Understanding Risk in the Great Competition with China

Sarah Kirchberger, PhD

On Christmas Day 2018, during an awards ceremony for Chinese military industry leaders, retired People's Liberation Army (PLA) Major General Luo Yuan gave a speech discussing China's options for dealing with its main strategic rival, the United States of America. That speech soon made headlines because Luo, a deputy secretary-general of the Chinese Academy of Military Sciences, seemed to be advocating a preemptive attack on U.S. aircraft carriers as a way to shock the U.S. into retreat.[1]

During earlier parts of his speech, Luo suggested attacking the opponent's weak spots with China's own superior forces:

> [W]hen our soldiers are fighting, they should use our own strengths to attack the enemy's weak spots. Whatever the enemy fears for, we should attack! Wherever the enemy is weak, we will expand there! So, what exactly is the US afraid of?... I feel we have not done enough serious thinking and research on this question.... I am not an expert in this area, nor can I answer this question accurately myself. I do remember a saying by Mao Zedong though: "Imperialism is a paper tiger." So what are the characteristics of a paper tiger? Outwardly it looks strong, but it's weak on the inside; its appearance is severe, but it is devoid of substance. We don't know where their weaknesses are, but we do know where their strengths are. And if you puncture their strengths, just like when puncturing a paper window, the weaknesses will be revealed.

Luo further elaborated on the specifics of how a "puncturing of US strengths" could be conducted:

> Historical experience tells us that the United States is most afraid of people dying. We now have the DF-21D and the DF-26 missiles, these are aircraft carrier killers. If we sank one of their carriers, this would cause 5,000 casualties; if we sank two: 10,000 casualties—don't you think America would be afraid?[2]

Luo's suggestion does not necessarily represent the mainstream thinking among China's leadership. Nevertheless, such rhetoric coming from a seasoned military official signals a new low in the war of words that increasingly characterizes China–U.S. relations. If nothing else, Luo's ideas are a vivid example of the risk of escalation through miscalculation. Already in 2014, the influential navalist Zhang Wenmu of Beihang University had put forward the idea that China should adapt Vladimir Putin's hybrid strategy for occupying Crimea as a promising way to take Taiwan. He argued that China would certainly succeed because the collective West would not care enough to intervene.[3]

Though it remains difficult to assess how prevalent such ideas are, it would be dangerous to assume that they are shared only by a few rogue thinkers.[4] During the preceding decade, popular Chinese writings had increasingly featured aggressive statements toward the U.S. and questioned the international order shaped by it. Such publications, among them "China Can Say No," "Unhappy China," "China's Maritime Rights," "China Dream," and "Wolf Totem," typically emphasized Chinese grievances.

In 2011, in an insightful analysis of what he calls the "geopolitik turn" in Chinese politics, Christopher Hughes traced in all of these texts a "morbid fascination with the relationship between violence and power," notions of a Chinese "moral exceptionalism," and the idea that China asserting its sovereignty over territories such as Taiwan or the South China Sea (SCS) is "no more than a form of restorative justice." Consequently, "China's use of force and expansion is...always judged to be defensive," and if such notions were to become more influential, the result would be "an increasingly zero-sum approach to international politics."[5]

Challenges from Probing Behavior

Developments since Xi Jinping's rise to power in 2012 have largely borne out this analysis. The disruptive communication style adopted by Beijing's "Wolf Warrior" diplomats all over the world also appeared during the 2021 U.S.–China summit in Alaska when China's most senior foreign affairs official disregarded previously agreed rules on speaking time limits and berated his American hosts.

Rhetoric aside, a multitude of actions taken by China's military and paramilitary forces in the Western Pacific reveal a pattern of gray-zone activity that seems designed to disrupt the status quo. By conducting threatening actions below the threshold of military aggression on a steadily increasing scale and frequency, China seems determined to test the willingness and capacity of neighboring states and the U.S. to respond effectively. There is a risk that China could succeed in numbing foreign observers into indifference in the face of ever more transgressions, permanently shifting the boundaries of the "normal."

This is a method China shares with Russia and Iran, as Jakub J. Grygiel and A. Wess Mitchell observe in *The Unquiet Frontier: Rising Rivals, Vulnerable Allies, and the Crisis of American Power*. They note that "probing" behavior, defined by them as a "test aimed at gauging the opposing state's power and will to maintain security and influence over a region," seems to have become a tool used increasingly "by revisionist powers for pushing the existing boundaries of their influence."[6]

China's probing has consisted so far of air incursions into Taiwan's air defense identification zone (ADIZ) paired with exercises in the maritime space around Taiwan and in the SCS and also includes increased Maritime Militia activity around contested features in the South and East China Seas. The successful seizure of Scarborough Shoal from the Philippines in 2012 and the subsequent land reclamation and militarization of occupied Paracel and Spratly features can also be classified as "probing." From China's viewpoint, those attempts to create a new status were vastly successful.

The PLA derives a number of benefits from disruptive actions. Each air incursion into Taiwan's ADIZ not only exerts psychological pressure on Taiwan's public, but also provides valuable intelligence on terrain and on electronic signatures of Taiwanese defensive weapon and sensor systems. Further, by forcing the Republic of China (ROC) Air Force to intercept intruding aircraft, they are prematurely wearing down Taiwan's aging fighter aircraft fleet. The strain may already have been responsible for several accidents that led to the loss of pilots and aircraft.

Steadily enhanced pressure from China's Maritime Militia on the Senkaku Islands or on Philippine-occupied or Vietnamese-occupied reefs in the SCS has similar effects of combining intimidation tactics with intelligence collection and is similarly wearing down opponents' capacities to respond. The downside for the PLA is a heightened China-related threat perception among affected countries that may

yet lead to enhanced military spending and better readiness on their part and incentivizes them to balance China by cooperating more closely with the U.S.

China's Capacity to Shape the Global Playing Field

China's increasingly disruptive behavior has been accompanied by an exceptionally fast growth in military capability. Investments that have poured into China's military buildup for three decades have borne fruit and threaten to tilt the conventional military power balance in the Western Pacific in China's favor much faster than most analysts had previously anticipated.[7] Backed by an increasing capacity to cause harm, China's assertive actions signal its resolve to use that capacity when whatever Beijing defines as its "core interests" at any given time are threatened.

Meanwhile, China's ability to pressure the West has increased dramatically since the financial crisis of 2008. In a world that is characterized by interdependent markets and globalized supply chains, the Communist Party–led brand of Chinese state capitalism has not just been able to survive; it has thrived. Due to party-state control of the Chinese financial sector, bolstered by the PRC's large foreign reserves, and by following a state-capitalist approach, China was able to weather the financial crisis better than most and could even serve as an anchor of stability for other countries that were not so fortunate. This had a remarkable effect on the attitudes displayed by Chinese functionaries and diplomats abroad, who began to behave more assertively toward Western counterparts, and has bought China lasting leverage in Europe where its supportive role during the European debt crisis left a legacy, notably in Germany and Greece. It also has enhanced the attractiveness of the "Chinese Model of development" to some developing countries.

Making use of party-state control of strategic economic sectors, China nurtured its leading state-owned enterprises (SOEs) into industrial giants through a combination of subsidies and domestic protectionism while bolstering their worldwide business outreach activities financially and politically, including through its Belt and Road Initiative (BRI).[8] In port infrastructure investments such as the state-owned shipping giant COSCO's 67 percent stake in the port of Piraeus in Greece, according to the European Chamber of Commerce, a strategy of "vertical integration" is typically followed:

> Chinese shippers use ports built and run by SOEs (State-Owned Enterprises) using steel and cement provided by SOEs; they use vessels built by the newly created shipbuilding behemoth [...] using steel made by SOEs, which is provided using iron and coal from SOEs; all of which is financed by SOE banks.[9]

The BRI fulfills multiple functions for China's Grand Strategy of making the world secure for the Chinese Communist Party (CCP). It allows China to hedge against the threat of blockade, generates dependencies and political support within key regions and within the U.N., and helps to market the Chinese business and investment models as well as cyber and space technologies abroad while its infrastructure investment projects help to make inroads into NATO's own backyard.

All of this has led to a situation in which key U.S. allies in Europe and the Indo-Pacific have become intertwined economically with China as closely as or even more closely than they are with the U.S. This has created openings for authoritarian influencing campaigns, coercive diplomacy, and elite capture, while the relative openness of Western high-tech research has given the PLA easy access to military and dual-use technologies that would otherwise be unavailable.[10] The one-sided dependence of entire business sectors on access to the Chinese market imposes prohibitive costs on companies and political actors that are brave enough to risk political friction in their dealings with China. This increasingly calls into question the ability and willingness of some allies to choose sides in a scenario in which tensions between the U.S. and China escalate.

When seeing the chance to drive a wedge between the U.S. and its allies, China is keen to ensure that the West cannot unify to "gang up on China." At the same time, China is actively competing for influence with European and U.S. initiatives in Africa and the Middle East and North Africa (MENA) region, but increasingly also in South America, and is offering its surveillance technologies to non-democratic governments in an effort to check the spread of democratic values around the world—values that the CCP sees as an existential threat.[11]

As a result of these developments, the Western relationship with China has entered an age of uncertainty. Western leaders are facing a more complex and therefore arguably more challenging threat situation than they faced before 1989 in a world that was neatly bifurcated into opposing camps between which there was little economic exchange.

During the Cold War, the U.S. and the Soviet Union shared an understanding of the risk from mutually assured destruction (MAD); had a reasonably clear picture of each other's military capabilities, strategic intent, and non-negotiable red lines; and had established direct communication links as a mechanism to minimize the risk of accidental escalation. Today, the overall picture is far less clear. China's ability to present a different face to different allies makes it hard for Western leaders to form a unified situational awareness regarding the challenges posed by China, and this alone presents significant potential for miscalculation.[12] In addition, while a Beijing–Washington hotline similar to the U.S.–Russian communication link has existed since 2008, reports indicate that China has cut it off several times, and U.S. attempts to communicate through that channel have typically not been answered.[13]

In this context, a discussion of some military risk factors in the U.S.–China relationship is necessary. An escalation could occur not only through mishap or accidents, but also if China and the U.S. were drawn into a downward spiral and began to see conflict between them as ultimately inevitable. In such a situation, China could see resorting to a preemptive strike as a rational decision. More likely than that, however, would be accidental escalation due to miscalculation—for instance, if brinkmanship were to go wrong in one of the many hot spots where China and the U.S. compete over critical interests.

One key question is: Would nuclear deterrence put strong enough constraints in place to make scenarios of war through accidental escalation or through premeditated preemptive attack exceedingly unlikely? While it is not possible to provide any definite answers, thinking through the implications of various risk scenarios, including those that are deemed unlikely, is a necessity for the U.S., its allies, and the Chinese themselves: It is, after all, in the long-term interest of all sides *including China* to avoid a catastrophic war.

Can There Really Be War Between Two Nuclear-Armed Powers?

During the Cold War, nuclear deterrence was a decisive factor that constrained both sides' moves. Today, new technological developments have brought about shifts in the strategic balance that need to be factored into the old assumptions.

One such factor is the pace and quality of China's military modernization, which the Chairman of NATO's Military Committee, Air Chief Marshal Sir Stuart Peach, recently described as "shocking."[14] To some degree, this effort is intended to counter American arms programs that have long worried Chinese military experts: ballistic missile defense (BMD) and conventional prompt global strike (PGS). As Lora Saalman notes:

> Chinese analysts view PGS as part of a larger U.S. effort to achieve "absolute security," with BMD as the shield and PGS as the sword, such that Washington is able to act preemptively.... Chinese analysts tend to view U.S. PGS as a threat to Beijing's conventional and nuclear weapons systems, as well as its command and control centers.[15]

Notably, Chinese military commentators tend to view any U.S. program—whether real or only contemplated, whether funded or not, whether terminated or ongoing—as being factually in existence, and they react to it as a threat that requires adequate countermeasures. An abundance of technical Chinese articles dissecting PGS, for instance, have advocated that China give up on its "no first use" policy of never deploying nuclear weapons first; intensify the military use of space; enhance the resilience of its space infrastructures and global intelligence, surveillance, and reconnaissance (ISR) capabilities; and improve its space launch vehicles and offensive cyber capabilities.[16]

Being critical of American PGS does not preclude China from striving for similar capabilities itself, as Saalman also points out. China's diverse ballistic missile program has been described as the most active in the world, giving China the world's largest inventory of short-range and medium-range ballistic missiles, many of which can be either conventionally or nuclear armed. These form the backbone of China's version of a layered defense strategy, commonly known as anti-access/area denial or A2/AD, to deter foreign interventions in its near abroad. According to a recent study by the International Institute for Strategic Studies (IISS), about 95 percent of China's ballistic and cruise missiles (approximately 2,200 rockets) fall within the 500 km–5,500 km range prohibited by the Intermediate-Range Nuclear Forces (INF) treaty. This makes the prospects of China's joining a comparable arms control mechanism dim.[17]

Meanwhile, China is working on a full nuclear triad by developing an intercontinental-range submarine-launched ballistic missile, the JL-3, which reportedly can carry up to 10 independent warheads and is intended for China's next-generation nuclear-powered ballistic missile submarines (SSBNs). With an estimated range of 12,000 km, it would give China the option of targeting at least part of the continental U.S. from a bastion in the SCS. A first successful test firing took place on June 2, 2019.[18] At the same time, two recent studies based on satellite imagery analyses noted significant new construction activity of about 250 new ballistic missile silos in Gansu and Xinjiang provinces. This amounts to a tenfold expansion of the previously operational Chinese missile silo capacity. It also "exceeds the number of silo-based ICBMs operated by Russia, and constitutes more than half of the size of the entire US ICBM force," making it "the most extensive silo construction since the US and Soviet missile silo construction during the Cold War."[19] This was not the end of the story. In August 2021, U.S. intelligence agencies identified a third, similar-sized missile silo field under construction in Inner Mongolia and estimated that the three new silos would be able to field a total of 350 to 400 new ICBMs. With 10 warheads per DF-41 missile, this would amount to space for more than 4,000 nuclear warheads—*if* all silos were indeed used to house missiles rather than some being left empty as part of a shell game. This would exceed America's approximately 3,800 warheads, of which more than 2,400 are in storage. The actual number of warheads would be limited by China's available stockpile of fissile material. Experts estimate that at present, China has enough weapons-grade uranium and plutonium "for about 730 nuclear warheads without having to build new enrichment or reprocessing facilities."[20]

In addition, many Chinese military and dual-use programs, including the global SATNAV (satellite navigation) constellation BeiDou; other remote sensing and communication satellites such as Gaofen, Yaogan, Jilin, Tianlian, and Hainan; China's own BMD program; and hypersonic glide vehicles (the DF-ZF HGV was tested in 2014) would be able to contribute to a PGS capability over time. The commercial nanosatellite Jilin-1 constellation, for instance, aims "to have 60 satellites operational by 2020, and 138 satellites in service by 2030, which will ultimately make it possible to offer a 10-minute revisit capability anywhere in the world."[21] In the summer of 2020, Jilin-1's maker, Chang Guang Satellite Technology, posted several

high-resolution videos of U.S. airports on its Weibo channel and demonstrated the system's real-time ability to identify and track individual aircraft.[22]

Another remote-sensing constellation under development, the Hainan-1, is intended for all-weather non-stop ship identification in all areas between latitudes 30 degrees North and 30 degrees South, which includes the entire South China Sea. A Chinese research paper indicated that simulations have already yielded 95 percent accuracy in identifying ships larger than 30 meters in length, which is sufficient for most surface warships.[23]

When combined with the existing military remote-sensing constellations Gaofen and Yaogan and a global network of ground stations that is also under development, such systems would enable targeting updates for an intercontinental PGS system, and the small, cheap nanosatellites especially would add a layer of resilience through redundancy and the easy replacement of lost units.[24] "If the same ideas on preemption are applied to China's own PGS," notes Saalman, "then its nuclear posture may change, whether declared or not."[25]

To counter perceived threats to its land-based nuclear-tipped missiles, China has begun to work on a full nuclear triad and the significant expansion of its warhead inventory. Other key priorities are a drive to further enhance A2/AD capabilities to discourage interventions within China's near abroad, developing the maritime domain, and building a blue-water power projection capability. A further aim is to transform the PLA from a fully mechanized force into an "informationized" (networked) force and eventually a force that has adapted to the "intelligentization of warfare" and can take full advantage of militarily focused artificial intelligence (AI).[26]

The Impact of Emerging Technologies

China sees the emphasis on 4IR (fourth industrial revolution)[27] technologies in the military, especially AI, as a potential game-changer that could allow the PLA to leapfrog over some of its current deficiencies; ethical concerns regarding the safe use of AI in warfare do not seem to exist at all.[28] China fully embraces the potential of AI for improving the accuracy and lethality of its cruise missiles. According to an account of an August 2016 interview with Wang Changqing, Director of the General Design Department at the China Aerospace Science and Industry Corporation's Third Academy:

> "[O]ur future cruise missiles will have a very high level of artificial intelligence and automation," he said. "They will allow commanders to control them in a real-time manner, or to use a fire-and-forget mode, or even to add more tasks to in-flight missiles."
>
> Chinese engineers have researched the use of artificial intelligence in missiles for many years, and they are leading the world in this field, he said.[29]

AI is also a key enabler of China's "blue ocean information network," a vast surveillance infrastructure deployed in the South China Sea that consists of fixed and mobile sensor arrays, unmanned systems, and communication platforms interlinking with ships, aircraft, and unmanned aerial vehicles (UAVs) that aims to render the underwater domain transparent. If successful, it could compromise the stealth of U.S. nuclear attack submarines operating in that area.[30]

Another application of AI is intended to network hypersonic weapons into smart swarms for coordinated attacks in order to overwhelm missile defense through saturation attack. A study from the Beijing Institute of Technology titled "Network for Hypersonic UCAV [Unmanned Combat Aerial Vehicle] Swarms" seeks to multiply the power of hypersonic weapons by having them work together. Such swarms would be far more dangerous than individual hypersonic missiles, multiplying the power of high-speed weapons.[31]

One reason for China's willingness to embrace AI for offensive purposes in warfare is the problem of nuclear asymmetry. Beijing's

comparatively small nuclear arsenal makes concepts that neutralize an opponent's numerical advantage especially attractive. Writes Saalman:

> AI and autonomy…offer Beijing the long-term potential to disrupt Washington's traditional strengths. They open the door for swarm and other technologies that could overwhelm conventional and nuclear platforms that are larger, more cumbersome, and less agile. While China may be concerned about potential adversaries tracking its own nuclear platforms and systems, Beijing is just as likely to avail itself of these relatively inexpensive methods of disrupting US activities.[32]

The heavy reliance of American net-centric warfare on data links and space infrastructures for geolocation, communications, and C4ISR (command, control, communications, computers, intelligence, surveillance and reconnaissance) has not only acted as a force multiplier; as a side-effect, it has created vulnerabilities that can be exploited through asymmetric attacks. Having analyzed American vulnerabilities, the PLA is exploring asymmetric attack vectors against the nodes that enable a networked system.

Here China is following a holistic approach of "unrestricted" (total) warfare encompassing all domains.[33] Bringing down a military network by jamming data links, blinding sensors, spoofing or otherwise disabling SATNAV and SATCOM (satellite communication) satellites, or physically destroying key platforms that are relied upon by other units (for instance, for area defense)—in other words, disrupting the system through cyber, electronic warfare, and kinetic attacks—is an approach long favored by PLA thinkers. In a study of PLA writings on "system destruction warfare," Jeffrey Engstrom summarizes the concept:

> [T]he PLA's very theory of victory in modern warfare recognizes *system destruction warfare* as the current method of modern war fighting. Under this theory, warfare is no longer centered on the annihilation of enemy forces on the battlefield. Rather, it is won by the belligerent that can disrupt, paralyze, or destroy the operational capability of the enemy's operational system. This can be achieved through kinetic and nonkinetic strikes against key points and nodes while simultaneously employing a more robust, capable, and adaptable operational system of its own.[34]

At the same time, psychological and information warfare aimed at undermining an opponent's ability to interpret the facts correctly, arrive at a reliable situational awareness, and maintain societal resolve to resist an opponent in the face of an unclear threat situation is explicitly part of such an approach. So is "legal warfare" employed to delegitimize the opponent's actions and win international support for one's own position.

Though by no means new, information and psychological warfare has gained new traction in the age of social media. The openness of democratic societies offers multiple vectors for attacking societal cohesion, disrupting election procedures, or hindering the formation of political will in other ways, while cyberattacks on critical infrastructures have the potential to disrupt and wear down societies. Depending on the concrete circumstances, asymmetric "system destruction warfare" might be employed as a first salvo, in particular if it were possible to disguise the initial attack or make attribution to a particular perpetrator difficult.

How High Is the Risk of a Conventional First Strike?

Jon Solomon has emphasized that naval forces have to confront the risk of possibly falling victim to a devastating first salvo. This might be fired by an enemy if he is certain that war is unavoidable. In such a case, the opponent would expect his own ISR assets to degrade sharply once the fighting starts, knowing that the "maritime picture will never be as

accurate and comprehensive at any later point in a conflict as it is during peacetime's waning moments." The awareness of a fast-closing window of opportunity for accurate targeting of capital ships might induce such an attacker to try to "maximally neutralize a defender's higher campaign-value fleet assets" as long as he still sees the chance to do so.[35]

Another key question is: How could a war that began with a conventional first strike remain conventional without escalating to nuclear war if it turns into a protracted fight? Depending on just how disastrous the prospect of losing would seem to those in power, it is not farfetched to consider that the danger of losing might tempt that side into using the threat of nuclear coercion to avoid such an outcome. Even though China officially adheres to a "no first use" policy, that is just a declaration of intent that could be changed at any time and should not be taken as a guarantee.[36]

Some analysts do not consider a nuclear escalation scenario when discussing conventional war between China and the U.S., deeming it far too unlikely, but that might be unwise.[37] As a RAND study cautioned in 2016, "confidence that an adversary will comply with one's script and, more generally, that the results of a decision can be controlled are tantamount to assuming away risk."[38] Even if the U.S. were willing to accept defeat on the battlefield at the hands of China without ever resorting to the threat of using its far superior nuclear arsenal, the assumption that playing the nuclear card would not even be contemplated by China's leaders in a desperate situation is just such an expectation of the CCP's adhering to a script. Mao's contempt for nuclear weapons as "paper tigers" is a case in point.

For the CCP, the risk of losing a conflict with the U.S. that China started might create such a harsh domestic backlash that accepting military defeat might make the CCP's position at home precarious. Given the CCP's record of defending its power position by all means possible, Beijing might very well resort to nuclear brinkmanship. Both sides in such a situation might try to find ways to employ the threat potential of their nuclear weapons to avoid defeat while still trying to contain the risk of full-blown nuclear war—but the road to a potentially catastrophic escalation would be open, and whether an attempt to contain it would be successful is uncertain.

In one hypothetical scenario of a future great-power conflict between the U.S. and a China–Russia coalition that was developed by the authors of the 2015 sci-fi novel *Ghost Fleet*,[39] the risk of a nuclear escalation was artfully eliminated from the equation through a Chinese–Russian first strike that neutralized the U.S. nuclear arsenal. This plot ploy allows for a plausible scenario in which two nuclear-armed opponents engage in a full-blown, kinetic, protracted, and yet purely conventional great-power conflict.

In the book, China and Russia have formed a secret alliance and have prepared the ground for a preemptive strike against the U.S. to take Hawaii. To achieve this, the attackers use a novel, secretly developed detection technology from space to target all U.S. nuclear-powered capital warships, including all SSBNs, simultaneously while carefully placed cyber weapons paralyze the land-based and air-based nuclear forces. This leaves the U.S. unable to resort to nuclear retaliation despite having absorbed devastating losses. In that Pearl Harbor 2.0–type scenario, Hawaii is invaded and occupied.

The book's plot sketches out how the conflict continues as a conventional war in which the U.S. finds itself fighting as the underdog and China and Russia, having achieved their limited war aims, refrain from further attacking the U.S. mainland. The rest of the novel describes the process of reconquering Hawaii through guerilla warfare, tactical ingenuity, and acts of individual heroism while portraying the use of emerging technologies including sophisticated cyber weapons and autonomous systems deployed in swarm formations. The story ends with an uneasy truce.

It is worthwhile to ask what the necessary preconditions for such a *Ghost Fleet*–style first strike scenario would be. The American defenders in that case would need to have

overlooked—for several years—the forming of a secret Russian–Chinese military alliance; the successful development and deployment of a novel technology that enabled the detection and targeting of nuclear reactors from space, even aboard submerged strategic submarines; and the long-term infiltration of their own critical cyber networks through the hardware and software supply chain. A series of striking intelligence failures and massive deficiencies in early warning on the part of the U.S. would have been necessary for such a bold, high-risk preemptive strike to be secretly planned and successfully executed. It can be inferred that in the absence of such a string of failures, the odds of success would have been low—probably too low for a rational actor even to contemplate.

In other words, unerring vigilance, regular war-gaming, awareness of one's own vulnerabilities, recognition of unlikely worst-case scenarios, incessant monitoring of all military and paramilitary activities, analyses of scientific developments in military-technological and dual-use fields and of diplomatic developments worldwide would go a long way toward averting any scenarios of this type.

What Might China Actually Be Planning to Do?

One indicator that China is trying to hedge against the risk of a crippling first strike is the emphasis placed on building much larger numbers of individual weapon systems than ever before. This could be to ensure the ability not just to overwhelm an opponent, but also to create sufficient redundancy in the face of heavy losses. One particularly striking example of this is the enlargement of the PLA Navy (PLAN) fleet.

The modernization of the PLA that started in the mid-1990s was long hampered by the Western arms embargo, but it has gained unprecedented momentum under Xi Jinping. The scale and pace are highly unusual and have enabled China to replace its motley array of old and obsolete hulls with large series of far more modern and capable warships that are also significantly larger and more seaworthy overall.

- In the largest peacetime naval buildup since at least the 1930s, China has been producing warships as if it were already at war, with shipyards reportedly working around the clock seven days per week, sometimes completing hulls ahead of schedule.[40]

- An entirely new class of 72 corvettes was commissioned by the PLAN within just eight years alongside numerous new frigates, destroyers, submarines, amphibious assault vessels, and missile catamarans.

- Between 2014 and 2018, measured in tons of steel, China has added the equivalent of the entire Royal Navy (Europe's largest) to its already large navy. Similarly, the Chinese Coast Guard has been massively enlarged and is now the world's largest according to tonnage.[41]

- The past decade has already seen the addition of two aircraft carriers to the fleet, and more are in the pipeline. It is unclear just how many aircraft carrier groups China is planning to operate, but a retired military official has indicated that "at least six aircraft carriers" would be needed to "break through the first island chain involving South Korea, Japan, Taiwan island and the Philippines to achieve command of the sea" and that the PLAN would need "about 10 more bases for the six aircraft carriers...[h]opefully...in every continent."[42] The opposite trend is the norm in Western countries, where naval programs typically suffer from cost overruns, cuts, and significant delays.

China's huge buildup has not been accompanied by any serious attempts to defuse regional worries through strategic communication—for instance, through transparency and other trust-building measures. As with the land reclamation and island militarization frenzy in the South China Sea that China long denied, Beijing's intentions regarding its arms

programs are typically not declared openly until irrefutable evidence exists, and details remain hard to access.

The pace of China's fleet enlargement has already allowed the PLAN to surpass the number of hulls in active service with the U.S. Navy while in the United States, the coming decade has been labeled the "Terrible 20s" because it will be characterized by an impending shortage of materiel as a result of failures in procurement planning:

> Fleets of ships, aircraft, vehicles, and other equipment are reaching the end of their service lives, hitting the edge of their upgrade limits, and losing combat relevance. As great-power competition accelerates, the United States is offering a free and open window of opportunity and advantage to its adversaries. Unless policymakers take concrete steps now, defense leaders will continue America's sleepwalk into strategic insolvency and its consequences. The aptly named "Terrible 20s" have arrived.[43]

Tanner Greer has elaborated on this theme by emphasizing the danger of inviting attack:

> In the mid 2020s the United States will be struggling to pay the Pentagon's "modernization crunch." *The Navy, Marine Corps, and Air Force will be midway through a transition to a new, counter-China force structure.* The number of attack submarines and stealth bombers that the United States can put in the field will be at an absolute low.
>
> It is at this moment we project the PLA will be capable of executing a cross straits invasion.
>
> This does not make conflict inevitable. But *if* the Chinese have concluded that military means are the only way to bring about Taiwan's integration into the People's Republic of China, Beijing's leaders will soon face powerful pressure to escalate towards war. Waiting until the 2030s or 2040s to sabre rattle is to wait for the U.S. military's counter-China modernization and procurement programs to run their course. There will be a terrific temptation to "resolve" the problem before these programs have been implemented.[44]

Moreover, projected U.S. capability gaps are not the only reason why the 2020s have been labeled a "decade of concern." A thought experiment conducted by the retired U.S. Navy Captain James E. Fanell, a former Director of Naval Intelligence, Pacific Fleet, supposes that Xi Jinping aims for China to have accomplished the successful integration of Taiwan at the latest by 2049 in time for the PRC's centenary. By that time, if the great celebration is to be a festive affair attended by international dignitaries, any military and political fallout from an attack on Taiwan would need to have subsided. Having learned from the world's reaction to the 1989 Tiananmen massacre, the hypothesis goes, Beijing likely concluded that the world needs about 20 years to forgive and forget—as the widespread international participation in the 2008 Beijing Olympics showed. Meanwhile, suppressing potential insurgencies on Taiwan might also take several years.[45]

If such a timetable is indeed in existence, the implication would be that this decade is a particularly tempting time in which to attempt a military change in the Taiwan Strait, and impending U.S. capability gaps during the 2020s could enhance this appeal.

Such sobering thought experiments can help to develop an awareness of how Western shortcomings might be seen by Beijing as a window of opportunity that could make an attempt on Taiwan seem tempting enough to face the risk of escalation rather than missing the chance once and for all. This means that the current situation calls for extreme watchfulness, clear signaling, and the enhancement of deterrence by all necessary means to ensure that it does not fail. Taiwan itself plays a key

role in this, as the most effective deterrence would be Taiwan's ability to defend itself.

Worryingly, RAND analyst David Ochmanek recently reported that U.S. war-gaming exercises simulating an attack on Taiwan over the years have consistently indicated that the U.S. would lose if it followed its standard approach and that American attempts to counter Chinese military advances were still falling short of the required goal. Ochmanek attributes this to "attention deficit disorder," a result of concentrating on counterterrorism and counterinsurgency wars for the past two decades.[46]

However, a recent Pentagon war game in which U.S. forces changed their approach and integrated emerging technologies into a changed posture yielded decidedly more promising results. This time, "a more defensive and dispersed posture less reliant on large, vulnerable bases, ports and aircraft carriers" was adopted. To make the posture more resilient, this strategy employed "large numbers of long-range, mobile strike systems, to include anti-ship cruise missile batteries, mobile rocket artillery systems, unmanned mini-submarines, mines and robust surface-to-air missile batteries for air defense," while focusing strongly on "surveillance and reconnaissance capabilities for both early warning and accurate intelligence to enable quicker decisions by U.S. policymakers, and a more capable command-and-control system to coordinate the actions of more dispersed forces." In that particular war game, the dispersed, resilient U.S. posture reportedly dissuaded the opponent from risking an attack in the first place.[47]

How Can Risk Be Mitigated?

Navigating the challenges of the 2020s and managing the military risk ensuing from China's rise and increasingly assertive stance will require vigilance and wisdom. If history can be seen as a path-dependent process that is shaped by the interactions of all parties, it is important for the West to get its part of the interaction right.

As the experiences of Pentagon war games show, there is a strong necessity to enhance the state of readiness; improve early warning and intelligence (as well as intelligence sharing among allies); create redundancies in key military systems and weapon platforms; develop resilient postures relying on dispersed rather than concentrated forces; strengthen industry and logistic capabilities; enhance the resilience of critical infrastructures; and—above all—bolster threatened allies' abilities to defend themselves. The aim should be to eliminate as many attack vectors as possible.

Such an approach would have the added benefit of signaling resolve and demonstrating the ability to adapt. It would counter the other side's misperceptions of an irreversible Western decline.

The current dynamic calls for close cooperation among all powers that have a stake in maintaining the rules-based international order and deterring China from risking military adventurism. To be effective, such a Western approach needs a combination of credible capacity-building, clearly communicated strategic intentions and priorities, and measured yet determined reactions to individual rogue actions that are aimed at slowly hollowing out the status quo.

Allies should use different countries' experiences, best practices, capabilities, and strengths to create a sum that is larger than its parts. The goal should be to signal to China's military planners and political leadership the costs and dangers of engaging in brinkmanship while at the same time pointing out a possible way to peaceful coexistence with the large community of democratic nations—if and when China's leaders drop their threatening behavior and adopt a more reasonable path.

It is ultimately not in China's interest to challenge the U.S. militarily as long as China cannot be assured of victory. Risking a humiliating defeat would endanger CCP rule within China and would certainly disrupt China's economic growth, which still depends on exchanges with the outside world. The West therefore needs to make sure that China can never be certain of victory.

Endnotes

1. See Jamie Seidel, "'Sink Two Aircraft Carriers': Chinese Admiral's Chilling Recipe to Dominate the South China Sea," News.com.au, January 2, 2019, https://www.news.com.au/technology/innovation/military/sink-two-aircraft-carriers-chinese-admirals-chilling-recipie-to-dominate-the-south-china-sea/news-story/aaa8c33d57da62e7d5e28e791aa26e0f (accessed July 4, 2021).
2. "Major General Luo's Speech at the 2018 Military Industry Awards Ceremony and Innovation Summit," Shenzhen, December 20, 2018, https://www.kunlunce.com/ssjj/guojipinglun/2018-12-25/130147.html (accessed July 23, 2021). Trans. Sarah Kirchberger. See also J. D. Simkins, "'We'll See How Frightened America Is'—Chinese Admiral Says Sinking US Carriers Key to Dominating South China Sea," *Navy Times*, January 4, 2019, https://www.navytimes.com/news/your-navy/2019/01/04/well-see-how-frightened-america-is-chinese-admiral-says-sinking-us-carriers-key-to-dominating-south-china-sea/ (accessed July 21, 2021).
3. Lyle J. Goldstein, "Get Ready: China Could Pull a 'Crimea' in Asia," *The National Interest*, April 11, 2015, https://nationalinterest.org/feature/get-ready-will-china-pull-crimea-asia-12605 (accessed July 4, 2021). For the full text of Zhang's essay, see Zhang Wenmu, "The World Significance of the Events in Ukraine and Its Warning to China," December 28, 2014, http://www.guancha.cn/ZhangWenMu/2014_12_28_304621.shtml (accessed July 21, 2021).
4. See the sobering examples in Orianna Skylar Mastro, "The Taiwan Temptation: Why Beijing Might Resort to Force," *Foreign Affairs*, July/August 2021, pp. 58–67, https://www.foreignaffairs.com/articles/china/2021-06-03/china-taiwan-war-temptation (accessed September 11, 2021).
5. Christopher Hughes, "Reclassifying Chinese Nationalism: The Geopolitik Turn," *Journal of Contemporary China*, Vol. 20, No. 71 (2011), pp. 601–620.
6. Jakub J. Grygiel and A. Wess Mitchell, *The Unquiet Frontier: Rising Rivals, Vulnerable Allies, and the Crisis of American Power* (Princeton and Oxford: Princeton University Press, 2016), pp. 43– 44.
7. Sarah Kirchberger and Johannes Mohr, "China's Defence Industry," Chapter 3 in *The Economics of the Global Defence Industry*, ed. Keith Hartley and Jean Belin (London and New York: Routledge, 2019), pp. 35–68.
8. The World Bank, "Belt and Road Initiative," *Brief*, March 29, 2018, https://www.worldbank.org/en/topic/regional-integration/brief/belt-and-road-initiative (accessed July 4, 2021).
9. Erik Kravets, "Sea Change: Can the E.U. Reverse Its Declining Fortunes—and the Growing Influence of China and Russia?" *The Maritime Executive*, June 7, 2021, https://maritime-executive.com/magazine/sea-change (accessed July 4, 2021).
10. Alex Joske, "Picking Flowers, Making Honey: The Chinese Military's Collaboration with Foreign Universities," Australian Strategic Policy Institute, International Cyber Policy Center *Policy Brief*, Report No. 10/2018, October 2018, https://s3-ap-southeast-2.amazonaws.com/ad-aspi/2018-10/Picking%20flowers%2C%20making%20honey_0.pdf (accessed July 4, 2021).
11. "Document 9: A ChinaFile Translation: How Much Is a Hardline Party Directive Shaping China's Current Political Climate?" *ChinaFile*, November 8, 2013, https://www.chinafile.com/document-9-chinafile-translation (accessed July 4, 2021).
12. Hans Binnendijk, Sarah Kirchberger, James P. Danoy, Franklin D. Kramer, Connor McPartland, Christopher Skaluba, Clementine G. Starling, and Didi Kirsten Tatlow, *The China Plan: A Transatlantic Blueprint for Strategic Competition*, Atlantic Council, Scowcroft Center, March 2021, https://www.atlanticcouncil.org/wp-content/uploads/2021/03/The-China-Plan-A-Transatlantic-Blueprint.pdf (accessed July 4, 2021).
13. David Brunnstrom and Michael Martina, "Strategic Clarity on Taiwan Policy Carries 'Significant Downsides'—U.S.," Reuters, May 4, 2021, https://www.reuters.com/world/asia-pacific/significant-downsides-strategic-clarity-over-taiwan-us-2021-05-04/ (accessed July 4, 2021).
14. Helen Warrell and Michael Peel, "Senior Nato Officer Warns of China's 'Shocking' Military Advances," *Financial Times*, June 25, 2021, https://www.ft.com/content/8a0b3975-1938-4815-af3b-22b5d3e6aca4 (accessed July 4, 2021).
15. Lora Saalman, "Prompt Global Strike: China and the Spear," U.S. Department of Defense, Daniel K. Inouye Asia-Pacific Center for Security Studies, April 2014, p. 1, https://apcss.org/wp-content/uploads/2014/04/APCSS_Saalman_PGS_China_Apr2014.pdf (accessed July 5, 2021).
16. Cf., for example, Ningbo Yuwen and Liwen Tang, "Discussion and Inspirations About Prompt Global Strike of the US," in *Journal of the Academy of Equipment Command & Technology*, Vol. 22, No. 3 (June 2011), pp. 58–61.
17. Mike Yeo, "China Could Lose 95% of Ballistic, Cruise Missiles Under Strategic Arms Control Pact, Says New Analysis," *Defense News*, June 5, 2020, https://www.defensenews.com/global/asia-pacific/2020/06/05/china-could-lose-95-of-ballistic-cruise-missiles-under-strategic-arms-control-pact-says-new-analysis (accessed July 4, 2021).
18. Dylan Malyasov, "New Chinese Submarine-Launched Ballistic Missile Spotted on Test in the Bohai Bay," Defence Blog, June 2, 2019, https://defence-blog.com/new-chinese-submarine-launched-ballistic-missile-spotted-on-test-in-the-bohai-bay/ (accessed July 3, 2021).

19. Hans M. Kristensen, "China's Expanding Missile Training Area: More Silos, Tunnels, and Support Facilities," Federation of American Scientists, Strategic Security Blog, February 24, 2021, https://fas.org/blogs/security/2021/02/plarf-jilantai-expansion (accessed July 3, 2021), and Matt Korda and Hans Kristensen, "China Is Building a Second Nuclear Missile Silo Field," Federation of American Scientists, Strategic Security Blog, July 26, 2021, https://fas.org/blogs/security/2021/07/china-is-building-a-second-nuclear-missile-silo-field/ (accessed August 5, 2021).
20. Bill Gertz, "Exclusive: China Building Third Missile Field for Hundreds of New ICBMs," *The Washington Times*, August 12, 2021, https://www.washingtontimes.com/news/2021/aug/12/china-engaged-breathtaking-nuclear-breakout-us-str/ (accessed September 11, 2021), and Malcolm Davis, "China Military Watch," Australian Strategic Policy Institute, *The Strategi*st, August 20, 2021, https://www.aspistrategist.org.au/china-military-watch-10/ (accessed September 11, 2021).
21. Ma Si and Liu Mingtai, "Jilin Group Sets Goal of Putting 60 Satellites in Orbit by 2020," *China Daily*, updated March 28, 2017, https://www.chinadaily.com.cn/newsrepublic/2017-03/28/content_28714354.htm (accessed July 5, 2021).
22. Chang Guang Satellite Technology Co., Ltd., official Weibo channel, https://m.weibo.cn/u/5838191069 (accessed July 21, 2021).
23. L. Wang, G. Q. Li, X. M. Li, and T. L. Yang, "Design of Hainan Satellite Constellation and Applications for Ocean Observations," in IOP Conference Series: Earth and Environmental Science, Vol. 502, *Proceedings of the First China Digital Earth Conference*, November 18–20, 2019, Beijing, China, p. [5], https://iopscience.iop.org/article/10.1088/1755-1315/502/1/012002/pdf (accessed July 5, 2021), and Guo Silu, "Hainan Satellite Constellation System Provides Shield for South China Sea," China Military Online, January 3, 2018, http://eng.chinamil.com.cn/view/2018-01/03/content_7894167.htm (accessed July 5, 2021).
24. Rear Admiral Monty Khanna, "Get Ready for the Next RMA at Sea," U.S. Naval Institute *Proceedings*, Vol. 146/1/1,403 (January 2020), https://www.usni.org/magazines/proceedings/2020/january/get-ready-next-rma-sea (accessed July 5, 2021).
25. Saalman, "Prompt Global Strike: China and the Spear."
26. Tate Nurkin and Ryo Hinata-Yamaguchi, "Emerging Technologies and the Future of US–Japan Defense Collaboration," Atlantic Council, Scowcroft Center for Strategy and Security, April 2020, p. 7, https://www.atlanticcouncil.org/wp-content/uploads/2020/04/Emerging-Technologies-and-the-Future-of-US-Japan-Defense-Collaboration.pdf (accessed July 5, 2021).
27. For an overview of 4IR, see World Economic Forum, "Fourth Industrial Revolution," https://www.weforum.org/focus/fourth-industrial-revolution (accessed July 5, 2021).
28. Elsa Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolution, and China's Future Military Power*, Center for a New American Security, November 2017, p. 6, https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/Battlefield-Singularity-November-2017.pdf?mtime=20171129235805&focal=none (accessed July 5, 2021).
29. Zhao Lei, "Nation's Next Generation of Missiles to Be Highly Flexible," *China Daily*, updated August 19, 2016, https://usa.chinadaily.com.cn/china/2016-08/19/content_26538878.htm (accessed July 5, 2021).
30. Center for Strategic and International Studies, Asia Maritime Transparency Initiative, "Exploring China's Unmanned Ocean Network," June 16, 2020, https://amti.csis.org/exploring-chinas-unmanned-ocean-network/ (accessed July 5, 2021); DM Chan, "China Launches Drones to Monitor South China Sea," *Asia Times*, September 12, 2019, https://asiatimes.com/2019/09/china-launches-drones-to-monitor-south-china-sea/ (accessed July 5, 2021); Jun Wang et al., "Design and Realization of Underwater Environment Real-time Monitoring System for Ocean Observatory Network," *Journal of Zhejiang University (Engineering Science)*, Vol. 50, No. 2 (February 2016), pp. 193–200; and Su Zhen-Dong, Liu Fan, Yang Rui-Ping, and Wang Fei-Yue, "Architecture of Marine Environmental Parallel Monitoring System Based on the Lanhai Information Network," *Acta Automatica Sinica*, Vol. 46, No. 8 (August 2020), pp. 1582–1591.
31. Shixun Luo, Zhongshan Zhang, Shuai Wang, Shuo Zhang, Jibo Dai, Xiangyuan Bu, and Jiangping An, "Network for Hypersonic UCAV Swarms," *Science China Information Sciences*, Vol. 63, Issue 4 (April 2020), Article No. 140311, http://scis.scichina.com/en/2020/140311.pdf (accessed July 5, 2021), and David Hambling, "China Developing Hypersonic Swarms to Overwhelm Missile Defenses," *Forbes*, March 18, 2021, https://www.forbes.com/sites/davidhambling/2021/03/18/china-developing-hypersonic-swarms-to-overwhelm-missile-defenses/ (accessed July 5, 2021).
32. Lora Saalman, "Fear of False Negatives: AI and China's Nuclear Posture," *Bulletin of the Atomic Scientists*, April 24, 2018, https://thebulletin.org/2018/04/fear-of-false-negatives-ai-and-chinas-nuclear-posture/ (accessed July 5, 2021).
33. Col. Qiao Liang and Col. Wang Xiangsui, *Unrestricted Warfare: Translated from the Original People's Liberation Army Documents* (Brattleboro, VT: Echo Point Books & Media, 2015). See also Qiao Liang and Wang Xiangsui, *Unretsricted Warfare* (Beijing: PLA Literature and Arts Publishing House, February 1999), https://www.c4i.org/unrestricted.pdf (accessed July 5, 2021).
34. Jeffrey Engstrom, *Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare* (Santa Monica, CA: RAND Corporation, 2018), p. iii, https://www.rand.org/pubs/research_reports/RR1708.html (accessed July 4, 2021). Emphasis in original.

35. Jon Solomon, "Parrying the 21st Century First Salvo," Center for International Maritime Security *Capability Analysis*, July 7, 2016, https://cimsec.org/parrying-21st-century-first-salvo/ (accessed July 5, 2021).
36. Peter Pry, "China's 'No First Use' Nuclear Fiction," *The Hill*, June 24, 2020, https://thehill.com/opinion/international/502503-chinas-no-first-use-nuclear-fiction (accessed July 4, 2021).
37. Cf. David C. Gompert, Astrid Stuth Cevallos, and Cristina L. Garafola, *War with China: Thinking Through the Unthinkable* (Santa Monica, CA: RAND Corporation, 2016), p. ix, https://www.rand.org/pubs/research_reports/RR1140.html (accessed July 4, 2021).
38. David C. Gompert, Hans Binnendijk, and Bonny Lin, *Blinders, Blunders, and Wars: What America and China Can Learn* (Santa Monica, CA: RAND Corporation, 2014), p. 192, https://www.rand.org/pubs/research_reports/RR768.html (accessed July 4, 2021).
39. P. W. Singer and August Cole, *Ghost Fleet: A Novel of the Next World War* (Boston: Houghton Mifflin Harcourt, 2015).
40. David Lague and Benjamin Kang Lim, "The China Challenge: Ruling the Waves," Reuters, April 30, 2019, https://www.reuters.com/investigates/special-report/china-army-navy/ (accessed July 21, 2021), and Vinayak Bhat, "High-Speed Production: Chinese Navy Built 83 Ships in Just Eight Years," *The Print*, September 20, 2017, https://theprint.in/defence/chinese-navy-built-83-ships-8-years/10416/ (accessed July 4, 2021).
41. Nick Childs and Tom Waldwyn, "China's Naval Shipbuilding: Delivering on Its Ambition in a Big Way," International Institute for Strategic Studies, Military Balance Blog, May 1, 2018, https://www.iiss.org/blogs/military-balance/2018/05/china-naval-shipbuilding (accessed July 4, 2021), and Lyle J. Morris, "Blunt Defenders of Sovereignty—The Rise of Coast Guards in East and Southeast Asia," *Naval War College Review*, Vol. 70, No. 2 (Spring 2017), Article 5, pp. 79 and 84, https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1016&context=nwc-review (accessed July 4, 2021).
42. Liu Xin and Liu Caiyu, "China Eyes Building More Aircraft Carriers," *Global Times*, April 20, 2017, http://www.globaltimes.cn/content/1043455.shtml (accessed July 22, 2021).
43. Mackenzie Eaglen with Hallie Coyne, *The 2020s Tri-Service Modernization Crunch* (Washington: American Enterprise Institute for Public Policy Research, March 2021), p. 1, https://www.aei.org/wp-content/uploads/2021/03/The-2020s-Tri-Service-Modernization-Crunch-1.pdf?x91208 (accessed July 4, 2021).
44. Tanner Greer, "Welcome to the Decade of Concern," The Scholar's Stage Blog, April 1, 2021, https://scholars-stage.blogspot.com/2021/04/welcome-to-decade-of-concern.html (accessed July 22, 2021). Emphasis in original.
45. James E. Fanell, "Now Hear This—The Clock Is Ticking in China: The Decade of Concern Has Begun," U.S. Naval Institute *Proceedings*, Vol. 143/10/1,376 (October 2017), pp. 10–11.
46. James Kitfield, "'We're Going to Lose Fast': U.S. Air Force Held a War Game that Started with a Chinese Biological Attack," Yahoo News, March 10, 2021, https://news.yahoo.com/were-going-to-lose-fast-us-air-force-held-a-war-game-that-started-with-a-chinese-biological-attack-170003936.html (accessed July 4, 2021).
47. Ibid.