

Envisioning a “World-Class” PLA

Implications for the United States and the Indo-Pacific

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CT-514

Testimony submitted on July 1, 2019, to the U.S.-China Economic and Security Review Commission as a statement for the record for the hearing on June 20, 2019.



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Published by the RAND Corporation, Santa Monica, Calif.

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Envisioning a “World-Class” PLA: Implications for the United States and the Indo-Pacific

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The RAND Corporation²

Statement for the Record for the U.S.-China Economic and Security Review Commission

Submitted July 1, 2019

During his address to the 19th Party Congress in October 2017, Chinese President Xi Jinping raised eyebrows in the West when he stated that the People’s Liberation Army (PLA) needed to attain the status of “world-class forces” [*shijie yiliu jun*, 世界一流军] by midcentury.³ The timing of the speech was obviously meant to coincide with the 100th anniversary of the founding of the People’s Republic of China in 1949, but the precise meaning of “world-class forces” remains less clear. In this testimony, I offer several thoughts on the likely components of a future world-class PLA. I then briefly assess the implications of such a development on the United States and the Indo-Pacific region.

How the PLA Fits Into Xi’s “China Dream”

Xi’s announcement that the PLA would become a world-class military by 2050 is hardly an aberration when viewed within the context of his “China Dream.” Xi envisions “the building of a wealthy, powerful, democratic, civilized, and harmonious socialist modernized nation.”⁴ In support of these objectives, Xi has stated that China must become “a strong country with a strong military.” Xi wants PLA modernization to be “basically completed”—a vague goal—by 2035; by 2050, the PLA should be “fully transformed” into “world-class forces.”⁵ In a discussion I had with a Chinese defense official in October 2018, I asked what Xi specifically meant by the term

¹ The opinions and conclusions expressed in this testimony are the author’s alone and should not be interpreted as representing those of the RAND Corporation or any of the sponsors of its research.

² The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

³ “Full Text of Xi Jinping’s Report at 19th CPC National Congress,” *Xinhua*, November 3, 2017.

⁴ “Xi Jinping Addresses Exhibition on China’s Renaissance,” *Xinhua*, November 29, 2012. As of June 17, 2019: http://news.xinhuanet.com/politics/2012-11/29/c_113852724.htm

⁵ “Full Text of Xi Jinping’s Report at 19th CPC National Congress,” 2017; and Wang Shibin [王士彬], An Puzhong [安普忠], and Kuang Zhenjiang [褚振江], “Xi Jinping Visits National Defense University and Gives Important Speech” [“习近平视察国防大学并发表重要讲话”], *Liberation Army Daily*, March 23, 2016. As of June 17, 2019: http://jz.chinamil.com.cn/n2014/tp/content_6973814.htm

“world-class forces.” The official responded that Xi seeks to elevate the PLA’s quality to parity with the U.S. military.⁶ This is likely a gross underestimation of what is actually happening. Xi appears to be more interested in leapfrogging the U.S. military by 2050 through the development of disruptive military technologies. In other words, Beijing probably plans to achieve the “Third Offset” strategy before the U.S. military can do so, thereby enabling Xi’s world-class PLA to defeat the United States in a conventional regional conflict and to protect Chinese interests worldwide.⁷ Xi’s plans are audacious: Their goals might simply be impossible to accomplish between now and 2050, especially since Washington is concurrently driving toward the Third Offset and is already significantly more advanced in conventional operations.⁸

Whether he succeeds in his goals, Xi has clearly directed the PLA to set its sights high. In addition to building offset capabilities, Xi has emphasized the importance of the PLA’s ability to conduct joint operations, improving China’s power projection capabilities from a regional to a global level, and professionalizing the PLA through strengthened oversight and discipline. Xi probably expects most offset capabilities to mature in the long term—that is, by 2050. However, his other critical objectives might be attainable between now and 2035, at which time I assess Xi expects the PLA to be capable of defeating any adversary—including the United States—within the Second Island Chain.

Enhancing Joint Operations

As a traditionally land-centric power, for decades, China prioritized the development of its ground forces, the PLA Army (PLAA). However, as exemplified by China’s last Defense White Paper, published in 2015, Beijing has concluded that the maritime domain—including Taiwan and the South and East China Seas—is now of paramount importance.⁹ Both the PLA Navy (PLAN) and PLA Air Force (PLAAF) have received additional attention, and the PLA now must coordinate operations across the PLAA, PLAN, and PLAAF.¹⁰ In early 2016, Xi implemented a

⁶ Author’s discussion with authoritative Chinese interlocutor, Washington, D.C., October 2018.

⁷ The Third Offset is an official Pentagon military strategy to invest in key innovative technologies, such as robotics, machine-human cooperation, or artificial intelligence (AI), to gain asymmetric advantages in great power competition. The First Offset occurred in the 1950s, when the United States relied on miniaturized nuclear weapons to make up for the Soviet Union’s conventional superiority in Europe, and the Second Offset took place in the 1970s with the U.S. military’s development of precision-guided munitions (PGMs) for conventional operations. For more on the Third Offset, see Kathleen H. Hicks, Andrew Hunter, Jesse Ellman, Lisa Samp, and Gabriel Coll, *Assessing the Third Offset Strategy*, Washington, D.C.: Center for Strategic and International Studies, March 2017.

⁸ For an in-depth discussion of how the U.S. military overall is superior to the PLA (but China is narrowing the gap), see Eric Heginbotham, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, David R. Frelinger, Burgess Laird, Kyle Brady, and Lyle J. Morris, *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power: 1996-2017*, Santa Monica, Calif.: RAND Corporation, RR-392-AF, 2015. As of June 26, 2019: https://www.rand.org/pubs/research_reports/RR392.html

⁹ “China’s Military Strategy (Full Text),” *State Council Information, The People’s Republic of China*. As of June 19, 2019: http://english.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm

¹⁰ See “China’s Military Strategy (Full Text),” 2015, for more on the importance of jointness. For more on the PLA’s weaknesses in conducting joint operations, see Michael S. Chase, Jeffrey Engstrom, Tai Ming Cheung, Kristen Gunness, Scott W. Harold, Susan Puska, and Samuel K. Berkowitz, *China’s Incomplete Military Transformation: Assessing the Weaknesses of the People’s Liberation Army (PLA)*, Santa Monica, Calif.: RAND Corporation, RR-893-USCC, 2015. As of June 26, 2019: https://www.rand.org/pubs/research_reports/RR893.html

major reorganization—perhaps the most substantial ever—of the PLA. In fact, Western experts have likened the reorganization to China’s own version of the U.S. Goldwater-Nichols Department of Defense Reorganization Act of 1986, which broke down bureaucratic stovepipes and created the Joint Force.¹¹ Under China’s reorganization, the four general departments—staff, political, logistics, and armaments—were abolished, which struck at the very heart of the PLAA’s power base, as it previously ran these departments.

The PLAA was further diminished in stature by the conversion of the seven Military Regions (MRs) to five Theater Commands (TCs). This conversion offered additional opportunities for commanders from services outside of the PLAA to lead the development of joint operational concepts of warfighting within the TCs.¹² For example, the Southern TC is led by PLAN Commander Yuan Yubai. What is unique about the TCs concept is that it places all forces, regardless of service, under one commander, in effect requiring joint operations. Separately, the Central Military Commission (CMC) was reduced from 11 to seven members, and the position of Joint Staff Department Director was added, underscoring the importance of integrated joint operations. Xi also promoted PLAAF Commander Xu Qiliang to Senior Vice Chairman—a clear signal of the growing importance of air operations within joint operational concepts.

In another indication of Xi’s interest in achieving a joint PLA, in late 2015, he established a new military organization, the PLA Strategic Support Force (PLASSF), to facilitate the collection, processing, and dissemination of cyber, space, and electromagnetic information within the PLA.¹³ From Beijing’s perspective, a truly joint force must be able to control the information environment through information-networked forces—in the words of the last Defense White Paper, ensuring that the PLA is capable of “winning informationized local wars [打赢信息化局部战争].”¹⁴ But Xi’s interest in networked warfare actually extends much deeper. Indeed, Beijing is building a “system-of-systems” model of waging warfare after observing how the post–Cold War United States has employed similar concepts.¹⁵ By midcentury, Beijing seeks to connect its system-of-systems to AI technologies, creating what it calls the era of the “intelligentization” (智能化 *zhineng hua*) of warfare.¹⁶ Intelligentization will enable faster and smarter decisions. AI, coupled with enhanced military interconnectivity, makes Chinese leaders increasingly confident they can win a future “system-of-systems confrontation.”

¹¹ Philip C. Saunders and Joel Wuthnow, “China’s Goldwater-Nichols? Assessing PLA Organizational Reforms,” *Joint Forces Quarterly*, No. 82, 3rd Quarter, July 2016. As of June 17, 2019: <https://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-82/Article/793267/chinas-goldwater-nichols-assessing-pla-organizational-reforms>

¹² The five TCs, in priority order for Beijing, are the Eastern, Southern, Western, Northern, and Central TCs.

¹³ Kevin L. Pollpeter, Michael S. Chase, and Eric Heginbotham, *The Creation of the PLA Strategic Support Force and Its Implications for Chinese Military Space Operations*, Santa Monica, Calif.: RAND Corporation, RR-2058-AF, 2017. As of June 26, 2019: https://www.rand.org/pubs/research_reports/RR2058.html

¹⁴ “China’s Military Strategy (Full Text),” 2015.

¹⁵ Jeffrey Engstrom, *Systems Confrontation and Systems Destruction Warfare: How the Chinese People’s Liberation Army Plans to Wage Modern Warfare*, Santa Monica, Calif.: RAND Corporation, RR-1708-OSD, 2018. As of June 26, 2019: https://www.rand.org/pubs/research_reports/RR1708.html

¹⁶ Elsa B. Kania, “Battlefield Singularity: Artificial Intelligence, Military Revolution, and China’s Future Military Power,” *Center for a New American Security*, November 28, 2017.

From Regional to Global Power Projection

Xi has also prioritized the modernization of PLA weapons systems that can identify and attack targets at farther distances from Chinese shores, with the intent of denying adversarial force deployments from regional staging areas as well as preventing additional adversarial forces from entering the theater of operations. In real terms, this means the PLA is actively seeking to develop counterintervention and antiaccess/area denial (A2/AD) forces (although Beijing does not refer to them as such) that can deliver precision strikes out to at least the Second Island Chain, if not beyond. This is, of course, no surprise, as the United States has many military bases and other sensitive facilities scattered throughout the region out to and including in the Second Island Chain, most notably on Guam and Okinawa.¹⁷ The PLAAF's H-6K bomber training missions are highly visible examples of Beijing's rising power projection capabilities.¹⁸ These flights have circumnavigated Taiwan and the South China Sea several times in the last few years and have threatened Japan as well. H-6Ks can now be armed with air-launched cruise missiles, which, if fired off the east coast of Taiwan, would put Guam within standoff range of PLAAF attack. Moreover, the PLAAF is rumored to be in the process of perfecting aerial refueling operations with a different version of the bomber (H-6N) with a significantly longer range than the H-6K.¹⁹ Regardless, Beijing is developing the next-generation H-20 bomber, which may be available by the mid-2020s; the H-20 could put Australia, Hawaii, and even the continental United States within range of attack by both conventional and nuclear weapons.²⁰

There are many other examples of the PLA's rising power projection profile. China has one operational aircraft carrier, the *Liaoning*, which has conducted several patrols through the Taiwan Strait and in the South China Sea. It is planning to build a second and maybe even a third and fourth carrier, partly for prestige but also to benefit from additional power projection advantages.²¹ The PLAN is increasing its number of landing platform dock vessels (Type 071) and modern guided missile destroyers (Type 055), both of which will significantly enhance long-range combat operations and maritime power projection.²² The PLAN is also increasing the

¹⁷ The growing PLA threat to U.S. military facilities has prompted much consideration about future U.S. military posture in the region. For RAND analysis on this topic, suggesting Washington invest in base hardening and dispersal, see Michael J. Lostumbo, Michael J. McNerney, Eric Peltz, Derek Eaton, David R. Frelinger, Victoria A. Greenfield, John Halliday, Patrick Mills, Bruce R. Nardulli, Stacie L. Pettyjohn, Jerry M. Sollinger, and Stephen M. Worman, *U.S. Overseas Military Posture: Relative Costs and Strategic Benefits*, Santa Monica, Calif.: RAND Corporation, RB-9708-OSD, 2013. As of June 26, 2019: https://www.rand.org/pubs/research_briefs/RB9708.html

¹⁸ For a detailed analysis of China's H-6K bomber flights, see Derek Grossman, Nathan Beauchamp-Mustafaga, Logan Ma, and Michael S. Chase, *China's Long-Range Bomber Flights: Drivers and Implications*, Santa Monica, Calif.: RAND Corporation, RR-2567-AF, 2018. As of June 26, 2019: https://www.rand.org/pubs/research_reports/RR2567.html

¹⁹ "H-6N Able to Do Aerial Refueling: Chinese Air Force Will Have a True Strategic Bomber" ["能空中加油的轰6N: 中国空军将拥有真正的战略轰炸机"], *Phoenix*, December 7, 2017. As of June 19, 2019: http://news.ifeng.com/a/20171209/54003568_0.shtml

²⁰ Grossman et al., 2018.

²¹ Kyle Mizokami, "Naval Power: China's Navy Could Have 4 Aircraft Carriers (And Soon)," *The National Interest*, March 29, 2019. As of June 19, 2019: <https://nationalinterest.org/blog/buzz/naval-power-chinas-navy-could-have-4-aircraft-carriers-and-soon-49662>

²² Andrew Tate, "China's Eighth Type 071 in Advanced Stage of Construction," *Jane's 360*, May 14, 2019. As of June 23, 2019: <https://www.janes.com/article/88529/china-s-eighth-type-071-in-advanced-stage-of-construction>

number of PLA Marine Corps forces as its disposal, thereby improving PLA expeditionary capabilities for contingencies throughout the South and East China Seas, as well as for operations against Taiwan.²³

Beijing is separately developing longer-ranging A2/AD capabilities. For instance, the DF-21D, an antiship ballistic missile dubbed the “carrier killer” by the Pentagon, could threaten U.S. surface assets at a range of 1,500 kilometers or farther.²⁴ From a broader perspective, China leads the world in missile development of all types, including both ballistic and cruise missiles. The ever-increasing range of these missiles strongly suggests that Beijing plans to eventually range the entire Pacific Ocean with conventional PGMs, effectively eliminating Washington’s sanctuary as its forces approach the Second Island Chain. Significantly, in early 2016, Xi changed the name of the PLA’s nuclear forces, the Second Artillery, to the PLA Rocket Force (PLARF) and elevated it to the service level. Xi further expanded the PLARF’s role into the conventional domain, once again signaling senior-most leadership’s deep interest in finding ways to increase the risk to opposing forces deploying to the theater of operations.

Another important aspect of PLA power projection is the establishment of bases across the globe and the signing of port access agreements along sea lines of communication. China only has one “official” base, which is located in the African nation of Djibouti alongside U.S. forces. It established the base to support PLAN counterpiracy deployments to the Gulf of Aden; these deployments began in 2008, ostensibly to protect China-bound shipping in the Strait of Hormuz. However, the PLAN has continued annual deployments long since the threat dissipated, clearly to take advantage of the opportunity to improve blue-water seafaring capabilities without raising major international concerns.

Rumors persist about other unofficial Chinese bases and places with port access agreements that could later become bases. China appears to have deep interest in many ports, including Haifa, Israel; Hambantota, Sri Lanka; Gwadar, Pakistan; Koh Kong, Cambodia; and Luganville, Vanuatu.²⁵ Regardless of what happens in these cases, it is often lost on Western analysts attempting to count Chinese bases that for all intents and purposes, Beijing already has air and naval bases on artificial islands throughout the South China Sea’s disputed Paracel and Spratly Islands. These militarized locations feature three runways that can accommodate military aircraft, along with hangars, antiship cruise missiles, and other military-related infrastructure. If Beijing can protect these sites during combat, it can extend the range of PLA weapon systems

²³ Dennis J. Blasko and Roderick Lee, “The Chinese Navy’s Marine Corps, Part 1: Expansion and Reorganization,” *China Brief*, Vol. 19, Issue No. 3, February 1, 2019. As of June 23, 2019: <https://jamestown.org/program/the-chinese-navys-marine-corps-part-1-expansion-and-reorganization>. Also see Franz-Stefan Gady, “China’s Navy Showcases New Type 055 Guided Missile Destroyer in Naval Parade,” *The Diplomat*, April 25, 2019. As of June 24, 2019: <https://thediplomat.com/2019/04/chinas-navy-showcases-new-type-055-guided-missile-destroyer-in-naval-parade>

²⁴ Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments of the People’s Republic of China*, Washington, D.C., May 2019.

²⁵ See Ron Kampeas, “U.S. Senate Warns Israel Against Letting China Run Haifa Port,” *Times of Israel*, June 14, 2019; Jonathan E. Hillman, “Game of Loans: How China Bought Hambantota,” *Center for Strategic and International Studies*, April 2, 2018; Gurmeet Kanwal, “Pakistan’s Gwadar Port: A New Naval Base in China’s String of Pearls in the Indo-Pacific,” *Center for Strategic and International Studies*, April 2, 2018; Charles Edel, “Hiding in Plain Sight: Chinese Expansion in Southeast Asia,” *War on the Rocks*, May 9, 2019; and David Wroe, “The Great Wharf from China: Raising Eyebrows Across the Pacific,” *Sydney Morning Herald*, April 11, 2018.

even farther. For example, if the H-6K bomber took off from the Paracel Islands (in May 2018, China landed an H-6K on Woody Island in the Paracels), then the PLAAF could range the entire South China Sea and possibly even all of Southeast Asia.²⁶

Finally, Beijing needs sufficient numbers of assets to deploy to theater in order to project power on a global, or even just regional, scale. Beijing's navy, coast guard, and fishing militia together "form the largest maritime force in the Indo-Pacific," according to the Pentagon. Beijing can also boast the largest number of air force and naval aviation assets in the region.²⁷ The PLA, in conjunction with its militia forces, can easily threaten and overwhelm regional opponents by "flooding the zone" of any conflict.

Cleansing the PLA

Much debate surrounds the intent behind Xi's ongoing anticorruption campaign. Xi's campaign is primarily a Maoist-style purge of Xi's political opponents,²⁸ but the anticorruption campaign undoubtedly also is an effective means of cleaning up actual graft within the PLA.²⁹ According to credible numbers from July 2018, Xi's campaign has swept up some 2 million individuals, and the number of investigations has been steadily rising by hundreds of thousands of new cases each year for the last several years.³⁰ Since coming to power in 2013, Xi has investigated, arrested, and/or sentenced at least 2,447 individuals.

The effect on the PLA has been nothing short of chilling. Under Deng Xiaoping, the PLA had more or less been left to its own devices, enabling corruption to become a pervasive feature of the military. In 1998, Jiang Zemin ordered the PLA to get out of the state-owned enterprise business and focus on improving its professionalism and combat capabilities, but he had very little leverage. His successor, Hu Jintao, lacked any real military experience, and PLA corruption flourished. With the rise of Xi, things changed quite dramatically. In 2014, Xi took the unprecedented steps of arresting former CMC vice chairman Xu Caihou for participating in a "cash for ranks" scheme.³¹ In 2015, Xi arrested another former CMC vice chairman, Guo Boxiong, on similar charges.³² The arrests were unprecedented because they marked the first time the PLA's highest-level retired officers faced corruption charges. In early 2016, as part of

²⁶ Asia Maritime Transparency Institute, "China Lands Bomber on First South China Sea Island," *Center for Strategic and International Studies*, May 18, 2018.

²⁷ Office of the Secretary of Defense, 2019.

²⁸ Derek Grossman and Michael S. Chase, "Why Xi is Purging the Chinese Military," *National Interest*, April 15, 2016.

²⁹ For an overview of the pervasive extent of corruption within the PLA before Xi taking the helm, see John Garnaut, "Rotting from Within," *Foreign Policy*, April 16, 2012. As of June 24, 2019: <https://foreignpolicy.com/2012/04/16/rotting-from-within>. For past RAND testimony related to Xi's anti-corruption campaign, see Timothy R. Heath, *The Consolidation of Political Power Under Xi Jinping: Implications for the PLA and Domestic Security Forces*, Santa Monica, Calif.: RAND Corporation, CT-503, 2019. As of June 26, 2019: <https://www.rand.org/pubs/testimonies/CT503.html>

³⁰ ChinaFile, "Visualizing China's Anti-Corruption Campaign," August 15, 2018. As of June 20, 2019: <http://www.chinafile.com/infographics/visualizing-chinas-anti-corruption-campaign>

³¹ Bo Zhiyue, "The Rise and Fall of Xu Caihou, China's Corrupt General," *The Diplomat*, March 18, 2015. As of June 19, 2019: <https://thediplomat.com/2015/03/the-rise-and-fall-of-xu-caihou-chinas-corrupt-general>

³² "Chinese Gen Guo Boxiong Sentenced to Life in Prison," *BBC*, July 25, 2016.

his military reforms, Xi created the “CMC Chairman Responsibility System,” which works through a disciplinary committee to monitor and punish corrupt PLA officials.³³ Most recently, in 2017, Xi pushed investigations against Joint Staff Department Chief Fang Fenghui and Political Work Department Director Zhang Yang, both sitting CMC members.³⁴

With these dramatic moves, Xi’s intent is not merely to demonstrate that he is unquestionably in charge. He has drawn a clear connection between maintaining unwavering PLA loyalty to the party and the competency of PLA commanders to lead the military into armed conflict. As Dennis J. Blasko has testified before this commission, the party slogan from 2014, called the “Three Whethers [三个能不能],” asks

(1) Whether our armed forces can constantly maintain the party’s absolute leadership, (2) whether they can fight victoriously when needed by the party and the people, and (3) whether commanders at all levels are competent to lead forces and command in war.³⁵

A key commentary on Three Whethers, cited by Blasko, further asks: “When the party and the people need it, can the army always uphold the absolute leadership of the party? Can you pull up and win the battle, can commanders at all levels take troops to fight and command war?”³⁶ Xi’s anticorruption campaign is about more than simply eliminating corruption (or eliminating Xi’s political opponents). It is designed to eliminate corruption *in order to* elevate military professionalism through developing core competencies. In 2014, Xi said “Fighting capacity is the sole criterion for testing the troops and military officers’ assessment, and promotion will focus on their ability of leading soldiers to fight and win battles.”³⁷ In the context of building a world-class PLA, which must exude the highest level of professionalism like the U.S. military, Xi’s anticorruption campaign plays a very prominent role.

Beating the United States to the Third Offset

Everything I have discussed up to this point contributes to PLA modernization, which, in Xi’s words, will be “basically completed” by 2035. In addition to these areas of development, Xi has also prioritized the acceleration of programs to develop disruptive military technologies that offer China asymmetric advantages against the United States. These technologies are being indigenously researched and developed to advance the construction of next-generation weapon systems, with the intent of leapfrogging Washington by midcentury. According to a recent report by former Deputy Secretary of Defense Robert O. Work, Beijing is attempting to achieve its own

³³ James Mulvenon, “The Cult of Xi and the Rise of the CMC Chairman Responsibility System,” *China Leadership Monitor*, Hoover Institution, Winter 2018, No. 55, January 23, 2018. As of June 20, 2019:

<https://www.hoover.org/research/cult-xi-and-rise-cmc-chairman-responsibility-system>

³⁴ Charles Clover, “Xi Takes Aim at Military in Anti-Graft Drive,” *Financial Times*, February 11, 2018. As of June 20, 2019: <https://www.ft.com/content/3dbaf32-0c2a-11e8-8eb7-42f857ea9f09>

³⁵ “破解一支军队所向披靡的脉动密码” [Crack an Army’s Password], *PLA Daily*, July 28, 2014, cited in Dennis J. Blasko, “PLA Weaknesses and Xi’s Concerns about PLA Capabilities,” testimony before the U.S.-China Economic and Security Review Commission, February 7, 2019.

³⁶ Blasko, 2019.

³⁷ “Xi’s Stresses CPC’s Absolute Leadership Over Army,” *China Daily*, November 2, 2014. As of June 19, 2019: http://www.chinadaily.com.cn/china/2014-11/02/content_18843109.htm

offset with “Chinese characteristics.”³⁸ I agree with this assessment, and it is the component of the PRC’s military strategy that Xi hopes will put the PLA over the edge in terms of becoming world-class—that is, eclipsing U.S. battlefield capabilities.

There are many different examples of disruptive military technologies, and China is developing virtually anything that might come to mind. Retired Senior Colonel Fan Gaoyue, who served as a director and chief specialist at China’s Academy of Military Science, noted that Beijing might be researching offsetting capabilities in aerospace, cyberspace, unmanned systems, and underwater warfare.³⁹ Other areas, at a minimum, include robotics, autonomous weapons, nanotechnology, 3-D printing, big data analytics, advanced manufacturing, AI, quantum computing, biotechnology, human-machine cooperation, cloud computing, and hypersonics. Beijing seeks to leverage its growing expertise in one or more of these or other areas to develop next-generation weapon systems that will challenge U.S. military capabilities by the 2050s. Xi, along with other senior Chinese leaders, believes that the next five to ten years will be the “decisive period” in U.S.-China technological competition.⁴⁰ Beijing almost certainly believes that the PLA successful intelligitization of warfare and system-of- systems construct will better position it to prevail in future armed conflicts.

Implications for the United States and the Indo-Pacific

Xi’s pursuit of a world-class PLA, if realized by 2050 in all the dimensions detailed here, will represent perhaps the most destabilizing geostrategic development of the 21st century. Although nuclear deterrence may remain undisturbed, steep advances in the PLA’s conventional capabilities, along with additional boosts to power projection and offsetting technologies, could, for the first time in modern history, pit the United States against a militarily superior adversary. The impact of this development will only be magnified if Washington allows its current technological and military edge over China to decline further. China is already militarily superior to all Indo-Pacific neighbors except, perhaps, Japan. China fielding a world-class military would not change the risk of going up against the PLA for the vast majority of Indo-Pacific residents.

However, there are three critical points the United States and the region must consider with the entrance of a world-class PLA onto the world stage. First, the PLA may conclude that it needs to test its improving capabilities to prove not only to Xi, but to itself, that its time has arrived.⁴¹ The PLA has virtually no real combat experience—especially in the air and maritime warfighting domains, where tomorrow’s conflicts are most likely to take place. Indeed, the last time China went to war was in 1979 against Vietnam; that conflict was predominantly, if not exclusively, a ground-forces engagement. The PLA would likely view Vietnam once again as the

³⁸ Robert O. Work and Greg Grant, “Beating the Americans at Their Own Game: An Offset Strategy with Chinese Characteristics,” *Center for a New American Security*, June 6, 2019.

³⁹ Fan Gaoyue, “A Chinese Perspective on the U.S. Third Offset and Possible Chinese Responses,” Study of Innovation and Technology in China, Institute on Global Conflict and Cooperation, University of California San Diego, January 3, 2017. As of June 20, 2019: <https://escholarship.org/uc/item/5wh2v87n>

⁴⁰ Tai Ming Cheung and Thomas Mahnken, eds., *The Gathering Pacific Storm: Emerging U.S.-China Strategic Competition in Defense Technological and Industrial Development*, Amherst, N.Y.: Cambria Press, 2018.

⁴¹ Derek Grossman, “Vietnam is the Chinese Military’s Preferred Warm-Up Fight,” *The Diplomat*, May 14, 2019.

ideal opponent for a limited war between now and 2035. China and Vietnam have the most overlapping sovereignty claims in the South China Sea, and Hanoi does not have a security alliance with the United States, meaning there would be no expectation of U.S. support. China could also test its power projection capabilities from its bases on the Paracel and Spratly Islands. A limited war would be eminently winnable from Beijing's perspective, and it would allow it to test some of the key capabilities it has been developing for many years. I certainly do not argue that the PLA is in the position to make such a decision, but if given a choice, it would prefer a limited exchange of this nature over beginning with a larger-scale armed conflict that would involve the United States, whether over Taiwan or the Senkaku-Diaoyu disputes involving Japan. There are simply some things that a military can only learn through real experience, and Xi's anticorruption campaign and improvements to the realism of PLA training can only build core competencies so far.⁴²

The second point is that as China modernizes the PLA, and particularly as it begins to rely on autonomous vehicles within a system-of-systems approach to warfare, Beijing is likely to perceive the risk of escalation to decline. In other words, attacking unmanned drones or the computer systems they rely upon will not pose an immediate risk to human life, and thus will be contextualized simply as robotic warfare. This has serious implications for the future of warfare that I believe are insufficiently explored, especially in the context of Chinese decisionmaking. As I wrote this statement, U.S.-Iran tensions were extremely high following Tehran's decision to shoot down a U.S. drone in the Strait of Hormuz. Although all of the facts are yet to be known, Iran almost certainly calculated that the destruction of an unmanned U.S. system was less provocative than attacking a human-piloted aircraft. Beijing is likely to face similar considerations.

Third, and finally, China's deep interest in AI has serious implications for the future of warfare against the PLA. Xi has noted his intent to make China the global center for AI by 2030.⁴³ In the coming years, China hopes to have mastered the stepping stone to achieving AI known as big data analytics, to control or even dominate the informationized warfare environment against great powers. Beijing is likely to then seek to attain a state of intelligentization as central to the PLA's ambitions as a world-class military. Although China is unlikely to allow AI to replace human operational commanders completely, its military leaders do seem to believe that it can act as a "digital staff officer," capable of gathering and presenting intelligence on the enemy, identifying enemy intent, and monitoring operations.⁴⁴ Such an arrangement might allow human commanders the ability to increase the speed and accuracy of their decisions, along the lines of the Defense Advanced Research Projects Agency's "Deep Green" program.⁴⁵ Of course, the trouble in all this is the notion that the human factor—common

⁴² Timothy R. Heath, "China's Untested Military Could Be A Force—Or A Flop," *Foreign Policy*, November 27, 2018. As of June 23, 2019: <https://foreignpolicy.com/2018/11/27/chinas-untested-military-could-be-a-force-or-a-flop>

⁴³ "Full Text of Xi Jinping's Report at the 19th CPC National Congress," 2017.

⁴⁴ Yuan Yi [袁艺], "人工智能将指挥未来战争？[Will AI Command Future Wars?]," 中国国防报 [*Defense Daily*], January 12, 2017. As of June 20, 2019: http://www.mod.gov.cn/jmsd/2017-01/12/content_4769771.htm

⁴⁵ "DARPA Commander's Aid: From OODA to Deep Green," *Defense Industry Daily*, June 3, 2008. As of June 20, 2019: <https://www.defenseindustrydaily.com/darpa-from-ooda-to-deep-green-03497>

sense, emotion, morality, and ethics—might be replaced by cold mathematical computations—increasing the likelihood for miscalculation and war escalation.

Recommendations for the U.S. Congress and Federal Government

Going forward, the U.S. Congress and the broader U.S. government might consider the following:

- **Prioritize predictive analysis—both unclassified and classified—on the disruptive technologies China is likely pursuing most aggressively, and determine appropriate countermeasures.** Although it is very challenging to examine Beijing’s next moves out to 2035, let alone to 2050, U.S. intelligence and defense analysts must strive to get a better handle on these trends. Doing so will improve the U.S. response, both in terms of offsetting technologies developed, and, perhaps more importantly, the overall formulation of a coherent military strategy against the PLA.
- **Improve understanding and targeting of future PLA “system-of-systems” constructs and reliance on automation.** If Beijing plans to rely on this approach in the future, the Department of Defense and Intelligence Community should actively research these concepts to support U.S. military exploitation of PLA vulnerabilities prior to and during warfare.
- **Encourage the Pentagon to communicate with the Chinese Ministry of Defense on the need to develop a code of conduct for automated warfare.** Such “rules of the road” already exist for certain interactions that Washington has with Beijing in contested areas. The two countries, for example, have negotiated and signed the Code for Unplanned Encounters at Sea for interactions between their forces at sea. These types of agreements could serve as a blueprint for future agreements.
- **Encourage a whole-of-government approach to working with U.S. allies and partners that will be impacted by China’s growing regional military power.** The National Security Strategy, National Defense Strategy, and the recently released Indo-Pacific Strategy all hit the right notes, but dedicated attention to the region—in the form of working across the diplomatic, intelligence, military, and economic spectrum—is absolutely necessary to demonstrate a sustained U.S. commitment to the Indo-Pacific.
- **Ensure the U.S. military retains the scientific, mathematical, and technological edge in growing U.S.-China competition.** Losing the edge may result in China achieving the next offset, not the United States. Determining which disruptive military technologies should be funded and at what level will remain an important role for Congress.