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An Analysis of the Role of Artificial Intelligence in China's Grand Strategy: Perception, Means and Ends

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ABSTRACT: This article examines the discourse on the role of artificial intelligence in China and how it fits into China's grand strategy policies. In particular, this article will focus on three grand strategy components: leader's perception, grand strategy means, and grand strategy ends. The author identifies that China's evolving national interests and strategic ideas are the central concern for its grand strategy by analyzing original texts. Beijing has the most ambitious AI strategy of all nations and provides the most resources for AI development. Since 2017, AI development has become part of China's grand strategy plans, setting out goals to build a domestic artificial intelligence industry. The AI sector has turned into a national priority included in President Xi Jinping's grand vision for China. China's goals are to make the country "the world's premier artificial intelligence innovation center for AI" by 2030. Ultimately, AI will foster a new national leadership and establish the key fundamentals for great economic power. There are many AI applications in several grand strategy means, including military and economic policies. This article uses a qualitative content analysis method to examine the case. Data was collected from Chinese leaders' speeches, government statements, official publications, and Chinese state media. This article concludes that AI has become one of the key components in China's grand strategy means, including economic, military, and intelligence capabilities. By promoting AI technology, China's grand strategy goals are maintaining national power, national face, and international reputations.

KEY WORDS: China's grand strategy, Artificial intelligence, China dream

Introduction

China's artificial intelligence (AI) strategy is one of the most comprehensive in the world, which sets specific targets to ensure the competitiveness of Chinese technological power. (Artificial Intelligence Index Report 2021). With the continuous effort to strengthen China's power over the past decades, artificial intelligence (AI) has become a key technology that would make China stand out globally in the next few years. With the world's largest population, its large internet audience, and data resources, AI would become the "new oil" of world politics (Nye 2020, 125). China has been investing heavily in the research and development of AI and has set a goal to be the world leader in artificial intelligence by 2030. Some experts believe that China could achieve its goals. Given the importance of machine learning as a general-purpose technology that affects many domains, China's AI development strategy has particular importance (Lee 2018, Nye 2020, 126). Some recent literature has provided a basic understanding of the role of AI in China's grand strategy development. Gregory Allen (2019) identified AI as a means to achieve several goals, including advancing the "intelligentized warfare," fighting terrorists in Xingjiang (domestic surveillance), and countering the United States (Allen 2019, 6-9). Joseph Nye (2020) pointed out that nearly half of the giant global companies in the age of Artificial Intelligence are Chinese companies, which "dare not defy the Chinese Communist Party, rendering them tools in China's geostrategic competition toolkit" (Nye 2020, 125). However, this research does not provide a clear understanding of AI's role in China's grand strategy policies.

Therefore, this article asks: "what is the role of artificial intelligence in China's grand strategy?" To answer this question, this paper employed a qualitative data analysis based on grand strategy theoretical concepts. The data were collected from original texts in the Chinese language. Despite the limited data available to the western world, this research helps understand the role of AI in China's grand strategy development. In this article, the author first offers an overview of AI development plans in China, followed by a theoretical perspective of China's grand strategy concepts. Next, this author explains the methods used to conduct empirical analysis. Finally, this author presents the results and discussions. This paper contributes to a further understanding of the Chinese use of AI in its grand strategy.

The Development of Artificial Intelligence Plans in China

China progressed with several plans over the past few years. In May 2015, Chinese Premier Li Keqiang and his cabinet released "Made in China 2025" (MIC 2025, *zhongguozhizao erling erwu*), a national strategic plan to further develop the manufacturing sector of China (The State Council of China 2015). The plan aims to upgrade the Chinese industrial manufacturing capabilities, growing from labor-intensive workshops into a more technology-intensive powerhouse (The State Council of China 2017a). The key objective of MIC 2025 is to identify essential technologies, such as artificial intelligence, 5G, aerospace, semiconductors, electric vehicles, and biotech, to level up Chinese industrial power and alter the dynamics in global markets. On July 20, 2017, the State Council of China (2017b) issued the "New Generation Artificial Intelligence Development Plan" (AIDP, *xin yidai rengong zhineng fazhan guihua*). This policy outlines China's strategy to build a domestic AI industry and become a leading AI power by 2030, making China the world's premier artificial intelligence innovation center. Chinese President Xi Jinping called for embedding advanced technologies into the real economy to foster growth engines and new business models (Xie and Jing, 2017). This was the first time AI was mentioned explicitly in a Communist Party of China work report (Future of Life Institute, 2020). The two documents mentioned above "form the core of China's AI strategy" (Allen 2019, 3). At the operational level, in 2016, China's Minister of Industry and Information Technology (MIIT 2020) released the "Three-Year Guidance for Internet Plus Artificial Intelligence Plan (2016-2018)," which focuses on enhancing AI hardware capacity, strong platform ecosystems, AI applications in important socioeconomic areas, and AI's impact on society.

In December 2017, the MIIT issued the "Three-Year Action Plan for Promoting Development of a New Generation Artificial Intelligence Industry" (2018–2020), which sets out targets that strive to achieve major breakthroughs in basic research and a series of artificial intelligence products by 2020, form an international competitive advantage in key areas, deepen the integration of artificial intelligence and the real economy, and integrate AI into manufacturing industries (Bhunia 2017). The Ministry of Science

and Technology (MOST) and a new office called the "AI Plan Promotion Office" are responsible for implementing and coordinating emergent AI-related projects. An AI Strategy Advisory Committee was also formed in 2017 to research strategic issues related to AI. Additionally, an AI Industry Development Alliance was also established, co-sponsored by more than 200 enterprises and agencies nationwide, and focuses on building a public service platform to develop China's AI industry (Future of Life Institute 2020).

In 2018, The National Innovation Institute of Defense Technology (NIIDT) had established two research organizations focusing on the military use of AI and related tech: the Unmanned Systems Research Center (USRC) and the Artificial Intelligence Research Center (AIRC). The AIRC also likely conducts classified work for the Chinese Military and Intelligence Community (Allen 2019, 8). In February 2019, China established a New Generation AI Innovation and Development Zone. In March 2019, Chinese President Xi Jinping presided over the seventh meeting of the Central Committee for Comprehensively Deepening Reform (*zhongyang quanmian Shenhua gaige wiyuanhui)*. The meeting reviewed and approved the "Guiding Opinions on Promoting the Deep Integration of Artificial Intelligence and the Real Economy" *(guanyu cujin rengong zhineng he shiti jingji shendu ronghe de zhidao yijian)*. The meeting pointed out that to promote the deep integration of artificial intelligence and the real economy, it is necessary to grasp the characteristics of the development of a new generation of artificial intelligence, adhere to market demand as the orientation, and target industrial applications, deepen reform and innovation, optimize the institutional environment, stimulate corporate innovation vitality.

In May 2019, the Beijing Academy of Artificial Intelligence (BAAI) released the "Beijing AI Principles" *(rengong zhineng Beijing gongshi)* with a multi-stakeholder coalition consisting of academic institutions and private-sector players such as Tencent and Baidu. (Artificial Intelligence Index Report 2021). The principles are proposed as an initiative "for the research, development, use, governance and long-term planning of AI, calling for its healthy development to support the construction of a community of common destiny, and the realization of beneficial AI for mankind and nature" (BAAI

2019). The principles have been officially endorsed by leading universities (including Tsinghua University and Peking University), national research institutions (including Institute of Automation, Chinese Academy of Sciences, Institute of Computing Technologies, and Chinese Academy of Sciences), and the Artificial Intelligence Industry Technology Innovation Strategic Alliance (AITISA).

Theoretical Perspective of China's Grand Strategy

The term "grand strategy" was officially introduced by Liddell Hart in 1929, emphasizing that grand strategy – higher strategy – was about more than winning the war, but achieving "a state of peace, and of one's people, [that] is better after the war than before" (Hart 1967). Later, according to Bernstein et al. (1994), grand strategy expands on the traditional idea of strategy beyond military means to include diplomatic, financial, economic, and informational means (Murray, Knox, and Bernstein 1996). In later interpretations, Barry Posen describes grand strategy as "a political-military, means-end chain, a state's theory about how it can best "cause" security for itself" (Posen 1986). John Lewis Gaddis posits that grand strategy "is the calculated relationship of means to large ends" (Gaddis 2002). This author adopts the definitions proposed by Barry Posen and John Gaddis. A grand strategy is a nation-state's theory about producing security for itself (Posen 2014).

This article differentiates three variables for analysis. The first variable is the leader's perception in grand strategy decision-making. Andrew Scobell (2014) argues that there are two faces of Chinese strategic culture, which affect leader's images. The first face of strategic culture is concerned with a country's self-image (the perceptions and realities of its own dominant strategic traditions and the policy outcome they produce). The second face of strategic culture involves the image constructed by the Chinese leaders towards other countries (Scobell 2014, 52). In an empirical study, Lin concluded that "Chinese leaders view themselves as peaceful and defensive based on traditional cultural philosophy."

On the contrary, Chinese leaders tend to characterize the United States as more focused on aggressive and offensive intentions concerning China"

(Lin 2021, 18). Guiding ideology is another factor. Dominant ideologies can affect the state's attitudes toward international affairs and willingness to use force (Haas and Haas 2005). Political ideology is a "set of beliefs about the proper order of society and how it can be achieved" (Erikson and Tedin 2015). Thus, Marxism-Leninism became the first official ideology.

The second variable is grand strategy means. This article argues that the Chinese grand strategy policy includes military policy, diplomacy, economic policy, intelligence instruments, and state extraction of resources. Military policy is a set of ideas implemented by military organizations to pursue desired strategic goals (Gartner 1999, 163). Diplomacy is the implementation of foreign policy, as distinct from the process of policy formation. Diplomacy can also help drive and guide cooperation between military, economy, and intelligence services (Griffiths, O'callaghan, and Roach 2008, 79). Economic policies are the actions that a government takes to influence the economy of a state (Brown and Ainley 2009, 5). Intelligence instruments are essential tools for Chinese foreign policy and grand strategy. Sun Tzu's words have often been quoted: "Know the enemy and know yourself; in a hundred battles, you will never be in peril" (Tzu 2007). Neoclassical realism identifies state extractive and mobilization capacity of domestic resources as a crucial intervening variable between systemic imperatives and the grand strategy policies states undertake (Schweller 2009).

The third variable is grand strategy ends. The goal of the Chinese grand strategy is a debated issue as the Chinese government did not reveal it explicitly to the public. However, there are at least two grand strategy goals that can be identified. First, maintaining national power. Waltz claims that national power is constituted by a web of military, economic, and political capabilities, asserting that a "state's political competence and stability" constitute an inseparable element of national power (Waltz 2010, 131). Second, China's grand strategy is to maintain the Chinese national face and international reputation. Peter Hays Gries termed it "face nationalism," linked to China's domestic audience and external relations (Gries 1999, 63). The theoretical model of this article is summarized as the table below:

Table 1: Theoretical Perspective of China's Grand Strategy

Leader's perception	Means	Ends
• Self-image • Image of others • Ideology	• Military policy • Diplomacy • Economic policy • Intelligence instrument • State extraction of resources	• National Power • National Face

Methods, Data Collection, and Coding Procedures

This article employs qualitative content analysis to understand the role of AI in China's grand strategy. There are several advantages of using the qualitative content analysis method. First, this is an unobtrusive data collection. Therefore, the author's preference does not affect the results. Second, content analysis is transparent and replicable by other researchers. Additionally, this is a flexible method allowing the researchers to delineate the scope of appropriate sources. Data was collected from state media, government officials' speeches, and Chinese Communist Party official publications (all Chinese). The author used Chinese keywords searching AI strategy, AI policy, and AI development. The data ranges from 2015 to the present time. Since only a small number of texts meet this criterion, the researcher analyzed all of them. This author determined 19 documents as evidence for analysis, and 74 codes have been coded from the documents.

Regarding the set of categories and coding rules, this article uses variables based on the above theoretical perspective to examine the role of AI in China's grand strategy. Three groups of categories are examined, including leader's perception, grand strategy means, and grand strategy ends. In the "leader's perception" category, this author assesses the texts relating to indicators, including "leader's perception on the role of AI," "ideology," "China's self-image," and "image towards others." This author investigates AI applications in the "grand strategy means" category, including military policy, diplomacy, economic policy, intelligence instruments, and state extraction of resources. In the "grand strategy means" category, the research was conducted examining the related concepts of national power, national face, and international reputation.

Within the coding and analysis process, key terms were located in documents, identifying other words or phrases appearing next to them, and the meanings of these relationships were analyzed to better understand AI's role in China's grand strategy. After reviewing the data, the author manually coded the data in the appropriate categories. Next, the author used MAXQDA software to help the process of counting and categorizing words and phrases. MAXQDA is a software program designed for computer-assisted qualitative methods of data and text analysis. After completing the coding, the collected data is analyzed to find patterns, translated into the English language, and conclusions were drawn in response to the research question.

Two research limitations should be highlighted. First, content analysis can sometimes be overly reductive, neglecting some context and ambiguous meanings. Second, the coding process and results interpretation could be biased, affecting the reliability and validity of the results and findings.

Results and Discussion

Figure 1 shows the relationships between different codes and the frequency of each code. The following codes that have no relations have been ignored by the software, including "state extraction of resources," "diplomacy," "ideology," and "image of others." The code map shows that the discourse of AI in grand strategy focuses on the perception of the roles and functions of AI, which are mainly connected to the discourse of military policy and national power. Military power is connected with intelligence instruments. National power has strong relationships with economic policy and international reputation.

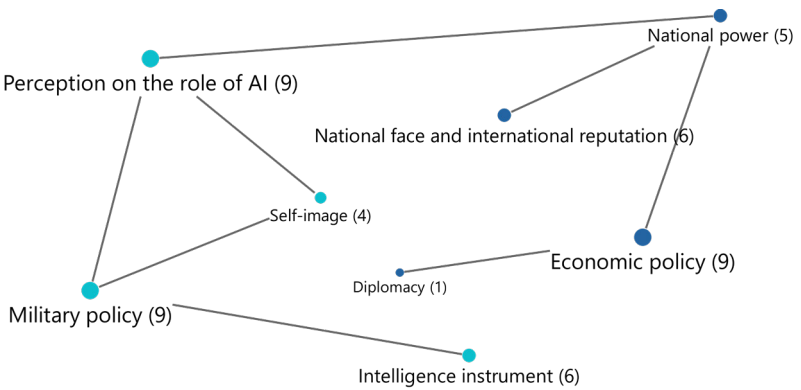

Figure 1. *Code Map of AI in China's Grand Strategy Discourse*

In Figure 2, the discourse of AI centers on AI as a means of grand strategy, including military policy, diplomacy, intelligence instrument, and economic policy. The field of military policy shows more weight in the results. There is less mentioning of AI's role in diplomacy. Although China does not explicitly connect AI and its foreign policies, China's leadership believes that AI technology is critical to the future of global military and economic power competition. A leader's perception of the role of AI is a key factor in China's grand strategy discourse. Regarding the grand strategy ends, national power and international reputation appear less than the grand strategy means.

Figure 2: *Code Frequencies in Segments (AI in China's Grand Strategy Discourse)*

Leader's Perception

Chinese top leaders believe that AI will become a crucial tool for China's long-term development. President Xi Jinping has also stated that the robot revolution is expected to herald the Third Industrial Revolution. In his speech during the "study session," Xi said that China must "ensure that our country marches in the front ranks where it comes to theoretical research in this important area of AI, and occupies the high ground in critical and AI core technologies." Xi further said that China must "pay firm attention to the structure of our shortcomings, ensure that critical and core AI technologies are firmly grasped in our own hands." (Allen 2019, 4). The guiding ideology for the development of artificial intelligence is Xi Jinping's thoughts. In the "*Notice of the State Council on Issuing the Development Plan*

for the New Generation of Artificial Intelligence," based on "the spirit of the 18th National Congress of the Communist Party of China and the third, fourth, fifth, and sixth plenary sessions of the 18th National Congress of the Communist Party of China" and the "spirit of General Secretary Xi Jinping's series of important speeches," China aims to accelerate the deep integration of artificial intelligence with the economy, society, and national defense (The State Council of China 2017b).

Regarding the self-image of the role of AI, China's leadership believes that AI technology will be the "dominant factor in determining future battles" (Xinhua 2019), emphasizing AI's critical role in the future of global military and economic power competition. Chinese leaders posit that, over the past years, Chinese AI technology is becoming increasingly mature, making China one of the major countries in artificial intelligence industrialization (Zijuan 2021). However, there is still a gap between China and the developed countries on the overall AI development (State Intellectual Property Office 2018). About the image of others on the role of AI, China perceives that world science and technology will soon have a breakthrough in the development of AI. Therefore, the Chinese People's Liberation Army (2019a) "must accelerate the advancement of military intelligence construction and accelerate the forging of an intelligent army." In an official talk, President Xi pointed out that "Artificial intelligence is a strategic technology that leads this round of scientific and technological revolution and industrial transformation… and an important strategic instrument for us to win the initiative in global technological competition" (Xinhua 2018).

There are opportunities and challenges associated with China's AI strategy. Regarding policy opportunity (*zhengce jihui*), AI strategy would encourage the companies to participate in global cooperation at the national level. The Belt-and-Road Initiative has become an important policy for international cooperation. The second is the technology opportunity (*keji jihui*). AI strategy provides an opportunity for the rise of global and regional scientific and technological innovation. The third is the market opportunity (*shichang jihui*). Economic globalization has provided AI development a wider space.

Concerning challenges, the first one is the international and domestic environmental challenge (*huanjing tiaozhan*). The impact of the COVID-19 and the economic downturns have increased the risks of the development of

AI. The second is the talent challenge (*rencai tiaozhan*). A serious shortage of high-end multinational talents has become a challenge for China's AI development. Finally, cultural challenges (*wenhua tiaozhan*). Cultural differences among countries and the different local standards, ethics, and customs would cause problems for AI development (China Academy of Information and Communications Technology 2020).

Grand Strategy Means

Chinese leaders consider AI as an important military and intelligence means. In his report to the 19th National Congress of the Communist Party of China, President Xi points out that AI in military development will help achieve the party's goal of strengthening the military in the new era (Zhi-Zhong 2020). He vows to accelerate the development of "intelligenized military" (*junshi zhineng hua)*. To use AI in developing weapons, China focuses on the dual needs of intelligent warfare system operations and constructing an intelligent weapon and equipment system (People's Liberation Army News 2019b). AI in military development is becoming a powerful driving force to promote military reforms, and it will have a profound impact on rules of operations and methods of combat in the future (Xinhua 2019). Major General Ding Xiangrong, Deputy Director of the General Office of China's Central Military Commission, defined China's military goals to "narrow the gap between the Chinese military and advanced global powers" by taking advantage of the "ongoing military revolution . . . centered on information technology and intelligent technology" (Allen 2019, 5, Kania 2017). AI is also a tool for domestic security purposes. For example, big data AI has been used to fight terrorists in Xinjiang province. In addition, the Chinese government uses technology such as face recognition system to identify and locate the activities of terrorists (Allen 2019, 6).*

AI is also an economic and diplomatic means. Specifically, Chinese leaders consider AI as the "new engine" (*xin yinqing)* of economic development. AI will release the enormous energy accumulated in previous technological revolutions and industrial transformations, profoundly changing human production (The State Council of China 2017b). President Xi states that

**General Wang Ning, "Global Terrorism: Threats and Countermeasures" (8th Beijing Xiangshan Forum, Beijing, October 25, 2018).*

AI development is an important strategic starting point for China to win the global science and technology competition, and is also an important strategic resource to promote the optimization and upgrading of industries and the overall rise of productivity (People's Net 2019). Xi argues that China must seize the opportunity to integrate AI into industrial development providing new momentum for high-quality development, improving the intelligent level of traditional infrastructure, and forming an infrastructure system that meets the needs of the Chinese economy and society (Xinhua 2018). For example, China uses the Belt-and-Road Initiative, in which AI "has become an important theme of international cooperation on the BRI, sharing opportunities for intellectual development (Xinhua 2020a)." In September 2020, State Councilor and Foreign Minister Wang Yi delivered a keynote speech in "Seize digital opportunities to seek cooperation and development" seminar organized by China Internet Governance Forum and focused on digital economy development and cooperation, data and supply chain security, and the process of global digital governance (Ministry of Foreign Affairs 2021).

Grand Strategy Ends

The grand strategy of the People's Republic of China (PRC) has become a focal point in International Relations (IR), Security Studies, and Strategic Studies since the rise of China at the end of the Cold War era (Lin 2019, 208). The People's Republic of China (PRC) is an emerging power that became the second-largest economy in 2010. To maintain economic growth and industrial competitiveness, China emphasizes its economic and technological development. The Chinese government considers a new industrial revolution which could be the key to retain Chinese economic and military power.

The goals of pursuing the China Dream (*zhonggue meng)* and the Strong Army Dream *(qiang jun meng)* are the primary grand strategy ends, enhancing Chinese national power and international prestige. China's 2017 National AI Development Plan identifies AI as a "historic opportunity" for national security leapfrog technologies. It suggests China should "firmly seize the major historic opportunity for the development of AI . . . and support national security, promoting the overall elevation of the nation's competitiveness and leapfrog development." Chinese leaders believe that China is still in important strategic

opportunities that can expand AI technologies. With the help of AI, China will develop better network power, digital power, further advance the industrial base, modernize the industrial chain, and improve economic quality, efficiency, and core competitiveness (Xinhua 2020b). China aims to enhance the new generation of artificial intelligence technological innovation capability, develop a smart economy, build a smart society, and maintain national security. China also invests resources to accelerate the construction of an innovative country with scientific and technological power. The goals include the "two centenary" *(liang ge yibai nian)* goals and the Chinese dream of the "great renaissance" *(weida fuxing)* (State Intellectual Property Office 2018). With the current plans, Chinese leaders believe that China will become a global artificial intelligence competition leader. China will build an open, shared, high-quality and low-cost artificial intelligence technology and application platform that is inclusive of the world and cooperate with the construction of the BRI projects and promote a "community with a shared future for mankind" *(renlei mingyun gongtongti)*.

Conclusion

China vows to become the global leader in AI development and the primary center for AI innovation by 2030. From this analysis, the role of AI in China's grand strategy centers on grand strategy means, particularly economic and military. The roles and functions of AI are crucial in China's military, economic, and intelligence capabilities. To prepare for an "intelligentized warfare," China stresses AI applications in military and intelligence fields. Although in official documents Chinese officials tend not to specify whether China's AI efforts are countering the US military power, scholars believe that China sees military AI R&D as a cheaper and easier path to develop Chinese equivalents of American AI systems (Allen 2019, 8-9). Economic capability is another focus, which is often connected with the discourse of national power. China is determined to ensure that it will catch up with the AI technologies and applications, competing with other economies. The overall goals are to increase the national power, national face and international reputation of China. Chinese leaders, including Chinese President Xi Jinping and Premier Li Keqiang, believe that AI development is an opportunity to build strategic capability and impact a state's future competitiveness. Thus, the importance of AI in China's grand strategy will only gain more ground in the future.

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