

# 5G and China-US Relations: Competition and Intervention

by

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## DEDICATION PAGE

不谋万世者，不足谋一时。不谋全局者，不足谋一域

Without long-term strategy, short-term achievement is impossible.

Without full-scale consideration, simple action is impracticable.

——陈澹然【清】 Chen, Danran [Qing Dynasty]

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## **ABSTRACT**

This study discusses the reasons that drive the US government to deviate from its private sector-dominated approach and implement state intervention in the competition with China over 5G. In order to better understand the reasons why the US sometimes intervenes in the market to gain a competitive advantage with respect to specific technologies, I examined and compared two case studies: the US response to competition with Japan over semiconductors in the 1980s, and the US response to competition with China over 5G in the 2010s and early 2020s. I argue that first, the US will intervene in the market to secure its technological advantage when it is outcompeted by foreign competitors; second, the US regards China as a strategic adversary, 5G gives China important economic and military advantages, therefore, the US government deviated from the free-market approach in order to maintain its strategic advantage.

## Chapter One: Introduction

Susan Strange writes in her book *States and Markets* that the competition among states is changing into the competition of leadership in the knowledge structure, and technological change will lead to the concentration of power in one country (Strange, 2015, p.136). At present, the competition in the field of information and communication technology, specifically the arena of 5G technology, is becoming the focus of the rivalry between China and the United States. From the perspective of the US, the global leadership of the US in the 4G era has helped to create millions of jobs and had a transformative impact on its economy (CITA, 2018).

During the Trump administration, the executive and legislative branches of the US government launched several initiatives to accelerate the development of 5G technology and tried to help the US occupy the global high ground of 5G technology. On the one hand, in the name of the “national security concern,” Trump sanctioned Chinese telecommunication companies with administrative power, including Huawei and ZTE; on the other hand, he strengthened the domestic network security and supply chain security management. It is obvious that America’s 5G policy has gone beyond the boundaries of market competition, and has deviated from the principles of “free market” and “free internet,” which are promoted by the US itself. As Susan Strange concludes that if the US government had not realized that it had gained a dominant position in all sectors related to the knowledge structure, it would not have been keen on free trade rules in the field of the service industry (Strange, 1998, p.137). Under the background

that China is taking the lead in the competition of 5G technology, the US government has implemented a series of interventions and policies in the market of 5G, and helped to build a domestic 5G industry.

Both Trump and Biden have implemented various initiatives, programs, and policies to intervene in the 5G competition against China. Their approaches are not limited to regular trade barriers, such as tariffs, subsidies, investigating and sanctioning specific Chinese products and companies. The interventions have expanded to the strategic level, aiming to strangle China's technological advantage in 5G. For example, American companies and non-American companies who include American products in their supply chains, are forced to cut the business connection with Huawei; Huawei's executive, Meng Wanzhou, was detained by Canada, as requested by the US Department of Justice; US allies, such as Canada, Britain, and Australia, are asked to exclude Huawei's equipment in their domestic 5G development plans.

The United States has always painted itself as the strongest advocator of "free market principles." Historically, from Adam Smith's classical liberal economy to neoliberalism, the "invisible hand" and "minimal state" are considered as two backbones of the country, which is summarized by Stiglitz as "market fundamentalism (Stiglitz, 2009)." Trump summarized the American approach for the technological competition as a "private sector-led and private sector-driven" approach and the function of the government is to remove the regulatory barriers the barriers of network building (Haselton, 2019). However, he not only removed the regulatory barriers in the

domestic market, but also tried to wipe out the competitive barriers that established by foreign companies in the global market of 5G. What has changed in the current race of 5G? Why did the US stick to the free market in the previous generations of telecommunication technology, but intervene aggressively in 5G? In this thesis, I argue that, in the high-tech sector that directly impacts America's economic and military advantage, the US government always intervenes in the free-market competition when the American private sector is outcompeted by foreign competitors. China is regarded by the US as a strategic rival, and 5G strengthens China's economic and military advantage; therefore, the US is willing to deviate from its usual preference for free-market approaches in order to keep its strategic advantage and maintain its ruling position. It is the rise of China's advantage in 5G and the fear it provoked in the US government that made the interventions inevitable.

## **1.1 Explaining 5G**

Fifth Generation (5G) technology, as a wireless mobile network technology with a transmission rate 100 times higher than 4G, has been identified by the US government as an important key to maintain global leadership--"a game that the United States must win" (Trump, 2019). 5G is a comprehensive technology. In the current digital age, 5G is not only the main source to generate wealth, but also a safeguard of national security.

The digital economy represented by 5G is affected by three laws. Moore's Law is the first one. Gordon Moore, the co-founder of Intel, explains that the processing capacity of the chip doubled every 18 months, but the price decreased by half (Moore,



1998). This determines that future technological competition must be surpassing the competition. From the first generation to 4G, none of the updates has lasted more than a decade, moreover, the dominating companies of the new generation of telecommunication technology are not the same compared with the previous generation. Motorola, and Nokia in the past were replaced by Google and Apple after entering the 4G era.

The second one is Metcalfe's Law, which determines that the value of the network increases at the square rate of the total number of network nodes/users. In general, it means the greater the number of users in a network, the greater the value of the entire network and each computer in the network (Hendler & Golbeck, 2008). Therefore, even if the United States blockades Huawei all over the world, China's mobile phone market is greater than the sum of the United States, Europe, and Japan, plus the Indian market is dominated by Chinese mobile phones, which makes the market share of Huawei large enough to survive (Yan, 2020). This law emphasizes that the population is still an important resource, especially those who have not been connected to the internet. According to the UN's digital economy report, half of the world population is still "offline". In other words, the digital economy will grow very fast in emerging markets and will become the largest economic engine.

The third is Davidow's Law, which dedicates that the first company that enters the market can obtain 50% of market share, and the later enterprises will share the remaining 50% (Davidow, 1992). This law reflects that the digital economy and 5G

competition are monopolistic. Monopolistic competition is to compete for the first place, competing to be the first one who enters the market and occupies 50% of the market share. If Huawei enters the 5G market first, it can expect to have half of the market share automatically. This explains why the US government implemented restrictions and sanctions targeting Huawei, because half of the 5G market may become Huawei's in the future.

These features have determined 5G is a key technology in the digital economy, which is an internet-based economic sector that has grown rapidly in recent years. The reason why the United States takes such aggressive measures when competing with China is that, to a certain extent, China is in a leading position in 5G technology. According to CTIA's report on 5G, China holds a narrow lead in the race for 5G, as Huawei provides cheaper but better quality 5G equipment (CTIA, 2018). At the economic level, the technological advantage would allow China to take more market share and earn more revenue; at the military level, it would also create technological dependency for the US military technologies. Moreover, in cyberspace, the security and privacy of America's digital information on the Internet will be at high risk, as China will be capable of attacking America's cyberspace.

## **1.2 Theoretical Framework**

This thesis frames the discussion and analysis of the race of 5G between China and the US under the theoretical frameworks of John Mearsheimer's offensive realism and Graham Allison's Thucydides Trap.

The basic setting of offensive realism is the anarchic character of the international system and the lack of security compels countries to adopt offensive strategies, which often leads to conflict and war. Mearsheimer points out that a state's initial motivation is defensive, but the structure of the international system forces the state to think aggressively and sometimes take offensive action (Mearsheimer, 1994). To understand why a state takes a specific behavior, the factors that should be examined is the state's relative power and the external environment, because these factors will determine the way in which the state secures its own interests. A state cannot know whether it gets enough security; it only knows that it is safer with power than without power (Frankel, 2013). As a result, all countries regard maximizing their relative power as the best way to obtain security and look for all opportunities to strengthen themselves. They do so not only because there is a clear threat that they must face, but also because they have to plan and prepare to deal with the potential threat hidden in the unpredictable future (Labs, 1997).

In the case of China-US relations, Mearsheimer calls for the US to do whatever is necessary to slow China's rise (Mearsheimer, 2001; Kirshner, 2012), because survival is the most important goal for the US government, containing and taking down China's rising power are necessary strategies to secure America's survival. The current race for 5G between China and the US matches this framework. China's technological advantage in 5G contributes to the increasing of China's power and influence globally, which directly impacts America's global hegemony. The US has determined that it cannot win the race for 5G through traditional laissez faire policies, because of the size,

vitality, and rapid growth of the Chinese telecommunications sector, which has been spurred in part by extensive (and very effective) Chinese intervention in this sector of its own economy. Therefore, the US is expected to set aside its traditional preference for free market policies, and intervene in the 5G market in order to contain China's 5G development.

Graham Allison's "Thucydides Trap" summarizes a structural conflict that when a rising power threatens to displace a ruling power, the outcome is frequently war (Allison, 2017). The two major assumptions in Allison's research are: first, the rapid growth of the rising power causes the fear of the ruling power; and second, the fear of the ruling power makes the war inevitable (Lee, 2019). Particularly, in the discussion of China-US relations, Allison marks under this framework that the possibility of war caused by American fear of China's rise is much greater than it seems (Allison, 2015). Furthermore, besides the basic interpretations of power relations, Thucydides's *History of the Peloponnesian War* marks another key assumption. The Melian Dialogue discussed in the book highlights the significance of national interest. National interest is the eternal standard that influences the behavior of a state, and any political factors are dominated by the concept of "interest" defined by power (Xu & Liu, 2004).

Besides Mearsheimer's offensive realism and Allison's Thucydides Trap, some alternatives can be adopted to explain China-US relations and the US intervention. The liberal assumptions of economic globalization and interdependence are alternative factors that are being discussed. Even Allison argues that international institutions

constrain states' behavior, and thick interdependence reduces the likelihood of war (Allison, 2017). The intervention of the US government in the technology competition should focus on building international rules and promoting bilateral cooperation because both countries can mutually benefit from the development of technology (Zhang & Xu, 2021). However, these frameworks cannot explain the current race of 5G, where the US intervened in the market and directly targeting on China.

In sum, this thesis frames the discussion of China-US 5G competition under the assumptions of 1) anarchy is the basic character of the international order; 2) the primary goal of a state is to survive in the anarchic world; 3) these external factors drive the state to take aggressive and offensive actions; 4) the threat of a rising state to displace the ruling state and the fear of the ruling state create a structural pressure. As a result, 1) 5G is the technology that has the capacities to influence the dynamic of power relations from the economic and military perspectives; 2) in the competition of high-tech sector, the US is expected to take all necessary actions to maintain its leading position and advantage (technological, economic, and military advantages); 3) the US is willing to intervene in the market and implement aggressive strategies to contain the competitors when its leading position is threatened.

### **1.3 Thesis Structure**

This thesis is constructed with seven chapters. The first chapter, which is the introductory section, briefly introduces the background of the topic and explains why 5G technology is chosen as the focus. This chapter also introduces the basic settings of

the research, including the research question and the arguments.

Chapter Two, will review previous research and articles about the US foreign economic policies and interventions in different trade sectors. It also examines the literatures that discuss drivers and reasons for US decisions to implement state interventions and policies in trade and competition with other countries

Chapter Three is the section on research methodology. This section will introduce my hypothesis and arguments and explains how I will test my hypothesis. I will explain what cases I will be using (semiconductor, 5G), and why I choose them as cases in the comparative analysis.

Chapter Four is a historical narrative and analysis of the cases of the semiconductor competition between the US and Japan in the 1980s. I will explain 1) why the semiconductor was a transformative and strategic technology; and 2) why the US intervened in the semiconductor industry during the competition with Japan in the 1980s.

Chapter Five is an analysis and discussion on the case of the China-US 5G competition. In this chapter, I will 1) outline the current situation with respect to competition over control over markets for 5G, 2) explain the challenges brought by 5G; 3) describe US policy choices in this case; and 4) explain these choices in the context of the different theoretical framework applied in this thesis.

Chapter Six is a comparative analysis to discuss the previous empirical chapters.

This chapter will analyze the similarities and differences between the two cases, and conclude the historical pattern of the US intervention, to try to make a general argument about when and why the US choose to undertake state intervention in the economy.

Chapter Seven is the concluding chapter, I will be summarizing my findings in previous chapters, and discussing the understanding of the current China-US rivalry, as well as broader theoretical implications for the question of technology's role in International Relations theories.

## **Chapter Two: Literature Review**

This chapter provides an overview of previous research on the topics of China-US relations and technology competition. It introduces the debate on identifying China-US relations among different international relations theories, as well as investigates the current discussion on the current China-US technology competition. By reviewing the previous literatures, this chapter reveals the limitation of the existing research and points out the space this thesis might fill in.

### **2.1 Research on China-US relations**

Generally speaking, the existing research on China-US relations concentrates on the theoretical frameworks of neorealism, neoliberalism. This bilateral relationship is interpreted under different theories as conflict, cooperation, and competition respectively.

#### **2.1.1 Conflict under neorealist perspective**

Most realists are pessimistic about China-US relations. Organski and Kugler emphasize that when the relative strength of the rising power grows close to becoming the dominant power, the dominant power will launch a preventive war against the rising power in order to maintain its hegemonic status (Organski & Kugler, 1980). Graham Allison concludes this power relation as a structural conflict between a rising power and a ruling power, and interprets it as the Thucydides Trap. He analyzes 16 historical cases and summarizes that when a rising power threatens to displace a ruling power,



the outcome is frequently war (Allison, 2017). Mearsheimer sums up the iron law of the game of great powers--that is, power maximization means security maximization--therefore, the rise of China not only challenges the dominant position of the United States, but also threatens the national security of the US, which leads to the "political tragedy of great powers" in the relationship between China and the United States (Mearsheimer, 2001). Aaron Friedberg shares the same view with Mearsheimer. He directly calls the future of China-US relations a "contest for supremacy" (Friedberg, 2011).

Defensive realists believe that countries take security as the primary goal in the international system, rather than the competition for power (Liu & Zhang, 2005). Charles Glaser pointed out that China and the US have enough reasons to believe that they have obtained sufficient security and can coexist in an environment tending to a bipolar system, therefore, the assumption of security dilemma proposed by defensive realists may not exist at all (Glaser, 2010). In general, whether in offensive or defensive realism, the attitude of realism on China-US relations tends to the outcome of the conflict theory.

The zero-sum power game emphasized by realism is more persuasive in explaining the fields where China and the US compete, such as military power and security. However, the history of China-US relations indicates that cooperation is greater than conflict. After all, there are not only competitive areas, but also cooperative areas within China-US relations. Taking China-US relations in the early 21st century as an example.

realism is difficult to explain why the Bush administration's attitude towards China is so different before and after the September 11 terrorist attack. At the same time, it also cannot fully explain that during the Obama period, when the power gap was relatively narrowed, China and the United States still established a broad basis for cooperation in the field of climate change and the economy. In other words, realism only focuses on the one-way logic of power competition, which makes it unable to take into account the dimension of cooperation in China-US relations. This makes realism unable to further explain the complexity and dynamics of China-US relations.

One criticism that realists face is the fact of the thick economic interdependence between China and the US. Even Allison believes that the interdependence between China and the US, especially at the economic level, is high enough to reduce the possibility of war (Allison, 2017). However, the definition of conflict that is regarded in Allison's research is a narrow definition, which is war. Samuel Huntington explains that the economy is the continuation of war in another form, and economic hegemony is crucial because economic power is the most basic and easily convertible form of power (Huntington, 1993). This is a broader definition of conflict, compared with Allison's. At the broader level, any conflicts, whether an economic conflict, a technological conflict, or an ideological conflict, apply to the framework of the Thucydides Trap, as long as they pose direct influences to the rising-ruling power structure. Therefore, the economic conflict between Japan and the US during the 1980s and the 1990s is excluded in Allison's historical analysis, instead, the fight over sea power and influence in the Asian-Pacific region between Japan and the US is regarded

by Allison as a Thucydides Trap case.

Furthermore, the economic interdependence between China and the US also reveals a paradox within China-US relations: the non-synchronization between trade relations and political relations. Song Guoyou explains that, logically, the trade relations deepening the interdependence of different countries, which will increase the cost of conflict, and political disputes undermine trade relations. However, these assumptions do not apply to the case of China-US relations, because, on the one hand, trade relations are not hindered by the deterioration of political relations, on the other hand, the development of trade relations cannot ensure and promote the benign interaction of political relations between two countries (Song, 2004).

Yan Xuetong believes that strategic interests are based on common needs, but economic interests are based on mutual needs, this difference defines the paradox of China-US relations (Yan, 2002). Yan's argument is disproved because the reality reveals that economic interests are not based on mutual needs. In the 5G competition, the US government only intervenes in a specific high-tech sector, while the overall trade deficit is ignored. Gowa states that a country is reluctant to trade with another who may be its opponent, because of the increased wealth for the other country from trade can convert economic resources to military power (Gowa, 1989). From this perspective, what caused this paradox in China-US relations is the fact that the US has different considerations on interests between relative gains and absolute gains according to the specific situation. As a result, the consideration of relative benefits will lead to conflict,

while absolute benefits will lead to cooperation (Song, 2004). This explanation reinforces Mastanduno's findings, as his research indicates that, even among allies, there is still trade dispute that could be caused by the consideration of relative gains over the concern of security (Mastanduno, 1991)

### **2.1.2 Cooperation under neoliberal perspective**

Neoliberals believe that the space for cooperation between China and the United States is greater than the space for conflict. The two most important variables that can affect China-US relations are absolute gains and the international institutions. The former makes the calculation of national interests no longer a zero-sum mentality, while the latter builds a bridge for interstate cooperation (Baldwin, 1993). In the view of neoliberalism, because security is not scarce in the current international society, therefore, the content of national interests has changed, non-security interests have become the priority of a state. The calculation of interests between countries is in term of absolute gains, which makes a "win-win" situation possible (Lipson, 1984; Axelrod & Keohane, 1993).

At the same time, international institutions have become a key bridge for cooperation among countries. As a kind of public goods, the international institution can provide information channels and establish rules, guide national actors to cooperate, and maximize their interests (Men, 2005; Li, 2016). In connection with China-US relations, neoliberals believe that international institutions will not only make China and the US gradually become each other's largest trading partner and create the

foundation of economic and trade interdependence. Moreover, the presence of international institutions also make this deep economic and trade interdependence a "safety valve" to control potential conflict between China and the United States (Johnston & Ross, 2005).

However, liberal scholars are too optimistic about China's integration into the international order. For example, since the financial crisis in 2008, China has increased its efforts to innovate the existing international institution, and established its own international financial mechanisms, such as the Asian Infrastructure Investment Bank (AIIB) and the BRICS Development Bank. By establishing new institutions with new rules, these alternative international financial institutions have posed a challenge to the traditional international order dominated by the Western countries, resulting in institutional competition between China and the West (Cui & Xing, 2011). In addition, neoliberals also exaggerate the importance of China-US economic and trade interdependence. This limitation is particularly revealed when the Trump administration raised an idea of decoupling the US economy from China.

### **2.1.3 Coopetition**

Because there are great differences among the three mainstream theories on understanding China-US relations, some scholars propose a more pragmatic way to analyze China-US interaction, which is the theory of coopetition (cooperation and competition). David Shambaugh stresses that China-US relations are showing more cooperation in areas such as the global economy and non-traditional threats; on issues

of security, on the other hand, China and the United States are more competitive. Therefore, this relationship is regarded as competition (Shambaugh, 2012). On this basis, David Edelstein introduces the time factor and takes the long-term and short-term strategic interests as independent variables that affect the strategic choices within China-US relations. He believes that if the United States considers short-term interests and China focuses on planning long-term interests, cooperation between China and the United States will increase significantly; however, if both China and the United States focus on long-term interests, conflicts between China and the US will rise (Edelstein, 2017). Based on Shambaugh and Edelstein's arguments, the US is more likely to choose to intervene in the economy when the competition focuses on long-term security interests, instead of short-term economic interests.

Shambaugh and Edelstein respectively explain the competition relationship between China and the United States in terms of field and time, however, they ignore the influence of the changing of power positions on the strategic choice of the two great powers. For example, at the beginning of the end of the Cold War, the United States experienced the first wave of "China Threat Theory", but the debate at that time did not form a specific policy in practice so that the United States continued to implement the "contact strategy".

## **2.2 Research on China-US Technological Relations**

The China-US Intergovernmental Agreement on Science and Technology Cooperation signed in 1979 established the foundation for China and the US to conduct

scientific and technological cooperation. However, with the rapid improvement of China's strength in the field of scientific and technological innovation in recent years, the United States began to be vigilant that China's rise would challenge its global hegemony. This increases the uncertainty of China-US scientific and technological cooperation. The current research on the current technological relationship between China and the US concentrates on two directions: competition, and cooperation.

### **2.2.1 Long-term competition**

Through the comparative analysis of the advantages and disadvantages of China and the United States, many scholars believe that although China's technological capacity has obvious disadvantages and is unable to outcompete the US in a short time, it has achieved rapid development in recent years and even beat the United States in some fields such as 5G.

Atkinson and Foote investigate Chinese and American technological development on 36 indicators from 2006-2016, and emphasize that by learning from the successful experience of Japan, South Korea, and Taiwan, China achieved tremendous development in technology. In some indicators, such as railway equipment, supercomputers, and automated machines, China surpassed the US (Atkinson & Foote, 2019). Manning, Engelke, and Klein analyze the global technology competition from the perspective of the policy environment, and illustrate that although the technological gap between the US and China still exists, China has already posed a challenge to America's leading position in technology (Manning, Engelke, & Klein, 2018).

These researchers commonly indicate that China only catches up with America's technological level on indicators such as the number of patent applications, R&D input, and the number of STEM graduations. The US will not ignore China in technology and will adopt policies to contain the rise of China. Although these researchers noted the fact that China is challenging the US in technology, however, their research ignored the differences of technologies, and cannot answer the question of why the US response to China's challenge in technology competition concentrates on 5G specifically.

### **2.2.2 Manageable cooptition**

More scholars identify the current China-US technology competition as a cooptition relationship. They are aware of the increasing tension within the competition, but they also highlight the fact that China and the US are highly interdependent on each other. Decoupling will create higher risks for both countries.

William Reinsch gives two major reasons why the United States hopes to "decouple" from China. The first one is the national security concern, such as the hidden threat of Huawei's equipment to America's national security. The second one is the competition. China conducts large-scale subsidies to become world leader in key industrial fields currently dominated by the United States. However, Reinsch further explains decoupling with China will cause negative consequences such as a sharp rise in manufacturing costs and a decline in the competitiveness of American enterprises (Reinsch, 2019). Silbergliitt also highlights the interdependence of China and the US. He emphasizes that the US depends on China's supply of 18 key materials (Silbergliitt,



2019). Therefore, the relationship between China and the US is competition, as they compete with each other, at the same time, the competition is conducted in the context of extensive interdependence between two countries.

Most scholars only interpret the China-US technology competition from the economic perspective, and ignore the influence of technological change in the strategic competition. They also omit the significance of military technology. Graham Allison points out the conflict between Japan and the US during the 1940s was an example of trade conflict causing war (Allison, 2017). Economic interdependence does not mean it is impossible for China and the US to decouple. These flaws make their research unable to explain the historical cases when the US embargoed and blocked China in certain technological areas in which the US has an absolute advantage. For example, NASA was suspended to from cooperating with China in its International Space Station project when the Congress passed the Wolf Amendment in 2011 because of espionage-related concerns (Gan & Westcott, 2021).

## **Chapter Three: Research Methodology**

This thesis answers the questions of 1) What are the reasons that drive the US government to deviate from its private sector-dominated approach and implement state intervention in the competition with China over 5G? 2) What is the historical pattern of the US government's policy towards technological competition with other countries? My hypothesis is that, with respect to technologies directly linked to US national security, the US government is willing to deviate from its private sector-centered approach, and intervene in the economy, whenever the private sector in the US is outcompeted by foreign rivals. The US government implements interventions, including investment and support to domestic 5G industry, as well as creating barriers and sanctions against China, because, 1) the private sector is losing the competition to Chinese companies, and 2), the consequences of losing the 5G competition are risky and unmanageable for the US government. It is the structural pressure created by China's technological advantage in 5G and the fear of the United States in its security make the US government's intervention in 5G competition inevitable.

To answer the research question and test the hypothesis, this thesis conducts a historical comparative analysis. This historical comparative analysis compares the China-US 5G race to the semiconductor friction between Japan and the US during the 1980s. The purpose of this comparative approach is to evaluate 1) the position of the US in the technological race (winning or losing); and 2) the approach of the US government implements toward the technological race (private sector-centered or state

intervention). This approach attempts to demonstrate a pattern from the two cases of in what situation the US government chooses to conduct interventions in the market of new technologies, as well as how the US government relates its views of technology to its foreign policies.

### **3.1 Why Japan? Why Semiconductors?**

The reason the case of Japan-US semiconductor friction is picked to compare with the China-US 5G competition is that both cases share two similar aspects: a similar power dynamic with the US; and a similar competition in the high-tech sector.

First of all, both cases occurred under one similar historical condition, which is the state power of the United States is relatively declining. In the 1970s and early 1980s, the United States was identified as in the declining of hegemony (Goldstein, 1993). In the conflict with Japan in the 1980s, Japanese companies occupied a huge market share in the semiconductor competition. In the market of dynamic random-access memory (dynamic RAM or DRAM), Japan's market share jumped to 75% in 1986 (Irwin, 2007). As a result, American companies pushed for a highly interventionist trade policy (Brown, 2020).

In comparison, the current race for 5G is repeating a same path. Economically, Huawei still the largest telecommunication equipment provider in the global market, despite the US interventions; technologically, Huawei claimed itself that, it has 18-months technological lead over its 5G rivals, and has secured more than 90 commercial

5G contracts worldwide (Li & Cheng, 2020). Several 5G reports that published by different departments of the US government commonly agree that governments need to help the private sectors to lead the 5G rollout (Medin & Louie, 2019; Brake, 2020; Tran & D'Souza, 2020).

Second, the competitions in both cases occurred in the high-tech sector, and 5G is technically a branch of the semiconductor industry. Semiconductors are identified as the infrastructure for 5G because the 5G network has to be transmitted through semiconductor chips; high-performance and reliable semiconductor products are required for the development of different generations of telecommunication technologies (Li, 2019). Moreover, these two specific technologies play a similar role in the structural rising-ruling conflict. Both technologies are massively used in military applications. In consequence, they are regarded by the US as a threat to US military power. Under Mearsheimer's theoretical framework, the dynamic of great powers relations is largely determined by military capacities (Mearsheimer, 2001). US military power is built on technological superiority, so losing its dominant position in the semiconductor and 5G fields directly weakens the military power of the US (Miller, 2019).

Generally speaking, both cases involve with a structural conflict between the rising power (i.e., China, Japan) and the US as the ruling power. The conflicts occurred under a similar circumstance where the US power relatively declines. The US government, as a result, proactively intervenes in the sector where the conflict happened. Because of

the similar power dynamics, both cases match the basic assumption of Allison's theoretical framework with a similar rising-ruling structural conflict in the high-tech sector. The power relationships are different in the two cases, as in the semiconductor case, Japan was an ally of the US and was dependent on the US military umbrella, while in the 5G case, China holds a different and a more independent position. However, this difference actually strengthens my argument because, 1) the rising-ruling structural conflict exists despite the alliance relationship; and 2) the US government is still willing to intervene in the economy, even the competitor is its ally (Japan), as long as the American private sector lost the competition and America's leading position is being threatened.

## **Chapter Four: The Semiconductor Dispute between the US and Japan, and the American Government's Intervention**

The trade friction between Japan and the US during the 1970s and 1980s was not concentrated solely in the semiconductor sector. It experienced different stages with different focuses. During the 1960s, the argument between Japan and the US was mainly about foreign direct investment (FDI) and the principles of the most favored nation (Fukushima, 1989). After entering the 1970s, with the intensification of overseas investment competition among developed countries, the contradiction between the United States and Japan began to focus on the field of investment. The trade conflict in the 1980s was a technological confrontation, with Japan challenging the US not only in the semiconductor industry, but also in aircraft, satellite, and television (Mastanduno, 1991). As Wang explains, the main reason why the technological conflict was prominent is that after entering this period, the main factor determining a country's international competitiveness began to transform from capital to technology. In addition to the inherent international division of labor in commodity trade, the transnational movement of production factors, such as transnational investment and technology transfer, became more important (Wang, 2019).

This chapter examines the friction between Japan and the US over the semiconductor industry during the 1980s. I initially introduce the historical context of the Japan-US semiconductor conflict, and state how a trade friction developed into a high-tech competition. Furthermore, I discuss the reasons for the US government's

decision to intervene in the semiconductor competition.

#### **4.1 The History of Technology Conflict**

The United States is the birthplace of the semiconductor. In 1947, the invention of the transistor in Bell Laboratory marked the birth of the semiconductor. In the early stage of semiconductor industry development, the U.S. government provided the initial market for products through military procurement and defense technology research and development and determined the technological direction of the early products: miniaturization, high performance, and reliability (Yin & Cui, 2010). In the 1960s, the computer industry became the first user of semiconductors, and the influence of the US government declined. With the development of the semiconductor industry, the R&D cost increased sharply and the industrial-scale expanded rapidly. However, because the integrated circuits were sold at a lower price in the open market, the technical and capital barriers for enterprises to enter the electronic devices market were lowered as companies were able to enter the market through market purchase. As a result, the companies that dominated the market were constantly changing. This competitive mechanism promoted technological progress and made the US electronics industry maintain high competitiveness in the international market.

In the 1950s, there was a big gap between Japan's semiconductor industry and the United States in terms of technology and scale. To improve the competitiveness of the semiconductor industry, the Japanese government, on the one hand, controlled the connection between the Japanese market and the international market through limited

market access, protected Japanese enterprises and domestic industry from the impact of international competitors, and at the same time, forced foreign enterprises to transfer technology to Japanese enterprises on the condition of entering the Japanese market. This played a key role in the early development of Japan's semiconductor industry.

The Japanese government undoubtedly played an important role in the process of catching up with the United States in the semiconductor industry. The Japanese government implemented both domestic and external support policies. On the one hand, the Japanese government implemented domestic support including direct subsidies, tax rebates, preferential access to credit, government purchase, investment and subsidies to R&D. On the other hand, the Japanese government also provided external support with respect to trade, including trade protection, restrictions on foreign direct investment, and the control over high-tech trade (Noland, 1995). In the 1960s, the export of Japanese electronic products rose sharply. In 1965, the export volume of Japanese radios reached 24.21 million (Song, 1987). In this period, the success of Japan's semiconductor industry mainly laid on the use of electronic components, that first developed by the United States, to produce consumer goods and sold them to the international market, to obtain higher value-added benefits, rather than directly selling electronic components to the international market at low prices.

Before the mid-1960s, the US semiconductor industry mainly provided integrated circuits for the US Department of Defense. American semiconductor producers failed to take into account the fact that a large number of Japanese semiconductor consumer



goods entered the American and European markets. Then, the national defense procurement of the semiconductor industry in the US decreased sharply because Japanese products flooded into the American market at a lower price. As a result, the semiconductor industry in Japan gradually developed from a consumer-oriented and low added-value component production industry to an industry with the ability to produce excellent components, computers, and telecommunication products. These pressures drove the US government to start thinking about how to respond as Japanese companies took a huge market share, which means the loss of revenues and jobs for the American semiconductor industry. In fact, until the 1970s, there were obvious differences in semiconductor tariffs between the United States, Japan, Europe, and other countries. The tariff imposed by the United States on semiconductors was about 7%, while that imposed by Japan, Britain, and France was around 10-20% (Yin & Cui, 2010). To deal with the adverse effects of tariff differences on US semiconductors and encourage foreign buyers to use US semiconductor components, clauses 806.30 and 807.00 were added to the tariff table. It was stipulated that if the materials or components made in the US are sold back to the US market after being produced abroad, only the value-added part of the products will be subjected to the tariff. This measure was one of the important factors for the United States to maintain its semiconductor trade surplus in the 1970s.

In the 1970s, the competition between Japan and the United States in the international semiconductor market was more intense. Although Japan opened its domestic semiconductor market in 1976 under the pressure of the United States, due to

Japan's special market structure, American products still faced various obstacles to entering Japan's domestic market. At the same time, to cope with the competition of American enterprises, the Japanese government funded large-scale of R&D projects to promote technological progress and improve the competitiveness of the semiconductor industry. For example, the "Very Large Scale Integration (VLSI)" plan implemented by various firms that organized by the Ministry of Economy, Trade, and Industry in 1976 made Japan achieved great forward progress in semiconductor core technologies. With the support of the government and the innovation of Japanese enterprises in semiconductor production, Japan had a real competitive advantage in the international market of commercial memory chips in the 1980s.

In 1984, Japanese enterprises occupied 60-90% of the market for high-quality dynamic and static random-access memories (Krugman, 1986, p.93). In 1985, the share of Japanese semiconductor products in the international market exceeded that of American products (Yin & Cui, 2010). According to the report released by a US company, Gartner, in 1986, six of the top ten semiconductor companies in the world were Japanese companies. Finally, in 1985, the US launched an anti-dumping investigation on Japanese semiconductor products, and this investigation was supported by the US Department of Defense and the CIA. This was the first time the US had attacked an ally on economic interests, and trade friction elevated from an economic issue to a political issue with the concern for economic security (Feng, 2018). With the aggravation of trade friction between Japan and the United States in the semiconductor field, Japan signed the US-Japan Semiconductor Agreement under the pressure of the

United States, which aims to prevent Japan from dumping semiconductor products into the US market and further open the Japanese domestic market. This agreement is an example that the US government posed interventions with diplomatic measures. It is different from traditional domestic measures, such as tax return, subsidies, and other supportive policies for the domestic private sector. The interventions in the global market are mostly conducted by the government with a focus on restricting foreign competitors. In addition, the failure of large-scale R&D projects in Japan led to a significant reduction in R&D investment.

After entering the 1990s, the competitiveness of Japan's semiconductor industry continued to decline, while the advantage of the U.S. market mechanism dominated by technological innovation gradually emerged. In 1996, the United States surpassed Japan to become the number one exporter of electronic components. After 1996, although Japan was still the most powerful competitor of the United States in the international semiconductor market, it was not able to shake the leading position of the United States as the largest exporter of semiconductor components (Tang, 2012).

As mentioned above, although there were frictions between the US and Japan over commodity trade during the 1960s and 1970s, in the technology sector, however, the US did not particularly control Japan's import of American advanced technology. According to Wang's research (2019), there was a sequence of the US intervention in the regular commodity trade and technology sector. The US focused on textiles, steel, and television at the beginning of the trade conflicts. In the 1980s, when Japan's

technology rose to challenge the leading position of American products, the US government finally realized where the “Japanese threat” came from (Wang, 2019). As Wang concludes, the US government first intervened in the commodity trade sector, yet, when Japan approached America's level in key technology fields, the US began to intervene in technology trade and high-tech sectors (Wang, 2019).

The Japanese technology threat perceived by the US is reflected in multiple dimensions. In 1980, Nippon Telegraph and Telephone Corporation (NTT) was asked by the US to "open its door" to business bidding as the US government warned Japanese firms would not be allowed to bid on a 17-billion-dollar US government contract unless American companies were given the equal right to compete for the purchases by NTT (Behr, 1980). This indicates that the trade friction in the technology section between Japan and the US was begun to put on the agenda as an intergovernmental issue. In 1981, the US asked the Japanese government to include American firms in the cooperation framework of the national project of Exploratory Research for Advanced Technology (ERATO). Furthermore, the US government also intervened in Japanese firms' projects in the US for violating the National Security Act and the Export Administration Regulation. For example, in 1987, Fujitsu, a Japanese company, was blocked by the White House from purchasing Fairchild, an American semiconductor manufacturer, for the concern of national security (Sanger, 1987). In 1983, Nippon Steel Corporation, a Japanese steel company, planned to acquire an American steel company, yet the purchase failed in the end due to the objection of the US Department of Defense (Wang, 2019). In addition, the espionage case of Hitachi and Mitsubishi against IBM

also occurred during this period.

He Ping's research (2018) observes the technology competition between Japan and the US in 1983. A public poll by Gallop in 1983 shows that one in four Americans believed that Japan was the most threatening country in the field of advanced technology; the annual report issued by the US Department of Commerce in 1983 indicated that, among five high-tech sectors, the US maintained a leading position only in the fields of aircraft and space technology because Japan was restricted by its Constitution, while it fell behind Japan in semiconductor, optical fiber, and intelligent mechanical engineering. He further concludes that due to the relative decline in technology, the US inevitably relies more on Japan in advanced military technology (He, 2018).

After the 1980s, the focus of the trade friction between Japan and the United States was the negotiation of high-tech products, including the negotiations in the fields of telecommunication, steel, automobile, and semiconductors. However, besides those negotiations in technology trade, the United States had begun to directly sanction Japanese enterprises. One of the big events was the Toshiba-Kongsberg scandal. In the 1980s, Toshiba illegally exported machine tools that can be used to produce high-tech weapons to the Soviet Union, in violation of the agreement of CoCom (Coordination Committee for Multilateral Export Controls). As a result, Toshiba was compelled to pay a substantial fine. On the one hand, it seems the Toshiba scandal involved the embargo on Communist countries, but in essence, it contained the suppression of the United

States on Japanese high-tech enterprises. This is supported by a 1987 Norwegian Police Service report, which revealed that companies from other Cocom member countries had also sold high-tech machines to the Soviets, but only a few firms were sanctioned by the US (Huang & Li, 2020).

The history of the Japan-US conflict in the semiconductor industry indicates the change of American policies toward Japanese product through the 1960s to the 1980s. As mentioned above, the trade friction between Japan and the US was not limited in one particular time period or one single industry. Trade conflicts happened across the textile, automobile, television, and even entertainment industry. The turning point of the bilateral trade friction was the high-tech sector. When the competition intensified in the high-tech sector, the US government turned its focus and intervened in this competition. What has changed? What caused the US government to intervene in the semiconductor competition?

#### **4.2 What Caused the Semiconductor War?**

The economic interest was the first concern that caused the US government to intervene in the trade in the semiconductor industry with Japan. As mentioned above, from the mid-1970s to the 1980s, the integrated circuit industry in Japan developed at an amazing speed. Taking the most popular 256Kbit DRAM as an example, Japan's market share in both global market and American market actually jumped to 80% and 90% respectively, the top three chip manufacturers in the world, NEC (Nippon Electric Company), Toshiba, and Hitachi, are all Japanese enterprises (Long, 1988; Irwin, 2007).

The failure of the US companies in the business competition with Japanese companies severely impacted the electronic manufacturing industry in the United States, including the sector of semiconductor chips. In 1985, Japan's semiconductor products were investigated for dumping by the US government, which became the starting point of the semiconductor war between Japan and the US.

Secondly, in the view of the United States, one of the important reasons for the rapid development of Japan's integrated circuit and semiconductor industry was that Japan took advantage of the United States in semiconductors, computers, and other relative high-tech fields. Since the invention of the transistor, American enterprises invested a lot of resources and played an outstanding role in the basic research field of new semiconductor products, such as integrated circuits. In particular, American enterprises undertook the task of designing new cutting-edge products for military purposes and supported the basic research that made it possible for new revolutionary products. Japanese semiconductor companies made full use of the political and military alliance relationship between the United States and Japan in more than 20 years after the World War II, resulting in "one-way" rather than "mutual two-ways" technology transfer. Japanese semiconductor and computer enterprises were able to "enjoy" the free ride, but their main strength and resources on production and manufacturing, and constantly made use of the achievements of the research and design in the US to produce high-quality semiconductor products at low cost, to occupy the market share in a short time (Rowan, 1981).

Third, the semiconductor industry is one of the most important high-tech industries. It provides intermediate products for many high-tech industries, especially as the core components of computer equipment and telecommunication equipment. It is one of the industries with the most intensive R&D activities. The United States believed that the failure in the field of semiconductor memory chips not only reflected the failure of the whole semiconductor industry but also might threaten the advantage of the computer industry as a strategic industry in the United States (Miller, 2019). Especially since the Reagan administration put forward the "Star Wars" plan in 1983, the US military paid close attention to the military value of semiconductor products, including "LSI's dual-purpose memory using silicon semiconductors", "semiconductor devices for image processing (CCD)," compound semiconductor devices such as gallium arsenide chips (Feng, 2018). Meanwhile, because semiconductor products are "dual-use" technologies, there was a risk that Japan's electronics, semiconductors, and other high-tech products might be leaked to the Soviet Union and other communist countries.

Fourth, the United States was dissatisfied with the Japanese government's strong intervention in the development of its semiconductor industry, as Japan's advantage and competitiveness in the semiconductor industry were developed with assistance from the Japanese government (Wang, 2019). Since the development of the Japanese semiconductor industry started late, as discussed above, the government implemented strong industrial policies and strict trade protection, set up high tariffs, and restricted the import of semiconductor products to prevent foreign enterprises from entering the domestic market. Even if foreign enterprises were allowed to enter, they were subject



to patents and technical assistance, which was considered by the United States as Japan forcing foreign enterprises to transfer technology. One example is the “Very Large Scale Integration (VLSI)” plan was regarded by the United States as a symbol of collusion between political and financial forces in Japan.

Given the strategic position of the semiconductor industry, it is impossible for a government to “let it go.” From the competition between Japan and the United States in the semiconductor industry, it seems that enterprises in the private sector were the major subjects in the competition, but the real subjects were the governments. All stages of the growth of the semiconductor industry were inseparable from government intervention: In the initial stage, the government provided the initial start-up market for semiconductors through public procurement and tariff protection, so that the semiconductor industry quickly reached economies of scale. In the growth period, the government used R&D subsidies, industrial deregulation, patent protection and other measures to promote the leap forward of technology and to ensure that technology is difficult to be copied; In the mature stage, the government promoted the export of semiconductor products and maintained and expanded the market share through various means such as negotiation, assistance, and anti-dumping investigation.

With the rise of Japan in the high-tech field in the 1980s, the US interventions in the trade with Japan reached an unprecedented level, because America's perception that Japan was about to surpass the leading position of the United States largely came from the threat of Japan’s capabilities in the technology sector. Although the Japanese threat

at that time remained at the economic level, it was still considered a realist threat to the overall national interests of the United States. Samuel Huntington's view is quite representative. Huntington (1993) believes Japan's challenge to US economic hegemony had a variety of effects on the United States: first, If Japan continued to expand its leading position in many military-related technology fields, the national security of the United States would be affected more directly and obviously; second, the growth of Japan's economic power threatened the economic interests of the United States; third, the influence of the United States in other countries would decline with the growth of Japan's influence; fourth, Japan's influence on the United States itself will rise. When Japan occupied the high ground of technology in the 1980s, the United States found that it was no longer possible to compete and contain Japan solely through economic methods. Therefore, the U.S. government took multiple methods, including political, administrative, financial, to intervene in the trade with Japan in the technology sector.

## **Chapter Five: 5G Competition Between China and the US**

At present, the world is ushering in a new technological revolution. The "key" to open this technological revolution is the fifth-generation telecommunication technology, which is known as 5G. In terms of technical characteristics, 5G almost eliminates all delays or interference in information processing. 5G users can use artificial intelligence to examine real-time events, decisions, upcoming events, and past events, and truly integrate all data (Tadjdeh, 2019). In terms of social impact, as the telecommunication infrastructure, 5G is the support of digital services such as robotics, artificial intelligence, smart city and Internet of Things (IoT). It will bring all-round changes to global social and economic life. At a higher level, 5G may bring changes in the world political and economic situation. China-US trade conflicts are nothing new, since 2001 when China joined WTO, both countries had trade confrontations and negotiations among sectors of integrated circuits, textiles, auto parts, issues of domestic subsidies, intellectual property, and financial information service (Bown, 2009). However, the current 5G race has changed the game to another direction. Seeking to balance the trade deficit with China is no longer the priority of the US government in trade negotiations. The primary goal has changed to prevent the rise of China's development and advantages in the high-tech sector. The trade report in 2020 indicates that the US government does not care more about the issue of trade deficit, because the trade deficit with China hit a new record in 2020 even though the Trump Administration implemented a variety of trade protection policies to balance the deficit (Cox, 2021).

The focus of the trade friction has shifted to contain China in technology and innovation, which is reflected in the 5G competition.

This chapter examines the China-US competition in the area of 5G technology. I initially bring a description to introduce what the US government did to intervene in the race for 5G. Then I explain the reasons that drive the US government to intervene in the private sector.

### **5.1 Huawei and the US government's interventions**

Although Trump claimed the US 5G strategy was mainly carried out by the private sector and does not rely on the government's support and intervention (Stacy, 2019). In fact, the US government has state power to intervene in the 5G competition and sanction Chinese 5G companies. The US Department of Defense clearly requires the government to fully and directly intervene in the 5G competition (Medin & Louie, 2019). As a result, the Trump administration took the initiative to block Huawei, domestically and internationally. The US government's actions include: accusing Huawei of business espionage and cooperation with the Chinese military; claiming that Huawei equipment threatened the cybersecurity of the US and other countries; asking Canada to detain Meng Wanzhou, the Huawei executive; cutting Huawei's market and technological ties to the US market with legal force; pressuring allies to exclude Huawei through administrative and diplomatic methods; using financial means to impose sanctions on non-American companies for doing business with Huawei.

In the National Security Strategy report, the Trump Administration described China and Chinese enterprises as "invaders" in the technology competition and accused Huawei of "stealing American technology and intellectual property" (The White House, 2017). The Trump Administration said that American companies and relevant institutions should avoid doing business with Huawei and ZTE because they may pose a national security threat to the United States (Triolo, Allison, & Brown, 2018). Subsequently, the US government took formal steps to prohibit Chinese companies from joining the US domestic 5G network. The US government required American companies not to provide technology products to China without the permission of the federal government. Products including Qualcomm's chips, Flex's accessories, and Google's Android Operating System were forced to be removed from Huawei's procurement list.

Furthermore, the US government also intervened in the international market, to strangle Huawei globally. In June 2019, the US Secretary of State, Mike Pompeo, said in an interview with Swiss media that it is difficult for Chinese companies to ensure information security, so cooperation with Chinese enterprises is equivalent to cooperation with the Chinese government, and therefore privacy and data protection cannot be guaranteed with Huawei's telecommunication equipment (Foreign Ministry of China, 2019). The US government also took other sanctions to threaten allies that if 5G facilities provided by Huawei are adopted, intelligence information would no longer be shared; as a result, Japan, Canada, Australia, and New Zealand all introduced restrictions on Huawei (Yu & Ji, 2021). German telecommunication giant T-Mobile

suspended the \$4.1 billion purchase contract with Huawei due to security concerns (Eggerton, 2019). The US Department of State also announced visa restrictions for Huawei employees (Hansler, Atwood & Conte, 2020). TSMC (Taiwan Semiconductor Manufacturing Company), one of Huawei's largest chip suppliers, was banned from doing business with Huawei since the US Department of Commerce released a new sanction that prohibiting non-American companies from providing chips for Huawei with American technology (Culpan, 2020). These actions and policies implemented by the Trump administration indicate clearly that the purpose of the US government's intervention is to contain the rise of China in the technology sector by strangling Huawei. On the other hand, the interventions at the international level actually reflect that the US is unable to handle the challenge of Huawei and China in the 5G sector by itself, therefore, the US needs assistance from its allies, urges these countries to exclude Huawei in their 5G plans. The policies and actions implemented by the Biden administration, Yan Xuetong has argued, are more rational and strategic than those in the Trump administration. Biden's exclusive multilateralism, which is different from Trump's unilateralism, reinforces the connection with its allies and poses more pressure on China and Huawei at the international level (Yan, 2021).

## **5.2 The Causes of US Interventions in 5G**

How can we explain the United States' aggressively interventions in the competition over 5G, and its containment of China and Chinese companies with all possible methods? On the one hand, the attributes of 5G itself can help to explain US

interventions. 5G, as a core technology in the current digital age of industrialization, directly influences international competition at the economic level. On the other hand, similar to the case of the semiconductor conflict between Japan and the US during the 1980s, the effect of 5G has escalated to the strategic level, as the 5G competition at the economic level has created a direct threat to national security of the US.

### **5.2.1 Economic interests**

The new round of industrial revolution, which is generally called "Industrialization 4.0", is a process from industrialization to informatization and from the traditional economy to the Internet economy (Petrillo, De Felice, Cioffi, & Zomparelli, 2018). The previous industrial revolutions were dominated by western countries, which monopolized the world's most advanced scientific and technological achievements (Ito, 2019). 5G, which is known as the core technology of the next industrial revolution, is the key factor that will eventually change the global economy, which makes it possible for a shift of the center of the industrial revolution from the West to Asia, and will trigger great changes in the mode of production and consumption, and determine the country's future economic development (Yan, 2020). Whoever masters 5G first may be in a leading position in scientific, technological, and economic development in the future. In the new era, if the United States does not take the initiative, the decline of its global leadership may cause a loss of its hegemonic position.

One driving force for the US government to intervene in the 5G competition is economic interests. In recent years, the "digital economy" is gradually rising and

developing rapidly. In terms of the proportion of the digital economy in GDP, approximately 60% of the US GDP was the digital economy, and for China, it was 38.6% in 2020 (Xue, 2021). According to the UN digital economy report, the global digital economy is highly concentrated in China and the US; in 2019, the two countries claimed 90% of the market capitalization value of the world's 70 largest digital platforms (UNCTAD, 2019). In the future, human wealth will rely more and more on the digital economy rather than natural resources. the world's largest resource will no longer be mineral or oil resources, but data resources (Yan, 2020). Data is the result of human activities. Data resources are very rich, but ultimately it depends on whether the country can analyze and utilize it, which determines whether or not the national wealth will increase. The reason why 5G determines the future of China and the United States is that which country controls the 5G technology can turn data into greater wealth.

The 5G Ecosystem Report, published by the US Department of Defense, says that among the top ten internet enterprises, Chinese companies occupy four seats, if China continues to take the lead, the future internet represented by 5G may further tilt to China, China's development in the 5G will repeat the prosperity of the United States in the 4G era (Medin & Louie, 2019). Over the past decade, American companies, such as Apple and Google, took the opportunity to occupy a leading position in the 4G market, which has created prosperity and accumulated national wealth at a fast speed (Yan, 2019). According to the prediction in the 5G Ecosystem report, leaders in 5G will earn hundreds of billions of dollars in revenue in the next decade, and China's development in the 5G will reproduce the prosperity of the US in the 4G era (Medin & Louie, 2019).



However, according to the current development situation, China has deployed 350000 base stations domestically, which are almost 10 times that of in the United States, Huawei has transported 10000 base stations overseas (Yan, 2019). Before 2009, the top ten Internet companies with revenue were all American companies, while in 2018, four of the top ten were Chinese companies (Yan, 2019). Qualcomm, an American 5G provider, calculates that 5G will generate US\$3.5 trillion in revenue and create 22 million jobs in the US by 2035 (Qualcomm, 2020). Losing the race over 5G literally means losing billions of dollars and millions of jobs. In the future 5G era, if China masters 5G first, the top ten largest companies might be all Chinese companies. In this way, one can understand why 5G has become the focus of strategic competition between China and the US and why the United States regards China as a major competitor.

### **5.2.2 Securitization of technology**

As the world's largest telecommunication equipment supplier, Huawei has been regarded by the US government as a direct threat to its national security since Trump declared national emergency over threats against American technology (Higgins, 2019). If we take a look at data, Huawei's achievements have made the United States very afraid. In 2017, Huawei's market share in the global telecommunication base station was 27.9%, ranked first in the world; in the same year, Huawei applied for 4024 international patents, the most in the world (Ma, 2020). It is inevitable that the United States would launch this 5G war against China since Huawei's development touches the

core interests of the US: national security interests.

The security concern in trade and technological change has always been one of the major drivers for the US government to restrict foreign competitors in the international and domestic market competition. Governmental forces, such as the US-China Economic and Security Review Commission, Committee on Foreign Investment in the United States, and Office of the United States Trade Representative, all play a vital role in assessing the security risks of economic activities and trade between China and the US. The current US interventions and policies targeting China and Huawei regard 5G as a key point to protect national security and maintain its monopolistic and hegemonic position. CTIA, the trade association of wireless telecommunication industry in the US, released the 5G competition reports for two consecutive years in 2018 and 2019. It listed China as the main competitor in the 5G field, and warned the US government that the development of 5G technology in the United States has already fallen behind. As a result, CTIA suggests the US government to take immediate actions to contain China in the competition (CTIA, 2018, 2019; Brake & Bruer, 2020). The US National Security Council (NSC) also warned that if China occupies a dominant position in the telecommunication field, it will be not only China's technological victory but also its political, economic, and military victory (GAO, 2020).

Falling behind in the 5G race also raised the security concern in cyberspace. The United States is the birthplace of the internet and has always regarded itself as the "leader" in cyberspace (Kiggins, 2014). As early as 2015, the National Security Strategy

report of the Obama administration clearly stated that since the birth of the Internet, the United States has had special leadership responsibility for cyberspace (White House, 2015). In 2018, the National Cyber Strategy released by the Trump administration further pointed out that most parts of the world have accepted the US vision of shared and open cyberspace (White House, 2018). Apparently, the US has always been an advocator of the values of free and open on the Internet. Ironically, 5G marks a starting point that the US government starts to practice geopolitical games in the "free and open" cyberspace. Since the incident of Meng Wanzhou, Secretary of the State, Mike Pompeo pointed his fingers at the development and construction of 5G in the US ally countries during his visit, and asked those countries to be vigilant against the security risks of using Huawei's equipment (Lee & Brandao, 2021). Furthermore, the United States, together with 32 countries, including Germany, Japan, and South Korea, European Union, NATO, and four global wireless network organizations, issued the Prague Proposals on the issue of 5G security, requiring to focus on the risks of the influence of third-country governments on their own 5G suppliers (Kahn & Lopatka, 2019).

The concern of the US government on Huawei does not just appear today. During the Obama era, there were accusations and investigations against Huawei by the House Intelligence Committee (Schmidt, Bradsher & Hauser, 2012). Obama also issued a policy evaluation document to exclude products from "foreign technology enterprises", including Huawei, in the supply chain as far as possible (The White House, 2009). If the previous exclusion only targeted the competitive advantage of Huawei equipment in the US domestic market, today's exclusion of Huawei by the US

government in the 5G market is a global contest. Additionally, the future competition is unlikely to loosen even the power of the US government transferred from Trump to Biden. Compared to Trump, Biden's intervention in the 5G competition is more proactive. Biden not only increased its interventions at the international level, as he promised to provide incentives to countries that are willing to exclude Chinese 5G products (Mauldin & Salama, 2021). Furthermore, the Senate recently passed the bill of Innovation and Competition Act, this is an ambitious bill that focuses on establishing the infrastructures for technology and innovation in the US, in order to boost the competitiveness of the US in the high-tech sector (Franck, 2021).

From Obama to Trump, then to Biden, the US government's intervention and containment strategy against China in the 5G sector reflect the significance of technology in the strategic competition between China and the US. The US government believes that Chinese technology companies have occupied the leading position in the new technology. This rapid progress in 5G not only allows China to grab more economic benefits in trade but also forms a threat to the national security of the US. This threat comes not only from the technology itself but also from China's challenge to the global leadership of the United States. Therefore, the US government decided to intervene and attack Huawei globally with no mercy.

## **Chapter Six: A Comparative Analysis: Based on US-Japan Semiconductor Disputes and China-US 5G Competition**

Economists of almost all schools are convinced that free trade can promote the effective allocation of resources in the market (Krueger, 1980). In terms of the promotion of overall interests, free trade is better than any form of state intervention and trade protection. However, every country will intervene and adopt trade policies to protect its domestic economy and interests out of its own political concerns. From the perspective of trade competition and national interests, a country's policy often depends on its position in the international political power structure.

A country often adopts different trade policies according to its own needs. In the period of rising and prosperity, when a country is in a leading or even monopolistic position, the government often advocates free trade, expands its own interests, and increases the share in the international economy through competitive advantage; In the period of relative decline, the government pays more attention to the relative benefits of economic and trade exchanges between countries, protects its own interests, maintains its position in the international economy, and reduces the relative benefits of trade target countries within the international competition (Shen, 2019). An example is that when Britain took the lead in completing the industrial revolution, the British government abolished Corn Law in order to seek expansion, reduce trade protection, and promote free trade; At the end of the 19th century when Germany rose, Britain ended the 30 years of free trade to compete with Germany globally (O'Rourke, 2000).

From the Second World War to the mid-1970s, the United States advocated and dominated free trade globally. However, with the rise of Europe and Japan in the 1970s and 1980s, the US set up trade barriers in various ways. Its trade policy moved toward trade protectionism (Mazzucato, 2011). To maintain its hegemonic position, the US government intervened the trade with Japan in various industrial sectors, including semiconductors, automobiles, iron and steel, textiles, and telecommunication (Bowen & McCulloch, 2009).

Since 2010, China replaced Japan as the world's second-largest economy and has maintained a rapid growth (Barboza, 2010). Statistically, China has become the largest competitor of the US. In the 2017 report of National Security Strategy, the US government identified China as a "strategic competitor" and a "revisionist country", exaggerated the "China Threat Theory" by emphasizing China's attempt to challenge American power (Trump, 2017). According to the report of National Defense Strategy in 2018, "prevention" and "containment" strategies have become the guidance of the US government towards China, as the US believes that the rise of China has posed a challenge to America's dominant position in the world (Mattis, 2018). A series of trade policies implemented by the US government since 2018 against China, including the increased tariffs and trade sanctions, have confirmed this mentality, that is, China has become the number one competitor and challenger of the US hegemonic position, this challenge urges the US to launch trade protections and intervene the sectors in the trade, especially the 5G industry, where the US is being seriously challenged.

## **6.1 Similarities Among the Japan-US Semiconductor Friction and China-US 5G Competition**

Both China and Japan have achieved economic development under the hegemony of the United States in different periods. Under the framework of the conflictual relationship between a “rising power” and a “ruling power,” there are similar reasons for the US government's intervention in China-US competition in 5G and Japan-US trade disputes in the semiconductor sector.

First, the historical background of these two cases is similar. Both China and Japan achieve economic development in the semiconductor and 5G sectors by making use of their available resources and advantages in the international economic order that is dominated by the United States. During their rising process, the governments of China and Japan have played important roles by supporting the economic sectors with certain industrial policies. In their bilateral trade relationship with the US in general, the Japanese government formulated various trade protection policies to expand exports and restrict imports, such as tariff barriers, and import restrictions. Through a large amount of R&D investment, with the advantage of domestic cheap labor, as well as absorbing foreign technologies through technology transfer, and large-scale export of low-price products to the United States, Japan's semiconductor industry achieved rapid development (Feng, 2018). In comparison, through a similar export-oriented strategy, China has achieved low export prices to support exports through export subsidies, tax rebates, and currency devaluation (Shen, 2019). It can be said that through similar

strategies, China and Japan undertook the needs of foreign investment and industrial upgrading of American high-tech and capital, made full use of rules and norms of America-dominated international trading system, and finally achieved rapid development of trade and the accumulation of wealth through the innovation of advanced technologies.

On the other hand, the unbalanced trade is the same reason the United States intervened in trade with Japan and China. To some extent, the state intervention of the US government is to solve the situation that the US power and economies have relatively declined in certain sectors. In the cases of semiconductor and 5G competitions, the United States faces not only high growth competitive pressure from Japan and China but also slow domestic economic growth and a series of domestic social problems. In the 1970s, the US was in a period of stagflation with low economic growth. The trade deficit continued to expand, the expansionary monetary policy accelerated the depreciation of the US dollar, as a result, the Bretton Woods system based on the US dollar collapsed, and the US economy fell into recession. Similarly, in recent years, especially after the financial crisis in 2008, economic and social inequality in the US has intensified, which caused social and political polarization. The US government consciously blames the domestic social problems on economic globalization and the development of China. This is why the Trump Administration launched trade sanctions against China, not only in the 5G sector but in all-round, under the slogan of "Make America Great Again".



Second, in the two cases, the US restricted the import of Chinese and Japanese products, in order to expand the export of American products. Taking advantage of its hegemonic power, the United States adopts various means to achieve its goals, including imposing tariffs, restricting imports and exports, launching anti-dumping investigations, and pressuring allies. The US government conducted anti-dumping investigations on foreign products through domestic laws, such as Section 301, and imposed additional tariffs on imported products. In the trade friction with Japan, measures such as gate price, limitation of market share, and import restriction were also taken by the US government. After signing the Plaza Accord and Semiconductor Agreement, the US intervened in Japan's economic structure and changed Japan from the macroeconomic level, Japan finally lost its advantage in economic structure and fell into a long-term economic "stagnation", which is also known as "a lost decade" (Hayashi & Prescott, 2002). In terms of intervention in the trade with China, in addition to imposing tariffs as the main means, the US government also took a variety of restrictive measures, such as the "China Clause" in the new US-Canada-Mexico Free Trade Agreement (Massot, 2018); In the high-tech industry, including the 5G and internet sectors, sanctions, embargoes, and sales bans are taken against Chinese high-tech enterprises, including Huawei, ZTE, and Tiktok, the US government directly intervened in the operation of these enterprises in the US market with legislative and administrative forces.

Third, the deeper reason that caused the US government's intervention in both cases is the development of Japan and China in the sector of semiconductors and 5G threatens

the position of the US at the level of the global value chain. The achievements of high-tech industries in China and Japan directly threaten the leading position of the United States in technology and urge the US to contain the development of Japan and China in semiconductor and 5G sectors through state intervention. Therefore, the core of the two cases of trade conflicts is mainly reflected in the competition at the level of the high-tech industry.

The level of science and technology is not only the core competitiveness of a country, but also an important field of strategic trade competition, and the competition in the high-tech field becomes the core battlefield of trade conflicts. Therefore, among various trade sectors in the trade frictions with Japan and China, the United States pays special attention to the development of the high-tech industry and implements tighter controls targeting semiconductor and 5G sectors. Since the Japanese government proposed a national strategy of Science and Technology, Japan achieved tremendous development among various industries, from light industries such as textile to heavy industries such as automobile and steel, then to the high-tech sector. In the sectors of not only semiconductors, but also electronic chips, and biotechnology, Japan reached the leading position in the world (Porter & Sakakibara, 2004). With regards to this, the US government implemented different interventions in different fields, with the different policy objectives of pursuing relative gains. Mastanduno's research (1991) indicates that the US fully adopted the policy of considering relative gains and implements trade protection in the satellite field; that policy was partially adopted in the aircraft sector, but none in the television sector. In the China-US trade conflict,

China's export products have gradually developed from the low end of the global value chain to the middle and high end and promoted the reconstruction of the global value chain (Gereffi, 2013). The US government pays special attention to the plan of "Made in China 2025", which is regarded as a threat. The US government believes that this plan is to occupy high-tech industry and replace American technologies, products, and services by all possible means, so as to prepare for Chinese companies to dominate the international market, which will pose a major challenge to the core interests of the United States (McBride & Chatzky, 2019).

The China-US trade war began in June 2018, the first \$50 billion tariffed goods were concentrated in high-tech industries, such as biomedicine, new materials, robotics, 5G, high-speed rail, and aviation products (Brown & Horowitz, 2018). It can be seen that the importance of the high-tech industry makes the ruling power shift its attention from absolute gains to relative gains. The higher technology the sector has, the more intense the competition will be. Therefore, the US takes all necessary ways to contain China's development in the 5G area.

## **6.2 Differences in the Japan-US Semiconductor Friction and China-US 5G Competition**

From the perspective of strategic competition between a rising power and a ruling power, there are great differences between the two cases. These differences are reflected in specific policies and reasons for state intervention of the US government caused by the uniqueness of China and Japan's own development in semiconductor and 5G sectors.

First, from the political level, the different political status of China and Japan and their relations with the United States determine the different coping strategies of the US government. The United States and Japan have been allies since shortly after the end of World War II. The historical background of the Cold War determines Japan's dependence on the United States at the political and military levels. Despite the escalating trade frictions between the United States and Japan, which had a certain negative impact on the economic and political relations between the two countries, Japan relied on the protection of US military umbrella. Therefore, in the trade and semiconductor conflicts, Japan always gave way and compromised to meet the requirements of the US. This unequal relationship has determined that the US government can intervene recklessly in the semiconductor sector without considering the negative consequences of its interventions (Shen, 2018).

In contrast, there are fundamental differences in political, economic, and social systems between China and the United States. Politically, unlike Japan, China is not an ally but has the relatively independent and equal position in front of the United States. At the same time, China is ideologically far from the US. Overall, due to the fundamental differences between China and the US, the rise of China at all dimensions is regarded as a major challenge to the international order that is dominated by the US. The strategic competition of big powers determines that China will not adopt Japan's concession strategy. In practice, the US interventions in the 5G area are different from the strategies in the semiconductor sector against Japan, because the bilateral relationship between China and the US is essentially different from the Japan-US

relationship. The Japan-US competition in the semiconductor sector is more like a game within the West, yet the 5G competition between China and the US is more like a rivalry between the East and the West. This competitive relationship is concluded as the new “technological Cold War” (Segal, 2020). On the premise of considering various interests, the United States has adopted a multi-level trade intervention policy to crack down on China in the 5G and the whole trade field.

Second, from the economic perspective, China's economy is larger than that of Japan in the 1980s. Statistically, in 1985, Japan's GDP was only 32% of that of the United States, while in 2017, China's GDP was 62% of that of the United States (Shen, 2019); China is also the largest manufacturing country, as the statistic shows in 2019, China occupied 28% of the world's manufacturing, which was nearly as much as America, Japan, and Germany combined (The Economist, 2020). Japan's development in the semiconductor field had a direct impact on similar products in the United States. Therefore, the U.S. intervention in the semiconductor industry is more straightforward with less consideration of the negative impact of the interventions in the bilateral trade on its domestic economy. On the contrary, the economic interdependence between China and the United States is deep, aggressive actions such as "decoupling" are unpractical and nearly impossible (Farrell & Newman, 2020). China is not only less dependent on the US economy, but also establishing new rules and norms in the global trading system, especially in the 5G sector. In the 5G competition between China and the US, the means of the US intervention is more direct and aggressive. Although the US government is tough in the semiconductor friction with Japan, the negotiation in the

semiconductor sector was still under international trade rules. In the 5G competition, in comparison, the interventions of the US have gone far beyond the methods to solve regular trade disputes. Whether the “entity list” of sanctioned Chinese enterprises after 2018 or new regulations on Huawei's chip export control in 2020, the interventions are directly implemented by administrative and legislative forces in the name of national security.

Additionally, the range of the interventions by the US government in the 5G sector is larger than that of interventions in the semiconductor competition with Japan. In addition to the direct sanctions against Chinese enterprises, the interventions spread to sectors of the Internet and supply chain and even the education industry. The US Commerce Department added 37 Chinese schools to the “entity list” in 2019, including seven universities that collaborate closely with the Chinese army (Bartz & Freifeld, 2019). Worried about the theft of core technologies, in 2018, the U.S. government shortened the visa period for Chinese graduate students in the high-tech majors from five years to one year; In 2019, the US restricted visas for Chinese students who potentially study in national security technologies (Watanabe, 2020); in September 2020, the US government directly revoked the visas of more than 1000 Chinese students and researchers, claiming that they posed a threat to national security (Pamuk, Brunnstrom & Woo, 2020).

To sum up, both China and Japan have developed in the global economic system dominated by the United States. Through appropriate industrial policies, they have

achieved the development in high-tech industries and occupied a large scale market share in the international competition with the US. In the face of the rise of China and Japan, United States has launched trade restrictions by increasing tariffs, restricting imports and exports, and using domestic laws to carry out anti-dumping investigations, sanctions, sales bans, targeting the semiconductor, and 5G sectors. It can be said that the state interventions of the US government in the semiconductor friction with Japan and the competition with China in the 5G sector are essentially the method that the US government to suppress potential competitors to maintain its leading position in the high-tech field. Due to the uniqueness of China's political and economic status, the US government has to use different methods to intervene in the 5G competition and consider which intervention is effective with minimum collateral damage. This indicates that state intervention of the US government is a method to balance its trade deficit, and at a deeper level, it is a necessary means to protect national interests and maintain its hegemonic position in the face of strategic competition with China and Japan.

### **6.3 A Rising-Ruling Structural Conflict**

The US has a tradition of valuing the significance of technology in the national strategy. As early as 1945, when the war came close to the end, the US government brought Nazi scientists to the US, which is known as Operation Paperclip (Laney, 2008). The United States realized the importance of scientific competition, especially in military technologies, with Russians after the war. The Cold War tech-rivalry between

the US and the Soviet Union was conducted through various technological areas, including nuclear weapons, aircraft, and space technology. These Nazi scientists made a huge contribution to the development of American science and technology during the Cold War (Huddleston 2015). Another example is a Chinese scientist, Qian Xuesen, who was involved in the Manhattan Project. His application to return to China was rejected by the US government in 1950 and then he was put under house arrest by the American authority for five years. In the end, Qian was released in 1955, and finally became the founding father of China's nuclear and rocket programs (Wang, 2011).

The historical examples listed above emphasize that the high-tech competition has been regarded by the US government as a significant sector in strategic competitions with other countries. In most cases, the high-tech competition has a direct connection to military power, that is, losing this competition literally means losing the technological advantage in military capacities, then military technologies and weapons will become defenseless, which is a direct threat to national security. Under Graham Allison's framework, the concern in the high-tech competition is regarded as a rising-ruling structural conflict, that is, the development of technological advantages of the rising power, and the fear of the ruling power makes the conflicts in the high-tech sector more intense and inevitable.



## **Chapter Seven: Conclusion**

The confrontation between China and the US since Trump took the office in 2017 has made Chinese scholars pick up the research on Japan-US trade friction in the 1980s (Ma & Cai, 2020). Chinese scholars have been massively investigating the history of Japan-US competition, as well as the reactions of each country, in the section of not only trade but more specifically in the semiconductor industry, as they are hoping to find a historical pattern of when, where, and how the US will intervene in the technology competition, in response to the current China-US 5G competition. This is also the purpose of this thesis.

### **7.1 Key Findings**

As discussed in previous chapters, there are some similarities between these two cases. On the one hand, from a historical perspective, both Japan and China are in a similar position in international competition with the United States. It not only means both China and Japan, as rising powers challenge the leading position of the US. It also means the US is in a state of relative decline in the context of the two cases. This state caused an unbalance in the bilateral trade with China and Japan. Similarly, in the two cases, the unbalanced trade relation and trade deficit are the major excuses for the US government to intervene. However, the deep reasons rely on the dimension of the strategic competition between the rising power and the ruling power. The United States, as the ruling power, intervenes in trade as a strategic method to maintain its hegemonic

position and protect its national interests. Furthermore, as Mastanduno argues, because the US is more sensitive to the sector of technology, especially the military-related ones, therefore, the thought of relative gains is more obvious in the US interventions and policies in semiconductor and 5G. During the 1980s, the United States strengthened its intervention in the field of technology, especially high-tech products, because the concern of the US that is about to be surpassed by Japan was largely from Japan's technological capabilities.

On the other hand, China is not Japan, after all, the uniqueness of China determines the reactions and interventions of the US are different, compared to the case of Japan. Even under the condition of the close military alliance, Japan still failed to avoid economic friction with the United States. The essence of the two bilateral relations is completely different, the dependence of Japan on the US within this alliance relationship determines both countries were not in equal positions. Through bilateral and multilateral negotiations, the US handled the rising challenge posed by Japan. The Plaza Accord, as well as the Semiconductor agreements, essentially reshaped the domestic structure of the Japanese economy, the US interventions finally succeeded. In comparison, what makes China different from Japan is that China is competing with the US at a higher strategic level, that is, what is changing is not only the trade balance but the international economic order. In the case of the semiconductor competition, the security concern of the US government was only reflected as the military technological dependence on Japanese products, the concern of the economic security was the major concern of the US to intervene in the semiconductor sector. In the case of the 5G

competition, in comparison, the leading position of China in the 5G sector is allowing China to reconstruct the standards, rules, and norms in the international order that is currently dominated by the US. The threats, or challenges, from China to the US stay not only on the level of trade and economic level but have expanded to strategic, political, and security levels. Therefore, the interventions in 5G are definitely different from those in the case of Japan. After all, the risks that posed by Japan in the 1980s was manageable for the US, and the US government finally managed it.

Historically, The United States has always valued the importance of technology competition, not only in the trade sector, but also in the strategic competition with other great powers. During the trade negotiations in the 1970s, the technology conflict between Japan and the United States was not too obvious; when Japan occupied a high ground in the field of technology in the 1980s, the United States found that it was no longer possible to solve Japan's challenge in technology through economic means, as a result, multiple methods, including political, administrative, and financial, were adopted by the US to compel Japan to satisfy America's demands.

Speaking of the current 5G competition, the US interventions are more aggressive, especially since Biden took office. If we argue Trump is irrational as he mostly made his decisions through Twitter, and his decisions were considered as lack of foresight as his policies not only hurt China and Chinese companies but also harm to American domestic economic conditions. Biden has switched the direction, compared to Trump's policies. His multilateral way at the international level and the recent Innovation and

Competition Act are elaborating the US interventions to a higher level, which aim to a long-term goal to strategically contain China. If Trump's interventions were guided by unilateralism, then Biden's current policies and plans are more multilateral. In general, Biden maintains the direction of containment policies against China because he still sees China as direct threat to the national security of the US (Yan, 2021). In comparison, Biden's multilateral interventions are more rational because it is an "exclusive multilateralism". He has been trying to ally with the West and handling China's threat with allies collectively. After all, as the report of the US National Security Strategy says at the beginning, the strategy of national security is guided by realism and outcomes, not ideology.

## **7.2 5G Reshapes World Politics**

From the perspective of power relations, the US intervention in 5G is not entirely driven by economic interests, but more importantly, by the concern of military power and national security. Along with the rapid rising of China, the international order is changing from unipolarity to a new bipolarity (Yan, 2020). The change in the international order reveals a structural conflict between China and the US, which matches Allison's argument of the rising-ruling conflict. This is the major reason that the competition between China and the US is becoming more intensive. This trend means that the strategic competition between China and the United States is reflected by the shrinking of the power gap and redistributing power. Currently, the reduction of the power gap mainly focuses on the high-tech sector. If China can take the lead and

first enter the market of 5G, then China will be able to reduce the gap, and the international power relations will also be reconstructed. Compared with the previous bipolar international order between the US and the Soviets, the competition between China and the US today is concentrated on technological influence, rather than ideological influence, because technology has become a determining factor in power politics.

Moreover, power redistribution includes two main contents: the first one is to adjust the existing power structure, and the second one is to formulate new international norms and rules. The US interventions and sanctions targeting Huawei are motivated by these two contents. In the 5G sector, Huawei holds the most patents, which means it has the greatest power to formulate technological standards. In the international power distribution, the rule-maker is the biggest beneficiary of the rules themselves. Therefore, the US intervention in 5G is to maintain its power to make rules. If China displaced the US as the rule maker, then the US would not be able to maximize its interests.

### **7.3 Thucydides and the Return of Realism**

Kishore Mahbubani states that the China is currently challenging American primacy at the global stage, and the US has made mistakes to encounter this challenge (Mahbubani, 2020). He made three suggestions to the US on how to reverse the game with correct strategies: minimalism, multilateralism, and Machiavellian. Minimalism refers to a strategy to “do less” to avoid unnecessary interventions, as fighting unnecessary wars have created burdens for the US; multilateralism refers to a strategy

to strengthen multilateral institutions, as its interest is to maintain the world order; Machiavellian refers to a strategy that the US has to be more realistic and contain China in a world where the US is no longer number one (Kishore, 2018). Interestingly, it seems the US government has accepted Mahbubani's suggestions when since it conducted massive interventions in the race of 5G and various strategies to contain China. The US government, especially the Biden administration, has withdrawn from the middle east, and shifted its focus to China and the region of Eastern Asia. Moreover, Biden also changed Trump's unilateralism to multilateralism, and Biden's multilateralism is an exclusive multilateralism that strengthens the relationship with allies to contain China.

The US interventions in the race for 5G and its strategies to contain China indicate a return of realism in the policymaking of American foreign policy. The power relations between China and the US have developed into the situation that Allison described. Robert Gilpin points out the international politics is no different from what Thucydides described in ancient Greece (Gilpin, 1981). In international politics, because the national interests pursued by all countries are manifested in the maximization of national power, and the national power conflicts with each other, the conflict of interests between countries will inevitably become the fundamental reason for the continuous conflict in human history.

Both cases of the China-US 5G competition and the Japan-US semiconductor conflict illustrate that the rising-ruling structural conflict also applies to the conflict in the high-tech sector, besides the direct military combat. Because the high-tech sector

has a direct connection to the military power and national security, the technology competition, therefore, directly influence the dynamic of the power relations at the international stage. In the foreign policy of great powers, realism generally takes national interests as the standard to measure whether the national behavior is wise or not. To a certain extent, realism has eliminated some unrealistic fantasies in foreign policymaking

The strategic competition between China and the US is not fundamentally about trade, but fundamentally about innovation. The current China-US rivalry is at a stage where China is appearing as a peer competitor. China does not only challenge the ruling position of the US in the high-tech sector or the rules-based world order. What China is challenging in the race for 5G is the power to make rules.

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