

Talent Competition Under the New Pattern of Sino-US Competition from the Perspective of International Relations

Zhang Taichang¹, Wang Yunle²

¹First year postgraduate student, Strategic and Defence Studies, Faculty of Arts and Social Sciences, University of Malaya

²Second year postgraduate student, Higher School of Public Administration, Major "Human Resources Management" Lomonosov Moscow State University

DOI : <https://dx.doi.org/10.47772/IJRISS.2024.8110186>

Received: 02 November 2024; Accepted: 16 November 2024; Published: 16 December 2024

INTRODUCTION

Sino-US relations are in a competitive state in many fields, especially in science and technology, where talent has become the key to the strategic game between the two countries. Since 2018, the United States has tightened restrictions on Chinese scientific and technological talents and blocked key technology fields. China has adjusted its talent policy and introduced measures to promote scientific and technological self-reliance. Studying this talent competition helps to understand the logic of the strategic competition between the two countries. Talent is at the core of global scientific and technological competition and is crucial to a country's innovation capabilities and international influence. The competition between China and the United States in the field of global talent and its impact not only affect the scientific and technological progress and economic development of the two countries, but will also affect global governance and scientific and technological innovation. This article aims to analyze the background, current situation, strategies and challenges of the talent competition between China and the United States, provide reference for policy making, and explore ways of cooperation.

Keywords: Sino-US relations, talent competition, overseas talent strategy, international relations

THEORETICAL FRAMEWORK

Realist Perspective: Competition for Power and Security

Realist theory points out that in an anarchic international system, countries pursue the maximization of power and security. In the talent competition between China and the United States, high-end talents are regarded as key strategic resources, especially in promoting technological leadership.

National Security Dimension:

The United States restricts the flow of talents to China by strengthening visa policies and implementing controls on the export of advanced technologies to maintain its technological advantages in fields such as artificial intelligence, quantum computing, and biotechnology. For example, under the framework of the "China Plan", Chinese American researchers face stricter scrutiny, which reflects the realist logic of placing national security above cooperative academic exchanges.

Power Accumulation:

China implements talent introduction programs such as the "Thousand Talents Plan" and the "Ten Thousand Talents Plan" to attract overseas Chinese scholars to return home and attract foreign experts. Through the

implementation of these strategies, China is committed to strengthening its innovation ecosystem and narrowing the technological gap with the United States, which is consistent with the realist concept of pursuing power maximization.

Liberal Perspective: Decline of Cooperation and Interdependence

Liberal theory emphasizes the positive effects of international cooperation and economic interdependence. Historically, talent exchange between China and the United States has been the cornerstone of technological cooperation, driving the innovation process of both sides. However, in the current geopolitical context, this foundation of cooperation is being eroded.

Weakened mutual benefit: After the end of the Cold War, China and the United States have cooperated in a wide range of fields, and thousands of Chinese students have made significant contributions to the US science and technology and research sectors. However, the United States has gradually viewed open talent exchange as a burden. Policies restricting Chinese researchers from entering STEM fields reflect a shift from free cooperation to protectionism.

Lack of global governance: Liberalism believes that international institutions can mediate such conflicts, but there is currently a lack of a multilateral framework to manage the global flow of talent. In the absence of a standardized global mechanism, unilateral actions such as US visa restrictions have dominated the talent landscape. This divide undermines the ideal of cooperation and a regulated international system advocated by liberalism.

Globalization theory perspective: talent networks and their fragility

Globalization theory emphasizes how economic and social interconnectedness promotes the flow of resources, including talent. However, the competition between China and the United States reveals the fragility of these networks under geopolitical pressure.

Deglobalization: The flow of talent, once a major driver of globalization, is now hampered by restrictive policies. For example, the United States has restricted Chinese scholars from entering sensitive research fields on the grounds of national security. This shift has disrupted the flow of global expertise and reduced international cooperation in key areas such as renewable energy and semiconductors.

Network Effects: Despite these challenges, China has diversified its international cooperation, establishing partnerships with regions such as Europe and Southeast Asia. By establishing partnerships with countries such as Singapore in the fields of artificial intelligence and smart manufacturing, China has reduced its dependence on the US talent network and fully utilized the remaining advantages of globalization.

This theoretical framework provides a multidimensional perspective for understanding the talent competition between China and the United States. By integrating realism, liberalism, and globalization theories, it reveals the complexity of this competition. The framework not only highlights the strategic priorities that drive national actions, but also emphasizes the broader impact on global governance and international relations.

LITERATURE REVIEW

Definitions and Key Concepts

The core concepts of this study cover talent competition, technological hegemony, and talent mobility in the context of globalization. These concepts provide a theoretical basis for analyzing the talent game in the context of Sino-US competition: Talent competition: Countries compete for high-skilled talents through policies, resource allocation, incentive mechanisms and other strategies. Olsen (2019) pointed out that top talents are the key support for a country's scientific and technological innovation capabilities and economic competitiveness.

Technological hegemony: refers to a country's dominant position in key technology fields, involving control over technical standards, intellectual property rights and R&D resources (Zweig, 2016).

Global talent mobility: Globalization has promoted the normalization of cross-border talent mobility, but in the Sino-US competition, this mobility has encountered restrictions and has shown the characteristics of "anti-globalization" (Mahroum, 2001).

These core concepts constitute the analytical framework of the talent game in the Sino-US scientific and technological competition, highlighting the importance of talent as a strategic resource and the profound impact of its mobility on the global scientific and technological landscape.

Talent as a strategic resource

Research on talent as a strategic resource mainly focuses on the contribution of talent to national strength and scientific and technological innovation:

Talent and national competitiveness: Nye's (1990) soft power theory proposes that high-quality education and technical talents are key elements of a country's comprehensive strength. The United States has long relied on attracting top global talents to maintain its academic and technological advantages, while China has worked hard to narrow this gap through policy guidance and localized training (Saxenian, 2006).

The role of talent in scientific and technological competition: In recent years, the competition between China and the United States for high-end talents in cutting-edge scientific and technological fields such as artificial intelligence, quantum computing, and biotechnology has been particularly fierce. This is not only a reflection of scientific and technological strength, but also a key means of geopolitical competition (Zweig & Wang, 2013).

Research on Sino-US scientific and technological competition

Against the background of Sino-US competition, the game between science and technology and talent has become an important topic in international relations research:

Historical evolution: Saxenian (2006) pointed out that in the 1990s, the United States attracted a large number of Chinese scholars to work or study in the United States with its open immigration policy and superior scientific research conditions. However, with the rise of China's science and technology sector, the US talent policy towards China has gradually turned into a preventive measure, reflecting a typical conservative great power strategy.

US talent restriction policy: Cheng et al. (2020) analyzed the Trump administration's "China Action Plan", which significantly reduced the opportunities for Chinese researchers to enter the US high-tech sector through visa review, export restrictions and technology blockades.

China's response strategy: In response to external blockades, China has attracted overseas students and scholars to return home through projects such as the "Thousand Talents Plan" and carried out scientific and technological cooperation with Europe, Southeast Asia and other regions to reduce its dependence on the United States (Zweig, 2016).

Global talent flow and governance

The impact of globalization: Globalization has promoted the cross-border flow of talent and knowledge, but Sino-US competition is changing this trend. Maharum (2001) pointed out that talent flow was once an important driving force for scientific and technological innovation, but the US protectionist policy and China's localization strategy are dividing this global network.

Governance deficiency and protectionism: Khanna (2020) proposed that the current international governance framework lacks norms for global talent flow, and unilateralism and talent protectionism are significantly weakening the freedom of cross-border scientific and technological cooperation. For example, the United States has promoted "scientific research security" standards through the G7 and the OECD to restrict the flow of high-end technical talent to China.

HISTORICAL BACKGROUND OF TALENT FLOW IN SINO-US RELATIONS

In the early stages of Sino-US relations, education and technological exchanges constituted the main form of interaction. From the late 19th century to the early 20th century, Chinese students studying in the United States became a key factor in promoting academic and cultural exchanges between China and the United States. The "Boxer Indemnity Study Abroad Program" funded by the Qing government provided a large number of Chinese students with the opportunity to receive higher education in the United States. After returning to China, these students contributed important technical and knowledge resources to China's modernization process. During this period, talent flow was mainly one-way output, with the United States becoming the main destination for studying abroad, while China was still in a relatively disadvantaged position in international technological competition.

After the end of the Cold War, Sino-US relations entered a complex stage of both cooperation and competition. Entering the 1990s, the acceleration of the globalization process prompted the United States to adopt a more open policy on the flow of international talents, which attracted many Chinese elites in the fields of high-end technology and scientific research to the United States for academic exchanges and career development. Cooperation in the fields of education and technology has gradually become a key element of Sino-US relations, especially in cutting-edge disciplines such as computer science, engineering, and biotechnology, where American academic resources and research projects have shown significant appeal to Chinese students and scholars. However, with the rapid growth of China's economic and technological strength, the cooperative relationship between China and the United States has gradually turned into a competitive situation. Since the mid-2000s, the United States has begun to show vigilance against China's rise in the fields of science and technology and economy, and the policies of the two countries on the flow of talent have gradually shifted from openness to restriction. This shift not only reflects the strategic adjustment of the United States in the global competition landscape, but also lays the groundwork for the fierce competition between China and the United States in the field of talent competition in the future. With the advent of the second decade of the 21st century, Sino-US relations have significantly entered a competitive stage, in which talent competition has become one of the core areas of competition between the two countries. During the Trump administration, the United States implemented more protectionist policies in the fields of education and science and technology. The "China Action Plan" launched in 2018 is an example. The plan significantly restricted the opportunities for Chinese researchers and students to enter the United States through strict visa reviews and investigations on Chinese researchers. In addition, the Trump administration has repeatedly expressed its opposition to skilled immigration and global talent mobility during its campaign and administration, which has further exacerbated the tension between China and the United States in the field of talent.

In summary, the historical background of Sino-US relations is closely related to talent mobility. From early educational exchanges, to the coexistence of cooperation and competition after the Cold War, to the talent protectionism of the new era, the flow of talent between China and the United States has undergone a process of change from openness to restriction. This change not only reflects the strategic adjustment of both sides in the global competition, but also indicates that the game between China and the United States in the field of talent will become more intense in the future.

CURRENT SITUATION: TALENT COMPETITION IN SINO-US RELATIONS

Against the backdrop of globalization, the competition between China and the United States is becoming increasingly fierce, and the competition for scientific and technological talents has gradually become the core content of the game between the two countries. Although globalization has promoted the deep integration of

science, technology, education and economy, in recent years, due to changes in policies of both sides, the talent competition between China and the United States has heated up sharply. This competition is not only a strategic contest between China and the United States in terms of innovation capabilities, but also involves complex games at the levels of national security and economic interests.

Talent Strategy in Science and Technology Competition

Scientific and technological innovation is the cornerstone of modern international competitiveness, and high-end talents are the core elements to promote scientific and technological innovation. Especially in cutting-edge scientific and technological fields such as artificial intelligence, quantum computing, and biotechnology, the role of talents is particularly significant. Since 2018, marked by the Sino-US trade dispute, the competition between China and the West, especially between China and the United States, has entered a new stage, and a long-term fierce competition is inevitable. The United States has significantly tightened its visa policy for Chinese scientific and technological talents to protect its advantages in the high-tech field. The talent issue is not only an important dimension, but also an extremely sensitive target of competition. The offensive and defensive battles around issues such as intellectual property transfer, overseas student training, scientific and technological exchanges and cooperation, scientific research project application, and higher education cooperation have become more frequent. Cornell University has even openly severed its educational cooperation relationship with Renmin University of China, and Johns Hopkins University has taken the initiative to set up bilateral exchange barriers.

During the Trump administration, the implementation of the "China Initiative" marked the official rise of talent competition as an important issue in Sino-US relations. The policy implemented strict visa review procedures for Chinese scholars and researchers, especially visiting scholars in the high-tech field, on the grounds of "scientific and technological protection" and "national security", greatly limiting the opportunities for Chinese scientific and technological talents to enter the United States.¹

After the Biden administration came to power, although it showed a different diplomatic style in some aspects, it did not relax the restrictions on Chinese high-tech talents. Instead, it continued to implement relevant policies under the name of "scientific research security". For example, stricter reviews are carried out on data sharing, intellectual property rights and other links in scientific research cooperation, restricting Chinese students and visiting scholars from engaging in scientific research activities in the United States. This policy not only makes it difficult for Chinese students to obtain further education opportunities, but also cuts off the channels for Chinese scientific research institutions to obtain advanced technology resources through the United States. As a result, the flow of talents between China and the United States has decreased sharply, and the cooperation between the two countries' scientific and technological talents has fallen to an unprecedented low.

Sanctions Alliance and Restrictions on the Flow of Chinese Talents

The United States not only restricts high-end Chinese talents at home, but also actively promotes its allies to join the sanctions alliance against China. By strengthening policies such as scientific research integrity and scientific research security, the United States exports these concepts to allies such as Australia, Canada, and the United Kingdom, attempting to build a network of blockades against Chinese scientific and technological talents on an international scale. For example, the Sensitive Technology Research Policy launched by Canada in 2024 reflects such policies. The policy stipulates a restricted list in the field of sensitive technologies, lists 85 Chinese scientific research institutions as targets of sanctions, and prohibits Canadian researchers from conducting academic cooperation with China on key technologies.

At the same time, the United States uses its voice in international organizations such as the G7 and the OECD to promote the value of "scientific research security" through multilateral mechanisms. For example, the G7 meeting established a scientific research integrity working group to promote member states to strengthen security considerations in scientific research cooperation and prevent China from stealing intellectual property or sensitive technologies through scientific research cooperation. These sanctions have significantly reduced

China's opportunities to obtain global high-tech talents and further narrowed the scope of scientific and technological cooperation between China and the United States.[2](#)

China's response to talent introduction strategies

In the face of the US blockade policy, China has actively adjusted its talent introduction strategy and strived to promote the localization and independent cultivation of high-end scientific and technological talents. In recent years, the Chinese government has continuously innovated and improved its talent policies, implemented major talent projects such as the "Thousand Talents Plan" and the "Ten Thousand Talents Plan" to attract high-end overseas talents to return to China. China not only provides generous salaries, scientific research funding support and scientific research platforms, but also helps returnees solve practical difficulties in scientific research and life through policy preferences and project support. Through these measures, China has rapidly gathered a group of internationally qualified scientific researchers and engineering and technical personnel in several cutting-edge scientific and technological fields.

In addition, China has begun to turn its attention to other regions, expanding diversified channels for talent introduction by strengthening cooperation with countries and regions such as Europe, Southeast Asia, and Latin America. China's cooperation in these regions is not only concentrated in the fields of scientific research and education, but also involves scientific and technological exchanges, talent training, and joint project development. For example, China's technical cooperation with Singapore covers high-tech fields such as artificial intelligence, semiconductors, and intelligent manufacturing, and has gradually formed a situation of resisting unilateral blockades through multilateral cooperation. This strategy has enhanced China's ability to resist risks in the international talent market and built a more flexible international talent cooperation network.

INTERNATIONAL BACKGROUND OF THE COMPETITION FOR TALENT BETWEEN CHINA AND THE UNITED STATES

With the deepening of the process of globalization, scientific and technological innovation and talent flow should have formed benign cooperation and resource sharing between countries, but the transformation of Sino-US relations has led to a differentiation of this model. The competition between China and the United States in the fields of high technology and key technologies has become more prominent, and the competition for technological dominance has directly affected the pattern of international scientific and technological cooperation. Especially in the cultivation, flow and cooperation of scientific and technological talents, the two countries have not only adopted completely different strategies, but also led to a series of changes that affect the global scientific research ecology and governance system.

Strategic competition for technological dominance

The competition between China and the United States in the field of science and technology is intensifying, and both sides have realized that the key to mastering technological dominance lies in having top talents and technical resources. The United States has long occupied a leading position in the world in scientific and technological development, while China has rapidly risen in cutting-edge technology fields such as artificial intelligence, quantum computing and 5G in recent years. This development trend has prompted the United States to accelerate the maintenance and consolidation of its technological advantages worldwide. By establishing a sanctions alliance against Chinese scientific and technological talents, the United States has strengthened its control over the flow of international talents, implemented strict visa policies and technology export controls to block China's access to high-end talents and technologies. The United States restricts Chinese scholars from entering the high-tech field and strengthens domestic technology protection barriers. The Biden administration continues to implement a technological blockade on the grounds of national security, closely linking the risk of talent mobility with the strategic needs of technological competition in order to maintain its leading position in international technological competition.[3](#)

Changes in the trend of global talent mobility

In the context of technological globalization, the mobility of scientific and technological talents has provided a strong impetus for technological innovation in various countries. However, the competition for scientific and technological talents between China and the United States has led to a "reverse globalization" phenomenon in the global talent mobility trend. The United States regards China as its main competitor in key technology fields. In order to reduce the outflow of science and technology, it has begun to strengthen restrictions on Chinese researchers, especially in cutting-edge technology fields such as artificial intelligence, semiconductors and biotechnology. Strict entry barriers. These measures have not only affected the flow of Chinese scholars, but also changed the traditional trend of global scientific and technological talents flowing to the United States.

Under the influence of the United States, its allies have gradually implemented more cautious management policies on talent mobility. Canada, Australia and other countries have successively tightened visa policies for international students and researchers in high-tech fields, and increased the intensity of scrutiny on Chinese researchers. In the past, the free flow of talents in cross-border scientific and technological exchanges has gradually been restricted, forming a new type of protectionism-that is, in the name of "scientific research security" and "national security", hindering scientific and technological talents from specific countries from entering the international technological frontier. This trend is exacerbating the differentiation in the global science and technology field, reducing the freedom of global talent flow, and posing a major impact on the international scientific research ecology.

The interweaving of international cooperation and the issue of "scientific research security"

The United States has continuously promoted the concept of "scientific research security" in international cooperation, emphasizing that scientific research cooperation should be based on security review, and calling on allies to strictly implement information disclosure, academic security and other principles in cooperation. After taking office, the Biden administration continued this idea, especially in the protection of key technologies and intellectual property rights, and promoted the concept of scientific research security to the multilateral cooperation system. Taking the European Union as an example, the "Guidance Document on Countering Foreign Interference in Research and Innovation" issued in 2022 proposed measures to deal with "authoritarian countries" interfering with academic freedom. Similar documents have been continuously issued, strengthening the geopolitical color of the competition between China and the United States for scientific and technological talents.

Driven by the G7 and the OECD, many countries have gradually adopted the scientific research security standards advocated by the United States. The G7 countries have established a scientific research ecological security and integrity working group to coordinate and formulate scientific research security policies to prevent scientific research results from flowing to "non-ally" countries. This international cooperation model based on security considerations has built a new "security-oriented" scientific research cooperation framework. The intention behind it is to further control the direction of the flow of scientific and technological talents and the content of cooperation through information disclosure and academic transparency, so as to limit China's rise in the high-tech field.

The rise of talent protectionism in global science and technology governance

The competition between China and the United States has not only had a direct impact on the science and technology and economy of the two countries, but also brought new challenges to global science and technology governance. In the past, global science and technology governance was based on the principles of openness and cooperation. In the current context of Sino-US confrontation, science and technology governance has increasingly tended to protectionism, especially in the flow of scientific and technological talents and intellectual property management, showing an increasingly "exclusive" trend.

The phenomenon of "talent protectionism" has gradually emerged in the field of science and technology governance, that is, countries have shown strong security considerations in the flow and cooperation of talents to prevent the outflow of scientific and technological talents and knowledge. Through its influence, the United States has gradually dominated the trend of talent protectionism, using technology export controls, academic access and other means to set up obstacles in international scientific research cooperation, and called on allies to adopt consistent restrictive policies. This protectionism not only reduces the cross-border flow of talents and knowledge, but also poses a threat to the efficiency of global scientific and technological innovation.

With the rise of protectionism in international science and technology governance, the global scientific research ecosystem has begun to fragment. More and more countries have restricted the flow of scientific and technological talents on the grounds of "national security" or "scientific research security", resulting in obstacles to cross-border scientific research cooperation. The global governance mechanism originally intended to promote scientific and technological cooperation and share resources has gradually evolved into a closed system dominated by scientific and technological control and technical barriers, which not only brings new risks to global innovation, but also may aggravate the imbalance of international scientific and technological development.

IMPACT AND CHALLENGES OF SINO-US TALENT COMPETITION

The competition for talents in the high-tech field between China and the United States is extremely fierce. This phenomenon has had a profound impact on the scientific and technological innovation capabilities of the two countries and has had a significant impact on the global scientific and technological cooperation and governance system. As scientific and technological powers, the confrontation between China and the United States in the flow of talents and the competition for innovative resources has not only affected the status and competitiveness of both sides in the field of science and technology, but also posed new challenges to academic exchanges, the freedom of talent flow and the global governance system in the context of globalization.[4](#)

Impact on Scientific and Technological Innovation Capabilities

(1) Obstacles to scientific and technological cooperation and loss of innovative resources

The restrictive measures taken by China and the United States on scientific and technological talents have directly affected the sharing and cooperation of both sides in technology research and development and innovative resources. In the current science and technology field, cross-border cooperation plays a vital role, especially in cutting-edge science and technology fields such as artificial intelligence and quantum computing. Global scientific research cooperation and talent exchange are key factors in promoting scientific progress and accelerating the application of new technologies. However, the restrictions imposed by the United States on Chinese scientific and technological talents have hindered the cooperation between the two countries in the high-tech field, which not only weakened the R&D efficiency of both sides, but also caused the ecological environment of international scientific and technological innovation to tend to split.

(2) Challenges of talent loss and local innovation capabilities

The visa restrictions and multiple sanctions imposed by the United States on Chinese scientific and technological talents have put China at risk of losing high-end scientific and technological talents. China has attracted a large number of overseas talents to return to China through projects such as the "Thousand Talents Plan", providing important support for the development of domestic scientific research and high-tech industries. However, due to the sanctions, some Chinese scholars studying abroad find it difficult to return to China or cooperate with international scientific research institutions, which has hindered the improvement of China's local innovation system. At the same time, facing the US review of Chinese scholars, China's restrictions on talent introduction and freedom of mobility will inevitably increase its investment in the training of high-end scientific and technological talents, thus causing a certain impact on China's innovation system.

Impact on international relations

(1) Intensified multilateral confrontation between China and the United States

The sanctions imposed by the United States on Chinese scientific and technological talents, as well as the restrictive measures taken jointly with allies through multilateral mechanisms, have led to the expansion of the confrontation between China and the United States in the field of science and technology from bilateral relations to multilateral confrontation. Under the impetus of the United States, countries such as the G7 and the Five Eyes Alliance have formed a trend of technological blockade against China, which has further intensified the competition between China and the United States in the global science and technology field, and the tension in international cooperation affairs has also escalated accordingly. The flow of scientific and technological talents, which should have promoted cooperation between countries, has become one of the core issues of the game between the two sides under the background of Sino-US competition.

(2) Complexity of coordination and cooperation among allies

The United States' policy on restricting the flow of scientific and technological talents requires its allies to be consistent with it, but the degree of acceptance of this strategy varies from country to country. For example, although Europe has gradually moved towards "scientific research security" in scientific and technological cooperation, it still retains a certain degree of openness in cooperation with China. The policy coordination difficulties brought about by the competition between China and the United States in scientific and technological talents have made the interest game between the United States and its allies more complicated, posing a challenge to the stability of this sanctions alliance. In the long run, the multilateral confrontation caused by the Sino-US technological competition may cause rifts among allies and test the stability of multilateral alliances.

Impact on the field of global governance

(1) Fragmentation of global scientific and technological cooperation

Against the background of the competition between China and the United States for scientific and technological talents, the global scientific and technological cooperation environment has shown a fragmented trend. The "scientific research security" concept and information disclosure policy promoted by the United States under multilateral mechanisms have led more and more countries to introduce national security considerations in scientific research cooperation to prevent high-tech talents and technologies from flowing to potential competitors. This "security-oriented" international scientific research cooperation model has gradually divided the previously highly open global scientific and technological governance by artificially set boundaries, and the cooperation of countries in key technology fields has become more cautious and exclusive.

As the scientific research security policy advocated by the United States is gradually promoted globally, international scientific and technological personnel are increasingly concerned about national security.

Talent mobility is no longer based entirely on scientific research needs, but has been incorporated into national interests. This trend has restricted scientific research and technological innovation worldwide, especially in cross-border cooperation involving high technology, basic science and applied research, further reducing the freedom of talent mobility and impacting the cooperation and openness of global governance. As a result, the differentiation of scientific and technological cooperation and the imbalance of resources will be further exacerbated.

(2) Challenges of the global talent governance system

As the competition between China and the United States intensifies, scientific and technological talents have become strategic resources that countries focus on protecting. The international community faces major challenges in how to ensure the freedom of global talent mobility. The United States' practice of imposing

restrictions on China through the Science and Technology Blockade Alliance is essentially transferring the right to allocate global talent resources from the international market to specific countries. This "exclusive" talent management model has weakened the fairness and autonomy of international scientific research cooperation, making it difficult for the international talent governance system to adapt to the new competitive landscape.

The traditional international science and technology governance framework advocates the principles of openness, sharing and fairness, but in the current context of Sino-US competition, the talent governance system is shifting towards protectionism, and more and more countries are directly linking talent introduction with national security. The freedom and fairness of global talent governance are therefore restricted, and academic exchanges, scientific research cooperation and talent training are gradually subject to geopolitical factors. In the future, the international community needs to face new challenges in global talent governance to rebalance the relationship between national security and international scientific research cooperation.

(3) The impact of "anti-globalization" on the international scientific research ecosystem

The "anti-globalization" trend caused by the competition between China and the United States for scientific and technological talents has caused the global scientific research ecosystem to face major adjustments. The past globalization process has promoted international scientific research cooperation and the free flow of talents, allowing many key technologies and scientific research results to be quickly applied around the world. However, with the rise of scientific and technological talent protectionism advocated by the United States and the intensification of confrontation between China and the United States, the global scientific research environment has been forced to shift to "regionalization". Under this trend, countries' cooperation in the high-tech field will gradually shrink to their allies, and the openness and collaboration in the scientific research ecosystem will be weakened.

This anti-globalization phenomenon not only weakens global innovation efficiency, but may also lead to uneven resource allocation of scientific research results. If countries continue to implement the principle of "national priority" in science and technology governance, future scientific research results may be more limited to countries or regions, and the innovation dividends brought by the globalization process will be greatly reduced. This poses a severe challenge to transnational issues such as climate change and public health that rely on global collaboration. The international scientific research ecosystem will face tremendous pressure to reallocate resources and build cooperation mechanisms.

STRATEGIES AND SUGGESTIONS FOR THE COMPETITION FOR TALENT BETWEEN CHINA AND THE UNITED STATES

The competition between China and the United States in the field of scientific and technological talents is escalating. In order to adapt to the current international scientific and technological competition pattern and future global governance needs, the two countries need to adjust and optimize their talent strategies. The following are specific strategies and suggestions for China and the United States in the competition for scientific and technological talents, as well as potential paths for both sides in international cooperation and competition.

China's response strategy

(1) Strengthen the training and innovation capabilities of local scientific and technological talents

In the face of increasingly severe scientific and technological talent blockades, China should increase its investment in local talent training and establish an efficient local scientific research talent training system. Specific measures include improving the level of scientific and technological education in universities and scientific research institutions, setting up more innovative talent funds, and providing sufficient project support for young scientific research talents. At the same time, by configuring high-level scientific research equipment

locally and building a high-quality scientific research ecosystem, China's high-end talents can be fully grown and developed in China. The improvement of the talent self-sufficiency system can not only ensure the continuity of scientific and technological development in the face of international blockades, but also promote the improvement of China's innovation capabilities.[5](#)

(2) Promote diversified channels for the introduction of scientific and technological talents

Against the backdrop of the United States and other countries continuously tightening the flow of scientific and technological talents, China should strengthen cooperation with other countries in scientific and technological talents and expand diversified channels for the introduction of talents. European, Southeast Asian and Latin American countries all have rich scientific research resources and high-quality talent reserves. China can attract high-end scientific and technological talents from these regions to develop in China through scientific research cooperation and technology transfer. In particular, under the impetus of the "Belt and Road" initiative, China can strengthen scientific and technological cooperation with developing countries, build a cross-regional talent flow network, and further alleviate the pressure from the US blockade.

(3) Implement an incentive and management system for innovative talents

In order to adapt to the needs of international scientific and technological competition, China needs to further optimize its talent incentive mechanism. It can enhance the attractiveness of talent introduction and retention through market-based compensation, long-term incentives, and incentives for the transformation of scientific research results. In addition, it should create more autonomy and innovation space for scientific and technological talents, reduce administrative constraints, and create a more inclusive and supportive scientific research environment. In particular, in state-owned scientific research institutions and universities, more flexible incentive and management systems should be gradually implemented to help scientific researchers achieve more benefits in terms of intellectual property rights and the transformation of scientific research results, thereby enhancing the enthusiasm for scientific and technological innovation.[6](#)

US Sanctions Strategy and Potential Risks

(1) Continued Challenges to Technological Leadership

Although the US policy of blocking science and technology talents may hinder China's development in certain science and technology fields in the short term, in the long run, excessive blockades will have a negative impact on the US's technological leadership. US high-tech companies and scientific research institutions may face the problem of declining innovation vitality due to insufficient talent diversity. If the inflow of foreign talents continues to be restricted, the US science and technology innovation system may encounter a "talent bottleneck", especially in the fields of high-end professional talent demand such as artificial intelligence and quantum computing. In the context of fierce global scientific and technological competition, excessive restrictions on foreign scientific and technological talents may cause the United States to lose its absolute advantage in global scientific and technological dominance.

(2) Difficulties in maintaining alliance relations

The United States calls on its allies to participate in sanctions through the "Research Security" alliance to restrict China's development in the field of scientific and technological talents. However, due to the different interests and economic needs of allied countries, the maintenance of the sanctions alliance faces many uncertainties. Some European countries and allies such as Canada have retained an open attitude towards China in scientific and technological cooperation, which shows that they have differences with the United States in terms of economic interests and strategic considerations. In the future, if the United States wants to maintain this sanctions alliance for a long time, it needs to find a balance among the member states, but it is not easy to achieve this balance, which may lead to cracks in the coordination and cooperation within the alliance.[7](#)

Suggestions for international cooperation

(1) Promote win-win cooperation between Chinese and American scientific and technological talents in non-sensitive fields

Although the competition between China and the United States in the field of high technology is intensifying, the two countries still have common interests in non-sensitive fields such as public health and environmental protection. The two countries can choose to carry out scientific and technological cooperation in these fields and promote scientific and technological development and social progress on a global scale through cooperation. For example, in combating global climate change and public health crises, China and the United States can carry out joint research and technology sharing to provide better solutions to global challenges. Cooperation in these areas will not only help ease the confrontation between China and the United States, but also provide a model for cooperation for other countries in the world.

(2) Build a more open and transparent global talent flow mechanism

Global scientific and technological innovation requires an open and fair talent flow system, and the international community should work together to promote the free flow of global scientific and technological talents. Open international talent management rules can be established through multilateral mechanisms to ensure the free flow of scientific researchers around the world, and political factors can be eliminated through transparent review standards. Interference in talent flow. Visa and residence requirements should be relaxed globally for researchers and students in non-sensitive technology fields to promote international scientific and technological cooperation and the free exchange of innovation.

CONCLUSION

Against the backdrop of increasingly fierce global scientific and technological competition, the competition between China and the United States for scientific and technological talents has extended from the fields of pure academic and economic cooperation to the level of national security and strategic confrontation. The United States has imposed a multi-level blockade on China in the form of a scientific and technological talent sanctions alliance to curb China's talent flow and innovation capabilities in the high-tech field. At the same time, China has responded to the blockade by optimizing the local talent training system, introducing overseas talents, and strengthening multilateral scientific and technological cooperation, striving to maintain the autonomy of technological development and talent resources in the global talent competition. The competition between the two sides has not only had a profound impact on their respective scientific and technological innovation capabilities, but has also changed the ecological environment and governance structure of scientific and technological cooperation on a global scale.

In the future, the competition between China and the United States for scientific and technological talents will continue to intensify, but the two countries also need to explore the possibility of cooperation in areas of common interests to avoid confrontation from evolving into a comprehensive decoupling. For the global science and technology governance system, how to balance the relationship between national security and scientific and technological cooperation is a difficult problem that the international community needs to solve urgently in the future. Between the global demand for scientific and technological innovation and the protectionism of "anti-globalization", the international community should strive to build an open, transparent and cooperative system for the flow of scientific and technological talents to promote the coordinated development of the global scientific research ecosystem. The future competition for scientific and technological talents will not only affect the scientific and technological development pattern of China and the United States, but will also have an important impact on global scientific and technological innovation and governance. In the governance of scientific and technological talents, countries around the world have the responsibility to jointly resolve the barriers to talent competition through multilateral cooperation and promote the healthy development of international scientific research.

LIST OF USED SOURCES AND LITERATURE

1. Fuzhan xie, Fang cai, & xuesong li. (2023). The New Journey of China's Economic and Social Development
2. Gao zi-ping. (2019). China's Transformation of Overseas Talent Strategy in the New Sino-US Contest Pattern.
3. Jin chen. (2023). Holistic Innovation Innovation Paradigm Explorations in the New Era Li yan. (2021). The U.S. federal government's cybersecurity talent team building measures and their implications for my country
4. Ma xiaoxiao. (2024). US Talent Sanction Coalition against China and Its Impacts. Modern International Relations
5. Ping li. (2020). The Outlook for China's Innovation-Driven Development beyond COVID-19.
6. Zhiqun zhu. (2006). US-China Relations in the 21st Century
7. Zhuo zelin. (2024, April 25). How the U.S. Can Address the STEM Talent Shortage Crisis

FOOTNOTES

1 Gao zi-ping. (2019). China's Transformation of Overseas Talent Strategy in the New Sino-US Contest Pattern. *Journal of East China Normal University (Philosophy and Social Sciences Edition)*, 51(3), 125 –132. <https://doi.org/10.16382/j.cnki.1000-5579.2019.03.013>

2 Li yan. (2021). The U.S. federal government's cybersecurity talent team building measures and their implications for my country *Civil-Military Integration of Cyberspace Affairs*, 1.

3 Jin chen. (2023). *Holistic Innovation Innovation Paradigm Explorations in the New Era* (1st ed., Issues 978-981-19-8624 –6). Springer Singapore. <https://doi.org/https://doi.org/10.1007/978-981-19-8625-3>

4 Zhiqun zhu. (2006). *US-China Relations in the 21st Century* (1st ed., Issue 9780203086582). Routledge. <https://doi.org/https://doi.org/10.4324/9780203086582>

5 Ping li. (2020). The Outlook for China's Innovation-Driven Development beyond COVID-19. *Cultures of Science*, 3(4). <https://doi.org/10.1177/2096608321995294>

6 Fuzhan xie, Fang cai, & xuesong li. (2023). The New Journey of China's Economic and Social Development. Springer Singapore. <https://doi.org/https://doi.org/10.1007/978-981-19-7915-6>

7 Zhuo zelin. (2024, April 25). How the U.S. Can Address the STEM Talent Shortage Crisis. "Guangming Daily." https://www.gmw.cn/xueshu/2024-04/25/content_37287413.htm