DRONES

IN THIS ISSUE

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ABOUT THE POSTERS IN THIS ISSUE

Documenting the wartime viewpoints and diverse political sentiments of the twentieth century, the Hoover Institution Library & Archives Poster Collection has more than one hundred thousand posters from around the world and continues to grow. Thirty-three thousand are available online. Posters from the United States, the United Kingdom, Germany, Russia/Soviet Union, and France predominate, though posters from more than eighty countries are included.

Drone Warfare in Ukraine: Historical Context and Implications for the Future

By Seth Cropsey

The Ukraine War has been dubbed the first drone war—and the first "StarLink War"—considering the publicly apparent role of advanced technologies in the conflict. However, the issue is what the Ukraine War might teach us about the future of military power. More specifically, is the Ukraine War a watershed moment, after which unmanned, distributed technologies will dominate the battlefield? Or is it a remarkably public display of a broader set of evolutions in the character of warfare?

A clear-eyed assessment of the battlefield realities in Ukraine demonstrates that drones are largely *in continuity with* the development of military capabilities coherently understood since the late 19th century. Their use in Ukraine is notable, simply because they carry to maturation concepts under long-term historical development. By generating a widespread reconnaissance-strike complex, drones in Ukraine allow both Ukraine and Russia to fight in a truly *systemic* manner, bringing to fruition the logic of the modern battlefield. There is much to learn from the Ukrainian case—and those that learn its lessons are likely to gain military power. But its lessons are primarily intellectual, not technical or material.

Ukraine has held off the Russian onslaught through a combination of tactical skill and operational competence. At the beginning of the full-scale invasion in February 2022, Russia held every military advantage. It had a larger, more sophisticated combat force, greater reserves, more ammunition, more numerous and more advanced armored vehicles, and an air force capable of prosecuting a large-scale strike campaign across Ukraine's strategic depth. Russia's initial campaign plan leveraged every one of these advantages. Russia sought to execute a large-scale country-wide bombardment followed up by a swift ground invasion that would seize and hold cities within days. The vaunted Russian paratroopers would deliver the *coup de grace*, hitting Kyiv within 24 hours of the initial attack, allowing Russian armored formations from Belarus to enter the city in force by Saturday, February 26, 2022. Had this happened as planned, the Ukrainian government may well have collapsed. Indeed, it very nearly did. Had Ukraine's Special Operations Forces not held Hostomel Airport for a crucial few hours on February 24, Russia would have smashed into the capital. Subsequently, it took a tenacious, well-executed defense of Kyiv's outskirts, combined with resistance in other major cities to Kyiv's east, to spoil the Russian plan.

Modern military history demonstrates that, barring a decisive initial victory, most wars settle into a long-term positional rhythm, broken only by societal collapse or a well-designed, well-executed series of offensives over months or years. The Great War is paradigmatic in this case. The initial German punch failed to encircle and destroy the French armies, triggering a race to the Channel that ultimately generated a positional stalemate. The Eastern Front had more movement, but even the Brusilov Offensive, the most successful Russian

offensive of the war, lacked the momentum to trigger a strategic collapse, and ultimately bled Russia white. The Second World War also had positional characteristics, despite the dominance of enormous tank battles in the popular imagination. The Soviet General Staff's masterstrokes at Stalingrad and Kursk took months of careful preparation, and brutal breakthrough battles. The exceptions—Israel's smashing victories in 1967 and 1973—prove the rule. After all, just a year before the Yom Kippur War, the North Vietnamese Army launched an enormous conventional offensive against South Vietnam, which ultimately failed to generate a strategic breakthrough at high cost.

The necessity of the breakthrough battle stems from changes in the character of war that began in the mid-19th century. Indirect fire artillery combined with rail-based long-range transportation and telegraphy to expand the battlespace *in width and depth*. This necessitated a new military logic that progressed beyond the linear tactical model that dominated early modern warfare, and which Napoleon ultimately perfected. No longer could campaigns be won with a single decisive engagement—Austerlitz was both the apex and the final instance of an age in warfare.

Moreover, the development of the modern bureaucratic state depersonalized military leadership. It is no coincidence that the final personalized battles of the 19th century occurred at the creation of the German Empire, which marked the final ascendance of bureaucratic governance and the destruction of the chivalric model that dominated from the 10th century. Campaigns had to be won over time in a series of engagements, individually disconnected, but made whole through a coherent strategic scheme.

The Great War's battlefield logic, defined by indirect fire artillery and the need to accumulate reserves for a breakthrough of operational significance, still holds true today, and held true despite the apparent distinctions of combined-arms mechanized maneuver warfare—after all, a tank is a mobile artillery piece, while an aircraft-dropped bomb serves the same purpose as a heavy artillery shell. The logic is identical: winning a campaign requires coordinating engagements across space and time to collapse the enemy systemically, both in *physical terms* by breaking through defensive lines, and in *intellectual terms* by overwhelming adversary processing capacity. Space-based assets, long-range precision-guided missiles, and stealth aircraft are simply variations on a theme.

This helps us better understand what we see in Ukraine. Both Ukraine and Russia are undergoing a process of military adaptation akin to that of the Great War. Drones employed *en masse*, linked to an effective data processing system and a distributed fires network, create an increasingly mature reconnaissance-strike complex. The term originates in Soviet military theory, denoting a system that combines long-range sensors and precision weapons to attack the enemy's operational depth. Its tactical cousin, a reconnaissance-fires complex, is on display in Ukraine today. In reality, however, these two systems blend into each other, since attacking the enemy at depth on the modern battlefield, replete with sensors and disruption mechanisms, and conducted at scale, requires harmonizing tactical and operational fires employment. Put simply, the close fight and the deep fight must have a synergy to them—a reality that U.S. operational artists understood when developing Airland Battle and Follow-On Forces Attack, and which the most talented of Soviet theorists began to grasp in the early 1920s.

Drones are an integral element of Russian and Ukrainian reconnaissance-strike complexes, since they provide an enormous amount of data and thereby allow the commander to identify and prioritize targets more efficiently, *if* he has a fast enough integration and analysis system to separate extraneous information from crucial reconnaissance. The "stalemate" we see on the battlefield today stems from the combination of drone-artillery usage and mine fields. Ukraine and Russia both lack the manpower and materiel for a massive breakthrough punch—Ukraine because of Western drip-feeding of materiel; Russia because of the political choice to backfill units that suffer atrocious losses rather than accumulating a real reserve. The side that properly harmonizes the close and deep fight, and leverages capabilities to ultimately facilitate a breakthrough and exploitation, will be the victor.

Mass employment of drones, particularly at the tactical level, has indicated an evolution in the character of combat. But its logic remains fundamentally identical to that of the late 19th and early 20th centuries.

An Imperial German artillery commander would be shocked at the amount of data provided to the modern Ukrainian battery, but he would largely understand the tactical logic of engagement decisions.

Air-naval combat has also shown the logic of reconnaissance-strike complexes quite unmistakably since the early 20th century. The difference is the ocean's vastness complicates the reconnaissance problem. Naval history is replete with instances of "encounter battles," engagements both sides stumble into by virtue of scouting limitations, but that nevertheless decide the broader campaign. Moreover, even when one side chooses to fight, as the U.S. did at Midway in 1942, far more than half the problem was *finding* the enemy. The World War's Mediterranean campaign provides a useful example of the characteristics a mature scouting complex generates: both the British and Germans struggled to break into mutually-competitive anti-access networks because ground-based aviation, considering technical realities, could mass against an enemy surface group with relative speed. The Cold War's HAYSTACK and UPTIDE programs—U.S. Navy attempts to increase Soviet detection time and allow American carrier groups to launch strikes on advancing Soviet forces in central Europe—also demonstrated this logic.

Ukraine has waged a creative air-naval campaign to break Russia's hold on the Black Sea and undermine its control of Crimea. Its spectacular employment of naval drones does have a programmatic implication for other navies: in the littorals or enclosed seas, cheap naval drones can be used to hit isolated enemy targets. However, Ukrainian naval drones are only the final element of a much broader system, which includes an air, and likely space-based, reconnaissance network, supplemented with human sources, a concerted strike campaign executed by standard long-range missiles and attack aircraft, special operations forces sabotage actions, and most critically, a coherent operational design that has broken apart the Russian air defense network. Combat lessons must always be put in their broader context. Otherwise, much like on land, supposed implications can be badly misleading.

The U.S. military and allied militaries should undoubtedly procure more drones of all types, <u>an objective for which the U.S.' insufficiently developed industrial base is woefully and dangerously unprepared</u>. But they cannot forget that the baseline logic of combat remains relatively fixed and has been for just over a century.

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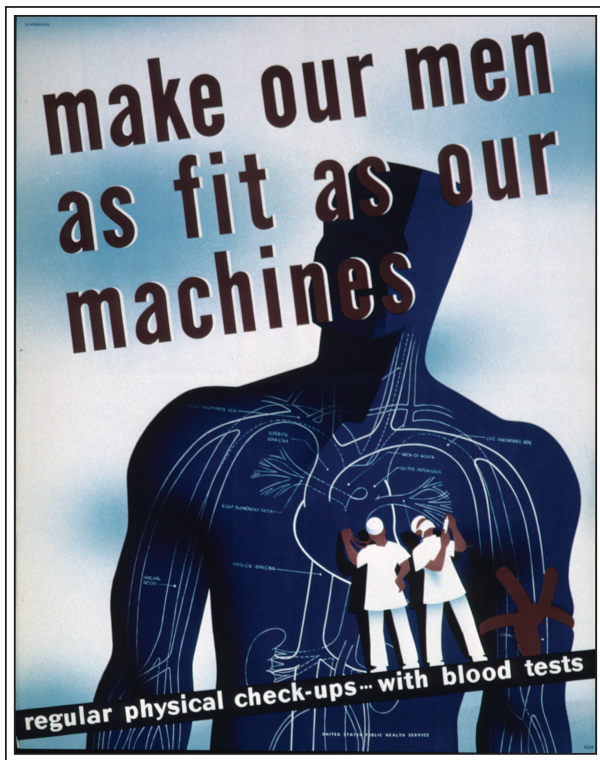
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The Advantages and Limitations of Drones in the Ukraine War

By Mark Moyar

The unmanned aerial vehicle, or drone, first appeared on the battlefield during World War II, when the Germans used a small number of radio-controlled aircraft as offensive weapons. The United States began employing drones for military surveillance and reconnaissance during the Vietnam War, but not until Operation Desert Storm, with the advent of a new suite of precision weapons, were drones capable of making significant tactical contributions.

Drones acquired strategic significance during the Global War on Terror of the early twenty-first century, as the result of new capabilities and new targets. The equipping of American drones with the Hellfire missile in February 2001 gave the United States an armed platform that could monitor targets in real time and stay on station for hours at a time without the risk of losing a pilot. The migration of al-Qaeda extremists from Afghanistan to Pakistan after the fall of the Taliban produced suitable targets. The Pakistani government refused to allow American military forces to operate on their territory, and after an initial period of cooperation it lost interest in helping the Americans capture al-Qaeda members. Hellfire strikes overcame these obstacles and had the added advantage of secrecy, which was beneficial for both operational and political reasons.

The first series of American drone strikes in Pakistan killed many of the intended targets. The tactical effectiveness of the drone strikes sank drastically, however, once the enemy learned the characteristics of the new platform and initiated countermeasures. What may have seemed a quantum leap initially would come to be seen as a modest step.

The Obama administration nevertheless chose to make armed drones the center of its counterterrorism strategy. Obama viewed drones as an excellent alternative to costly counterinsurgency campaigns, one that could achieve results at a much lower cost while still demonstrating presidential toughness. Under Obama, drone strikes surged in Pakistan and Yemen. Most of the strikes eliminated low-level fighters, and hence had minimal strategic consequences. The strategic ineffectiveness of the drones, along with reports of civilian casualties caused by drone strikes, would prevent the use of drones in subsequent conflict zones like Libya and Syria.

The wars in Ukraine and Gaza have seen the proliferation of new drones with new capabilities. The Ukrainians and Russians had been forced to rely especially heavily on drones because of the dangers that advanced antiaircraft defenses posed to manned aircraft. Although the details of some of these drones remain hidden, publicly available reports have provided important insights into their tactical and strategic effects. Many of the drones serve the same basic functions as previous drones—surveillance, reconnaissance, and missile launching—but on a much larger scale. Combatants use fleets of drones to obtain live video feeds of opposing forces, and employ ever-evolving jamming techniques and anti-drone weapons to thwart the enemy's drones.

In the Ukraine War, armed drones have destroyed substantial numbers of trucks and naval vessels. The relatively large size of these drones, however, have made them easy targets for anti-drone weapons, and hence

they have become scarcer over time. Most of the drones now in use are smaller and serve mainly to spot targets for destruction by artillery, missiles, or ground attack. Their effectiveness in pinpointing such targets has done much to frustrate the movement of combat vehicles and supply trucks. This tactical effectiveness has yielded strategic results, by thwarting large Russian and Ukrainian ground offensives.

For now, at least, the drone has strengthened firepower and defense, at the expense of mobility and offense. The advent of the machine gun in the early twentieth century had much the same effect. In both wars, the combatants responded in the same way to the technological change—by reducing their vulnerability through cover and concealment. It is for this reason that the static warfare in Ukraine today is so reminiscent of the war on the eastern front from 1914 to 1918.

America's early victories in the information age—the Persian Gulf War, the invasions of Afghanistan and Iraq, and the drone war in Pakistan—suggested that technology had brought an end to prolonged wars of attrition, in which each side bled the other heavily. The subsequent insurgent wars in Afghanistan and Iraq, however, revealed that technological advantages could be reduced through low-intensity warfare. The Ukraine War is now showing that America's adversaries have found ways to negate technological advantages in high-intensity warfare by fielding comparable technologies, including not only drones but also antiaircraft weapons systems, precision munitions, and electronic warfare. More than two years of bloody attrition, with casualties on the Ukrainian side nearly equaling those on the Russian side, is the sorrowful consequence.

The outcome of the Ukraine War seems certain to hinge on the same factors as the outcome of World War I—the ability of one side to outlast the other in terms of military manpower and economic production. In this regard, it would also resemble the American Civil War and the final years of World War II. And hence it would not resemble the early Napoleonic wars or the early Axis victories of World War II when new methods of mobile warfare permitted the rapid encirclement and destruction of the enemy. The drone and other technological advances, like prior advances in aviation and weaponry and communications, have improved the ability of ground forces to fight, but have not changed the centrality of ground forces in determining the ultimate outcome.

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A Legal Framework for the Use of Drones in War

By John Yoo

Image credit: Poster Collection, FR 1738, Hoover Institution Archives.

The Ukraine and Israel wars have renewed worries over the emergence of advanced military technologies. Ukrainians have used naval drones to inflict staggering losses on Russia's Black Sea fleet, and aerial drones to destroy armor and personnel with unprecedented precision and speed. In Gaza, the Israel Defense Forces have used drones to kill individual Hamas leaders, and robots to penetrate Hamas' dense network of underground tunnels. A network of surveillance robots, space-based communications, and even artificial intelligence analysis helps human decision-makers on tactics and strategy.

The success of high-tech weapons in Ukraine and Israel seems to make manifest the prophecies of a revolution in military affairs. "The future of war will be dictated and waged by drones," warns Eric Schmidt, former CEO of Google and a science advisor to the White House and the U.S. military. To some, the rise of warfare by robots, computer networks, and AI spells the end for conventional weapons such as tanks, manned aircraft, and capital ships, and demands the embrace of radical new approaches. To others, these developments demand unprecedented legal and political regulation. UN experts have warned that drone strikes will be abused because "they make it easier to kill without risk to a state's forces." If intervention is too easy, these critics argue, states will be tempted to turn too quickly to force as a solution and to wage war too easily upon civilians. They urge us to negotiate new treaties or to extend existing treaties, even though the latter were developed for the technologies and strategic challenges of a half-century ago. Elon Musk has called for a ban on "killer robots" because AI is "potentially more dangerous than nukes."

Rushing to judgment on military technology would be a serious mistake. It is undeniable that new technologies are changing daily life. Robotics, the internet, and space-based communications have increased economic productivity. These same advances are generating new kinds of weapons, from robotic drones to attacks on computer networks. While nations will still use force to defend themselves, to compete for power and influence, and to respond to humanitarian crises, these weapons offer the potential to change armed conflict. Advanced GPS-guided missiles can strike advancing armor or capital ships with great precision, based on intelligence gathered only minutes before by robotic aircraft and communicated through networks based in space or the internet.

Nevertheless, robotics, cyber, and space may not trigger a wholesale change in the nature of warfare. Indeed, the current stage of the conflict in Ukraine suggests that these new technologies have not fundamentally altered century-old methods of warfare. In Ukraine, World War I–style trenches, massive artillery, and combat by attrition seem to have stalemated campaigns seeking rapid breakthroughs with combined-arms maneuvering units. In Israel, terrorists used unconventional means to defeat Israel's high-tech border wall with Gaza, but then unleashed a murderous rampage upon civilians using tools of terror that resembled the pogroms of centuries past.

Rather than transform warfare, the precision and speed of new technologies may help reduce the destructiveness of harm from war and help spare civilians. Better intelligence and greater precision in targeting should lead to less loss of civilian life; robotic drones and swift intelligence and communications could increase a nation's deterrent power. These evolutionary—not revolutionary—benefits of advanced weapons technology render the replacement of conventional weapons premature or even quixotic.

It also means that calls for legal regulation will not only fail, but also could be counterproductive. Early regulation of military technology has rarely, if ever, succeeded when nations are still learning the costs and benefits of new weapons. At the turn of the last century, for example, nations refused to apply old concepts of the laws of war to the innovations of the airplane and submarine. Agreement is especially unlikely today because nations would find it difficult, if not impossible, to verify compliance with limits on computer programs or miniaturized, robotic attack vehicles. The strategic implications of WMD on warfare and international politics, by contrast, are better understood, and stockpiles are less difficult to verify. Even so, the United States and the Soviet Union did not enter into the first strategic arms limit agreements (SALT) until the Nixon administration, almost three decades after the dropping of the atomic bomb.

Instead of formal treaties, however, nations relied on nuclear deterrence to enforce a principle of restraint. Nor do robotics, cyber, and space weapons threaten the massive, indiscriminate destruction that supports the special dynamics that govern WMD agreements. But that does not address the nub of the concern for many critics. They worry that gaining the ability to strike more precisely at lower cost will lower the threshold for war. New technologies may give nations the confidence to resort to force too readily because they trust too much in their capacity to wage easy wars. Or great powers may use force too often because technology allows them to avoid the costs of war and instead concentrate them on the enemy.

There are two reasons to resist premature bans on advanced military technology. First, as Ukraine and Gaza show, the world is becoming more chaotic. Western nations still need to defend against territorial aggression and terrorist attacks. The costs of conventional conflicts, particularly casualties from ground combat, may discourage nations from confronting these problems. But if the costs of war decline, while the effectiveness of force improves, nations may be able to wage a more effective defense: advanced technology can act as a force multiplier that will enhance our resolve to prevent threats to our security. The challenge of our era is not a world where defenders of international order are too quick to act, but too hesitant. We should welcome technologies that make intervention more precise and less costly.

Second, these new weapons may allow nations to coerce others to stop these greater threats to international order more effectively. We should reconsider whether it makes sense to hold civilian infrastructure and resources immune from attack, merely because they do not provide direct support to military operations. Attacks of this kind may provide more effective, less lethal, and less destructive means of coercing states that threaten the international order, compared with direct military engagements. Rather than carry out attacks that could kill thousands, western nations could use advanced technologies to paralyze, for example, Iran's banking system or stock market. To recognize a broader scope for attack would not necessarily imply a dramatic change in actual tactics. Current U.S. military manuals authorize attacks on anything that "sustains" an enemy's "war-fighting capacity."

This formula, however, is so vague that, as critics complain, it might extend to almost anything. Such evasive formulations may invite misunderstanding regarding actual U.S. commitments. Academic commentators and NGO advocates have rushed in with confident pronouncements on what international law must be understood to prohibit. The United States will be better off if it does not allow such abstract legal reasoning to limit the way it uses new weapons technologies. We should, of course, try to ensure our militaries use new technology carefully to avoid direct physical injury to human beings other than enemy combatants. But we should not take into account notions of harm devised in earlier times when weapons inflicted broader, more indiscriminate civilian loss. Today's more focused weapons should cause us to rethink the aim and purpose of attacks.

We should expand the range of options that nations may use to defend themselves and to stop serious international challenges. Technological change creates new possibilities for abuse. Social media allow people to

reconnect with distant friends and relatives, to organize political movements, to spur academic research—or to engage in cyberbullying or recruitment for terror networks. But technologies can also enable solutions. More permissive legal standards could open a Pandora's box of new threats. But we also need to remember that adversaries do not necessarily follow legal restraints just because the U.S. demands that they should. The threat of meaningful retaliation, rather than mere legal argument, has restrained enemies. What we cannot do is pretend that the new technologies make no difference. We cannot ignore their potential for enhancing security, even as we grapple with the challenges.

JOHN YOO is Heller Professor of Law at the University of California at Berkeley. His latest book is *Defender in Chief: Donald Trump's Fight for Presidential Power* (St. Martin's, 2020). Recent works include *Striking Power: How Cyber, Robots, and Space Weapons Change the Rules for War* (2017) and *Point of Attack: Preventive War, International Law, and Global Welfare* (2014). Professor Yoo was deputy assistant attorney general in the U.S. Department of Justice from 2001 to 2003; general counsel of the U.S. Senate Judiciary Committee from 1995 to 1996; and a law clerk for Supreme Court Justice Clarence Thomas from 1994 to 1995. He graduated from Yale Law School and summa cum laude from Harvard College.

Drones Reduce
U.S. Military Capabilities

By Bing West

Since 9/11, the U.S. military has employed a handful of long-range drones to acquire intelligence and to strike individual high-value targets. In 2019, Janes defense intelligence group projected that 82,000 drones would be purchased worldwide over the next decade. Then came the Ukraine war. In the past two years, drone warfare has burgeoned. Both Russia and Ukraine aim to produce a million such drones in 2024. No intelligence agency anticipated this enormous growth, fueled by its low costs.

The Ukraine battlefield now buzzes with swarms of First Person View (FPV) drones. Massing artillery, vehicles, or troops is perilous for both sides, thus slowing down maneuver and preventing surprise offensives. Drones pounce on any vehicle or soldier that can be seen, inflicting widespread fear along with tens of thousands of casualties.

Ukraine garage shops are churning out 62 different kinds of FPV drones, using parts from China, the world's leader in "toy" drones. These tiny Ukrainian drones, costing $300 to $500 each and as rudimentary as bolt-action rifles, offset Russia's edge in volume of artillery. A Russian 152mm shell costs $600, versus $3,000 to $9,000 for a NATO shell. Consequently, Russians are firing five artillery shells for every NATO-supplied shell fired by the Ukrainians. Equally disturbing, Russia has been jamming the GPS signal guiding HIMARS or Excalibur shells costing $240,000 each. In response, Ukraine is employing drones to direct barrages of "dumb," less costly artillery shells. Overall, Ukraine is losing over ten thousand of these attritable (suicidal) drones each month. Because, based on data from prior wars, one hundred FPV drones or artillery shells inflict three or fewer casualties, massive numbers of drones (more than a million) are needed to complement as well as substitute for artillery.

The Pentagon, however, abhors cheapness; no production line exists for cheap drones or cheap artillery shells. The Pentagon can't produce twenty thousand, let alone a million, drones because defense industry prices are prohibitively high. Official procurement figures are classified, but press reports indicate per unit costs for FPV drones vary from $6,000 to $58,000—twelve to one hundred times more expensive than Ukraine's home-assembled drones. Congress, however, has not authorized Ukraine to use U.S. funds for its garage-style drone factories.

The same cost disparity affects defense just as much as offense on land. In the past five months, our dozen-odd small bases in Iraq and Syria have been attacked more than 170 times by cheap missiles and drones. To shoot them down, the U.S. Army has deployed an interceptor called Coyote that costs $100,000 per shot. In February, the Army contracted for an additional 6,700 Coyote interceptors for $670 million. It would be unsustainable for the United States to deploy forward bases and logistics depots in a major war when defense costs ten to twenty times more than offense.

At sea, the Biden administration, fearful of Putin's response, has refused to give Ukraine anti-ship missiles. NATO and U.S. warships pulled out of the Black Sea before the war began two years ago, permitting the Russian navy to blockade Ukraine's grain exports. So Ukraine rigged its own airborne and seaborne drones that sank seven Russian warships, forcing the Black Sea Fleet to retreat and grain exports to resume. In February, a Russian landing ship was sunk, to quote a U.S. Marine general, by "$60,000 worth of jet skis."

In the Red Sea, it is embarrassing that the U.S. Navy must deploy a multi-billion-dollar carrier task force to semi-contain a tribe of pirates, rather than snuff out the threat. In January and February, U.S. Navy missiles intercepted more than 70 drones fired at vessels in the Red Sea by the Houthi tribe in Yemen. Drone costs to Iran (Houthi's supplier): $2 million. Costs of the U.S. Navy's SM-2 missiles fired: $140 million. This is an exorbitant cost to defend vessels against inexpensive drones. We don't have the magazines or production lines for a full-on fight against China at such cost-exchange ratios.

Ukraine is producing one million drones; imagine how many China will produce. The U.S. Navy is also experimenting with offensive drones, including surface and submersible variants, to sink Chinese ships. One option envisions launching a swarm of 30 Coyotes, priced at $15,000 per unit. Each "swarm" costs $450,000. The Navy won't do much swarming at that price tag.

Deputy Secretary of Defense Kathleen Hicks announced a program to produce thousands of "small, smart, cheap" drones to counter China. All details are classified, even though thousands may eventually be deployed. The per unit cost will range from the tens of thousands to the hundreds of thousands of dollars. Only in the Pentagon are per unit costs of "hundreds of thousands of dollars" labelled as "cheap."

The Deputy Secretary said attritable offensive drones and their cyber/electronic systems will make up half a percent of the Pentagon budget, or about four billion dollars. Half a percent is a public relations gesture, not a serious effort. Judged by the budget rather than the rhetoric, the Pentagon believes offensive drones are a small niche in warfare. No trade-offs with large, expensive mainstay items like aircraft carriers are proposed. The result a few years hence will be twenty or thirty thousand offensive drones with high per unit costs.

POLL: In what tactical and strategic ways have military drones changed the nature of modern warfare and the relative strengths of the world's armed forces?

☐ Drones are an untested sort of hobby weapon, and no substitute for traditional artillery, armor, and manned aircraft.

☐ Drones offer advantages to military forces but cannot in themselves fundamentally alter the outcome of wars.

☐ Today's use of drones is as revolutionary a tactical development as 20th-century artillery, missiles, and armor.

☐ Drones are revolutionary weapons of the future that will recalibrate traditional assessments of relative military power.

☐ Future warfare will see the end of all manned military operations and will likely be fought exclusively with drones.

Hopefully, the drones will benefit from AI. But to control the development of AI-enhanced weapons, the Pentagon has issued a 21-page bewildering directive that, inter alia, "recognizes privacy and civil liberties . . . and will establish transparent governance and compliance." This DOD "compliance" will force AI software to include ideological emendations. How can a drone recognize civil liberties?

Culture eats strategy and paper plans for lunch. And the culture of the American military-industrial complex is fixed upon opulence that is not affordable. The ballooning national debt guarantees there will be no increase in the inadequate defense budget. Our defenses to counter drones cost ten times more than what our enemies are investing in offensive drones. The net result is that drones will reduce U.S. military capabilities because the Pentagon's budget cannot sustain its expensive tastes.

BING WEST is a military historian who has written a dozen best-selling books about the wars in Vietnam, Iraq, and Afghanistan. His most recent books are *The Last Platoon: A Novel of the Afghanistan War*, and with co-author General Jim Mattis, *Call Sign Chaos: Learning to Lead*. A graduate of Georgetown and Princeton Universities, where he was a Woodrow Wilson Fellow, he served in the Marine infantry in Vietnam and later as Assistant Secretary of Defense for International Security Affairs. Among other awards, he is the recipient of the Defense Distinguished Public Service Medal, the Marine Corps Heritage Award, Tunisia's Medaille de Liberté, the Colby Military History Award, the Goodpaster Prize for Military Scholarship, the Marine Corps Foundation Award for Leadership, the Veterans of Foreign Wars National Media Medal, and the Free Press Award.

Additional Related Commentary

- *Strategika*, Issue 14 (May 1, 2014), https://www.hoover.org/publications/strategika/issue-14.

Discussion Questions

1. In what tactical and strategic ways have military drones—in the air, on land, and on and beneath the seas—changed the nature of modern warfare and the relative strengths of the world's armed forces?

2. In what theater of fighting—air, land, sea—are drones most effective?

3. Are there any real dangers in creating an autonomous army of drones, whose artificial intelligence could replace, or even turn on, human operators?

4. Does the use of drones for assassinations introduce new ethical questions about such unmanned munitions?

5. Does the ubiquity of cheap drone weaponry alter the relative balance of power between traditionally large conventional militaries and the forces of smaller and weaker states?

The Future of U.S. Weapons

Military History in Contemporary Conflict

As the very name of Hoover Institution attests, military history lies at the very core of our dedication to the study of "War, Revolution, and Peace." Indeed, the precise mission statement of the Hoover Institution includes the following promise: "The overall mission of this Institution is, from its records, to recall the voice of experience against the making of war, and by the study of these records and their publication, to recall man's endeavors to make and preserve peace, and to sustain for America the safeguards of the American way of life." From its origins as a library and archive, the Hoover Institution has evolved into one of the foremost research centers in the world for policy formation and pragmatic analysis. It is with this tradition in mind, that the "Working Group on the Role of Military History in Contemporary Conflict" has set its agenda—reaffirming the Hoover Institution's dedication to historical research in light of contemporary challenges, and in particular, reinvigorating the national study of military history as an asset to foster and enhance our national security. By bringing together a diverse group of distinguished military historians, security analysts, and military veterans and practitioners, the working group seeks to examine the conflicts of the past as critical lessons for the present.

Working Group on the Role of Military History in Contemporary Conflict

The Working Group on the Role of Military History in Contemporary Conflict examines how knowledge of past military operations can influence contemporary public policy decisions concerning current conflicts. The careful study of military history offers a way of analyzing modern war and peace that is often underappreciated in this age of technological determinism. Yet the result leads to a more in-depth and dispassionate understanding of contemporary wars, one that explains how particular military successes and failures of the past can be often germane, sometimes misunderstood, or occasionally irrelevant in the context of the present.

Strategika

Strategika is a journal that analyzes ongoing issues of national security in light of conflicts of the past—the efforts of the Military History Working Group of historians, analysts, and military personnel focusing on military history and contemporary conflict. Our board of scholars shares no ideological consensus other than a general acknowledgment that human nature is largely unchanging. Consequently, the study of past wars can offer us tragic guidance about present conflicts—a preferable approach to the more popular therapeutic assumption that contemporary efforts to ensure the perfectibility of mankind eventually will lead to eternal peace. New technologies, methodologies, and protocols come and go; the larger tactical and strategic assumptions that guide them remain mostly the same—a fact discernable only through the study of history.