Fulfilling the Centennial Mission of the People's Liberation Army: The Achievements and Dilemmas of the CCP's Military Modernization

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Abstract

As the People's Liberation Army approaches its centennial, the Chinese military is actively strengthening its military modernization research and development efforts to deliver a brilliant centennial military achievement. China is accustomed to asymmetric warfare. In its early days, China learned from the Soviet Union about high-tech joint operations, and after the Gulf War, it adopted the United States as its model, copying many of its high-tech weaponry. While China has pursued advanced weaponry by any means necessary, developing what appears to be fifth-generation weapon hardware systems, its actual combat capabilities lag far behind those of the United States. China recognizes that if it wishes to resolve territorial sovereignty issues in the Indo-Pacific region by force, it must confront U.S. military intervention and possess a strong military capability to deter such intervention. Such military needs rely on the R&D of its defense industry. The United States similarly recognizes that deterring China's reckless military expansion requires maintaining a strong military force and a sufficient gap in military power. Competition between the U.S. and China could potentially spark an arms race in which the participants seek to deter competitors and weaken others.

Keywords: PLA, Military Modernization, Military-Civilian Fusion, Artificial Intelligence, Great Rejuvenation of the Chinese Nation

I. Foreword

Since taking power, Xi Jinping has put forward numerous slogans and targets for China's future development, such as the "Two Centenaries," the "Three-Step Strategy," and "Achieving the Mission and Goals of the Centennial Mission of the Chinese People's Liberation Army." These slogans primarily echo Xi's intent of achieving the "great rejuvenation of the Chinese nation."[1] For China, rejuvenating the nation or becoming a socialist superpower, military strength, in addition to political and economic influence, is critical. In other words, without military strength, China

Figure 1. Xi Jinping Wants the "Great Rejuvenation of the Chinese Nation"

Source: Xu Wei, "High-quality growth key, says Xi," March 13, 2023, *China Daily Hong Kong*, <https://www.chinadailyhk.com/hk/article/320056>.

1. Council on Foreign Relations: "Excerpt: The Third Revolution," 2018, *Council on Foreign Relations*, <https://www.cfr.org/excerpt-third-revolution>.

cannot counter the influence of Western countries and ensure the survival of the Chinese Communist Party (CCP).

In fact, since the founding of the People's Liberation Army (PLA), China has always been in a militarily disadvantageous position. Due to its intervention in the Korean War, China received assistance from the former Soviet Union. Through military modernization in the 1950s, China built up its navy and air force, enhancing its military strength. Yet, the Sino-Soviet split led to the cessation of military aid to China, and coupled with power struggles within the CCP, military modernization stagnated in the 1950s.[2] The Cultural Revolution of 1966 was disastrous for the CCP's military modernization. The army was heavily involved in the "Three Supports and Two Military Missions" (supporting the workers, supporting the left, and supporting the peasants, military training, and military control),[3] leaving it with little time to focus on military training and armaments development. Power struggles even led to the denunciation of professional officers, leaving inexperienced workers, peasants, and soldiers as decision-makers and leaders, severely damaging China's military expertise and training. Even after 1975, when Deng Xiaoping attempted to address the military's shortcomings, no significant results were achieved. Following the Sino-Vietnamese War of 1979, just as the Korean War had spurred China's military modernization in the 1950s, the lessons learned from the war with Vietnam also served as a driving force for the CCP's military modernization in the 1980s.[4] However, this largely resulted in a return to the Soviet-style defense policy of the 1950s.

The 1990 Gulf War unleashed a wave of global high-tech warfare, sparking a Revolution in Military Affairs (RMA). Naturally, the CCP, with the United States as its perceived enemy, was greatly stimulated by the latter's military prowess against

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2. Larry M. Wortzel, "Military Mobilization in Communist China," December 18, 2020, *AUSA*, <https://www.ausa.org/publications/military-mobilization-communist-china>.
3. Harvey W. Nelsen, "Military Bureaucracy in the Cultural Revolution," *Asian Surve*y, Vol. 14, No. 4, April 1974, pp. 372-395.
4. James Carter, "The Necessary Lesson of the 1979 Sino-Vietnam War," February 16, 2020, *The China Project*, <https://thechinaproject.com/2022/02/16/the-necessary-lessons-of-the-1979-sino-vietnamese-war/>.

Iraq. China began to modernize its military in the 1990s with the goal of winning local wars under high-tech conditions and learning from the U.S. military. Faced with insufficient basic scientific and technological capabilities and funding shortages, how to strengthen asymmetric combat capabilities against the United States and surpass U.S. military power by taking shortcuts became the main paths to China's military modernization.[5]

The Afghanistan War in 2001 and the U.S.-Iraq War in 2003 taught the CCP important lessons learned about U.S. military integration. These lessons, such as the increased use of long-range precision weapons, the integration of special forces behind enemy lines with long-range bombing, the widespread deployment of communications and information systems, and the use of psychological warfare, media warfare, and legal warfare, have transformed the core of China's military modernization, focusing on the application of information in combat. Hu Jintao advocated winning local wars under high-tech, especially information-intensive conditions. However, unable to immediately and effectively surpass the United States, plagiarism and imitation have become the primary path for China's military modernization, an approach that became increasingly overt and which international criticism failed to counter.

II. China's Model for Introducing Advanced Foreign Technology

China acquires military technology through both legal and illegal means. Legally, this involves recruiting key technical talent from overseas through programs such as the "Yangtze River Plan" and the "Thousand Talents Plan." These programs, along with generous subsidies, have enabled China to rapidly advance its military technology. Regarding military-related experts, China has recruited defense technology specialists from the former Soviet Union and Ukraine to guide the development of weapon platforms in China. For large ships and fighter jets, when reverse engineering or plagiarism encounters development bottlenecks, the experience of those actually involved in the development becomes crucial.

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5. Arthur S. Ding, "China's Revolution in Military Affairs: An Uphill Endeavour," *Security Challenges*, Vol. 4, No. 4, Summer 2008, pp. 81-99.

Furthermore, if the introduction of technology or talent is conducted through official or military channels, it may be subject to international sanctions or export controls. This forces China to resort to Military-Civilian Fusion (MCF), using Chinese private enterprises as a "white glove" to collaborate with international defense companies in joint R&D and production, or to import relevant technologies to enhance China's defense research and production capabilities. This is especially true for specialized parts and materials, which are not complete military products, and are imported legally through military-civilian fusion channels.

In addition to these legal means, to close the gap in military technology with the United States, China has resorted to cyber and industrial espionage to acquire critical technology. Consequently, the discovery of backdoor programs used for penetration or individual computer leaks in the defense industries of the United States and other

Figure 2. The J-20 Fighter Jet with External Plug-Ins Exposing Its Stealth Flaws

Source: emperornie, "The Latest Fighter of Chinese Airforce," November 11, 2018, *Wikipedia*, <https://commons.wikimedia.org/wiki/File:J-20_fighter_(44040541250)_(cropped).jpg>.

Western countries is often linked to critical technologies. China, through a "grains of sand" approach, has accumulated key technologies for critical systems, ultimately completing weapons systems nearly on par with those deployed by the United States military.[6] For example, China's J-20 is a clear copy of the U.S.' F-22; China's J-35 is a copy of the U.S.' F-35; and the fourth aircraft carrier, which will use electromagnetic catapults for the first time, is also believed to be related to the electromagnetic catapult technology found on the USS *Ford*, the latest U.S. aircraft carrier. The openness and public disclosure of information in the Western world have become a hotbed for Chinese plagiarism and theft.

Figure 3. The PLA's Z-20 Helicopter

Source: Shujianyang, "Z-20 Mockup at Zhuhai Aerospace Land," February 18, 2024, *Wikipedia*, <https://commons.wikimedia.org/wiki/File:Z-20_mockup.jpg>.

6. Gavin Blackburn, "Two Chinese Nationals Detained in Kyiv on Suspicion of Attempting to Steal Military Tech, SBU Says," September 7, 2025, *Euro News*, <https://www.euronews.com/my-europe/2025/07/09/two-chinese-nationals-detained-in-kyiv-on-suspicion-of-attempting-to-steal-military-tech-s>.

Furthermore, the H-20 bomber, which has yet to enter service,[7] is a copy of the U.S.' B-2; the Z-20 transport helicopter is a copy of the U.S.' UH-60 Black Hawk; and the WZ-20 attack helicopter is a copy of the U.S.' Apache helicopter, to name just a few specific examples. These are only complete platforms. Others, such as fighter engines, are reverse-engineered from existing Russian engines because China remains technically unable to develop them. However, due to limitations in materials engineering and forging techniques, China's domestically produced engines have shorter lifespans, and their output power and combat performance are naturally inferior to those of genuine products.

III. China's Achievements in Military Science and Technology

Thanks to China's economic development, China now enjoys a massive budget for defense technology and weapons research and development. Recognition of the need to invest in the sector stems from the gap in military technology with the United States and the need, as perceived by Beijing, to prevent U.S. intervention in the Indo-Pacific or in international strategic competition. China has invested heavily in narrowing the technological gap. However, funding alone is not enough; talent and a foundational defense industry are essential to meet R&D needs. Therefore, while China may have achieved outstanding results in certain defense technology R&D areas, it still has some inherent limitations and deficiencies.

1. Drones

While China has been relatively slow in developing traditional ground combat systems, such as tanks, in certain areas its achievements have surpassed those of the United States and Russia. For example, in drones, China's superior production technology has given it an international advantage.[8] The combination of low costs

7. Joseph Trevithick, "China's H-20 Stealth Bomber Unlikely To 'Debut' Until 2030s, According to U.S. Intel," December 18, 2024, *The War Zone*, <https://www.twz.com/air/chinas-h-20-stealth-bomber-unlikely-to-debut-until-2030s-according-to-u-s-intel>.

8. Robert D. Atkinson, "China Is Rapidly Becoming a Leading Innovator in Advanced Industries," September 16, 2024, *ITIF*, <https://itif.org/publications/2024/09/16/china-is-rapidly-becoming-a-leading-innovator-in-advanced-industries/>.

and growing innovation capabilities have turned an increasing number of Chinese companies into formidable global competitors. This rapid progress in innovation stems from the CCP's determined efforts to dominate global markets in a host of advanced industries.

Another factor is that, for the longest time, the United States and other Western countries have not considered drones a combat advantage, still valuing large platforms for firepower superiority and thus neglecting drone development. However, since the wars in Azerbaijan and Armenia, drones have expanded beyond their limited use of intelligence, surveillance, and reconnaissance (ISR) and are now being used as artillery and missiles for various tactical offensive operations. This trend has given countries like China, Iran, and Turkey a significant advantage in drone development.

Figure 4. China's Wing Loong II Unmanned Attack Aircraft

Source: Mztourist, "Wing Loong II Side View, Dubai Air Show 2017," November 16, 2017, *Wikipedia*, <https://commons.wikimedia.org/wiki/File:Wing_Loong_II_side_view.jpg>.

In addition to producing a large number of civilian drones, China is also continuously innovating in the development of military drones. Chinese drones now range from micro, small, medium, and large, emphasizing integrated reconnaissance and strike capabilities, and possessing both defensive and offensive capabilities. Furthermore, China has developed unmanned fighter jets, modeled after large American drones capable of long-range aerial surveillance, and is deploying them on helicopter landing ships and aircraft carriers. This year, China completed the development of an unmanned submarine at the Guangzhou Shipyard, and the army is also actively developing robotic beasts. The integration of unmanned technology and artificial intelligence is gradually building unmanned combat capabilities into the weapon systems of China's three military branches.

Going down in scale and up in mass, China is also fielding drones that can scout, strike, and swarm, all without risking pilots' lives. They are developing high-altitude and long-endurance recon drones, possibly air-launched supersonic spy drones, and stealthy combat drones with their own weapons bays.[9]

2. Hypersonic Missiles

In the field of hypersonic missiles, China has primarily developed and improved upon existing tactical ballistic missiles, particularly in warhead development, to create hypersonic missiles. For example, the DF-16 was upgraded to the DF-17, creating a hypersonic missile with a range of 1,000 to 2,000 kilometers; the DF-26 was upgraded to the DF-27, creating a hypersonic missile with a range of 3,000 to 4,000 kilometers. These missiles utilize warheads that travel at the edge of the atmosphere, increasing their speed and making them difficult to intercept. These two missiles are similar to Russia's Hazel missile.

9. Mackenzie Eaglen, "China's 'Breakneck Speed' Military Modernization Is a Threat to America," June 4, 2025 *AEI*, <https://www.aei.org/op-eds/chinas-breakneck-speed-military-modernization-is-a-threat-to-america/>.

Figure 5. China's DF-17 Hypersonic Missile

Source: 頤園居 , "DF-17 missile on a road-mobile vehicle," October 20, 2022, *Wikipedia*, <https://en.wikipedia.org/wiki/DF-17#/media/File:DF-17_Missile_20221020.jpg>.

Russia currently deploys the air-launched Kinzhal missile and the submarine- and ship-launched SS-N-33 Zircon missile, while China's development in this area is still lacking. The United States is rapidly catching up in the development of hypersonic missiles, hoping to surpass both China and Russia. Several hypersonic missiles are currently undergoing testing and should be able to effectively destroy Chinese targets in wartime. No country has an effective defense system against hypersonic missiles.

3. Air Force

China's air force is committed to developing air platforms that can rival those of the United States and appears to be making significant progress. China traditionally competed with the United States by imitating Russia's Su-37 series. It clearly lags behind the United States in the development of stealth fighters and bombers. However, by copying combat concepts and combining engines and combat systems, China has developed a fifth-generation fighter similar to the American F-22. While China's fifth-

generation fighters may be about half a generation behind their American counterparts, they still pose a threat to the air defenses of other countries, particularly neighboring India and Taiwan. However, for Japan and South Korea, which already operate the fifth-generation F-35 fighter, the air defense threat is relatively minor. That being said, if the number of such aircraft in the Chinese air force increases, or if a surprise attack is launched against these countries, the consequences could be severe.

Similarly, China has copied the U.S. and developed its own J-35 stealth fighter to deploy stealth fighters on aircraft carriers. This fighter is expected to be deployed on the *Fujian*, China's fourth aircraft carrier. Because it has not yet officially entered service, its takeoff and landing efficiency, and combat performance are unknown. However, just as the CCP has begun developing fifth-generation fighters, the U.S. is

Figure 6. The J-35 Stealth Fighter Debuts at the 2024 Zhuhai Air Show

Source: 林乃絹 ,〈殲 -35 珠海航展亮相—中國隱形戰機步入雙機時代 專家：飛行員實戰短板難超越美國〉, November 13, 2024, *VOA*, <https://www.voachinese.com/a/china-j35a-stealth-fighter-debuts-at-annual-zhuhai-airshow/7861688.html>.

about to phase out the F-22 and is preparing to develop the sixth-generation F-47, highlighting the generation gap between the two countries' fighter jets. Designed for catapult takeoff and landing, the J-35 could face critical hurdles on the ski-lift aircraft carrier *Liaoning*: insufficient payload and fuel capacity. These two limitations will reduce the *Liaoning*'s combat capability, potentially even making the J-35 unable to match the F-35. This will restrict the J-35 to deployment on the *Fujian* aircraft carrier or the *Sichuan* landing ship.

China's new H-20 bomber is still in the final testing phase and has yet to enter service.[10] The lack of a new heavy bomber has forced China to continue using the

Figure 7. China's H-20 Bomber

Source: Caleb Larson, "China's H-20 Stealth Bomber Simply Summed Up in 4 Words," June 17, 2025, *National Security Journal*, <https://nationalsecurityjournal.org/chinas-h-20-stealth-bomber-simply-summed-up-in-4-words/>.

10. Joseph Trevithick, "China's H-20 Stealth Bomber Unlikely To 'Debut' Until 2030s, According To U.S. Intel," December 18, 2024, *The War Zone*, <https://www.twz.com/air/chinas-h-20-stealth-bomber-unlikely-to-debut-until-2030s-according-to-u-s-intel>.

modified H-6 series, which lacks stealth capabilities and has a limited payload, making it less adaptable to high-tech air defenses. The U.S.' new sixth-generation B-21 bomber has entered mass production and will replace the B-1B and B-2 bombers. After the U.S. demonstrated long-range bombing success with its heavy bombers against Iran in June 2025, China should be more aware of the gap between its military technology and operational concepts.

4. Navy

China's shipbuilding capabilities and cost advantages have enabled it to create the world's largest fleet, but it still lags behind the United States in terms of total tonnage and quality. The slow pace of replacement of the U.S. fleet stems from the decline of its shipbuilding industry. Since Donald Trump's return to the White House, the U.S. has signaled its determination to actively revitalize its shipbuilding industry, while encouraging other countries' shipbuilding industries to invest in the U.S. or to jointly build additional U.S. ships. Additionally, while China has surpassed the U.S. in terms of fleet size, some combat technologies still lag behind. Its third aircraft carrier is currently undergoing testing, while the fourth is still powered by conventional engines, which suggests that China's ship propulsion is struggling to surpass the threshold of nuclear engines. Even though China possesses nuclear-powered submarines, their combat capabilities and operational concepts lag far behind those of the United States.

In addition, China is committed to developing the Type 075 and Type 076 amphibious landing ships, and while some progress has been made, the manufacturing process has been slow, and the integration of various platforms remains unclear, highlighting the naval power gap between China and the United States. Furthermore, China's shipbuilding industry previously employed a dual-factory model, with two state-owned shipbuilding companies competing for R&D. However, due to a series of accidents and the duplication of resources, the two companies have been merged. This may affect China's technological capabilities and shipbuilding efficiency in the future.

The CCP's rapidly expanding defense budget, growing capabilities, and the increasing use of force to achieve certain goals operate in tandem. China's lead in

global military and commercial shipbuilding continues to alarm U.S. policymakers and to make headlines.

5. Space Force

China is actively developing its space forces and holds a leading position globally in both manned rocket and space stations. This capability, which involves a superiority in space war, will necessitate a rapid catch-up by the United States to regain its space combat advantage. In fact, the United States still holds an advantage in the integration of low-orbit satellites and medium- and high-altitude satellites related to space warfare. For example, the United States has the highest density of

Figure 8. China's Beidou Satellite System

Source: AKAMGO yalms, "Model of BeiDou Phase III satellite orbits," December 13, 2022, *Wikipedia*, <https://zh.wikipedia.org/zh-tw/%E5%8C%97%E6%96%97%E5%8D%AB%E6%98%9F%E5%AF%BC%E8%88%AA%E7%B3%BB%E7%BB%9F#>.

low-orbit satellites deployed in the Starlink system worldwide. The United States is also developing laser weapons capable of attacking low-orbit satellites from medium and high altitudes. In terms of the development and operation of space planes, the United States remains in the lead, while China is still in the early stages of research and development.

6. Military-Civilian Fusion

China has acquired numerous defense industry development technologies through collaboration with foreign companies, thereby enhancing its technological capabilities. However, under U.S. export controls and technology sanctions, such efforts have become increasingly difficult, hindering the comprehensive development and deployment of China's specialized R&D systems. The CCP focuses its MCF development on improving the efficiency of military equipment research and production systems. Through government regulation of the "military-to-civilian" and "civilian-to-military" transitions, it determines market resource allocation and the exchange and integration of scientific and technological achievements, talent, funding, and information between military and civilian sectors. The goal is to leverage the role of national defense development in driving economic development, and economic development in supporting national defense development. However, the complex MCF mechanism presents challenges such as technology confidentiality, technology transfer, and intellectual property protection, which remain unresolved.

Overall, China's military technological development, fueled by its massive budget, has experienced a tremendous leap forward. Xi has mandated that the PLA significantly advance in cyberspace, space, maritime capabilities, and artificial intelligence to surpass the United States. However, factors such as the gap in high-tech capabilities, U.S. technology sanctions, and a severe economic downturn will inevitably impact China's military modernization process. Some iconic weapon platforms may not be developed as planned. In this context, China may develop innovative weapons to showcase its unique characteristics and put them on display during the September 3 military parade. However, without actual combat testing, it remains unclear whether such developments will achieve a deterrent effect.

IV. Impact on Regional and Taiwan Strait Security

When two countries' military capabilities are equal, a deterrent effect can occur because there is no guarantee of victory over the other. When either side faces intense political pressure or nationalism, forcing a military solution, even if the military advantage is modest, it will target its opponent's critical weaknesses and deliver powerful tactical strikes, shifting the balance of power. The military disparity between the U.S. and China is very clear. While China holds a slight lead in medium-range missiles, the U.S. holds a 10-20-year technological lead in cyber, space, air power, and naval platforms. The problem, however, is that China is accustomed to engaging in asymmetric warfare or people's war. Even at a military disadvantage, it will exploit political and other non-military means to achieve operational advantages and seize opportunities for victory.

Many examples from the Korean War and the Vietnam War show that the U.S. did not fail militarily, but due to heavy losses or domestic public backlash, strategic

Figure 9. The Fujian Aircraft Carrier

Source: 陳進安,〈中國第三艘航母「福建艦」內部艙室首次曝光　各種設備安裝完　成〉, January 6, 2023, *HK 01*, <https://www.hk01.com/article/854530?utm_source=01articlecopy&utm_medium=referral>.

decision-makers faced immense pressure, ultimately forcing them to give up and withdraw from the conflict. In other words, without a guaranteed victory, the U.S. may not intervene in Indo-Pacific disputes. And if it intervenes, a protracted war will likely lead the U.S. to shift its stance, if not to abandon its initial goals altogether. Although China's military lags behind that of the United States, its determination in a clash or confrontation could force the United States to retreat. The United States is well aware of this and is actively strengthening its operational advantages, widening the gap in military technology with China in the hope of creating a deterrent effect. However, if China predicts that the United States, despite its military technological advantage, lacks the determination to engage in a large-scale war or cannot afford the casualties, it will not worry about the costs and may seize the opportunity to provoke a conflict.

Taiwan must be aware of the military implications of the comprehensive nature of Party control and the CCP's penetration of all levels of technology. These, combined with a relatively disciplined central planning system, mean that the Party and the PLA can orchestrate mobilization relatively easily. U.S. military leaders would do well to note this significant ability of a great-power competitor, examine the corresponding shortcomings in military capabilities, and adjust the training of forces accordingly.

It will still take at least 10 years for China's current military technological capabilities to surpass those of the United States,[11] but this does not mean that China will only take military action a decade from now. This is because China may employ less advanced weapons asymmetrically to counter an enemy nation's advanced weapons, or employ unexpected tactics to gain a strategic advantage or even reverse the tide of war. The military clashes between India and Pakistan in May 2025, in which Pakistan used inferior Chinese aircraft to defeat more advanced Indian aircraft, is a case in point. While Chinese military innovation is not perfect, it is much stronger

11. "China is closing the gap with America in high-tech weaponry," July 8, 2025, *The Economist*, <https://www.economist.com/podcasts/2025/07/08/china-is-closing-the-gap-with-america-in-high-tech-weaponry>.

than previously understood, and there are many aspects of it that Taiwan and other states should learn from, if not emulate.[12]

Therefore, Western countries must not only continue to expand their advantages in military technology and weapons development, but also focus on quickly and effectively countering China's various asymmetric tactics. Advanced countries such as the United States have the technological capabilities to develop various "game-changer" platforms and weapons. If they can be developed secretly and used suddenly after a conflict occurs, they can also have a game-changing effect and deter CCP adventurism.

In the face of China's military modernization, Taiwan is forced to adopt an asymmetric warfare model of its own. However, this asymmetry requires the use of high-tech weaponry to achieve effective combat results. Therefore, Taiwan's defense modernization must also be actively pursued. This can be achieved through enhancing Taiwan's defense technology and military capabilities in areas such as long-range precision missiles, unmanned technology, and the application of artificial intelligence. As the United States eliminates the "red supply chain" to counter China's military-civilian fusion technology development, Taiwan should assume a partial supply chain role and explore co-production with the United States of key small arms platforms or components. This will contribute to subsequent operational sustainability and strengthen defense technology cooperation with allies.

12. Mackenzie Eaglen, "China's 'Breakneck Speed' Military Modernization Is a Threat to America," June 4, 2025, *AEI*, <https://www.aei.org/op-eds/chinas-breakneck-speed-military-modernization-is-a-threat-to-america/>.