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Why China is primed to win a technological arms race with America

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Invisibility cloaks? *Mako* anti-antisubmarine drones? Robotic "lobsters"? Stims? F-40 *Shrike* fighters? Imaginative science fiction or harbingers of the future?

In his recent novel *Ghost Fleet*, Peter Singer, one of Washington's most influential technologists, has written a fictional account of a future war with China that has caught the attention of national security geeks. With co-author August Cole he crafts a dystopian view of America's wartime prospects against a fictional Chinese Directorate that allies Big Business and the People's Liberation Army. It features capabilities and weapons at the far edge of the current science and technology spectrum but with just enough reality to provoke strategists and planners worried about the future of conflict. The tale is all the more credible for having been written by a Brookings Institution analyst with two big technology-centric books on drones and cyberwar under his belt, a daunting speaker's schedule, and, presumably, an insider's access to the latest thinking about military technologies.

If timing is everything, Singer and Cole have hit the proverbial jackpot. *Ghost Fleet* arrives just as the Office of the Secretary of Defense is pushing to implement former Secretary of Defense Chuck Hagel's "third offset strategy," intended to "sustain and advance America's military dominance for the 21st century." Along these lines, Secretary Hagel announced the Defense Innovation Initiative. Our current secretary of defense, Ashton Carter, as well as Deputy Secretary of Defense Robert Work are now pushing the Pentagon's bureaucracies to bring Hagel's vision to reality.

Even if these initiatives are successful, however, the third offset strategy may not achieve its intended effects. China is a formidable commercial competitor, the American economy's ability to support a technological arms race is in doubt, and the nation's allies may not be able to keep up.

Which technologies will underpin the third offset remains mired in the Pentagon's planning, programming, and budgeting processes. Everything from robotics, autonomous systems, cyber capabilities, resilient basing, counter-sensor weapons, and more have been floated. Whether subsequent technological innovations, new warfighting concepts, advanced gaming techniques, and defense reforms follow the long-standing concepts associated with AirSea Battle global precision strike, or another yet-to-be-invented overarching idea, it is important to begin considering how the third offset strategy will affect the strategic dynamics in the Asia-Pacific.

Why the Asia-Pacific? Because, the Asian littoral out to the so-called first island chain is the first and most significant area of operations for peacetime military competition between China and the United States as well as the most likely flashpoint for direct conflict between the two. If the third offset strategy is successful, it will help the United States to remain a net security provider in the region while thwarting China's effort to assert its primacy from the East China Sea to Southeast Asia and beyond to the Indian Ocean.

Chinese military modernization

Modern China, unlike most post-Cold War American adversaries, is technologically advanced and someday relatively soon may even approach or exceed American capabilities in select modern military systems — missiles, space-based, and undersea systems, for example. The trend line for China's own military technological progress is positive, despite significant but well-known weakness and failures. Where China cannot match American capabilities in the short to intermediate term, it has invested heavily in asymmetric technologies and doctrines intended to counter existing American capabilities.

Many analysts believe that China has developed sophisticated anti-access/area denial strategies (A2/AD) intended to prevent the U.S. Navy and other forces from operating close to China's territorial waters. Using a wide variety of approaches, from threat of long-range precision strike to mine warfare systems, China hopes to limit American freedom of action in the littorals and perhaps beyond the second island chain. If Chinese efforts are successful, American joint and combined military forces may not reach their full combat potential or incur great losses for trying.

Peacetime competition

The most basic assumption underlying the third offset strategy is that the economic, industrial, and technological strengths of the United States can and should be harnessed to overcome the advantages of potential adversaries and the inherent difficulties associated with projecting military power to the far reaches of the globe. Some advocate that the United States adopt competitive strategies, which self-consciously impose costs on adversaries and potential adversaries by re-setting the pace with innovative military technologies.

Yet the United States might not be able to sustain a high-technology strategy and, in the long run, China may be better positioned in a long-term race. Despite recent setbacks to its economy, China is still able and willing to invest major resources into military modernization. Numerous accounts document how the Chinese defense industry has increased its capacities, at least in part, by using cyber espionage to steal American and Western technologies and reverse engineering weapons and systems. Many Americans, on the other hand, remains uncertain about the economic future, tired of the post-9/11 increase in national security spending, and, by some accounts, supportive of domestic infrastructure investment to ensure long-term prosperity. In short, pursuing a strategy that depends on out-innovating and outspending rivals, presents political risks for American leaders.

The United States has also failed multiple times to reform its defense acquisition system in order to reduce costs, respond more quickly to the needs of warfighters, and field advanced systems more rapidly. The relationship between defense officials, the military services, the U.S. Congress, and the largely private defense industry is famously convoluted. While the traditional defense industry remains able to meet the nation's defense procurement needs, the current focus on improving the nation's cyber capabilities operations and protecting the highly networked military systems may require a hybrid cyber–military–industrial sector. Yet this hybrid appears

far in the future, despite the Obama administration's focus on cyber security and the relative growth of "cyber" as a component of recent defense budgets.

Minding the gap

Another challenge for the third offset strategy is that American allies and coalition partners will find it difficult to keep pace with American military innovations. As Theo Farrell and Terry Tariff have observed about the most recent period of American military transformation,

European states have simply been unable to match the level of U.S. investment in new military technologies and so for some time critics have warned of a growing "transformation gap" between the United States and the European allies. [*A Transformation Gap*]

A similar dynamic may develop in the Asia-Pacific. Relatively few regional partners are likely to match the United States as it adopts innovative but expensive technologies. Clearly some states, like Japan, South Korea, and Singapore, may choose to match American military investment in innovative technologies, while others with less robust economies or very different strategic cultures and circumstances (i.e., India) may choose not to or will try but fail. Japan's defense spending remains limited by its constitution; India is still buying capabilities reminiscent of the Cold War (aircraft carriers and nuclear submarines), and the smaller states across the Asian littoral have been reluctant to invest in militarily capabilities that support but do not duplicate those of the United States.

Unless the U.S. military and intelligence communities can somehow overturn the laws of physics, economics, and geography simultaneously, America remains at a disadvantage relative to China in terms of the fundamentals of military conflict in Asia. The United States is attempting to project power against a continental-sized power half a world away. It therefore must expend vast resources to bring its military power to bear across the Pacific Ocean and rely heavily on allies for everything from bases to diplomatic support.

The third offset strategy will have far-reaching effects on American allies, friends, and adversaries. Not all of the effects will be positive from the perspective of individual countries or the regional security environment. American policymakers, of course, recognize that the third offset strategy will impact the rest of the world, but they appear relatively sanguine about the results. Undersecretary Robert Work has spoken directly to this issue: "While the Defense Innovation Initiative and a third offset strategy is a U.S. initiative, it will also require a deliberate, aggressive effort on the part of our allies."

And, of course, Chinese officials themselves are well aware of both their military strengths and American vulnerabilities; hence the intense pursuit of A2/AD capabilities. There is little reason to believe that the newly confident and relatively wealthy China will not adjust to the third offset strategy. If we are to believe futurists like Peter Singer and August Cole, China may well out innovate and out invest the United States. How else would China achieve technological breakthroughs in autonomous "quadcopter" search-and-destroy drones, the neuroscience of memory and cognition, ubiquitous anti-satellite weapons, and space-based sensors capable of detecting nuclear reactors deep undersea? While some of these capabilities are at the far edge of

American capabilities, others have not been invented or would be so expensive as to preclude large scale deployments. Is such a technological arms race desirable or even winnable? It well might be that strategic adjustments in American ends and ways could help both side avoid such an unproductive allocation of national resources and a costly great power war.