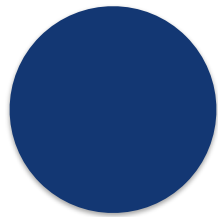


Política Internacional e Geopolítica a era da imprevisibilidade

**INSTITUTO CULTURAL
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SESSÃO Nº 33**

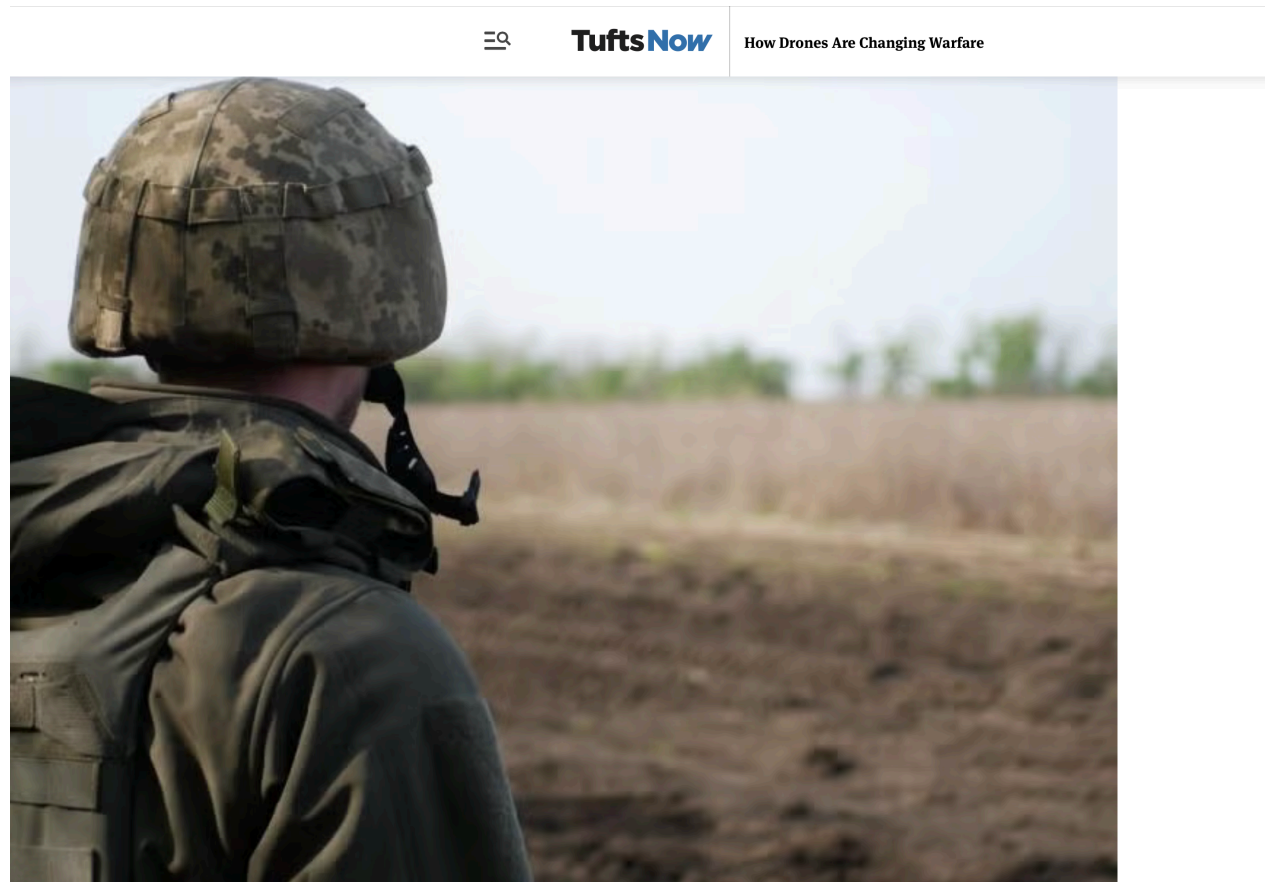
4 / 6 /2025



PARTE I – TEMA PRINCIPAL

As transformações da forma de fazer a guerra (1)

[FONTE: Taylor McNeil, 21/01/2025, Tufts University]



WAR

How Drones Are Changing Warfare

They started as ways to gather intel on enemies, and now are used to deliver deadly attacks, as battlefields continue to evolve in Ukraine and beyond

As transformações da forma de fazer a guerra (2)

[FONTE: Taylor McNeil, 21/01/2025, Tufts University]

As part of the ongoing war in Ukraine, one night in late November, Russia sent a swarm of 188 drones to attack Ukrainian infrastructure like electrical utilities, as well as residential areas, according to news reports. Ukrainian forces said they shot down 76 drones, but the damage was still extensive. Those kinds of attacks are continuing almost daily now.

The attacks are a sign of the growing importance of the use of unmanned aerial vehicles—the more technical name for drones—in conventional warfare.

Military drones started being used by the U.S. in the 1990s for airborne reconnaissance, and in the early 2000s, U.S. Predator drones were also used to target Al Qaeda and Taliban leaders following the 9/11 attacks.

Now drones are being employed as weapons in conventional warfare between countries, and their use is evolving rapidly. “Ukraine is the laboratory for all of this,” says Richard Shultz, Shelby Cullom Davis Professor of International Security Studies at The Fletcher School, referring to the nation that Russia invaded in February 2022, creating Europe’s largest armed conflict since World War II.

As transformações da forma de fazer a guerra (3) [FONTE: Taylor McNeil, 21/01/2025, Tufts University]

How were drones used early on by the U.S. military?

The U.S. military in the 1990s had a fleet of UAVs—unmanned aerial vehicles—for intelligence purposes, not attacking. As drones evolved in the aftermath of 9/11 and the war in Iraq, one UAV could watch 24 hours a day for several days, some 60 targets in a small city. With two, you could watch 120 targets.

In the counterterrorism world, that was tremendous, because you could monitor many sites—was this an IED [improvised explosive device] factory, a terrorist unit headquarters, and so on.

These things collected an amazing amount of data. The big challenge was having enough people to watch the video and images created, which became a problem as the drone fleet proliferated. Around 2014 or so, these UAVs were collecting so much video that it couldn't be used. You just didn't have enough eyeballs to go through it.

As transformações da forma de fazer a guerra (4) [FONTE: Taylor McNeil, 21/01/2025, Tufts University]

If military staff couldn't analyze all the drone reconnaissance data, what did they do with it?

This is where the first attempt to use artificial intelligence in war fighting comes into play, training algorithms and putting them on those UAVs to help identify counterterrorism targets. That sounds straightforward, but it was very hard to do. It meant distinguishing between different kind of vehicles and between people—is this a fighter or a farmer? Is he carrying a gun or is he carrying a hoe?

“Carl von Clausewitz, the Prussian war theorist, said that the nature of war never changes, but the characteristics of war are always changing. We are in a period—which started before the Russia-Ukraine war—when new technologies are really affecting the characteristics of war.”

—— Richard Shultz ——

As transformações da forma de fazer a guerra (5) [FONTE: Taylor McNeil, 21/01/2025, Tufts University]

You need a lot of data to train the AI. But first, you need people to develop specific types of targets for the AI. Then the algorithms have to train on that data to be able to look at large amounts of full motion video to identify all sorts of targets. In Ukraine this means training algorithms to find tanks, missile launchers, fortifications, headquarters.

When were drones first used to attack targets in battle, rather than to conduct reconnaissance or targeting individuals?

We first saw UAVs or drones having a strategic impact in the war between Armenia and Azerbaijan, also known as the second Nagorno-Karabakh war, in 2020—it was the weapon that shaped the outcome of the war, giving Azerbaijan victory.

The Azeris more or less took the Armenians by surprise. They launched drones that were able to obliterate Armenian armor and artillery, and they quickly took back the disputed territory of Nagorno-Karabakh, and could have gone into Armenia. The Armenians suffered a lot of casualties for a small country.

The Azeris were so successful because the drones were used as strategic weapons—it took away the Armenian defense. That was really the first example of what was coming.

As transformações da forma de fazer a guerra (6)

[FONTE: Taylor McNeil, 21/01/2025, Tufts University]

What is the combat role of drones now, and how might it be evolving?

Imagine you're a combat force defending territory. Drones allow you to hit behind the enemy lines, hit critical supplies for the attackers, like gasoline. Likewise, a unit in the field can send drones forward to directly attack the enemy.

Don't forget they are also still very much used for intelligence gathering. Think about the war in Ukraine—the combatants have to watch a large number of areas. If you have UAVs that can do that, and the AI is trained to find specific assets, then you can target them. This is evolving in the Ukrainian case—Ukraine is the laboratory for all of this.

“The future of land warfare is really changing, not just because of UAVs, but a number of developments that have taken place in the war in Ukraine, including what's called electronic warfare.”

As transformações da forma de fazer a guerra (7) [FONTE: Taylor McNeil, 21/01/2025, Tufts University]

Does this mean that the nature of war is changing?

Carl von Clausewitz, the Prussian war theorist, said that the nature of war never changes, but the characteristics of war are always changing. We are in a period—which started before the Russia-Ukraine war—when new technologies are really affecting the characteristics of war.

The big question is, will it advantage the offense or the defense? Who comes out best in this? It's an age-old question. In the case of the Azeris, they used UAVs offensively to map the Armenian defenses, identify key capabilities like artillery and armor, and destroy it. But it can be successfully used defensively, too.

Is it easier to launch a drone offensive or defend against a drone offensive?

I think that's a big question. What does effective drone defense look like? We tended to think that an attacker could swarm the enemy with drones, but the other side always gets a vote in this. There's no question in my mind that there's obviously a lot of attention to how you defend against some of this.

Is the U.S. military changing its ways to adjust to this new reality, where unmanned vehicles—via air or sea—could take out large military equipment like tanks and warships?

Well, to an extent. But don't give them too much credit for being innovative, because large organizations change slowly. All we have to do is look back to the Iraq War and how long it took the U.S. to adapt its military strategy to the war that they were fighting versus the conventional war that they first fought against Saddam's army.

As transformações da forma de fazer a guerra (8) [FONTE: Ulrike Franke / ECR, 10/01/2025]

● European Power

Drones in Ukraine: Four lessons for the West

From overreliance on China to the growing involvement of civilians, the extensive use of drones in the Ukraine war offers crucial lessons for future conflicts

Commentary · 10 January 2025 · 5 minute read



A soldier of the special aerial reconnaissance unit of the National Police of Ukraine Khyzhak holds an FPV drone in his hand during hostilities, Donetsk region, Ukraine, December 14, 2024 · picture alliance / abaca | Smoliyenko Dmytro/Ukrinform/ABACA ©

As transformações da forma de fazer a guerra (9) [FONTE: Ulrike Franke / ECR, 10/01/2025]

The nature of the war in Ukraine has favoured drones. It is fought over land. Crewed aircrafts were for extended periods neutralised by air defences. Civilian drones are widely available, even if they're not always the most effective option: a dedicated anti-tank weapon is usually more suitable for engaging a tank than a drone with first-person view. But when the former is not available, the latter might be a good enough alternative. And with Ukraine struggling with shortages of ammunition and military equipment for its artillery, drones have in part helped to fill this gap.

The number of non-aerial systems has also grown considerably: Ukraine has used naval drones (surface and underwater systems) to attack Russia's Black Sea fleet, resulting in the sinking of several ships. Ukrainians want to create what they describe as “the world's first fleet of naval drones.” Uncrewed ground systems have also entered the battlefield. While they are still less sophisticated than their naval and aerial siblings, they are capable of transport, intelligence gathering, and even attacks.

Western armed forces and governments can draw four lessons from Ukraine's drone experience.

As transformações da forma de fazer a guerra (10) [FONTE: Ulrike Franke / ECR, 10/01/2025]

Lesson one: It will not always be like Ukraine

Every armed force in the world today seeks to harness drone capabilities. Unlike only a few years ago, any state, as well as non-state actors, can readily acquire drones. Currently, the main exporters of military drones are China and Turkey. But drones can also be built domestically with comparatively little funding and expertise. Meanwhile, civilian drones are freely available to everybody in large quantities. These systems can, within limits, be adapted for military operations. Of course, a modified civilian quadcopter bears little resemblance to a multi-million uncrewed warplane. But both have military utility, and in some cases, mass production and low cost can compensate for lack of advanced capabilities. Western armed forces thus need to prepare for future conflicts in which drones will be omnipresent and used for various roles. They should be able to operate such systems, as well as be able to defend against them.

However, Ukraine could also just be a peak moment for drone warfare.

As transformações da forma de fazer a guerra (11) [FONTE: Ulrike Franke / ECR,10/01/2025]

Lesson two: Scale up and adapt quickly

A natural conclusion for Western armed forces might be to stock large quantities of equipment. Replenishing depleted arsenals in Europe is certainly an urgent task. However, drones require a different approach.

Drone types can lose their usefulness quickly. If the combat situation changes, or if defences are developed to counter them, a drone system that was vital yesterday can become obsolete today. During the initial assault on Ukraine, Turkish-made Bayraktar TB2 drones were so crucial in fighting back Russian troops that they inspired a popular war song. By 2024, Bayraktars were no longer important, largely due to air defences. Bayraktars were not the only system to suffer this fate; it has become increasingly difficult to take stock of the drones used in Ukraine because of their fast turnover. Systems need to be adapted fast.

The impressively fast innovation circles—from cardboard drones and tethered drones to increased autonomy and the use of AI—is thus not just a result of the ingenuity of Ukrainian, Russian, and Western engineers. They are an imperative to avoid defeat.

As transformações da forma de fazer a guerra (12) [FONTE: Ulrike Franke / ECR, 10/01/2025]

Lesson three: The dependence on China must be countered

When the civilian drone market took off in the early 2010s, Chinese firms quickly came to dominate it. Their low prices pushed Western competitors out of the market and, by 2016, DJI accounted for two-thirds of all consumer drones produced worldwide. Today, Chinese firms hold a monopoly on the hobbyist market, offering highly capable systems at affordable prices. And not only China produces the majority of commercial drones but it also manufactures most of the components needed to assemble them. As a result, while Ukraine will likely come out of the war as a drone power, its industry is dependent on Chinese-made parts—from cheap plastic components to motors and video transmitters.

This dependency is particularly concerning in light of the growing geopolitical competition between the West and China, alongside the Sino-Russian cooperation. In Ukraine, there are complaints about defective Chinese components, sparking rumours of sabotage. Amid a trade war with the US, China is now restricting exports of components and materials critical to drone building, a move that is already affecting Ukraine. Kyiv has recently begun to onshore component production, but this will be a long process and will require European support.

As transformações da forma de fazer a guerra (13) [FONTE: Ulrike Franke / ECR, 10/01/2025]

Lesson four: Drones enable greater civilian involvement

First-person videos of drones dropping grenades into an open tank hatch, or of soldiers pursued or guided to safety by a drone: these images have been ubiquitous in the war, fostering a feeling of closeness with the public. This has led many people, both from Ukraine and abroad, to participate in crowdfunding initiatives—many of which, strikingly, aiming to buy drones.

Being cheap and easy to modify, drones have enabled civilians to be directly involved in the defence efforts. Volunteers began tinkering with drones since the 2014 Russian aggression. The hobbyist drone unit Aerorozvidka developed its own drone system which by 2022 was being used by the Ukrainian military.

The growing involvement of civilians in warfare is a phenomenon that Europeans must contend with. This is an important challenge, especially for democracies. While engaged citizens can be a positive force, it can contribute to polarisation, be exploited by opponents, or create pressures that could hamper international diplomacy.

As transformações da forma de fazer a guerra (14) [FONTE: ISW- Institute for the Study of War / 2/06/2025]



As transformações da forma de fazer a guerra (15) [FONTE: ISW- Institute for the Study of War / 2/06/2025]

Ukraine continues to innovate its drone technology and tactics to achieve operational surprise and successfully target Russian military infrastructure in the rear. The SBU was reportedly able to launch the FPV drones close to the targeted Russian air bases, which likely enabled the FPV drones to evade Russian electronic warfare (EW) systems and deny Russian air defenders enough time to detect the drones.[7] The SBU innovative use of semi-trucks to launch the FPV drones directly in Russian territory enabled Ukrainian drone operators to strike targets deep in Russia's rear and conduct the first drone strike during the war against a target in Siberia. The SBU's tactics to use FPV drones and not aircraft-type long-range drones also allowed drone operators to maintain operational surprise to inflict maximum damage and minimize Russia's response window.

Ukraine's drone strike operation against strategic Russian aircraft may at least temporarily constrain Russia's ability to conduct long-range drone and missile strikes into Ukraine. Ukraine's June 1 operation targeted aircraft that Russia uses to launch cruise missiles against Ukraine and airborne early warning and control (AEW&C) systems that Russia uses to identify Ukrainian air defense systems and coordinate Russian fighter jet targeting.[8] Russia regularly deploys Tu-95 and Tu-22M3 to launch Kh-101/Kh-555 and Kh-59/69 cruise missiles against Ukraine.[9] The downing of Russian A-50 aircraft has previously temporarily constrained Russian aviation activities over Ukraine.[10] The June 1 Ukrainian drone operation will force Russian officials to consider redistributing Russia's air defense systems to cover a much wider range of territory and possibly deploying mobile air defense groups that can more quickly react to possible similar Ukrainian drone strikes in the future.[11]

As transformações da forma de fazer a guerra (16) [FONTE: Newsweek, 2/06/2025]

Map Shows Russian Air Bases Hit in 'Pearl Harbor' Drone Raid

Coordinated, long-range strikes on multiple Russian airbases thousands of miles from Ukraine took out more than a third of Russia's strategic cruise missile carriers, according to Kyiv, dealing a stinging blow to Moscow ahead of renewed peace talks.

Ukraine on Sunday launched 117 individually-operated drones at four airbases across Russia, officials said, in an attack branded "Russia's Pearl Harbor" by observers, referencing Japan's infamous 1941 assault on the U.S. Pacific Fleet at Oahu, Hawaii.

The operation, codenamed "Spiderweb," inflicted roughly \$7 billion in damage as Kyiv struck more than 40 Russian aircraft simultaneously, including nuclear-capable bombers, Ukraine's SBU domestic security agency said.

As transformações da forma de fazer a guerra (17) [FONTE: Newsweek, 2/06/2025]

Ukraine targets Russia's **long-range aviation** bases



Newsweek

As transformações da forma de fazer a guerra (18) [FONTE: Newsweek, 2/06/2025]

What To Know

The head of Ukraine's SBU security service, Lieutenant General Vasyl Malyuk, said on Monday that Kyiv hit 41 aircraft, including Tu-95 and Tu-22 strategic bombers Russia has used extensively to fire long-range missiles at Ukraine.

Ukraine also struck an A-50 spy plane, Malyuk said. The A-50 surveillance aircraft is an expensive and scarce asset for Russia, previously targeted by Ukraine.

Footage widely circulating online appears to show several aircraft in flames or damaged. Andriy Kovalenko, an official with Ukraine's national security and defense council, said on Monday "at least 13 Russian aircraft were destroyed."

Ukraine said it had targeted four airfields "simultaneously," while Russia's Defense Ministry said Ukraine had used first person-view (FPV) drones to target military airfields in five regions — Amur, Irkutsk, Ivanovo, Murmansk and Ryazan.

As transformações da forma de fazer a guerra (19) [FONTE: Newsweek, 2/06/2025]



Satellite imagery captured by Airbus on September 20, 2023, and provided by Google Earth shows Russia's Ukrainka air base, one of five Russian bomber bases targeted in a Ukrainian drone attack on June 1, 2025. **AIRBUS/GOOGLE EARTH**

As transformações da forma de fazer a guerra (20) [FONTE: Newsweek, 2/06/2025]

Moscow acknowledged "several" aircraft had caught fire in the strikes in Murmansk, in northwestern Russia, and Irkutsk, in Siberia.

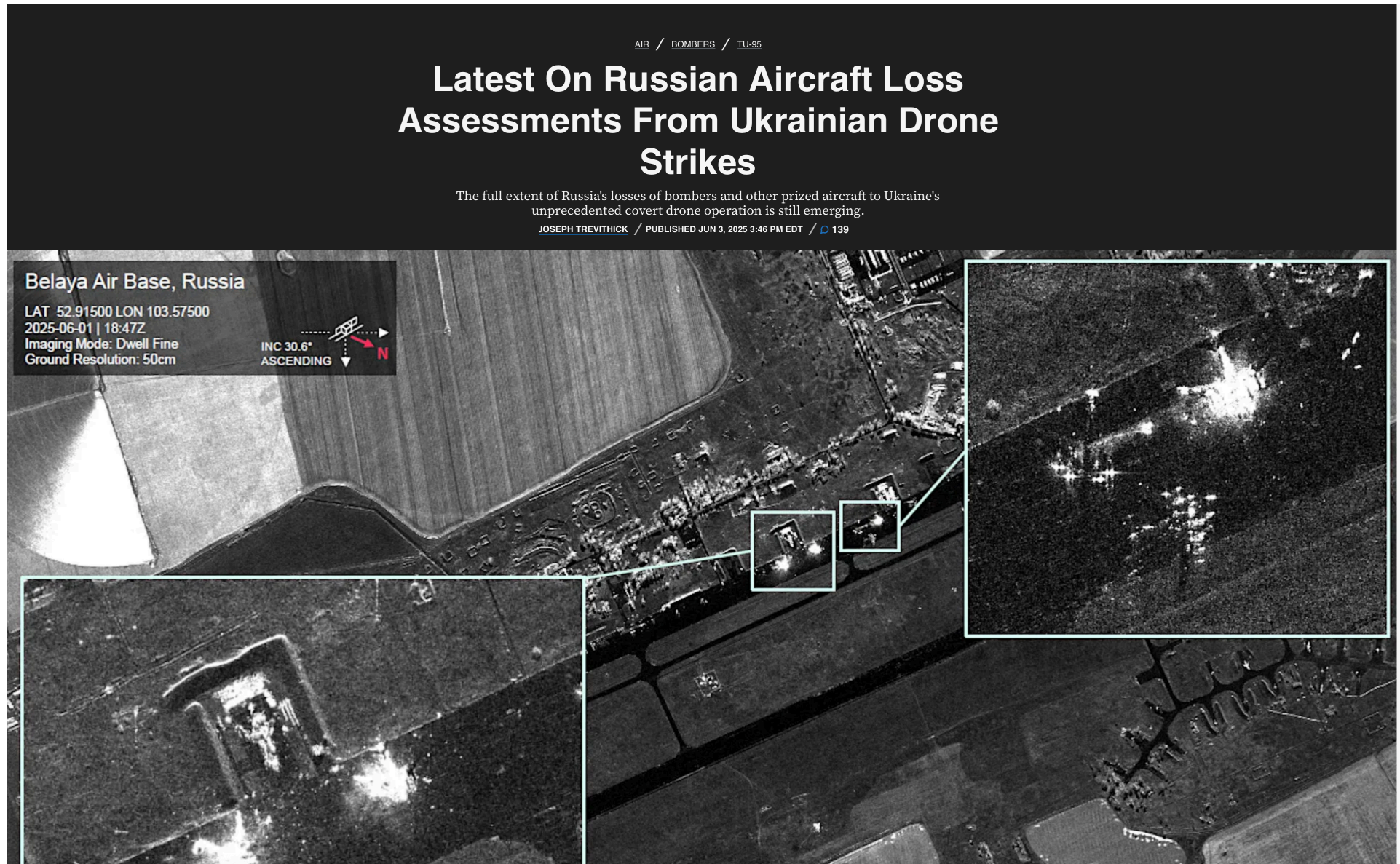
The SBU did not name Ukrainka, an airbase in the Amur region reportedly hit by drones, as a target. An SBU spokesperson declined to comment when approached for clarification.

Igor Kobzev, the governor of Russia's Irkutsk region, said an unspecified number of drones had struck a military facility near the village of Sredny, close to the Belaya airfield. Kobzev, as well as Russian and Ukrainian media reports, said drones had been launched from trucks parked close to the airfields.

The trucks, stationed near the targets, likely helped Ukraine to avoid Russian air defenses and electronic warfare systems, the U.S.-based think tank, the Institute for the Study of War ([ISW](#)), said on Sunday.

The SBU said it had transported the drones over the border, hiding the uncrewed vehicles in "mobile wooden houses" mounted on trucks with remotely-operated removable roofs.

As transformações da forma de fazer a guerra (21) [FONTE: The War Zone, 3/06/2025]



As transformações da forma de fazer a guerra (22) [FONTE: The War Zone, 3/06/2025]

Synthetic aperture radar (SAR) satellite imagery that *TWZ* has obtained from U.S.-based [ICEYE US](#) further points to multiple Russian Tu-95 Bear bombers having been damaged or destroyed at Belaya Air Base. Situated in Russia's eastern Irkutsk region, Belaya was one of five bases that Ukraine targeted in unprecedented covert drone attacks over the weekend. Exactly [how many of Russia's aircraft were struck](#) remains unconfirmed, and readers can first get up to speed on what is known about the operation and its aftermath in our past reporting [here](#).

The image of Belaya that ICEYE US provided to *TWZ* was taken on June 1, the day of the Ukrainian drone attacks, and shows what the firm has assessed to be at least four Tu-95s likely damaged or destroyed at that base, as seen below. However, the resolution of the image and the nature of SAR, which does not show the same kinds of details that would be available in visual spectrum imagery, do make it difficult to definitively determine the state of any of the aircraft.



As transformações da forma de fazer a guerra (23) [FONTE: OEC - Observatory of Economic Complexity]



About

Overview

In 2023, global trade of Drones reached \$3.93B, reflecting a 60.9% increase from 2022, when trade totaled \$2.44B.

Among the 1228 products traded in 2023, Drones ranked 608 in global trade value, accounting for 0.017% of world trade. According to the Product Complexity Index (PCI), it was the 249th most complex product out of 1057, with a PCI value of 0.81.

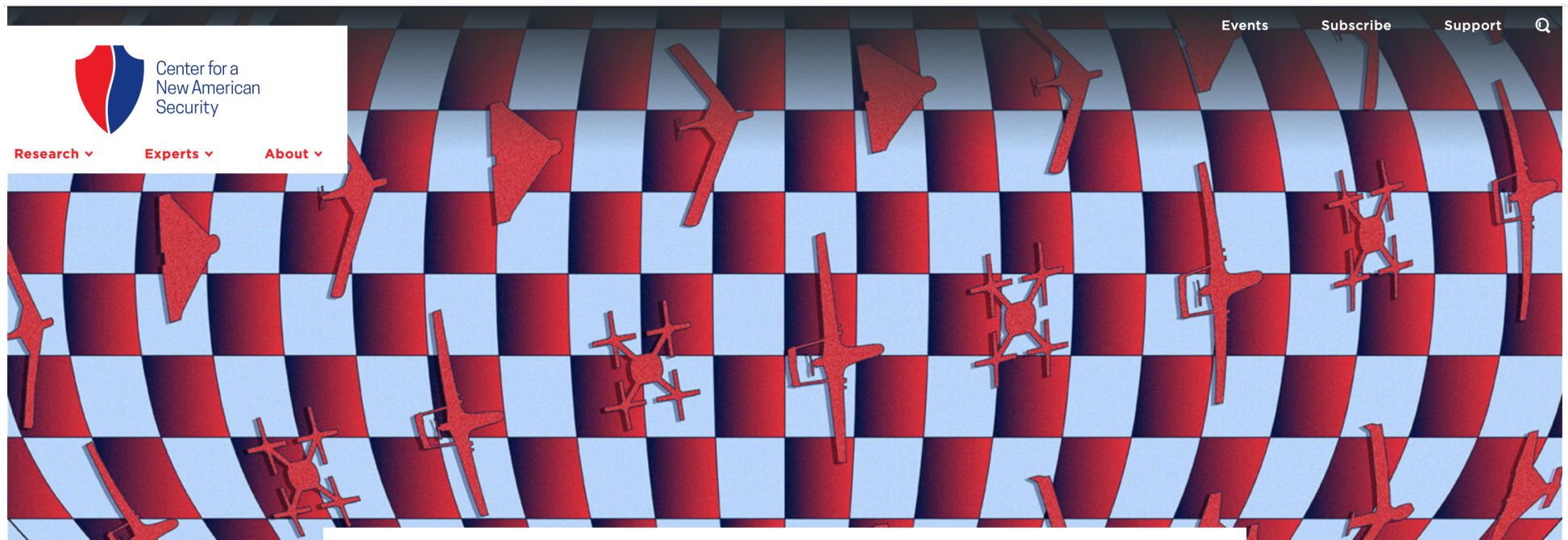
Exports and Imports

In 2023, the leading exporters of Drones were **China** (\$1.83B), **Hong Kong** (\$408M), and **Turkey** (\$231M). The top importers were **Ukraine** (\$464M), **United States** (\$423M), and **Netherlands** (\$223M).

Drones falls under the **Transportation** section, specifically within the chapter or HS2 **Aircraft and Spacecraft**. Some related by-products include to **Small drones (250g-7kg), RC Only**, **Mini drones (<250g), RC Only**, **Large drones (25-150kg), RC Only**, **Heavy drones (>150kg), RC Only**, and **Medium-sized drones (7-25kg), RC Only**, among others.

As transformações da forma de fazer a guerra (24)

[FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]



SEPTEMBER 10, 2024

[Image Credit](#)

Drone Proliferation Dataset

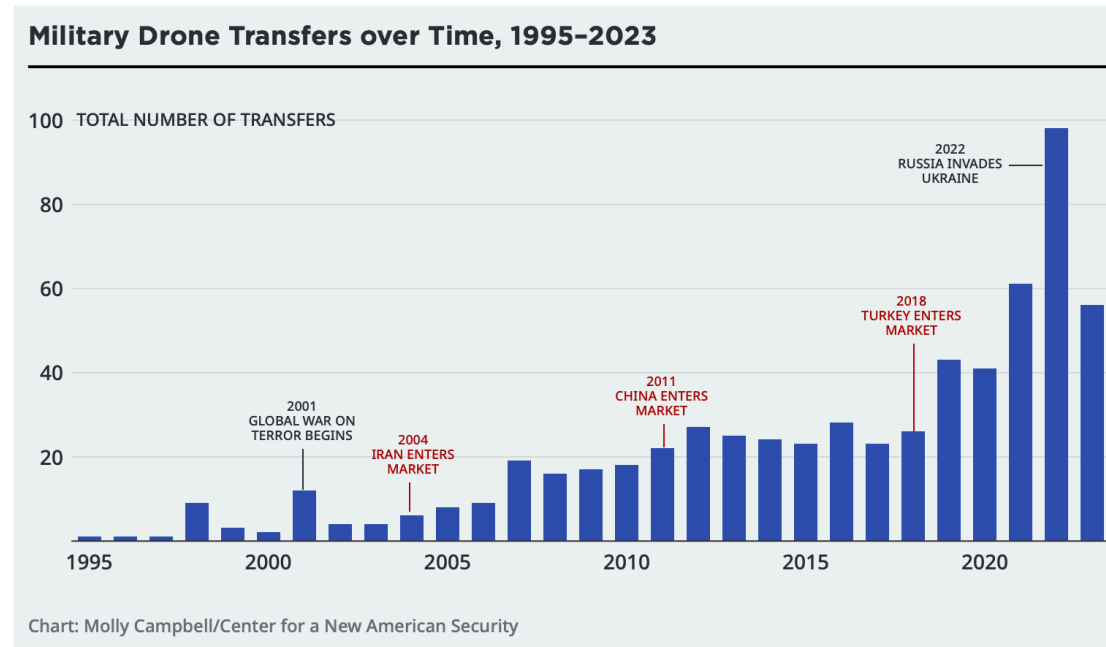
As transformações da forma de fazer a guerra (25) [FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]

Summary of Findings

Over the last 30 years, there has been a steady diffusion of drone technology, with an increasing number of states and nonstate actors acquiring uncrewed systems. The days of Israeli and American domination of the drone market are long gone. China, Turkey, and Iran have developed low-cost military drones and are willing to sell them to interested buyers. The United States' self-imposed adherence to the Missile Technology Control Regime (MTCR) has given rise to competition from China and Turkey, limiting Washington's ability to shape drone proliferation and employ drone diplomacy, narrowing one avenue of U.S. influence.

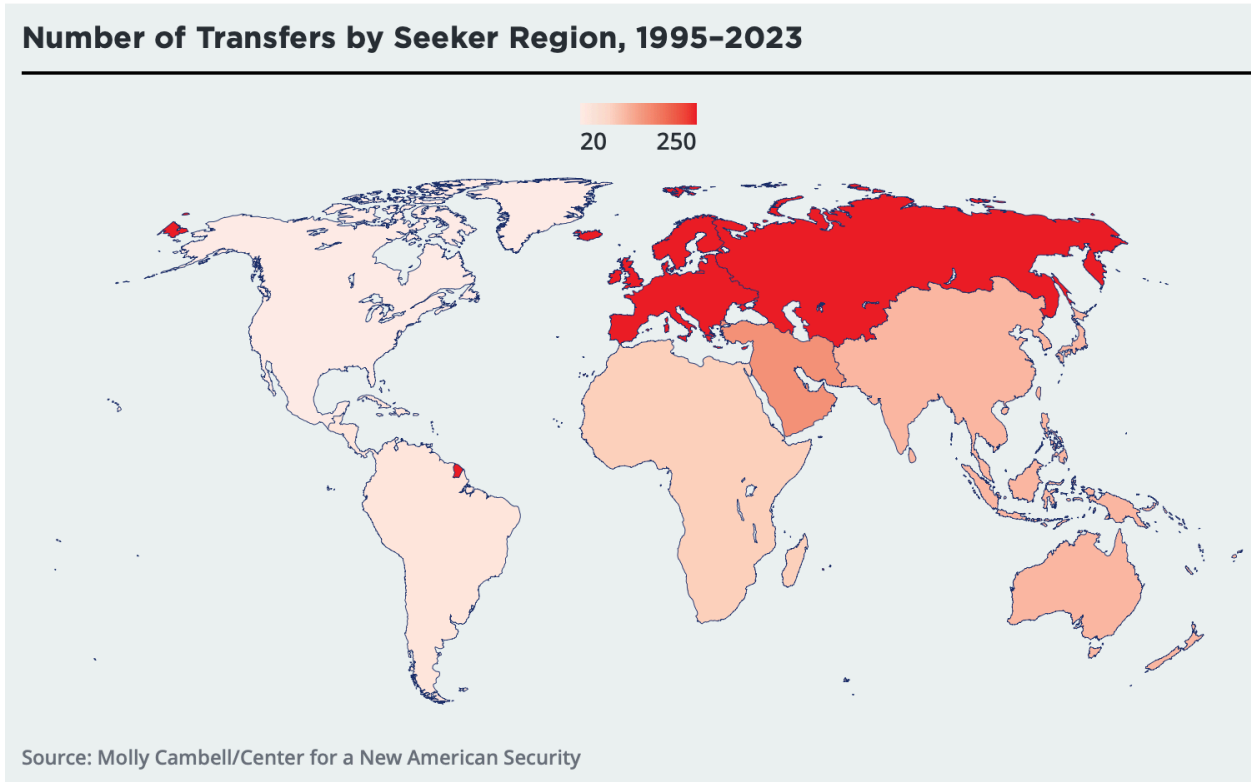
Consequently, the last decade has witnessed a tremendous surge in military drone sales. In 2022, six new countries acquired military drones, all of which were armed Bayraktar TB2 drones from Turkey. Chinese drone sales peaked in 2014, and by 2021, Turkey had overtaken China as the globe's largest supplier. The good press from the battlefields of Libya, Nagorno-Karabakh, and Ukraine, along with Turkey's short timelines for delivery, has propelled Turkey to the top of the military drone market. While larger, more expensive, reusable military-grade drones dominated the early drone market, the sale of loitering munitions (kamikaze drones) has accelerated and will likely continue to grow.

As transformações da forma de fazer a guerra (26) [FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]



The author identified 633 drone transfers between 1995 and 2023, of which roughly 40 percent went to the European theater. The term “transfers” refers to completed and ongoing foreign military sales, direct commercial sales, leases, gifts, and secondary proliferation. The Global War on Terror has also driven proliferation over the last 20 years in the Middle East, which received an identified 134 transfers during this period. On the African continent, drone proliferation has increased dramatically since 2020. From 1995 to 2019, the region had an average of roughly two transfers annually. From January 2020 to September 2023, the average increased to nearly 13 transfers a year. Of the 84 recorded transfers to Africa identified in the dataset, 51 have occurred since 2020, a significant number of which were armed Bayraktar TB2s.

As transformações da forma de fazer a guerra (27) [FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]



The entrance of China and Turkey into the military drone marketplace has dramatically increased the number of global armed drone transfers. Even after reinterpreting the MTCR Category I in July 2020, the United States has rarely exported its armed military drones. Since 2018, China, Turkey, and the United States have made a combined total of 69 sales of armed military drones to 40 different nations. Turkey made 65 percent of the sales, and China accounted for another 26 percent, while the United States only provided 8 percent.

As transformações da forma de fazer a guerra (28) [FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]

Top 10 Armed Drone Seekers, 1995–2023











	Seeker	Total Number of Armed Drone Transfers
1	 United Kingdom	9
2	 Nigeria	7
3	 United Arab Emirates	7
4	 Algeria	6
5	 Pakistan	5
6	 Saudi Arabia	5
7	 Ethiopia	4
8	 Kyrgyzstan	4
9	 Morocco	4
10	 Ukraine	4

Table: Molly Campbell/Center for a New American Security

All Armed Drone Suppliers, 1995–2023










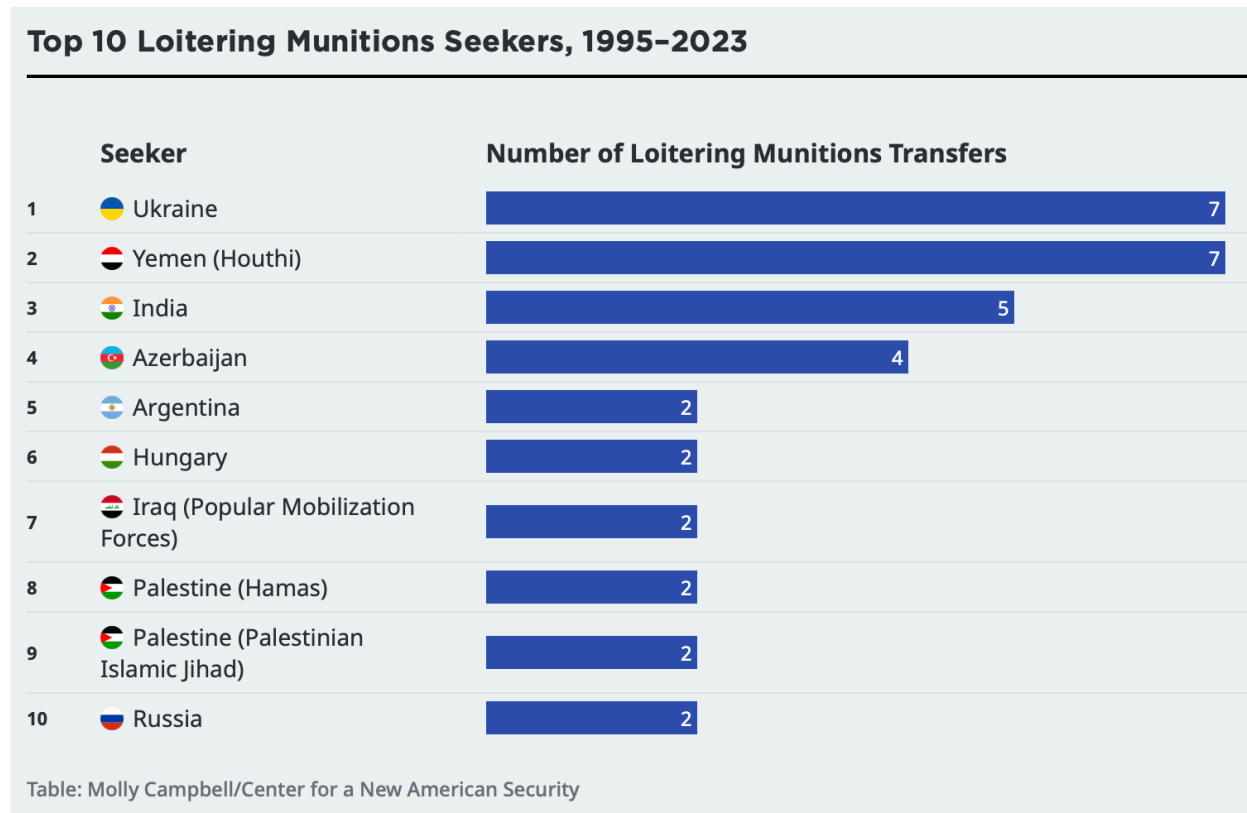
Supplier	Total Number of Armed Drone Transfers
 Turkey	47
 China	34
 United States	12
 Iran	8
 Israel	6
 South Africa	3
 United Arab Emirates	3
 Belarus	1
 Russia	1

Table: Molly Campbell/Center for a New American Security

As transformações da forma de fazer a guerra (29) [FONTE: Molly Campbell / Center for a New American Security, 10/09/2024]

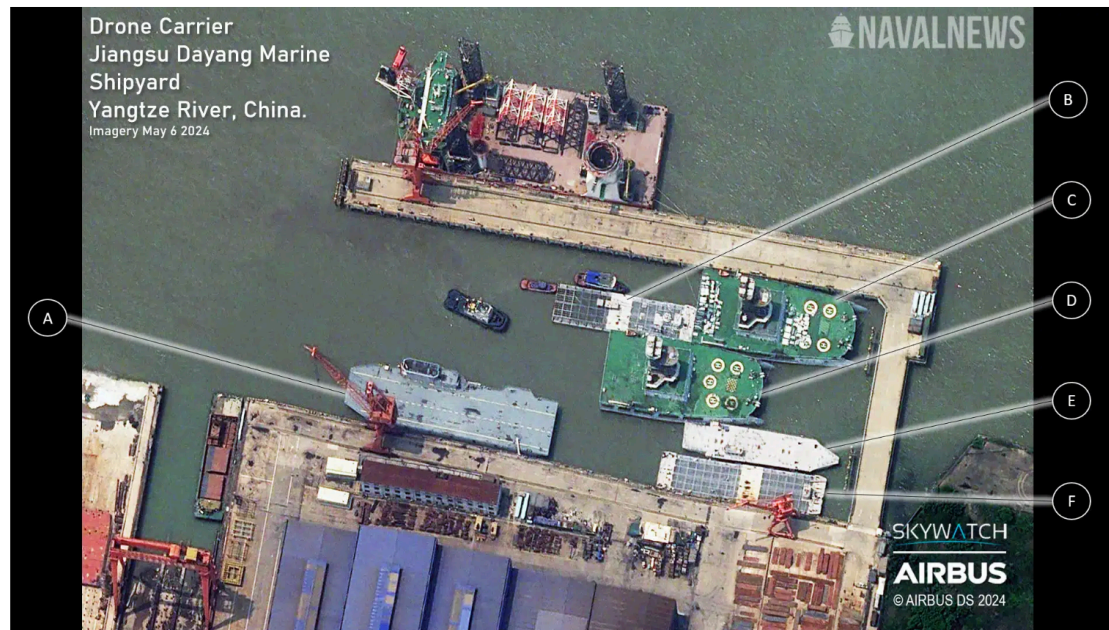


As drones proliferate across the globe and more countries acquire armed reusable drones and loitering munitions, it is reasonable to expect this technology will play a significant role in the battlefields of the future.

Given current trends in the availability of drones, it is fair to expect that most actors—state and nonstate—will employ a variety of military and commercial drones in the future.

As transformações da forma de fazer a guerra (30) [FONTE: H. I. Sutton / Naval News, 15/05/2024]

China Builds World's First Dedicated Drone Carrier



Click to Enlarge. The previously unreported drone carrier (A) is longer but narrower than two drone motherships (C, D) built at the same yard. There are also several high-tech target barges (B, F), including one which mimics an aircraft carrier (E).

Hidden away in a shipyard on the Yangtze, far upriver from the major yards at Shanghai, is a new aircraft carrier. It's China's fourth, a ship whose mere existence has not been reported before. Only China can build an aircraft carrier in relative secrecy.

As transformações da forma de fazer a guerra (31) [FONTE: H. I. Sutton / Naval News, 15/05/2024]

Mysterious Drone Carrier

The design is smaller than the regular aircraft carriers, with a flight deck approximately one third the length and half the width of a U.S. Navy or Chinese Navy (PLAN) super carrier. For comparison, it is slightly shorter but wider than a World War Two escort carriers. It would be possible to operate fixed wing aircraft from it, but its straight deck arrangement would be anachronistic, not allowing aircraft to take off and land at the same time. Additionally there doesn't appear to be space for a typical aircraft hangar, so the number of aircraft would be greatly limited. It does make sense as a drone carrier however.

Drones are an increasing part of naval warfare. Leading navies are already trialing them from regular aircraft carriers. And some navies, notably Iran and Turkey, are working on plans for 'drone carriers'. But this space is still in its infancy.

As transformações da forma de fazer a guerra (32) [FONTE: H. I. Sutton / Naval News, 15/05/2024]

Potential roles for this ship

J. Michael Dahm notes that the shipyard where it is being built, Jiangsu Dayang Marine, has previously built simulated enemy ships for the PLAN. China has an extensive program of simulating Western and Western-leaning navies' ships in its weapon testing program. Its anti-ship ballistic missiles are tested on [full-size outlines of U.S. Navy aircraft carriers](#).

Several high-tech target barges and [two large drone motherships](#) have already been built at this shipyard. All these perform as opposing forces in training, a role known as 'Electronic Blue Force'. So it is possible that this ship too is designed to support that mission.

If the new ship is intended to support large fixed-wing UAVs at sea, as its design suggests, then it raises the question of who or what it is expected to simulate. As we note, it is the first drone carrier in the world, so it is not mimicking any known Western ship. Such drones could be operated more cheaply from shore. A second possibility is that it is some type of experimental platform that will test and develop drone operations at sea.

Whether it is intended for Blue Force simulation or purely research and development remains to be seen. Similarly, we question whether it is an official PLAN program or a speculative commercial project. The new drone carrier remains something of a mystery. Watch this space.

As transformações da forma de fazer a guerra (33) [FONTE: Alexander Gale / UK Defence Journal, 20/10/2023]

Drone carriers and the future of naval aviation

As drones are becoming an increasingly important element of modern warfare, militaries across the world are experimenting with new ways to integrate unmanned systems into their arsenals.

[Alexander Gale](#) October 20, 2023



As transformações da forma de fazer a guerra (34) [FONTE: Alexander Gale / UK Defence Journal, 20/10/2023]

Development and Acquisition

A number of states are currently developing their own drone carriers. Following [Turkey's ejection from the F-35 program](#), Ankara set out to repurpose the [TCG Anadolu](#) to carry drones instead of manned aircraft.

In place of the F-35B, the Anadolu will carry Baykar Bayraktar TB3 drones which will be capable of conducting intelligence, reconnaissance, and surveillance missions as well as assault operations with smart munitions.

The Anadolu was commissioned in April 2023, although development of the TB3 is still in progress. The TB3 is essentially the maritime equivalent of the TB2, which has seen combat in [Nagorno-Karabakh](#), [Ukraine](#), Iraq, Libya, and Syria.

Iran is likewise seeking to augment its fleet with drone carriers by [converting two merchant container ships](#). The first of the two vessels, the Shahid Mahdavi was reportedly received by the [Islamic Revolutionary Guard Corps Navy \(IRGCN\)](#) earlier this year, with the second vessel, the Shahid Badheri, still in development.

The vessels will likely carry Iranian-designed Shahed-136 explosive-tipped [kamikaze drones](#), which like the Turkish TB2 drones, have seen usage in Ukraine, Syria, and Iraq.

As transformações da forma de fazer a guerra (35) [FONTE: Alexander Gale / UK Defence Journal, 20/10/2023]

Advantages and Limitations

The main advantage of deploying drones on seaborne vessels is the same as conventional aircraft carriers – power projection over longer distances. The acquisition of drone carriers will enable states to conduct unmanned aerial operations at greater distances outside of their own territory, increasing the array of available tactical, operational, and strategic options.

There are several tactical and operational benefits to be gained through the operation of drone carriers or the introduction of drones to conventional aircraft carriers. One key advantage of unmanned systems is that the lives of pilots are not risked during operations. Unmanned aircraft are also far cheaper to produce and run than their manned equivalents.

This means that drones are more expendable than manned aircraft, making them suitable for tasks that might otherwise be deemed too dangerous. This gives commanders at sea greater flexibility to conduct a wider variety of missions without risking the lives of personnel or costly military hardware.

As transformações da forma de fazer a guerra (36) [FONTE: Alexander Gale / UK Defence Journal, 20/10/2023]

Depending on their configuration, drones launched from carriers will be capable of conducting intelligence, surveillance, and reconnaissance missions, as well as light attack operations against small surface vessels at sea or various targets on land.

At the strategic level, middle-income states stand to benefit the most from the acquisition of drone carriers. For states unable to afford traditional aircraft carriers, drone carriers offer a cheaper and viable alternative that will allow them to project airpower at greater distances without the necessity of land basing. Actors like Turkey or Iran could conceivably extend the use of unmanned aerial capabilities over low-intensity conflict zones with littoral access. This could provide new options to assist allies militarily and undermine opponents with little or no viable air defences.

However, until unmanned aircraft are capable of establishing air superiority, drone carriers will not constitute a revolutionary moment in military affairs. As the conflict in Ukraine has demonstrated, the [operational freedom of drones](#) is severely curtailed in environments where adversaries possess capable air defence systems and electronic warfare capabilities.

Drones simply do not yet have the offensive and defensive capabilities of advanced manned aircraft like the F-35. For this reason, aircraft carriers will continue to reign supreme in terms of long-range power projection in at least the short to medium-term future.

As transformações da forma de fazer a guerra (37) [FONTE: El País, 5/04/2025]

Russia revolutionizes warfare with fiber-optic-controlled drones

Ukraine leads the way in unmanned vehicle innovation, but the invaders are advancing with weapons that have been key to their recapture of territory in Kursk



A fiber-optic cable drone from Russia's 40th Marine Brigade on February 16 in Kursk. Ministerio de Defensa de Rusia

As transformações da forma de fazer a guerra (38) [FONTE: El País, 5/04/2025]

This innovation prevents the aircraft's connection from being disrupted by what is known as "electronic warfare," that is, by disruptive radio frequency signals. On both sides, many vehicles and defense barriers incorporate these antennas, which emit radio frequency signals that cut off the remote connection between the pilot and the drone. Fiber-optics are immune to this.

Its operation is ingenious and simple: the drone has a built-in reel with a cable, which can be between three and 15 miles long. If, during flight, the cable becomes entangled in an obstacle, such as trees, the vehicle continues flying because the reel keeps releasing it, and it remains connected to the pilot.

Russia began deploying these drones experimentally a year ago, but it wasn't until last December that their use became widespread. Ukraine followed suit shortly afterward, but its production level remains behind that of the enemy. Their presence is detected along the entire front line, but it has been especially felt in Kursk, where they are playing a key role in nearly [expelling Ukrainian troops from the Russian province](#).

As transformações da forma de fazer a guerra (39) [FONTE: El País, 5/04/2025]

"The only way to stop them is to protect the logistics routes with nets, but you can't cover a highway with kilometers of nets," a high-ranking officer in the Ukrainian military's intelligence services explained to EL PAÍS in Sumy in March. This soldier, who only provided his first name, Roman, warned that the cost of these drones is much higher than that of remote-controlled vehicles because they require kilometers of fiber-optic cables and the cylinder that charges them.

An analysis by the Ukrainian state news agency Ukrinform in March established that the average cost of a reel and fiber-optic cable is close to €1,000 (\$1,082). Added to this is the price of the drone, which, in the case of the most commonly used models, FPV (first-person view) guided by a camera mounted on its front, ranges between €300 and €600 (\$324-\$649). Roman estimated that three months ago, the average cost of 15 miles of fiber-optic cable and the reel was €2,000 (\$2,164).

Eighty percent of global fiber optic production is carried out in China, and Ukrinform claims that economies of scale are allowing the price per meter of cable to be reduced, but at the same time, quality is deteriorating. Roman, the Ukrainian intelligence officer, believes that hands the advantage to Russia because on the enemy side, the burden of military financing falls entirely on the state, and fiber optic drones are a priority for the Russian military. On the Ukrainian side, however, a good portion of the drones arriving at the front [depend on private donation campaigns](#), and their cost leads to fewer units.

As transformações da forma de fazer a guerra (40) [FONTE: OWire]

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Top 5 Optical Fiber Cable Manufacturers in China

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October 12, 2024

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China has emerged as a global leader in the production of **optical fiber cables**, offering a diverse range of products at competitive prices. With advanced manufacturing technologies, strong supply chains, and high-quality standards, Chinese manufacturers are meeting the demands of both domestic and international markets. This article will highlight some of the leading optical fiber cable manufacturers in China, including OWIRE, a notable player in the industry.

Why Choose Optical Fiber Cables from China?

Choosing optical fiber cables from Chinese manufacturers has several advantages:

1. **Competitive Pricing:** Chinese manufacturers often provide high-quality products at prices that are significantly lower than their global counterparts.
2. **Advanced Technology:** Many companies invest in the latest technologies to produce high-performance fiber optic cables that meet international standards.
3. **Wide Product Range:** From single-mode to multi-mode, armored to underwater cables, Chinese manufacturers offer a broad range of fiber optic cable options.
4. **Global Export Standards:** Most manufacturers have certifications like ISO9001, UL, CE, ROHS, and more, ensuring their products meet global quality standards.

As transformações da forma de fazer a guerra (41) [FONTE: OWire]

Leading Optical Fiber Cable Manufacturers in China



1. OWIRE

Founded in 2009, **OWIRE** has become a prominent name in the optical fiber cable industry in China. Specializing in a wide variety of communication cables, OWIRE is known for its exceptional product quality, extensive range, and competitive pricing. Here are some key highlights of OWIRE:

- **Product Portfolio:** OWIRE produces a comprehensive range of optical fiber cables, including indoor/outdoor cables, FTTH cables, OPGW, armored cables, single-mode and multi-mode cables, and specialized cables like underwater and underground versions.
- **Quality Certifications:** The company's manufacturing facility is ISO9001:2015 certified, and its products have received various certifications, such as UL, FCC, CE, ROHS, CCC, and CPR.
- **Competitive Advantage:** OWIRE's pricing is nearly 20% lower than other manufacturers offering similar quality, making it a cost-effective choice for businesses.
- **Fast Production and Delivery:** Capable of producing two containers of cables in just one day, OWIRE ensures that customers receive their orders promptly, meeting tight deadlines.



2. (Yangtze Optical Fibre and Cable Co., Ltd.)

YOFC is one of the largest optical fiber and cable manufacturers in China and the world. They offer a wide range of products, including single-mode and multi-mode fibers, FTTH cables, and optical modules. YOFC is known for its advanced research and development capabilities, ensuring that they stay at the forefront of innovation in fiber optic technology.

- **Strong R&D:** YOFC focuses heavily on innovation, making significant investments in research and development.
- **Global Reach:** Their products are widely used in telecommunications, broadband, and data center industries around the world.

As transformações da forma de fazer a guerra (42) [FONTE: OWire]



3. FiberHome

FiberHome is a leading supplier of optical communication systems and network solutions in China. They manufacture high-quality optical fiber cables designed for telecommunications, data networks, and IT infrastructure. FiberHome's focus on high-performance and durable products makes them a trusted brand in the fiber optic industry.

- **Wide Product Range:** They offer products from basic optical fibers to advanced fiber optic modules and solutions.
- **Global Standards Compliance:** All FiberHome products meet international standards, ensuring reliability and durability.



4. Hengtong Group

Hengtong Group is another major player in China's optical fiber cable industry. The company offers a diverse range of fiber optic solutions, including FTTH cables, submarine cables, and aerial cables. Hengtong has a strong focus on expanding its global footprint, exporting its products to over 120 countries.

- **International Presence:** Hengtong has a significant market share in both domestic and international markets.
- **High-Quality Standards:** Their products are known for excellent performance in harsh environmental conditions.



5. ZTT (Zhongtian Technology Group)

ZTT is a renowned manufacturer of fiber optic cables, specializing in telecommunications and energy solutions. The company provides a broad spectrum of products, including optical fibers, power cables, and submarine cables. ZTT's commitment to sustainability and innovation has helped them become a preferred choice in the global market.

- **Sustainability:** Focuses on eco-friendly manufacturing practices and renewable energy solutions.
- **Innovative Products:** Continuously develops new products to meet the growing demands of modern communication systems.

As transformações da forma de fazer a guerra (43) [FONTE: Tras Safronov/ MilitarNYI, 25/04/2025]

Chinese Drone Maker Introduces UAV Controlled by Fiber Optics



Chinese drone maker Skywalker has unveiled a fixed-wing drone controlled via a fiber-optic tether.

The company says the drone can operate over a distance of up to 30 kilometers using a fiber-optic connection.

It has a maximum flight speed of 190 km/h. According to the manufacturer, it is equipped with a third-generation coil weighing 2.9 kilograms and containing 30,100 meters of cable.

The system uses a fiber-optic remote control, which the company says is immune to interference.

As transformações da forma de fazer a guerra (44) [FONTE: Tras Safronov/ MilitarNYI, 25/04/2025]

Drone makers and EW system developers are engaged in a constant contest: the former working to improve signal security, the latter seeking new ways to disrupt control and video transmissions.

Fiber-optic drones, however, are unaffected by EW because they do not rely on radio frequencies.



Fiber-optic coil by Dj Skywalker. Photo credits: Dj Skywalker

The absence of radio signals also makes such drones undetectable by conventional drone detection systems.

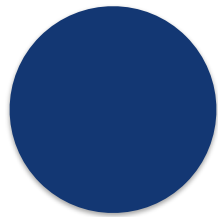
The operators receive a near real-time, high-quality video feed from the drone's camera.

As transformações da forma de fazer a guerra (45) [FONTE: Tras Safronov/ MilitarNYI, 25/04/2025]



Picture taken by a Chinese Skywalker fiber-optic drone. April 2025. Photo credits: Dj Skywalker company

In February, Ukraine's Unmanned Systems Forces tested domestically produced Shovkopryad (Silkworm – e.d.) fiber-optic modules, designed for use on aerial, ground, and maritime drones.



PARTE II – NOTAS BREVES

O fim do longo século americano, segundo Keohane & Nye (1) [FONTE: Foreign Affairs, 2/06/2025]

The End of the Long American Century

Trump and the Sources of U.S. Power

ROBERT O. KEOHANE
AND JOSEPH S. NYE, JR.

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O fim do longo século americano, segundo Keohane & Nye (2) [FONTE: Foreign Affairs, 2/06/2025]

President Donald Trump has tried both to impose the United States on the world and to distance the country from it. He began his second term by brandishing American hard power, threatening Denmark over the control of Greenland, and suggesting he would take back the Panama Canal. He successfully wielded threats of punitive tariffs to coerce Canada, Colombia, and Mexico on immigration issues. He withdrew from the Paris climate accords and the World Health Organization. In April, he sent global markets into chaos by announcing sweeping tariffs on countries all over the world. He changed tack not long after, withdrawing most of the additional tariffs, although continuing to press a trade war with China—the central front in his current offensive against Washington’s main rival.

O fim do longo século americano, segundo Keohane & Nye (3) [FONTE: Foreign Affairs, 2/06/2025]

Even as Trump has correctly identified the way in which the United States is strong, he is using that strength in fundamentally counterproductive ways. By assailing interdependence, he undercuts the very foundation of American power. The power associated with trade is hard power, based on material capabilities. But over the past 80 years, the United States has accumulated soft power, based on attraction rather than coercion or the imposition of costs. Wise American policy would maintain, rather than disrupt, patterns of interdependence that strengthen American power, both the hard power derived from trade relationships and the soft power of attraction. The continuation of Trump's current foreign policy would weaken the United States and accelerate the erosion of the international order that since World War II has served so many countries well—most of all, the United States.

O fim do longo século americano, segundo Keohane & Nye (4) [FONTE: Foreign Affairs, 2/06/2025]

THE DEFICIT ADVANTAGE

When we wrote *Power and Interdependence* in 1977, we tried to broaden conventional understandings of power. Foreign policy experts typically saw power through the lens of the Cold War military competition. Our research, by contrast, explored how trade affected power, and we argued that asymmetry in an interdependent economic relationship empowers the less dependent actor. The paradox of trade power is that success in a trading relationship—as indicated by one state having a trade surplus with another—is a source of vulnerability. Conversely, and perhaps counterintuitively, running a trade deficit can strengthen a country's bargaining position. The deficit country, after all, can impose tariffs or other trade barriers on the surplus country. That targeted surplus country will have difficulty retaliating because of its relative lack of imports to sanction.

O fim do longo século americano, segundo Keohane & Nye (5) [FONTE: Foreign Affairs, 2/06/2025]

Threatening to bar or limit imports can successfully exert pressure on trading partners. In terms of asymmetric interdependence and power, the United States is in a favorable bargaining position with all seven of its most important trading partners. Its trade is extremely asymmetric with China, Mexico, and the Association of Southeast Asian Nations, all of which have an export-import ratio of more than two to one with the United States. For Japan (roughly 1.8 to 1), South Korea (1.4 to 1), and the European Union (1.6 to 1), those ratios are also asymmetric. Canada enjoys a more balanced ratio of around 1.2 to 1.

O fim do longo século americano, segundo Keohane & Nye (6) [FONTE: Foreign Affairs, 2/06/2025]

China appears weakest of all in the trade sector alone, with its three-to-one ratio of exports to imports. It also cannot call on alliance ties or other forms of soft power. But it is able to retaliate by exploiting countervailing factors, punishing important American corporations that operate in China, such as Apple or Boeing, or important American domestic political actors, such as soybean farmers or Hollywood studios. China can also use hard power such as cutting off supplies of rare minerals. As the two sides discover more precisely their mutual vulnerabilities, the focus of trade warfare will shift to reflect this learning process.

O fim do longo século americano, segundo Keohane & Nye (7) [FONTE: Foreign Affairs, 2/06/2025]

REAL POWER

The Trump administration misses a major dimension of power. Power is the ability to get others to do what you want. This goal can be accomplished by coercion, payment, or attraction. The first two are hard power; the third is soft power. In the short term, hard power usually trumps soft power, but over the long term, soft power often prevails. Joseph Stalin is thought to have once mockingly asked, “How many divisions does the Pope have?” But the Soviet Union is long gone, and the papacy lives on.

The president seems inordinately committed to coercion and the exercise of American hard power, but he does not seem to understand soft power or its role in foreign policy. Coercing democratic allies such as Canada or Denmark more broadly weakens trust in U.S. alliances;

O fim do longo século americano, segundo Keohane & Nye (8) [FONTE: Foreign Affairs, 2/06/2025]

THE SPECTER OF GLOBALISM

Looming over the rise of Western populists such as Trump is the specter of globalization, which they invoke as a demonic force. In reality, the term simply refers to increasing interdependence at intercontinental distances. When Trump threatens tariffs on China, he is trying to reduce the economic aspect of the United States' global interdependence, which he blames for the loss of industries and jobs. Globalization can certainly have negative and positive effects. But Trump's measures are misplaced, since they attack those forms of globalization that are largely good for the United States and the world while failing to counter those that are bad. On balance, globalization has enhanced American power, and Trump's assault on it only enfeebles the United States.

O fim do longo século americano, segundo Keohane & Nye (9) [FONTE: Foreign Affairs, 2/06/2025]

Trump's assault on globalization enfeebles the United States.

Economic globalization has been reversed in the past. The nineteenth century was marked by a rapid increase in both trade and migration, but it slowed precipitously with the beginning of World War I, in 1914.

Trade as a percent of global economic activity did not recover to its 1914 levels until nearly 1970. This could happen again, although it would take some doing. World trade grew extremely rapidly between 1950 and 2008, then more slowly since the 2008–9 financial crisis. Overall, trade grew by 4,400 percent from 1950 to 2023. Global trade could again lurch into decline. If the U.S. trade measures against China lead to a more committed trade war, it is likely to do a great deal of damage. Trade wars in general can easily morph into enduring and escalating conflict, with the possibility of catastrophic change.

O fim do longo século americano, segundo Keohane & Nye (10) [FONTE: Foreign Affairs, 2/06/2025]

The Trump administration is also unwinding another key tool of American soft power: the country's espousal of liberal democratic values. Especially during the last half century, the idea of human rights as a value has diffused around the world. After the collapse of the Soviet Union, in 1991, democratic institutions and norms spread to much of eastern Europe (including, briefly, to Russia), as well as to other parts of the world, notably Latin America, and gained some foothold in Africa. The proportion of countries in the world that were either liberal or electoral democracies reached slightly over 50 percent at its high point around 2000, and has fallen a little bit since, remaining near 50 percent. Even though the post–Cold War “democratic wave” has subsided, it has still left an abiding mark.

O fim do longo século americano, segundo Keohane & Nye (11) [FONTE: Foreign Affairs, 2/06/2025]

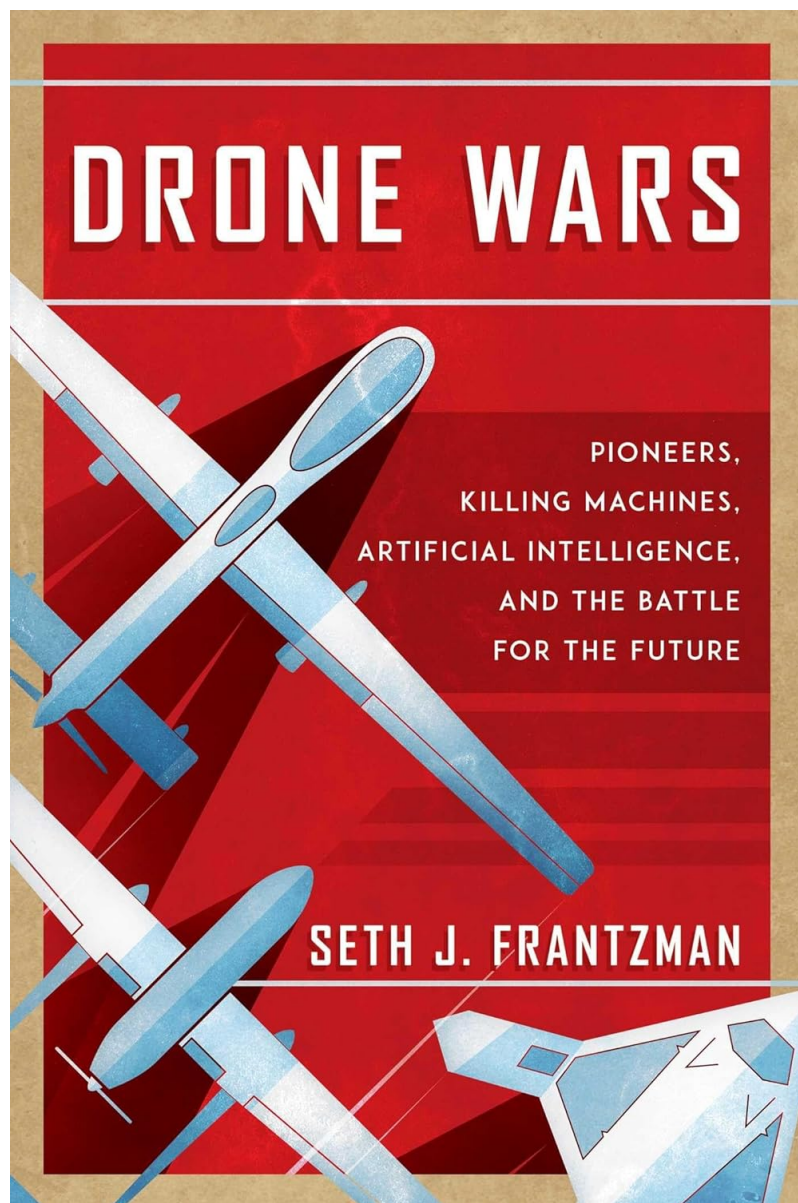
A BET ON WEAKNESS

There is no undoing global interdependence. It will continue as long as humans are mobile and invent new technologies of communication and transportation. After all, globalization spans centuries, with roots extending back to the Silk Road and beyond. In the fifteenth century, innovations in oceangoing transport spurred the age of exploration, which was followed by European colonization that shaped today's national boundaries. In the nineteenth and twentieth centuries, steamships and telegraphs accelerated the process as the Industrial Revolution transformed agrarian economies. Now, the information revolution is transforming service-oriented economies. Billions of people carry a computer in their pocket packed with an amount of information that would have filled a skyscraper 50 years ago.

O fim do longo século americano, segundo Keohane & Nye (12) [FONTE: Foreign Affairs, 2/06/2025]

no borders. To rechannel and reshape globalization for the common good, states will have to coordinate. For such coordination to be effective, leaders will have to construct and maintain networks of connection, norms, and institutions. Those networks will in turn benefit their central node, the United States—still the economically, militarily, technologically, and culturally most powerful country in the world—providing Washington with soft power. Unfortunately, the myopic focus of the second Trump administration, which is obsessed with coercive hard power linked to trade asymmetries and sanctions, is likely to erode rather than strengthen the U.S.-led international order. Trump has focused so much on the costs of free-riding by allies that he neglects the fact that the United States gets to drive the bus—and thus pick the destination and the route. Trump does not seem to grasp how American strength lies in interdependence. Instead of making America great again, he is making a tragic bet on weakness. 🌐

Sugestões de leitura



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The End of the Long American Century

Trump and the Sources of U.S. Power

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