the Chinese and export markets, China has more often than not requested the transfer of managerial and production know how for manufacturing current models, as well as blue prints of older models of a brand – whether it be planes, trains or automobiles. Much of Chinese technological know-how was gained by foreign companies actually permitting producers to imitate slightly out of date foreign technologies and through the cooperation with foreign companies producing goods within China. In addition, China often demanded high levels of domestic content

[22] "A £30,000 copycat Rolls-Royce? It must be made in China", Daily Mail, April 24 2009. https://www.dailymail.co.uk/news/article-1172635/A-30-000-copycat-Rolls-Royce-It-China.html

for the parts making up a finished product in China, thus encouraging the growth of locally based sources of high quality supplies.[23]

But much of this knowledge transfer is not done willingly by overseas companies. Essentially, Chinese companies (which the government often has a majority stake in) use both their own buying power and/or access to the Chinese market to ensure that overseas companies agree to direct knowledge transfer and/or joint ventures (where knowledge is transferred anyway). Such agreements are so multitudinous that it is regarded simply as common practice and ranges from trains, planes and automobiles to mobiles phones and computers. In addition, in the military sector, Chinese manufacturers have used co-production agreements to "learn by doing" in order to then independently produce very similar products.[24] A good example of this is the Russian Sukhoi SU-27. In 1996, Moscow and Beijing reached a $2.2 billion deal for the co-production of the SU-27 in China by the Shenyang Aircraft Company. After a hundred or so aircraft were successfully completed, production was shifted to a Chinese only version, the J-11, which included several improvements to the aircraft and its weapons capabilities.[25]

In China's final stage of development, it has turned towards the acquisition of overseas companies, investing via venture capital and private equity companies in order to enhance knowledge transfer of industrial processes, inventions and managerial practice. This does not mean that its other methods of knowledge acquisition have fallen into abeyance, simply it reflects China's growing wealth and, with it, a significant increase in purchasing power. In recent years, Chinese companies (often state owned) have gone on an international spending spree. It is estimated that, since 2012, Chinese companies have invested in US technological companies to the tune of $19 billion involving "641 different deals…with particular focus on AI, robotics, and augmented or virtual reality". More recently, Chinese investment "accounted for approximately 10 percent of all U.S. venture deals per year".[26] In addition, it is not unusual to see participation of such a developed state in venture capital and private equity operations, but it is

[23] Dani Rodrik, "What's so Special about China's Exports?", 2006. accessed October 06 2007. http://ksghome.harvard.edu/~drodrik/ Chinaexports.pdf.
[24] Herman Schwartz, States Versus Markets: The Emergence Of A Global Economy, (London: Palgrave, 2000 -2nd edition).
[25] Wikipedia, "Shenyang J-11", accessed January 2021. https://military.wikia.org/wiki/Shenyang_J-11
[26] Office of the United States Trade Representative, "Findings of the Investigation Into China's Acts, Policies", 143.

unusual that some of the funding for these operations comes from the government.

For example in the more legitimate sphere, Chinese private equity firms recently participated in the takeover of the American printer company Lexmark and the "$2.75 billion purchase of Dutch chipmaker NXP Semiconductors" while the Chinese company HNA Group took over the electronics distributor, Ingram Micro for $6.1 billion".[27] But, at least from a Western perspective, there have been buyouts that are not so straightforward because they are by Chinese state owned or state backed companies. For example, in 2017, National Chemical Corporation's took over Syngenta (Swiss pesticides) for $43 billion.[28] More controversial was the takeover of the UK chipmaker Imagination Technologies in 2017 by Canyon Bridge. One of the major stakeholders in this private equity firm is the Chinese state-owned China Reform holdings that recently (2020) tried to place four Chinese directors on the board of Imagination Technologies raising fears that China planned to relocate the company to the mainland.[29]

This comes after the Cambridge based chipmaker, Arm, effectively had its Chinese based operations (Arm China) taken over by the local CEO after he was accused of misconduct. Foolishly, Arm in 2018 agreed to the Chinese state sponsored group, Hopu, owning 51 per cent of its Chinese subsidiary, and Arm UK, 49 per cent making it impossible to wrest back control of the new entity.[30] This raises all sorts of questions about the ownership of its proprietary hardware in China and it looks likely that China has now fully taken over operations in the mainland (Arm personnel were refused access to its site in China).[31] As a result of the events at Arm, the Chair of the UK Foreign Affairs Select Committee has argued that the UK must intervene in the case of Imagination Technologies company in order to prevent a repeat

[27] Michael Brown and Pavneet Singh, "China's Technology Transfer Strategy: How Chinese Investments in Emerging Technology Enable A Strategic Competitor to access the Crown Jewels of U.S. Innovation
Washington D.C.: Defense Innovaton Unit Experimental, January 2018, 10.
[28] Michael Brown and Pavneet Singh, "China's Technology Transfer Strategy", 10.
[29] James Warrington, "China "using Covid cover" to seize control of Imagination Technologies", City AM, April 14 2020. https://www.cityam.com/China-using-covid-cover-to-seize-control-of-imagination-technologies/
[30] Matthew Field, "Inside Arm's growing China rebellion", The Telegraph, June 21 2020. https://www.telegraph.co.uk/technology/2020/06/21/inside-arms-growing-China-rebellion/
[31] Matthew Field, "Inside Arm's growing China rebellion".

of this behavior.[32] In a similar vein, President Trump blocked the same private equity firm (a mis-nomer if there ever was one given its access to large amounts of state credit), Canyon Bridge, from taking over Lattice Semiconductor Corp for $1.3 billion.[33]

Previously, we mentioned how China is surging ahead in the electric vehicle market. This is not only because of the grants and the state coordinated network of re-charging stations. Chinese automobile companies have also sought to acquire hi-tech knowledge through buying into or taking over overseas firms. One of the most active companies has been Wanxiang Group and its subsidiary Wanxiang America Corporation. In 2013, they purchased A123 systems which produces lithium batteries for electric vehicles. Again, in 2014, Wanxiang's American subsidiary bought Fisker Automotive. The company is known for producing one of the first luxury plug-in electric hybrid vehicles but had to file for bankruptcy – providing a great opportunity for Wanxiang to leapfrog several stages of technological learning.[34]

National innovation

The above details of knowledge acquisition do not imply that indigenous innovation does not exist in China – as is clear from their cutting edge supercomputer to their electric vehicles. Major new engineering and hi-tech projects are now conducted solely by Chinese companies (albeit with much help from the Chinese government). China is benefitting from its own investments in education and R&D whilst at the same time benefitting from overseas expertise in areas of weakness. Indeed, in 2017 a total of 7.4 million students graduated from Chinese universities and a total of 5.86 million Chinese have studied abroad from 1978 to the end of 2018, picking up vital know-how for the country's development.[35] The number of science and engineering graduates is the largest number in the world and many are also gaining expertise overseas. Chinese students studying Science,

[32] Guy Faulconbridge, "UK urged to stop China taking control of Imagination Tech: lawmaker", Reuters, April 14 2020. https://www.reuters.com/article/us-China-britain-imaginationtechnologies/uk-urged-to-stop-China-taking-control-of-imagination-tech-lawmaker-idUSKCN21W1FW

[33] Guy Faulconbridge, "UK urged to stop China taking control of Imagination"

[34] Office of the United States Trade Representative, "Findings of the Investigation Into China's Acts, Policies", 142.

[35] Zou Shuo, "Chinese students studying abroad up 8.83%", China Daily, March 28 2019 and www.statist.com.

Technology, Engineering and Mathematics (STEM) in the United States make up 16% of all American graduate STEM students (although this may rapidly change as a result of the second Trump administration).[36]

However, such innovation is greatly aided by state policies of insisting that foreign companies transfer technology as part of joint venture agreements and, of course, the huge amount of state funding that leading Chinese companies receive. In January 2006, China launched the national strategy of "indigenous innovation" with the aim of assuming a leadership role in science based industry by 2020 and possessing a high tech industrial base by mid-century.[37] In 2009, as part of the "indigenous innovation" drive, the government actually officially announced that Chinese products would be given preferential treatment. Such products have been defined as domestically sourced if the domestic manufacturing costs make up at least half of the final price. [38] Associated with this drive has been the usual requirement that managerial and technological know-how be transferred, but in show-case projects even the research and development must be done jointly with a Chinese firm. China's main way of making such conditions arises out of the fact that it has not yet signed the WTO government procurement agreement that ensures free competition when governments tender contracts. This means that the government has an alternative method of favoring those companies that agree to technology transfer and/or joint ventures with Chinese companies by choosing those that agree to such conditions over other bids for major infrastructural contracts.

The indigenous innovation drive has been strengthened through several official policies, most notably the 2015 announcement of the Made in China 2025 ten year strategic plan targeting, amongst other things: advanced information technology; robotics and automated machine tools; aircraft and aircraft components; advanced rail equipment; new energy vehicles; and pharmaceuticals and advanced medical devices.[39] China therefore continues

[36] Jacob Feldgoise and Remco Zwetsloot, "Estimating the Number of Chinese STEM Students in the United States", Centre for Security and Emerging Technology October 2020. https://cset.georgetown.edu/publication/estimating-the-number-of-chinese-stem-students-in-the-united-states/

[37] James McGregor, China's Drive for "Indigenous Innovation: A Web of Industrial Policies, Washington D.C.: US Chamber of Commerce, 2010, 13.

[38] James McGregor, China's Drive for "Indigenous Innovation: A Web of Industrial Policies, 20.

[39] Office Of The United States Trade Representative, "Findings Of The Investigation Into China's Acts, Policies, And Practices Related To Technology Transfer,

to place conditions on companies seeking to establish a presence in the country in industries that are deemed strategic--including local content requirements, plus knowledge transfer in the areas of management, production and technology.[40] However, the difference now compared to before is that it seems the government is targeting major innovatory projects for joint ventures where the research and development is also done jointly. Once the requisite knowledge is acquired, Chinese companies then take on new projects using the innovatory techniques that they have learned.

In the IT sector the most obvious examples of success our Lenovo and Huawei. Lenovo first managed to capture a large part of the domestic market in China and then went on to successfully take over IBM's personal computer arm in 2005 and has since become the leader in terms of global market share for PCs.[41] Initially, Lenovo had fairly limited capabilities in terms of computer production, to the extent that it outsourced 100% of its laptops (2003). Yet, as with so many Chinese companies, they quickly adapted by buying up the personal computer section of IBM (2005), thus reducing its reliance on out sourcing radically, bringing many of the production processes back in-house.[42] Lenovo has now become the leader in terms of global market share for PCs.[43] The path followed by Lenovo is exactly that which China wishes to pursue. Initially, the company began as a major distributor of IBM and other companies' computers. It then began producing its own computers mainly through out sourcing and then it used its profits to takeover a major overseas company enabling it to design and create cutting edge computers independently.

Similarly, Huawei has overtaken Nokia, RIM and HTC in the smartphone market with its global market share amounting to 17 per cent, thus taking second place behind Samsung and outpacing Apple.[44] It is improving its

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Intellectual Property, And Innovation Under Section 301 Of The Trade Act of 1974", 29, March 22, 2018, accessed April 11 2018.
https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF

[40] Roselyn Hsueh, China's Regulatory State: A new strategy for globalization, Ithaca: Cornell University Press, 2011, Chapter Eight.

[41] Lorretta Chao, "As Rivals Outsource, Lenovo Keeps Production In-House", Wall Street Journal, July 9 2012. http://www.wsj.com/articles /SB10001424052702303302504577325522699291362.

[42] Lorretta Chao, "As Rivals Outsource"

[43] Lorretta Chao, "As Rivals Outsource"

[44] Anton Troianovski, "Huawei's Smartphone Sales Eclipse Nokia, RIM", Wall Street Journal, January 27 2013. http://online.wsj.com/news/articles /SB10001424127887323854904578264234043436260.

high-end models rapidly and its overall growth has been breath-taking. Moreover, several other Chinese smartphone companies now capture an impressive share of the overall market, such as, Oppo, Xiaomi, Vivo and Lenovo. In addition, the Hanguang 800 chip made by Alibaba for AI operations actually out performs intel chips in some tasks, although it is worth pointing out that it was designed by Alibaba but had to be produced by a Taiwanese company. [45] Huawei has been in the news recently because it is ahead of many of its rivals when it comes to 5G networking. Whilst this is a clear sign of how China's technological prowess has advanced, it is worth remembering that the omnipresent arm of the Chines state was present in the background. According to research by the Wall Street Journal in 2020, Huawei received £57bn in aid from the Chinese government enabling it to "offer generous financing terms and charge 30 per cent less for network equipment than competitors", thus undercutting its rivals.[46]

China's success is as much in industrial products as consumer goods. In 2016, it launched a satellite (the Micius Quantum Communications Satellite) equipped with a state of the art quantum encryption device. In the same year, China produced the world's fastest supercomputer (Taihu Light) using Chinese designed and manufactured microprocessors. In the military sphere, it is designing cruise missiles that use artificial intelligence so that they essentially become semi-autonomous in terms of avoiding defenses and final targeting paths.[47]

Overall, there are many reasons to believe that China will become as competitive in the high value high tech end of production for two key reasons. The first is the way in which the government directs the economy and reduces the risk for those companies engaged in innovatory technologies. This is well illustrated by its efforts in helping to develop silicon chip design and manufacturing by Chinese companies - seen by the government as one of its main strategic weaknesses, especially since the ban on sales of certain electronics to its companies. Currently, China imports $312 billion worth of chips and in order to stimulate its own chip-making industry the government has earmarked $29 billion for investment.[48] The

[45] The Economist, "Technology Quarterly", January 04-10, 2020, 11,
[46] Mark Schiefelbein, "Huawei received £57bn in aid from China to undercut rivals", The Times, December 28, 2019. https://www.thetimes.co.uk/article/huawei-received-57bn-in-aid-from-China-to-undercut-rivals-mbcw33pj6
[47] This paragraph is a summary from Michael Brown and Pavneet Singh, "China's Technology Transfer Strategy", (Washington D.C.: Defense Innovaton Unit Experimental, January 2018) 12.
[48] The Economist, "Technology Quarterly",

second is that more and more of the investment by Chinese companies is going into research and development. In 2017 alone, research and development spending increased by an astonishing 12 per cent, reaching a total 293.6 billion dollars for the year. By 2022 the amount had reached 418 billion dollars – a huge jump in just five years.[49] This does not yet match that of the United States, but with such prodigious increases it is highly likely that it will close the gap significantly in the next five years.

Conclusion: China – Past its Peak?

Although China's economy is now slowing, its exponential growth for four decades has brought it very close to matching the size of America's economy. China's current trajectory shown in Figure 2-1 suggests that it may even be getting closer. Although in 2015/16 it looked as if America was pulling away again and China's economy was slowing, China managed to pull off a new growth spurt.

However, the Covid lockdowns that were stricter and far longer in China compared to the approach taken by America have had a very tangible effect upon the economy. As a result, relative to American growth, China's performance has been lacklustre and the gap between their economies has once again widened. China's economy now generates around US$18 trillion whilst America generates $US27 trillion (2023). The numbers are so vast, it is difficult to take in exactly what this means. But, in relation to the rest of the world, the American economy now accounts for almost a quarter of global economic activity (measured by GDP). If we add these two giants together, then they account for over 40 per cent of the world's economic activity.

In addition to this, China became the world's largest manufacturer in 2010. It now accounts for just under 30% of the world's manufacturing value added.[50] In 2010, manufacturing made up 35 per cent of its GDP, but this has fallen to 26 per cent (2023).[51] However, this should not be seen as a negative point, the lower value is mainly because China is becoming more

[49] "China's R&D spending exceeds 3 trln yuan in 2022, "Xinhua News Agency, accessed August 18 2024.
https://english.news.cn/20230918/ be73d86c69394af28abb12995b413ddc/c.html

[50] Felix Richter, "China Is the World's Manufacturing Superpower", Statista, accessed Augst 18 2024. https://www.statista.com/chart/ 20858/top-10-countries-by-share-of-global-manu facturing-output/

[51] World Bank, "Manufacturing, value added (% of GDP) – China", accessed August 18 2024. https://data.worldbank.org/indicator/ NV.IND.MANF.ZS?locations=CN.

like other highly industrialized countries where services play a far bigger part in the economy. In 2010, services accounted for 44 per cent of GDP whereas in 2023 they accounted for just under 55 per cent of GDP.[52] The absolute contribution made by manufacturing has not actually decreased. Indeed within just a decade China's manufacturing value added doubled to almost $5 trillion by 2022.[53]

Value added is an important measure, because it essentially measures expenditure on labour and materials (as well as other costs) in the manufacturing process and is therefore an indirect way of gauging exactly how much is being produced in a country. In today's world most countries are integrated into the global economy through production chains. In other words, very few products are made in one country – instead the production tasks are split up and carried out across the world wherever it is cheapest to do so. Think of the average car and you will have the engine from one country, the electronics from another, the axles from another and so on and so on. Given the huge amount of investment by foreign companies in China, one of the greatest dangers it faced was being used for its cheap labour, land etc. for the simpler labour intensive tasks. Because this is cheap unskilled labour the economic benefits associated with this part of production are relatively low. The value added to a product is mainly made up of labour, materials and machine costs plus profit. The parts of the production that use cheap unskilled work therefore create little value added. This not only means poor wages, it also carries with it far less economic benefits compared to medium to high tech production that uses skilled labour. Countries can end up with very impressive looking export growth, but the level of actual business generated can remain at the lower end of the scale.

But China has pulled off something rather remarkable and very unusual (if the trajectory of most developing states is anything to go by) – it has gone up the technology ladder from basic labour intensive work to ever more skilled work and succeeded in the creation of medium and high technological goods. Because the state insisted on technological transfer alongside technical and managerial know-how, it has successfully engaged in the more technical sides of production that companies can charge more for. So much so that, in medium high technology industries, China now dominates – far outstripping the amount of value created by America in this

[52] World Bank, "Services, value added (% of GDP) – China", https://data.worldbank.org/indicator/ NV.SRV.TOTL.ZS?locations=CN.
[53] "China Economic Indicators", The Global Economy, accessed August 18 2024. https://www.theglobaleconomy.com/China/manufacturing_value_ added/