

SINO-RUSSIAN MILITARY COOPERATION: IMPACT ON CHINA'S AIR DEFENSE SYSTEM

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1. INTRODUCTION

The military cooperation between China and Russia has undergone various phases of rapprochement and distancing. However, the last decade has been marked by a significant re-approximation, resulting in a reconfiguration of the global defense system, with a particular emphasis on technical-military cooperation and technology transfer, especially in air defense systems (GORENBURG, et al. 2023). This study aims to investigate how Sino-Russian collaboration impacts the development of China's air defense capabilities, exploring how this dynamic contributes to China's growing role in the geopolitical landscape.

The central question guiding this research is: how has Sino-Russian military cooperation accelerated the modernization of China's air defense system? Our hypothesis is that the transfer of Russian military technology, particularly with the S-400 defense systems, has played a crucial role in the modernization of the Chinese armed forces, strengthening its strategic position in the Asia-Pacific and challenging the hegemony of the United States.

The theoretical foundation of this research is based on the contributions of WALLERSTEIN's World-Systems Analysis (1974) and ARRIGHI's Systemic Cycles of Accumulation (1994). This theoretical framework is essential to understand how Sino-Russian military cooperation fits into the global landscape. WALLERSTEIN's (1974) perspective offers an analysis of the hierarchical structure of the international system, divided between core and periphery, with core nations holding economic and military dominance. According to ARRIGHI (1994), global hegemony is intrinsically linked to the military and economic projection capabilities that a given power can exert. Through military cooperation with Russia, China enhances its position on the global stage, expanding its geopolitical influence (ARRIGHI, 1994).

The research addresses a critical gap in the current literature, specifically regarding the extent to which Sino-Russian military cooperation has contributed to China's industrial defense base. While significant attention has been given to China's geopolitical rise, less focus has been placed on how its cooperation with Russia has facilitated the development of advanced air defense technologies and fortified its defense industry. This study aims to fill that gap by tracing key military cooperation milestones, including the procurement of the S-400 systems and the subsequent development of new air defense technologies.

The applied methodology is qualitative, emphasizing multiple methods that combine documentary analysis anchored in a critical review of specialized literature and process tracing to map key events and milestones of military cooperation. These include major agreements related to the purchase of S-400 systems and the development of new air defense systems. The organization of evidence is based on the chronology of key Sino-Russian military events and agreements. Moreover, the main companies involved were identified, allowing a deeper understanding of how this cooperation has bolstered China's military capabilities.

2. METHODOLOGY

This study adopts a qualitative approach, grounded in the use of comparative methods and causal analysis, as proposed by RAGIN (2007), MAHONEY and GOERTZ (2006), and LEE and WALLERSTEIN (2000). The research combines documentary analysis with the process tracing method to identify causal relationships and key milestones in Sino-Russian military cooperation, particularly concerning the transfer of technology in the S-400 and S-500 air defense systems. According to RAGIN (2007), "the comparative method is essential for examining cooperation dynamics over time," allowing for the triangulation of information and verification of the consistency of evidence.

Documentary analysis built the empirical foundation of this study. As MAHONEY and GOERTZ (2006, p. 229) state, "documentary analysis allows the mapping of actors and the identification of critical milestones." The bibliographic material collected and analyzed included primary and secondary sources: institutional reports from the Stockholm International Peace Research Institute (SIPRI), the Center for Naval Analyses (CNA), the Center for Strategic and International Studies (CSIS), and the RAND Corporation. These sources provide detailed data on arms transfers and the evolution of military cooperation between China and Russia, with a focus on agreements involving the S-400 and S-500 air defense systems. The documentary analysis allowed for the mapping of the main agents involved and the identification of the most relevant milestones in military collaboration between the two countries.

Process tracing is used to investigate causal processes through detailed case studies (BEACH and PEDERSEN, 2013; BENNETT and CHECKEL, 2015). The technique aims to track the impact of Sino-Russian military cooperation on the development of China's air defense system, identifying the most relevant milestones of this collaboration and its implications for China's defense industrial base. This method allows for the mapping of the sequence of events and identification of the underlying causes that link Sino-Russian military cooperation to the development of China's air defense system.

The methodological process followed three main stages. The first stage was data collection, which focused on gathering quantitative and qualitative information from specialized sources, such as SIPRI records, which document arms transactions between China and Russia. These data provided a solid foundation to map the flow of military technology transfer, particularly with respect to the S-400 systems. The second stage consisted of data triangulation, involving the comparison and integration of information from different sources, such as CSIS reports and RAND Corporation studies on the Chinese defense industry. Triangulation ensured the validity and reliability of the conclusions drawn from the collected data.

In summary, the final stage was the critical analysis of the evidence, where the data were examined to identify diagnostic evidence that could confirm the causal relationships between Sino-Russian cooperation and the strengthening of China's defense capabilities. The use of process tracing allowed for the identification of key milestones in this cooperation, including the acquisition of the S-400 and S-500 systems, and demonstrated how the transfer of Russian technology accelerated the development of China's defense industrial base, making the country more self-sufficient in its military capabilities.

3. RESULTS AND DISCUSSION

The 2015 contract between China and Russia for the acquisition of the S-400 air defense system and Su-35 aircraft marked a significant milestone in defense relations between the two countries. These agreements expanded China's regional power projection capabilities, particularly in strategic areas such as the South China Sea and Taiwan. SCHWARTZ (2021, p. 2) highlights that "these systems played a crucial role in extending the range of China's air defense, allowing the country to secure its airspace more effectively."

Furthermore, the technology transfer provided by Russia accelerated the development of China's own defense systems, such as the HQ-9, which was heavily inspired by the Russian S-300 system (GORENBURG et al., 2023). Data from the Stockholm International Peace Research Institute (SIPRI) (2024) shows that, between 2014 and 2024, Russian exports to China amounted to 8,074 million trend-indicator values (TIV), with engines (44%) and aircraft (31%) being the main items. These figures underscore the importance of technology transfers in China's military modernization. WEINBAUM et al. (2022, p. 3) state that "seven of the world's top 15 defense companies are Chinese, and many of them have directly benefited from Russian technology transfers."

However, as China progresses toward self-sufficiency in the defense industry, the practical benefits of Sino-Russian cooperation are diminishing, reflecting its transformation from being dependent on Russian arms to becoming an autonomous producer of military technologies (GORENBURG et al., 2023, p. 74). The CNA (2023) report highlights that many of the weapons previously imported from Russia are now being produced domestically, signaling greater technological sovereignty. This shift reverses the dynamics of cooperation, with Russia now more reliant on Chinese components, particularly electronics, following Western sanctions.

The Herfindahl-Hirschman Index (HHI) reveals that, although China has diversified its industrial base, there is still a high concentration of dependence in key sectors such as air defense systems, indicating strategic vulnerabilities (WEINBAUM et al., 2022, p. 5). Ultimately, the Sino-Russian relationship is becoming increasingly asymmetrical, with China gaining autonomy and Russia growing dependent on collaboration in the face of international sanctions.

4. CONCLUSION

This study concludes that Sino-Russian military cooperation has had a profound impact on the development of China's air defense system, accelerating the modernization of its military capabilities and positioning the country as a key actor in the international geopolitical landscape. The acquisition of advanced systems like the S-400, alongside the transfer of Russian technology, directly contributed to the strengthening of China's defense industrial base and its ability to project regional power.

Furthermore, the results suggest that this cooperation may pose a challenge to the military hegemony of the United States, particularly in the Asia-Pacific region. The evidence indicates that China is increasingly prepared to exert independent military influence while continuing to benefit from collaboration with Russia. These findings support the hypothesis that Sino-Russian military cooperation has been a

crucial factor in strengthening China's defense capabilities, with far-reaching geopolitical implications.

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