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Fast Following

Military Emulation and Twenty-First-Century Transformation

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Executive Summary

Modern war is a contest of learning and adaptation. One of its most important, yet least appreciated, elements is "fast following": the deliberate practice of observing an innovation proven by someone else, then copying, improving, and fielding it at speed. The concept emerged from business innovation literature, but it fits well with the conditions of war. On the battlefield, there is limited protection for intellectual property, imitation cycles are short, and adversaries study each other relentlessly. Historical examples—from British emulation of German infiltration tactics in 1918 to North Vietnam's competition against U.S. electronic warfare innovations—show that fast following has long been a source of military advantage.

What has changed in recent years is the pace and reach of learning and adaptation. Ukraine and Russia have fast followed each other's weapons, tactics, and institutions since 2022. Russia copied Ukraine's Unmanned Systems Forces within 18 months and is building it at far greater scale. The 2026 war with Iran showed that military lessons now travel globally. A drone designed in Iran and improved by Russia was copied by the United States and countered by Ukrainian interceptor teams deployed to the Gulf. In the Western Pacific, Australia, China, Japan, North Korea, and Taiwan are all fast following the lessons of wars they have not yet had to fight.

These cases also show that the gap between an innovation's demonstration and its adoption by others is measured in weeks in Ukraine and Russia, but often in years in Western military institutions. Meanwhile, the authoritarian bloc of China, Russia, Iran, and North Korea operates as a collective fast-following system.

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To rebuild a Western edge in learning and adaptation through the systemic incorporation of fast following, this report recommends that Western military institutions (1) build intermediaries linking users, industry, and procurement, (2) create rapid acquisition pathways that trade technical risk for speed, (3) systematically study foreign wars, (4) learn directly from combat-experienced partners such as Ukraine, (5) establish doctrinal laboratories, (6) measure the demonstration-to-adoption gap, (7) reward leaders who adapt and emulate, and (8) preserve exploration alongside fast following.

Introduction

> *"Men almost always walk on the paths beaten by others and proceed in their actions by imitation . . . a prudent man should always enter upon the paths beaten by great men and imitate those who have been most excellent."*
> *–Niccolò Machiavelli,* The Prince*, Chapter VI*

On February 28, 2026, as U.S. and Israeli forces commenced their military operations against Iran, among the first munitions employed by U.S. forces was a cheap, delta-winged, one-way attack drone, the Low-Cost Uncrewed Combat Attack System (LUCAS). The Pentagon subsequently **acknowledged** that the weapon had been derived from a reverse-engineered Iranian Shahed-136. Within days, Iranian Shaheds were striking cities and U.S. military bases across the Gulf region. Shortly after this Iranian strike campaign began, over **200 Ukrainian specialists deployed** to several Middle Eastern countries to help the United States and its Gulf partners destroy those drones using interceptor drones and tactics that Ukraine had developed under Russia's multiyear bombardment of its homeland.

An aerial weapon designed in Iran, further developed and produced at scale by Russia, copied by the United States, and countered by methods pioneered in Ukraine captures how military learning now occurs rapidly and travels around the world. Almost none of the actors in this chain was the original inventor of the capability it exploited. Each was executing a concept called fast following.

Over the past four and a half years, countries such as Ukraine, Russia, Israel, and Iran have learned how to learn better and adapt faster. At the same time, a global adaptation war has emerged, with an authoritarian learning and adaptation bloc of China, Russia, Iran, and North Korea learning and sharing insights into tactics, technology, and strategy faster than has ever been possible before.

This new-era global adaptation environment can be characterized as one with significant concurrency, where intellectual rather than technological innovation is preeminent, and where new technologies such as artificial

intelligence (AI) and social media have sped up and compressed learning cycles. And while all participants in this **adaptation war** have imperfect insight into their adversaries—and learning can be unevenly distributed between military services and nations—the modern adaptation environment is transforming force generation, force structures, the employment of military forces, and the development of national security policy in peace and war.

There is a large body of literature that covers learning and adaptation in military institutions, in both war and peace. But in much of the literature there is an implication that the best learning and adaptation systems are those that move first and fastest on the battlefield and in the strategic realm. And while that is often the case, there is a complementary approach that can also be effective in peace and war: fast following.

The central argument of this report is that fast following—the deliberate custom of observing an innovation proven by someone else and then copying, improving, and fielding it at speed—is now a core competency for military institutions. Western military institutions have invested heavily in innovation units, experimentation, and technology development. Far fewer have built a deliberate and systemic capacity to fast follow. The adversaries of the West, individually and collectively, have.

The report proceeds in six parts. The first examines the theory of fast following in innovation literature and the purpose of its application in military institutions. Part two explores historical examples of fast following in war. The third part examines how Ukraine and Russia have fast followed each other from the full-scale invasion of February 2022 through to mid-2026. Part four examines how fast following has spread beyond Ukraine, to the 2026 war in Iran and the wider Middle East, and part five examines the Western Pacific, where Australia, China, Japan, North Korea, and Taiwan are studying and emulating the lessons of recent wars. The report concludes with an assessment of what these new cases reveal and recommendations for the United States, Australia, and other Western military institutions on how they might better institutionalize fast following and use it to generate military advantage.[1]

Fast Following in Innovation Literature

The idea of the "fast follower" emerged as a response to a more famous concept in business innovation literature: first-mover advantage. In a **1988 article** that shaped decades of business strategies, Marvin Lieberman and David Montgomery argued that businesses that developed and brought an innovation to market

1 This report builds on the work of an earlier article on this topic written by the author in 2026.

first were able to seize enduring advantages through technological leadership, preemption of scarce assets, and customer switching costs. The concept was leapt upon, particularly by those in technology markets. The core message that permeated business thinking was to be first, at almost any cost.

The evidence that emerged subsequently, however, proved less sympathetic to business pioneers. In a **study of 500 brands**, Peter Golder and Gerard Tellis found that first movers in the market failed around 47 percent of the time. They also discovered that there was an 8 percent failure rate for the early followers who entered soon after original innovators. By 1998, Lieberman and Montgomery had themselves **published a retrospective** conceding that going first was more dangerous and less likely to prove successful than their 1988 analysis had described.

From this emerged the evidentiary case for the concept of fast following. A fast follower is not a passive imitator, however; rather, it is an organization that deliberately allows a pioneer to absorb the cost and uncertainty of proving a new concept, watches closely what works and what fails, and then enters the market at speed. The fast follower does so with an improved version of the original product or idea, often just as the market begins to scale. Constantinos Markides and Paul Geroski capture this reasoning in their book, ***Fast Second***. Smart firms decline to be the radical innovator operating at the leading edge of risk and cost. Instead, they adopt a strategy of arriving second and consolidating the new niche in the market with enhanced execution, scale, and refinement.

The core idea here is that advantage lies not in the original idea but in the speed and skill with which it is copied, adapted, and enhanced. This approach is most powerful where product development cycles are short, the barriers to copying are low, and product life cycles are brief. Any head start by one firm erodes rapidly, their advantage transitory. The capacity to observe innovation, understand its place in building new niches or filling old ones, and then iterate matters more than the capacity to invent. While these conditions may not be present in every single market, they are representative of how military operations have occurred throughout history. Fast following is also one of the most important characteristics of modern war.

Rationale for Fast Following

The rationale for fast following is built on an organization's assessment of risk and available information. First movers must invest and pay in advance for the discovery of a new concept. They must fund failed prototypes and the various dead ends that take place in development, although they also learn from these. The first mover has to educate the market (or military institution) that does not

yet know it needs a thing, and must do so with some uncertainty about whether the concept or product will work or succeed within the targeted market.

The fast follower pays very little of this cost. By the time it acts, the first mover has already shifted from circumstances of uncertainty to having built the evidence for the new product; this evidence henceforth is a free good for fast followers. The fast follower can also observe which version of the idea or product was successful and which was not and then insert themselves into the market with modified or improved variants. They can also arrive at the moment the idea or concept begins to scale, with the expensive issues of feasibility and demand having already been answered by another institution.

A first-mover lead is also more perishable than its champions once assumed. In ***The Diffusion of Military Power***, Michael Horowitz notes that "each innovation has a unique life span." Rita McGrath **describes** how "sustainable competitive advantage is now the exception, not the rule. Transient advantage is the new normal." And as Andrew Krepinevich writes in ***The Origins of Victory***, being a second mover can allow one side to "see with relative clarity the mover's plans for gaining competitive advantage." But, as Krepinevich also notes, being able to exploit the advantages of being a second mover, or fast follower, is founded on that institution being able to employ time more effectively and efficiently than their first-mover rival.

If a follower acts rapidly to recognize an opportunity and then executes an idea better than the first mover, barriers to copying are low, and the head start erodes quickly. Where those conditions are present, the ability of an institution to copy and improve is more crucial than the ability to invent. Being second is not a consolation prize; rather, for many organizations it can be a deliberate and central aspect of their strategy. The advantages of such a strategy are magnified if a first mover becomes locked into the design choices, sunk investments, and the costs that accompany the support arrangements of the early version of a product. These kinds of commitments can be avoided by a fast follower. The innovator's head start can transform into a legacy that the follower, starting from a clean sheet, is able to leapfrog before building a lead on their competitors.

A fast follower's advantage is contingent on many different considerations that are not evenly dispersed in the business world. In business, the conditions of brief imitation cycles, low barriers to copying, and rapidly decaying head starts can occur in some sectors and not in others. Because of this, being first still pays off in those industries that are protected by patents, the need for large amounts of capital, or long product lives. However, war strips most of these protections away from competitors. The competitive pressure in warfare is continuous, rapidly evolving, and almost always existential.

In war, as in business, belligerents study one another relentlessly. But military institutions possess enhanced incentives to do so because the alternative is often defeat. Advantages that are revealed by one side are exposed through their employment against the enemy. That enemy then has the clearest and most compelling motive to copy them. Andrew Marshall, the former head of the Office of Net Assessment in the Pentagon, characterized this dynamic competitive environment in a **1993 memorandum**:

> War comes and it becomes clear that some countries' military have done a much better job of thinking through the appropriate concepts of operation and have made the necessary organizational changes. They have a dramatic advantage until the other military establishments can emulate them or make adjustments.

The conditions that make fast following attractive in the most contested commercial markets are, in war, simply the normal state of military interaction and competition. The **challenge for a military**, therefore, is to rapidly recognize a change in an enemy's military capacity and either imitate that new capacity or develop an asymmetrical counter. Regardless of which pathway is selected, military institutions must be able to recognize change and emulate an adversary military force as a central pillar of learning and adaptation.

Fast Following and Military Learning and Adaptation

As was explored in the literature in the preceding section, the dynamics and language of fast following are very transferable into the endeavors of military institutions. The **2022 U.S. National Defense Strategy** explicitly committed the Department of Defense to act as a "fast follower," describing how "we will be a fast-follower where market forces are driving commercialization of military-relevant capabilities" such as AI, space, renewable energy, and autonomy. This **case has also been made** by at least one defense-related think tank: In areas of rapid commercial advancement, a military competes not by inventing a technology but by the speed with which it harvests, adapts, and fields it.

The concept of fast following is aligned with scholarship on how military institutions change. In ***The Sources of Military Change***, Theo Farrell and Terry Terriff distinguished three pathways to military change: innovation, adaptation, and emulation. The last is the deliberate adoption of practices through imitation of other military organizations. Farrell expands on this in a **subsequent article**, noting that fast following, or military emulation, "involves an organisation importing and adopting a foreign military model or way of

war, in whole or in part" and that this occurs through two transmission paths: collaboration and coercion.

While Farrell and Terriff treat emulation as one pathway among three, other sources explain why an organization might be compelled to copy a rival through fast following rather than do so as a deliberate choice. In ***The Sources of Military Doctrine***, Barry Posen argues that the competitive pressure of the international system drives states to imitate one another's successful military practices, observing of the Cold War nuclear arms race that each superpower, to some degree, imitated the other. Kenneth Waltz argues along similar lines to Posen, writing in ***Theory of International Politics*** that "the possibility that conflict will be conducted by force leads to competition in the arts and the instruments of force. Competition produces a tendency toward the sameness of the competitors."

Importantly, Posen also highlights that not all imitation or fast following in the past has been successful. He **writes** that "both soldiers and civilians have frequently guessed wrong on the many aspects of military doctrine." This is important to keep in mind as systems to support fast following—and guard against it—are constructed in military institutions.

Horowitz offers a further, useful idea for understanding the concept of fast following and its temporal elements. He describes the "**demonstration point**" of a major military innovation:

> Separating the incubation period from the take off period of a mature innovation reveals the importance of determining the demonstration point for each major military innovation. The demonstration point for each MMI [major military innovation] occurs when the potential of its full capabilities is reasonably known in the international system through an action by a first mover, rather than the capability merely being the subject of internal exercises or debates.

With the pace of development in some technologies such as AI and autonomous systems and their application in the wars in Ukraine and the Middle East, Horowitz's demonstration points are being achieved more often and more quickly, and are being more widely observed, than at any time in the past. Drone attack and surveillance imagery is posted online within hours; open-source analysts dissect new weapons within days; AI helps military commanders compress decisionmaking in kill chains to just minutes. Horowitz **describes** how the demonstration point is "when the clock begins ticking on potential adoption by other states."

In essence, the potential for fast following begins as soon as an innovation is employed, and Horowitz's clock starts *for everyone watching*. As later sections

of this report will demonstrate, the interval between a demonstration point and adoption by others has become one of the most revealing elements and most important measures of effectiveness for a military institution's capacity for learning and adaptation.

Fast following in war is emulation conducted under competitive pressure and at speed. It is reliant on institutions recognizing change in the environment, be it in their own wars or in their observation of foreign wars. This observational function for discovering insights from foreign wars is explored by Brent Sterling in ***Other People's Wars***. Sterling's work examines how military organizations might be able to better analyze other people's wars by building an accurate picture of what has occurred in these conflicts, better understand the context of insights, and build the mechanisms to translate the observations for application by the military organization seeking new insights into war. Those organizations that study foreign conflicts closely, and act on what they observe, can gain an advantage over those that do not.

Fast following also sits within the broader theory of organizational learning. James March's distinction between the exploitation of known competencies and the exploration of new ones is foundational knowledge. Fast following is a disciplined form of exploitation, the rapid application and refinement of a solution that someone else has already explored. Its value, and its limits, both flow from this. As **March finds**, "The essence of exploitation is the refinement and extension of existing competences, technologies, and paradigms. Its returns are positive, proximate, and predictable." The issue of exploration and exploitation is further studied by Oliver Schmitt in ***Preparing for War***, with the recommendation from that work being that "both exploitation and exploration are essential to an organization's ongoing success, and balancing the two is therefore a fundamental issue for the organization's leaders."

In war, fast following carries a simpler logic than in any commercial market. Frank Hoffman argues in ***Mars Adapting*** that the militaries that prevail in wars are often not those that innovate first but those that adapt fastest under fire, and that the imperative for adaptation is "inherent in the nature of war." An important theme of Nora Bensahel and David Barno's book, ***Adaptation Under Fire***, finds that a decisive variable in war is usually whether an institution has built, in advance, the structures and culture that allow it to learn and change rapidly once fighting begins. This is hardly a new idea. It was a pillar of one of Sir Michael Howard's best-known works, "**Military Science in an Age of Peace**," where he writes that

> usually everybody starts even and everybody starts wrong. In 1914 every army of all the belligerent Powers shared a common doctrine, of the dominance of the offensive and the inevitability of rapid and decisive campaigns. All navies believed in the dominant role of the capital ship. In these circumstances, when everybody starts wrong, the advantage goes to the side which can most quickly adjust itself to the new and unfamiliar environment and learn from its mistakes.

There is no intellectual property that can stand in the path of battlefield innovation; such are the existential imperatives of all involved. In these circumstances, emulation cycles might be measured in days or weeks rather than years, with the penalty for a slow follower being more friendly casualties and lost territory.

The imperative for Western military institutions to fully adopt the fast-following methodology is the threat posed by authoritarian powers. Contemporary great-power competition has produced an **adversary learning and adaptation bloc**, in which China, Russia, Iran, and North Korea function as an integrated, collective fast-following group. When one member proves a capability or a lesson, the others can copy it. The 2026 war with Iran, examined later in this report, has shown that this collective learning now runs in more than one direction: Russia, which fast followed Iran's Shahed design in 2022, has **reportedly** returned improved versions of that same weapon to Iran.

While there is always a danger of fast following the wrong lesson or copying a tactic without the context that made it work, done well, fast following compresses the cycle from observing a problem and innovation to fielding an answer. This is a decisive variable in war, particularly if its character changes from month to month.

Historical Examples of Fast Following in War

The dynamics described above are not unique to contemporary warfare. The logic of fast following occurs across military history whenever the conditions of competitive pressure, short imitation cycles, and observable enemy innovation are present. The cases below illustrate that fast following has long been a decisive element of military effectiveness, from the Western Front in 1918 to the electronic warfare duels over North Vietnam half a century later. Each example demonstrates a different dimension of the fast-follower dynamic, whether tactical, technological, or organizational. Taken together, they establish that the capacity to emulate an adversary's proven innovation is a recurring source of military advantage. This historical pattern provides essential context for understanding the Ukraine-Russia adaptation spiral, which represents the same dynamic operating at unprecedented speed and scale.

The British Army Adopts German Infiltration Tactics, 1917-1918 (Western Front)

Germany pioneered **storm trooper infiltration tactics**—small-team assault methods that bypass strongpoints to strike at depth—under Captain Willy Rohr in 1915, codifying them across the army by 1917. The **Spring Offensive of March 1918** (Operation Michael) proved their devastating effectiveness, breaking British lines for the first time in four years.

The British Army, and the armies of its dominions of Australia and Canada, fast followed. Rather than copying the German system wholesale, British commanders, particularly Rawlinson, Byng, and Monash, integrated decentralized infantry methods with their growing advantages in tanks, artillery, and aircraft. The result was the combined arms breakthrough at Amiens on August 8, 1918. The Australian and Canadian Corps spearheaded the attack, reaching their objectives within hours; Ludendorff **called it** the "black day of the German Army." The Hundred Days Offensive that followed drove Germany to armistice by November.[2]

Japan Fast Follows Britain's Taranto Raid to Plan Pearl Harbor, 1940-1941

In November 1940, the Royal Navy **launched a carrier strike** on the Italian fleet at **Taranto harbor**, demonstrating that battleships in a shallow, heavily defended harbor could be **sunk by torpedo bombers**. Admiral Isoroku Yamamoto, commander-in-chief of the Japanese fleet, studied the raid and used it as evidence to convince his superiors of the prospects for a surprise attack on the U.S. Navy. Concluding sometime in November 1940 that a preemptive aerial attack on the U.S. Pacific Fleet offered Japan its best strategic chance, he **ordered his staff** to begin planning. Japan then adapted the specific technique. By summer 1941, it had developed the Mark 95 torpedo, modified to run in the shallow waters expected at Pearl Harbor.

The fast-follower dynamic is clearest at the tactical level: Japan **took a proven concept**—mass carrier aviation against a fleet in port using shallow-running torpedoes—and scaled it, deploying six carriers where Britain had used one. The result was **one of the most consequential surprise attacks** in history. It is worth noting that some historians argue Yamamoto's planning was largely independent of Taranto. The strongest evidence is that Taranto confirmed feasibility and accelerated the technical solution (the modified torpedo)

2 For a description of Australia's part in the war, see C.E.W Bean, Anzac to Amiens (Canberra: Australian War Memorial, 1946), 410–95. For the Canadian perspective, see W.G. Nicholson, Canadian Expeditionary Force 1914-1919, Official History of the Canadian Army in the First World War (Victoria, BC: Queens Printer, 1962), 386–460.

rather than originating the idea. But even if this is so, Taranto was a classic demonstration point, and Japan's response to it was a clear act of fast following.

North Vietnam Fast Follows U.S. Electronic Countermeasures Against the Wild Weasel, 1965–1972

This example is a little unusual: A technologically inferior belligerent fast followed a superpower's tactical innovation. When the United States deployed **electronic warfare support aircraft**, the purpose-built platforms made to hunt and destroy North Vietnamese SA-2 surface-to-air missile (SAM) radar sites using anti-radiation missiles, North Vietnam observed, adapted, and progressively neutralized the innovation. North Vietnamese SAM crews **developed countertactics** that exploited U.S. limitations, which included keeping radar off until an inbound aircraft was close, calculating its trajectory passively, then activating briefly to fire, before relocating within approximately four hours. The North Vietnamese army also began to dispatch MiG fighter jets to harass U.S. electronic warfare aircraft, which forced electronic warfare support aircraft such as the EB-66 to retreat south of the twentieth parallel. This severely limited jamming support to U.S. missions over North Vietnam.

This forced **U.S. adaptation** in the form of the F-105 (variants I, II, and III) and F-4 Phantom (variant IV) Wild Weasel aircraft. The struggle **continued throughout the war**, with North Vietnamese operators adjusting their radars and electronic techniques to neutralize U.S. countermeasures, including shooting down many Wild Weasel aircraft, and U.S. forces reacting to the changing threat with different tactics and radar strike missiles. The **countermeasures effort** reached its climax in Linebacker II in December 1972. North Vietnam's fast adaptation of counter-electronic-warfare tactics allowed it to maintain a credible integrated air defense throughout the war, **shooting down multiple U.S. aircraft** and **constraining the air operations** of a vastly wealthier adversary.

From History to Modern War

These case studies, spanning a half century of war, establish a steady pattern. In each example, one belligerent observed an adversary's proven innovation, copied it, and then improved upon it. They did so fast enough to translate the emulation into a decisive operational or strategic advantage—at least for a time. The conditions that underpin this pattern—observable enemy innovation, short imitation cycles, and the existential pressure of war—are those that have characterized the conflict in Ukraine and Russia since 2022, in addition to other modern conflicts.

What distinguishes the contemporary expression of fast following, however, is not its intrinsic logic, which has been consistent throughout modern military

history, but its accelerating pace and wider reach. The imitation cycles that took months or years previously are now measured in weeks, and sometimes days. This acceleration, driven by the proliferation of cheap sensors, open-source intelligence, and industrial-scale production of unmanned systems, has made fast following a core operational requirement. And because the wars that have broken out this decade are observed in near-real time by military organizations around the world, the fast followers are no longer only the belligerents themselves. The next part of this report examines the most intensive laboratory of competitive military adaptation in the modern world: the war in Ukraine.

Ukraine and Russia as Fast Followers Since 2022

No conflict in the post–Cold War era illustrates the practice of fast following more intensely than the war in Ukraine since February 2022. Fast following has occurred continuously in both directions and at three distinct levels: the technical copying of weapons, the tactical copying of different evolving methods, and the organizational copying of institutional structures. Neither belligerent has enjoyed a durable first-mover advantage, because each has copied and improved on the other within weeks. The acceleration of this fast-following dynamic reflects the proliferation of cheap sensors, open-source intelligence, and commercial drone manufacturing, as well as the unprecedented strategic visibility of a war fought in front of the world's cameras and reported on in real time via social media.

Russia as a Fast Follower

Russia has fast followed both an ally and an adversary in the ongoing war with Ukraine. One of its most important acts of military emulation has been to adopt a partner's weapons. Russia did not invent the long-range strike drone that now **characterizes** its **nightly bombardments** of **Ukrainian cities**. Instead, it took the Iranian Shahed-136, localized its manufacture as the Geran-2, produced it in the tens of thousands, and then iterated through **faster, jet-powered variants** such as the **Geran-5** to complicate interception. Concurrently, Russia fitted successive iterations of the drone with multi-element anti-jamming navigation antennas, mesh-networked mobile data modems that allow real-time operator control, and air-to-air missiles. A **recent report** from CSIS found that "the loop between what operators need and what engineers deliver is measured in weeks." This is fast following in its purest form: Acquire a proven foreign design, build it at scale, and improve it faster than the original designer.

Russia has also been a determined fast follower of Ukrainian innovation. Throughout 2022 and 2023, Ukraine pioneered cheap, mobile air-defense fire groups to hunt Russian drones. Russia observed their success and **copied both the organization and the tactics** for its air defense. The pattern recurred across

the drone war as a whole. After an initial period in which Ukrainian agility and a **vibrant volunteer technology sector** gave Ukraine an advantage, Russia studied Ukrainian practice, matched it, then outproduced it. By late 2025, the drone contest was **turning in Russia's favor**.

But the advantage in drone technology being constructed by Russia was, as Rita McGrath **wrote**, transitory. In early 2026, the Ukrainian military reported that its drone forces had **stepped up their effectiveness** and, over a four-month period, had inflicted more casualties on Russian forces in Ukraine than the Russian military was able to recruit. Then, in February 2026, the Russian military discovered one of the hidden vulnerabilities of fast following. It had copied Ukraine's application of commercial Starlink terminals for frontline communications and drone operations by acquiring terminals through gray markets and third countries. When SpaceX and Ukraine's Ministry of Defence agreed on the introduction of a "whitelist" of registered terminals, that fast-followed capability disappeared almost overnight. This **forced Russian units** back to radio, mesh networks, and improvised relays and provided an opportunity for Ukrainian ground forces to **liberate large portions** of occupied terrain in southern Ukraine. A fast follower that emulates a capability built on someone else's infrastructure inherits that infrastructure's strengths and its vulnerabilities.

Ukraine as a Fast Follower

Ukraine, for its part, has been an energetic fast follower, most strikingly on fiber-optic drones. It was Russia that **first deployed** fiber-optic first-person-view (FPV) drones at scale; during the Kursk incursion that began in August 2024, Russia used the unjammable cable-guided weapons to devastate Ukrainian logistics and help force Ukrainian troops out of the salient. Ukraine, which was initially caught out, **raced to catch up**, its new drone branch fielding fiber-optic systems in direct response.

Within months, Ukrainian manufacturers were not just copying the concept but improving on it. They began producing improved next-generation fiber-optic drones with **ranges up to 30 kilometers**. This was another demonstration of the fast-follower pattern: Russia proved the concept and absorbed the development costs and uncertainty about its effectiveness; Ukraine then copied the idea and pushed it further. The same reactive military emulation has characterized the war's electronic warfare contest, in which each side's jamming innovation is met within weeks by the other's counter.

Ukraine has continued to fast follow Russian innovations throughout 2026. Russia's Molniya, a crude, cheap, fixed-wing strike drone with a simple airframe, proved effective against Ukrainian vehicles and positions well beyond the range

of quadcopter drones. In April 2026, a Ukrainian manufacturer unveiled the Khmarynka, a catapult-launched, fixed-wing strike drone with a 50-kilometer range and a 7-kilogram payload that openly resembles the Russian design. The initial **150 prototypes** were provided to frontline Ukrainian brigades for combat testing before the drone was then made available to order through the Brave1 marketplace.

Similarly, in May 2026, Ukraine launched a large-scale "**Logistics Lockdown**" campaign of mid-range drone strikes against Russian roads, rail junctions, fuel, and depots 50 to 150 kilometers behind the front line. While the Ukrainian military portrays this as an independent initiative, it nonetheless bears a strong resemblance to the **logistics interdiction model** that Russia's "**Rubicon**" center used to such effect against Ukrainian supply lines in 2025.

Interceptor Drones: A New Fast-Following Competition

The contest over interceptor drones is the most recent illustration of the fast-following competition. It is also the one that has shown, at least in 2026, the greatest global consequence. Facing hundreds of Shahed and Geran drones each night, and a finite supply of expensive surface-to-air missiles, Ukraine pioneered the mass employment of cheap interceptor drones such as the Wild Hornets' Sting. By February 2026, Ukrainian interceptor drones costing between $800 and $3,000 each were responsible for **approximately 70 percent** of Shahed takedowns in the Kyiv area. Ukraine has kept iterating: In April 2026, its drone forces **launched an interceptor drone** from an uncrewed surface vessel to destroy a Shahed.

Russia has fast followed with similar capabilities. It fielded a Russian autonomous interceptor, the Yolka, in 2025. In July 2026, **Russian forces were observed** fitting underwing interceptor drones to **An-2 biplanes and Yak-52 trainers**, a copy of a **Ukrainian volunteer innovation** that had armed an An-28 light transport with interceptor drones to hunt Shaheds above cloud cover. As later sections of this report examine, the Ukrainian interceptor model has become one of the most **widely emulated** military innovations in the world since the beginning of 2026, adopted in the Gulf, by **the U.S. Army**, and in Japan.

Fast Following Across Domains

A similar dynamic has been observed at sea, with Ukraine playing the role of first mover in naval innovation. Lacking a conventional fleet, Ukraine improvised with uncrewed surface vessels (USVs), including the Magura and Sea Baby families. These vessels have been used, often in cooperation with missiles and aerial drones, to sink or damage a long list of Russian warships. In February 2024, a **Magura V5** became the first naval drone in history to sink an enemy warship in

combat, sinking the Russian corvette ***Ivanovets***. In 2025, these uncrewed naval vessels were **shooting down Russian aircraft**, and in 2026, a Ukrainian naval drone **engaged in combat** with a Russian naval drone for the **first time in history**. This maritime campaign has destroyed or disabled a large proportion of the Russian Black Sea Fleet and driven it from its main base at Sevastopol in occupied Crimea.

Russia, in turn, became a fast follower. The Russian military has developed its own USVs, including the **Kama** and a family of other **maritime drones**. In 2026, Russia is expected to introduce more than **150 naval drones** into service. Russia has also accelerated its counter-USV defenses and announced a major **naval modernization** in response to the vulnerabilities Ukraine has exposed.

Russia has also been a fast follower in the field of uncrewed ground vehicles (UGVs). After Ukraine began to deploy these systems for logistics, casualty evacuation, and combat functions in 2024 and 2025, Russia began to copy this approach. Russian forces have employed their UGV variants in northeastern Ukraine in 2025 and 2026, often pursued by **swarms of Ukrainian drones** seeking to find and destroy them.

Fast Following at the Institutional Level

Some of the most important examples of fast following are organizational, because they show emulation occurring not as a weapon, but as a driver for structural reform. Ukraine has been a pioneer in this regard, particularly with the organizational change necessitated by expanding drone penetration across the entire military enterprise. After establishing the world's first dedicated unmanned-systems assault units in early 2023, in June 2024 it established the **Unmanned Systems Forces**, the first separate branch of any military devoted to drones. It has also launched the **Drone Line initiative** to concentrate its best drone units along a deep "kill zone." This institutional innovation, underpinned by a bottom-up culture in which frontline need, private initiative, and rapid state procurement meet—brokered by bodies such as Brave1—has been as important as any single weapon.

Russia once again fast followed. In August 2024, it established the **Rubicon Center for Advanced Unmanned Technologies**, an elite, well-resourced formation that functions as a doctrinal laboratory: It develops drone technologies, tests tactics, trains operators, and pushes the resulting expertise out to line units. Its establishment was an explicit response to Ukraine's drone innovation and formation of the drone units. Rubicon proved to be a **very effective organization**, conducting thousands of strikes against Ukrainian logistics and drone crews. This was further evidence of Russia's ability to learn and shed at least some of its rigid command habits and adapt. Russia then copied

the institution wholesale. In November 2025, it stood up its own **Unmanned Systems Forces** branch, explicitly modeled on the Ukrainian example. Fast following had moved up the chain, from copying a drone, to copying tactics, and now to copying an entire force structure. Russian fast following recently has even embraced the **Brave1 drone marketplace idea**. Created by Ukraine's state-funded defense innovation organization, Brave1, this marketplace allows Ukrainian military units to access a website to order equipment straight from Ukrainian manufacturers without going through a centralized procurement system.

The scale and reach of Russia's institutional emulation of Ukraine's drone institutions have grown rapidly. By April 2026, according to Ukraine's then-commander in chief, Russia's Unmanned Systems Forces had grown to around 101,000 personnel, with **plans to reach 165,500** by the end of 2026. Russia has also reorganized many of its drone units, rather than attaching them to individual brigades. This approach to the command and organization of drone units **closely mirrors** Ukraine's Drone Line. Ukraine created a new military service for drones, and within 18 months, Russia had copied it and was building it at a scale that neither Ukraine nor most Western military institutions can match. It may be one of the most important Russian fast-following initiatives of the war so far.

The Emulation and Adaptation Spiral

Both Ukraine and Russia have closely observed each other's ground tactical doctrine. A shift toward small-team tactics, infiltration, and the tighter integration of drones into infantry squads, platoons, and companies has been an adaptive spiral almost since the beginning of Russia's full-scale invasion in 2022. Whether the innovation is tactics, a fiber-optic drone, UGVs, or a naval system, the structure is identical: One side proves a technology and supporting concepts, the other copies and improves it, and the lead changes hands within months.

The lesson of the war in Ukraine is that fast following is now a core competency for military institutions (and leaders) in war. Because imitation cycles are now often measured in weeks, and sometimes days, very few first-mover advantages endure in modern war. The side that institutionalizes the continuous loop of observing, copying, improving, and fielding capabilities gains a recurring and compounding advantage. Russia's progress from 2023 to 2025 in Ukraine reflects, in part, its growing effectiveness as a large-scale fast follower, while Ukraine's strength has been the pace of its iteration and the openness of its innovation ecosystem. This ongoing contest, which has military, industrial, and national dimensions, is dynamic, and none of the advantages that emerge are permanent. And, as the following sections demonstrate, the lessons of this fast-following spiral are not limited to Eastern Europe.

Beyond Ukraine: Fast Following in the Middle East

If Ukraine has served as a wartime laboratory of the fast-following spiral, the 2026 war with Iran has been the first large-scale demonstration that lessons from Ukraine are now being exported, copied, and enhanced beyond Eastern Europe. The **military campaign** that commenced against Iran on February 28, 2026, began with coordinated U.S. and Israeli strikes (Operation Epic Fury and Operation Roaring Lion) that killed Iran's supreme leader and targeted its missile, drone, and air defense infrastructure. Iran responded with sustained missile and drone attacks against Israel, Gulf states, and U.S. bases, and later with a campaign against shipping in the Strait of Hormuz. Fighting between Israel and Hezbollah resumed in parallel. Several distinct examples of fast following have emerged from these conflicts.

The United States and the Shahed

The most prominent example of fast following has seen the world's most technologically advanced military emulating the design of a sanctioned Middle Eastern nation. The **LUCAS**, built by Arizona-based SpektreWorks, was developed from a training replica of the Shahed-136 and costs around $35,000 per unit. The first **shipboard launch** of the system was conducted from the USS *Santa Barbara* in December 2025, and U.S. Central Command employed the LUCAS drones in combat against Iranian command and control facilities, air defenses, and launch sites from the first day of Operation Epic Fury. Concurrently, the Pentagon formed its first dedicated one-way attack drone unit, **Task Force Scorpion Strike**, which was placed under Special Operations Command Central. This was followed in August 2026 by the formation of a **multinational attack drone task force** in the Middle East named Task Force Falcon Strike.

This is a clear example of fast following due to the imperatives of military operations. Iran was the inventor of the drone, but Horowitz's "demonstration point" was achieved by Russia's mass employment of the Geran-2 against Ukraine beginning in 2022. Russia paid the cost of improving the drones and proving the concept at scale. The U.S. military then emulated the proven design. Two observations are relevant to this example. First, the U.S. military was prepared to discard the institutional preference for exquisite, high-cost munitions in favor of an adversary's cheap and "good enough" weapon. This is the kind of design lock-in, and its systemic impacts, that fast following is designed to overcome. Second, the interval between the demonstration point and U.S. use in combat was roughly three and a half years. That was fast by the standards of U.S. military acquisition processes but very slow by the standards of the war in Ukraine, where the equivalent cycle is measured in weeks.

The Gulf States and the United States Fast Follow Ukraine

Iran's drone attacks exposed a problem for the United States that Ukraine had been confronting since 2022. Ukraine had originally sought to defend against large numbers of cheap Russian one-way attack drones with small numbers of expensive, exquisitely advanced interceptor missiles. After six American military personnel were killed in a **drone strike** at Port Shuaiba in Kuwait in March 2026, Washington requested Kyiv's assistance. By March 20, **228 Ukrainian specialists** had deployed to Jordan, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates, including to a U.S. military base in Jordan, bringing interceptor drones and the tactics, radar networks, and command arrangements that make them effective. As **President Zelensky stated** at the time, "I believe no one has experience comparable to ours." In April, Zelensky claimed that Ukrainian interceptors operated by these teams had **shot down Iranian drones** in the Middle East.

The U.S. Army moved and evolved in parallel. It acquired around 13,000 **Merops interceptor drones**, a system first used by Ukrainian forces against Russian drones in 2024 and subsequently adopted by Poland and Romania. The interceptors, which cost around $15,000 each, were deployed to protect U.S. forces against Iranian Shaheds. Then-Army Secretary Dan Driscoll **told Congress** in April 2026 that the system allowed the U.S. Army to "take Shaheds down that cost $30,000 to $50,000, which is amazing because that puts us on the right end of the cost curve." He credited a **streamlined acquisition process** that had cut decisionmaking from 16 steps to a rapid approval cycle.

This example of fast following by U.S. forces in the Middle East introduces something new to the theory of fast following: fast following as a service. Ukraine did not just export hardware or software; it exported people, operating procedures, and hard-won judgment. This is Farrell's "**collaboration**" pathway of emulation operating at the speed of war. It is also an important reminder that the most valuable element of an innovation is often the tacit knowledge of the people who developed it.

Hezbollah Fast Follows the Fiber-Optic Drone

Another lesson in fast following has recently emerged in southern Lebanon. In the spring of 2026, **Hezbollah began employing fiber-optic FPV drones**, with cables of 10 to 30 kilometers, against Israeli ground forces. Israeli electronic warfare systems, designed for radio-controlled threats, **were initially ineffective against them**, and some units resorted to rifle fire and improvised nets over their positions. According to one Israeli research center, **over 80 FPV drones were launched at Israeli forces** over several weeks, with around 15 hits that killed four soldiers and a civilian and wounded dozens. Israel subsequently **announced plans** for a dedicated drone factory and new counter-FPV defenses.

The demonstration point for fiber-optic drones was the Kursk fighting in August 2024. Hezbollah, a terrorist organization under sustained pressure from Israel, fast followed a Russian innovation within about 18 months. Israel, with one of the world's most capable and combat-experienced militaries, had the same 18 months of warning but had not fielded an effective counter by the time the threat arrived. This was not a failure of observation; the fiber-optic drone threat was widely reported. It was, rather, the learning deficit—a shortfall in *acting* on lessons rather than in generating them—described earlier in this report and in a **June 2026 Lowy Institute report**. It demonstrates that even highly adaptive militaries can be slow followers when a lesson appears to belong to someone else's war.

Russian-Improved Shaheds Return to Iran

The Iran war in 2026 has also exposed how the authoritarian learning and adaptation bloc functions as a fast-following system. In August 2026, drawing on U.S. intelligence assessments, the Institute for the Study of War reported that Russia had **transferred upgraded Shahed-type drones** incorporating Geran improvements, along with targeting intelligence, to Iran for use against U.S. forces in the Middle East. The Shahed pioneer has become the fast follower of its own design's improved descendant. Improvements generated under the pressure of Ukraine's dense air defenses were **transferred to a second theater**, against a different adversary, **within months**. For Western planners, this means that lessons learned in one theater must be assumed to be available to all members of the bloc in every theater.

Fast Following in the Pacific Theater

The Western Pacific has not experienced major interstate war in the period covered by this report. Its militaries, however, are, at different rates, learning from other people's wars. This makes the region a useful test of whether institutions can fast follow without the forcing function of combat.

China

The People's Liberation Army (PLA) has not fought a major war since 1979. Its primary source of combat-relevant learning is therefore the close study of others' conflicts, and ever since the Falklands War, it has studied modern wars—including that in Ukraine—in great detail. Its fast following has been visible in several ways. In 2025, units of the PLA's 81st Group Army **tested fiber-optic drones** of the type pioneered in the Kursk fighting only months earlier. A **September 2025 military parade** in Beijing displayed an array of uncrewed aerial, surface, and undersea systems that reflected close attention to the drone wars in Ukraine and the Middle East. And the PLA has developed concepts for

networked robotic formations, including aerial swarms, ground "wolf packs," and maritime "shark packs," explicitly justified by the demands of contested littorals and information-degraded environments of the Western Pacific and under the auspices of its "**intelligentized warfare**" concept.

Perhaps a more interesting example is what might be described as anticipatory fast following. On August 6, 2026, PLA Ground Force units used at least 13 armed KVD002 uncrewed combat aerial vehicles to conduct missile strikes against fast-moving drone boats during a **training exercise**. The PLA does not yet face an adversary employing USVs at scale. But Taiwan is building that capability, modeled on Ukraine's Black Sea campaign—and so are other nations, including the United States. The PLA is therefore fast following not the Ukrainian innovation, but Russia's battle-proven experience of countering it, and this is occurring long before any war breaks out. This is **fast following of a countermove**, anticipated ahead of when it might be required in war.

Taiwan

Taiwan **has been studious** in its observations of Ukraine's naval drone campaign. In March 2025, Taiwan's CSBC Corporation **unveiled** the Endeavor Manta USV, and other Taiwanese firms have displayed designs that closely resemble Ukraine's Magura- and Mykola-class vessels. In June 2026, Taiwan's executive proposed a **$6.6 billion budget** for domestically produced uncrewed systems, including 208,200 one-way attack drones, 1,446 reconnaissance drones, and 1,320 uncrewed surface vessels.

Taiwan's learning from Ukraine since 2022 also demonstrates that fast following is a political as well as a military undertaking. The **new drone budget** was required because opposition parties had removed similar provisions from the government's **earlier defense supplementary budget**, which was cut before passing in August 2026. A military might identify the right lesson and the right solution to an operational problem but still be unable to fast follow if its national institutions cannot fund and authorize it at the necessary speed.

Japan

Japan has taken a different path than its regional neighbors by using Ukraine as a testing ground for future Japanese capabilities. Japanese firm Terra Drone has **fielded** interceptor drone prototypes in Ukraine through partnerships with Kyiv-based startups, and Japan plans to deploy autonomous interceptor drones to protect radar sites, bases, and vessels **beginning in 2027**. Funding for **Japan's uncrewed defense capabilities** rose from ¥111 billion in 2025 to ¥277 billion in 2026, with a goal of producing around 80,000 drones annually by 2030. Ukrainian firms have courted Japanese, Taiwanese, and Philippine customers,

with one Ukrainian executive observing that the maritime situation in Asia is "**extremely similar**" to the Black Sea. This is a novel fast-following pathway. Rather than waiting for a lesson to be codified, a nation embeds its industry in a partner's war to test and refine its own designs under combat conditions.

North Korea

North Korea has done something that none of its Western Pacific neighbors has done. It has deployed its troops to Ukraine and conducted large-scale combat operations alongside Russian troops in a drone-saturated war. An estimated **11,000 to 15,000 North Korean troops** have fought in and along the periphery of Ukraine, where they have gained firsthand exposure to drone-artillery integration and adapted by dispersing into smaller units, improving camouflage, and adopting methods for counter-drone defense. Kim Jong-un has emphasized drone development since 2024, coinciding with deepening military cooperation with Russia. Reports in 2026 also indicate that **Russia is actively assisting** North Korean military drone development. North Korea is fast following through participation, and its troops have carried that knowledge home to the Korean Peninsula.

Australia

Australia offers a modest example of fast following, and one in which learning and adaptation have flowed in both directions. In 2022 and 2023, Australia donated more than 600 SYPAQ Corvo Precision Payload Delivery System drones—low-cost, flat-packed cardboard reconnaissance and delivery drones originally codeveloped with the Australian Defence Force—to Ukraine. Ukrainian operators rapidly modified how they used the drones, and their feedback went directly to the Australian manufacturer, which **reworked the mission planning system**, user interface, and ground control station for the entire Corvo family. At the same time, Australian soldiers deployed in Operation Kudu—the Australian Defence Force's contribution to the UK-led training mission for Ukrainian troops—found themselves learning from those they had been sent to train. In March 2026, instructors from the 2nd Battalion, Royal Australian Regiment, who had been mentored by Ukrainian drone specialists during Operation Kudu, **ran the Australian Army's first courses** teaching soldiers to build, modify, and fly FPV attack drones, which leaders aim to "**rapidly scale**" across the Army.

Institutional investment has followed, but it has been more a case of slow following than fast following. In April 2026, the government released a National Defence Strategy and Integrated Investment Program that **allocated around A$12 billion** over the decade to drones and uncrewed systems, which the defense minister linked to lessons learned from Ukraine and the Middle East, and **committed up to A$7 billion** for counter-drone capabilities. The first contracts

under this counter-drone program included an Australian-designed interceptor drone, SYPAQ's Corvo Strike, which is a direct analogue of the Ukrainian interceptor models examined in this report.

The Australian case shows the value of placing soldiers and industry in direct contact with a combat-experienced partner. But it also shows the limits of the current approach. Lethal FPV drones had become pervasive in Ukraine by 2023, yet the Australian Army ran its first courses on them in 2026, and its counter-drone investments will take years to field at scale. By the measure proposed in this report, the demonstration-to-adoption interval, Australia has been a follower, but not yet a fast one.

Implications and Implementing Fast Following Recommendations for Military Institutions

When considered together, the cases from Ukraine, the Middle East, and the Western Pacific extend the theory of fast following in five important ways.

First, fast following is now global and multidirectional. The Shahed has traveled from Iran to Russia and from Russia to the United States by way of emulation, and from Russia back to Iran in improved form. Fiber-optic drones have traveled from Russia to Ukraine, China, and Lebanon. Interceptor drones have traveled from Ukraine to Russia, the Gulf, the United States, and Japan. The fast follower is no longer only the opponent across the front line; it is every military institution watching.

Second, the demonstration-to-adoption gap is largely driven by institutions, not technology. For Ukraine and Russia, the interval between an adversary's demonstration and their own fielding is measured in weeks. For Hezbollah, adopting fiber-optic drones took around 18 months. For the United States, copying the Shahed took around three and a half years. The technology was equally available to all. What differed was institutional speed.

Third, know-how travels mainly with people. The most effective transfers have been those in which people moved with the technology: Ukrainian specialists in the Gulf, Japanese engineers testing in Ukraine, and North Korean soldiers returning from Russia's war. Hardware can be copied from photographs. Tacit knowledge of how to employ it has to be learned or borrowed from those who already possess it.

Fourth, fast followers can emulate the countermeasure as well as the innovation. The PLA's counter-USV training and Israel's slow response to fiber-optic drones show that the most important thing to copy is sometimes not a weapon but

the adversary's answer to it. The side that fast follows the counter before a war begins is likely to possess an advantage.

Finally, fast following has vulnerabilities. Russia's loss of Starlink showed the danger of copying a capability that rests on another party's infrastructure. Taiwan's budget politics showed that fast following requires national as well as military agility. And the risk, noted earlier, of copying a lesson without the context that made it work remains ever present.

If fast following is a decisive element in a larger learning and adaptation framework in modern war, the question for Western and Australian forces is how to do it deliberately and systemically rather than accidentally or sporadically throughout the force. Fast following is not a substitute for a learning and adaptation system; it is one of its key action arms. A learning system detects and makes sense of change; fast following is how an organization acts on what it has observed by copying and improving a proven solution at speed. A learning system without a fast-follow capability might sometimes generate insight that never reaches industrial production, doctrine writers, or military personnel in the field. This is the type of learning deficit that afflicts many Western institutions. Conversely, a fast-follow capability without a learning system copies blindly.

The following actions, drawn from what has worked in Ukraine and from the wider literature, are recommended as realistic and implementable for military institutions.

1. **Establish a dedicated intermediary that connects users, industry, and procurement.** Ukraine's advantage has rested less on any single technology than on an ecosystem in which frontline need, private developers, and rapid state procurement are tightly coupled, brokered by organizations such as Brave1 and a deregulating digital-transformation ministry. Western militaries should build an explicit analogue: a standing body, with real authority and a protected budget line, whose task is to match a proven battlefield innovation to a domestic producer and field it in months. The U.S. Defense Innovation Unit, created to let the Department of Defense act as a fast follower, and the Australian Advanced Strategic Capabilities Accelerator are only partial models. The **lesson from Ukraine** is that such bodies must reach all the way to the user, with developers embedded inside military units and feedback cycles measured in weeks, not years.

2. **Create emergency acquisition pathways that trade technical risk for speed.** Conventional acquisition, built for exquisite low-density platforms, cannot field a copied innovation inside the weeks that an emulation cycle allows. Militaries should establish standing rapid pathways for

urgent operational requirements that explicitly accept higher technical risk in exchange for shorter timelines and that hold program managers accountable for speed and operational relevance rather than process compliance. The U.S. Army's acquisition of Merops interceptors, enabled by collapsing a 16-step decision process, shows what is possible when this is done. This single change is most likely to convert observed lessons into a fielded capability and should be the norm and not a wartime exception.

3. **Build a systematic capacity to observe foreign wars, with systems for translating insights for local context.** Fast following begins with seeing what works. Militaries should resource dedicated cells to **study ongoing conflicts** and translate their lessons into specific capability and doctrinal options, drawing on the open-source abundance that now exists. The discipline that matters most is **contextual**: A lesson copied without the conditions that made it work is worse than no lesson at all. Every candidate for innovation should therefore carry an explicit judgment about whether, and how, it transfers to the organization's geography, climate, force structure, and adversary, guarding against the recurring error of emulating the wrong thing. Farrell describes **three challenges** that must be resolved in this translation of insights from foreign wars: (1) the degree of affinity between the imported model and the culture of the receiving organization, (2) the difficulty in adopting the military model, in terms of resources required and level of disruption for the organization, and (3) tactical considerations, specifically the extent to which the imported military model returns tactical advantage to the adopting organization. These are important considerations for senior leaders in any process to emulate, and fast follow, the innovation of others.

4. **Treat combat-experienced partners as a learning asset, not just a recipient of assistance.** The deployment of Ukrainian specialists to the Gulf, the **defeat of NATO and U.S. units** by Ukrainian drone teams in **exercises**, and Japan's testing of its designs in Ukraine all point to the same conclusion: The fastest way to acquire tacit knowledge is to learn directly from those who developed it. Western military institutions should establish formal standing arrangements to embed Ukrainian (and, where appropriate, Israeli) operators and trainers in their exercises, training establishments, and experimentation units. These experts should be employed as opposing forces that expose Western units to current battlefield methods, as well as friendly forces to provide direct knowledge on how to implement change. These arrangements should be reciprocal and enduring, not ad hoc responses to crises.

5. **Institutionalize fast following in a doctrinal-laboratory organization.** Both Kyiv and Moscow eventually concentrated their fast following in

dedicated organizations (Ukraine's Brave1 and Unmanned Systems Forces, and Russia's Rubicon center) that develop, test, train, and disseminate as a single continuous function. A Western analogue—a standing unit whose mandate is to absorb battlefield innovations; refine them; work closely with defense industry and military research, development, test, and evaluation organizations; and push new technology, training, and ideas out to the force—would give fast following an institutional home and an accountable owner. It need not be large. But it should be empowered, well-resourced, and connected both to the front and to industry. The U.S. Army's recent decision to **close its experimental drone battalion** in favor of distributing drones across the force should be matched by an enduring institution that continues to perform this laboratory function.

6. **Measure the demonstration-to-adoption gap.** What is not measured is rarely improved. Military institutions should track, and report to senior leaders and legislatures, the time between the demonstration point of a significant foreign innovation or technology and the fielding of an equivalent capability or effective counter in their own force. The cases in this report suggest that this demonstration-to-adoption gap can range from weeks in Ukraine and Russia to years in some Western institutions. Making that gap visible would be a key driver in closing it. This would also give senior military leaders an objective measure of their institution's adaptive capacity.

7. **Incentivize leaders, reform promotion, and reward emulation, not just invention.** Fast following cannot operate effectively without leaders who value adapting fast over continuing to do things the established way. Promotion systems informed by decades of peacetime institutional management tend to reward adherence to process and undervalue adaptive leaders who can take risks, copy good ideas rapidly, and improve on them. Militaries should review their promotion pathways to ensure they do not structurally disadvantage these innovative, energetic leaders and should state plainly that military emulation and rapid iteration are highly valued. At the same time, the array of incentives for the behavior of leaders at all levels should evolve to ensure that risk taking and establishing unit cultures that nurture observing, learning, and adapting in peace and war are at the core of both selection and assessment of leaders.

8. **Preserve exploration alongside fast following.** Fast following is a form of exploitation, and an organization that only ever copies will always be one cycle behind the innovator it takes advantage of. The point is not to abandon original innovation for imitation, but to balance the two. Institutions need to pair a powerful fast-follow capability with protected space for exploration, so that a military force can both copy others quickly

> and, sometimes, be the pioneer worth copying. Managing that balance, between exploiting what is proven and exploring what is not, is an enduring task that demands good leadership and appropriate resources.

Taken together, these measures describe how fast following complements a learning and adaptation system rather than substituting for it. The learning system observes, analyzes, and judges; the fast-follow capability acquires, adapts, and fields; the doctrinal-laboratory unit and the acquisition pathways turn judgment into capability at the pace the battlefield demands. The combination is what allows a military to keep step with an adversary that is itself learning and, occasionally, to get ahead.

Conclusion

Fast following is the disciplined practice of allowing others to prove a concept, then copying and improving it more rapidly than the competitor can exploit their lead. In the innovation literature it is a strategy that is frequently superior to being a pioneer. In war it is more fundamental, because the military emulation cycle can often be measured in weeks or even days, and the cost of slowness is measured in lives and territory lost. The journey of the Shahed drone, with which this report commenced, captures this new reality. In the space of four years, a single design was copied, industrialized, and improved from one nation by a second, emulated by a third, countered by methods pioneered by a fourth, and then returned in improved form to its inventor. The same pattern can be traced in fiber-optic drones, naval drones, interceptor drones, and entire military services.

Ukraine and Russia have each been fast followers since 2022, repeatedly copying one another's weapons, tactics, and institutions in a learning and adaptation spiral. The 2026 war with Iran has demonstrated that this emulation spiral now extends well beyond Ukraine and Eastern Europe, encompassing the United States, the Gulf states, Israel, and Hezbollah. And in the Western Pacific, China, Taiwan, Japan, and North Korea are all fast following the lessons of wars they have not yet had to fight themselves.

Farrell describes how

> the search for solutions to battlefield challenges can lead militaries to emulate foreign ways of organizing and operating. Military emulation may occur when ideas are diffused within alliances or coalitions, or when military models are imposed by powerful patrons on client militaries. Cultural fit, degree of difficulty, and tactical advantage promised, are all factors that will determine the ease and extent of military emulation.

Thus, fast following is not a simple process, and like other learning and adaptation processes, it requires resourcing, institutional buy-in, and good leadership. But it is an important complement to the internal innovation and learning systems of a military institution.

For the United States and Australia, and their allies, the implications of recent fast-following initiatives are clear. Their adversaries in the authoritarian learning and adaptation bloc are fast following individually and collectively, sharing proven innovations across theaters within months. The United States has shown, with its LUCAS and Merops programs, that it can fast follow when the pressure of war demands it. But those are pockets of excellence, not a well-developed military system. The gap between a demonstration point and adoption remains. In too many Western institutions, this gap is measured in years rather than weeks. In a future conflict in the Indo-Pacific, there will be very little time to learn at that pace.

The decisive capability for contemporary military institutions is therefore not only the ability to innovate, but the systemic capacity to fast follow. They should be able to observe, copy, improve, and field at the pace the modern battlefield now demands, and to do so before the fighting starts as well as during it. A core part of leadership in twenty-first-century military institutions, therefore—in peace and war—is hard-wiring that capacity into learning and adaptation systems, acquisition processes, leadership models, promotion processes, and institutional cultures, so that fast following is systemic rather than episodic. The race, as Simpkin argued, is still to the swift.[3] But in the adaptation wars of this century, the swift will very often be those who are fastest to follow. ■

3 In his book *Race to the Swift*, Richard Simpkin inverted a passage from Ecclesiastes ("The race is not to the swift") with an argument that in modern war, the race *is* to the swift. This would be achieved through a focus on maneuver over attrition, momentum and tempo, application of the indirect approach and deep operations, and precision warfare. Richard Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare* (Lancer Publishers, 1997).

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