

Beyond Reapers and DJI Mavics: Are Scholars and Policymakers Ready for One-Way Attack Drones?

Description

On March 23rd an Iranian-made one-way attack (OWA) drone [struck](#) a US-led coalition base in Syria, killing a US contractor and injuring five US servicemembers and another US contractor. It was not the first time an OWA had been used in this way. On January 20th three drones had [attacked](#) another coalition base in southern Syria. Two were shot down, but the third injured two Syrian fighters in the base. The model of drone was initially unidentified, but later footage of the January attack [revealed](#) that they were Qasef-2ks, a kind of OWA drone.

Practitioners may be intimately familiar with the Qasef and other OWA drones, but their recent use in Syria and Ukraine, where actors have used these drones in large numbers and to great effect, should be prompting scholars, commentators, and many policymakers to rethink how they conceptualize drones. Previously, even as the number and variety of drones expands, scholars of irregular warfare have overwhelmingly studied how actors use only two kinds of drones, which do not include OWAs. The first is the Unmanned Combat Air Vehicle (UCAV), like the MQ-1 Predator and MQ-9 Reaper. According to most scholarship, UCAVs are primarily used by states to conduct [counterterrorism](#), and therefore studies focus on their utility in counterinsurgency contexts. On the opposite end of the spectrum, some scholars look at how insurgent and terrorist groups use [quadcopters](#) like those made by the Chinese company DJI to increase the lethality and reach of their attacks.

Both drone types are important to study, but one-way attack drones are different. Whereas UCAVs are extremely expensive to operate and quadcopters have limited range and payload, OWA drones are a low-cost way for nonstate actors and proxy forces to strike targets hundreds of miles away with better precision than a rocket or mortar. The opportunities and challenges presented by OWA drones merit further analysis, as they are a growing part of irregular warfare and irregular tactics from Yemen to Ukraine. While practitioners have started [pouring](#) money into air defenses that can [counter](#) one-way attack drones effectively, a lack of scholarship has left many policymakers without a clear understanding of what one-way attack drones are, what they are used for, and how their low cost, high precision, and ease of proliferation will make them a key part of future conflicts.

One-way attack drones are a broad category, but share the feature that they crash into or explode above their target, and therefore cannot be reused. The category includes drones of all shapes and

sizes, but those with the greatest potential to challenge even the most advanced militaries are fixed wing, cheaply built, and can travel hundreds of miles. The Shahed-136, for example, which has quickly become the mascot for drones of this type, [probably](#) costs around \$30,000 USD each and is estimated to be able to fly up to 2,000 kilometers, although no known attack has tested that maximum range. Most importantly, Iran's OWA's are a precision strike capability that is compact enough to proliferate across the world, and simple enough for everyone from nonstate actors to the Russian army to make use of them.

Iran's OWA drone program is frequently referenced in the media because the Iranian government sent hundreds to Russia for use against Ukraine, but these drones present more challenges in an irregular context. Iran's drones are used [extensively](#) in Yemen, where the Iran-backed Houthi rebels launch them in conjunction with missiles against the Yemeni government, Saudi Arabia, and the United Arab Emirates. The drones are both part of an effort by the Houthis to [coerce](#) its stronger adversaries without a conventional battle, and a proxy effort by Iran, which seeks inexpensive ways to wrongfoot its regional rivals. A major part of Saudi Arabia's recent rapprochement with Iran is [reportedly](#) a desire to halt the flow of one-way attack drones to the Houthis from Iran.

One-way attack drones take advantage of the assumptions of modern air defense: that conventional militaries will primarily use a small number of extraordinarily capable systems, like advanced cruise missiles, strike aircraft, or UAVs, rather than large numbers of less capable systems. Over the course of several years, the Houthis launched hundreds of drones at oil and military facilities to degrade Yemeni military capabilities and coerce Saudi and Emirati leaders to cease support to the Yemeni government. While the Saudis in particular claim most drones were shot down, the intensity of the campaign led the Saudi military to [plead](#) for more air defense systems to protect their borders and is one of the reasons they have sought a way [out](#) of the conflict for years.

The blind spot scholars and commentators had for one-way attack drones came into play when the United States announced that Russia would acquire Iranian drones in mid-2022. Few observers looked beyond Iran's UCAV fleet when analyzing the implications of the transfer for the conflict. Even after Shaheds started showing up in Ukraine, they tend to be [folded](#) into broader articles about drones overall, rather than studied as a system with a unique purpose.

Russia's [attacks](#) in October turned heads. Russia used dozens of Shahed one-way attack drones to target civilians in Kyiv. As was the case in Yemen, the drones were used in preponderance to get through conventional air defenses, or to support missile strikes. Even if most were shot down, those that made it through killed civilians; subsequent attacks peaked towards the end of the year and led the Ukrainian government and international donors to prioritize [well-intentioned](#) but tactically dubious efforts to specifically counter Shaheds.

Even in the context of the conventional conflict between Ukraine and Russia, Ukraine uses one-way attack drones as part of their irregular campaign against Russia's rear bases and supply lines. As early as June Ukrainian forces [struck](#) Russian oil and military targets with improvised one-way attack drones to get around their lack of other long-range strike options. To get around Russia's massive naval superiority, Ukraine [attacked](#) Russia's Black Sea fleet with OWA drones in conjunction with drone boats, forcing the Russian navy to rethink their operations. These drones either came from Ukraine's [fledgling](#) drone industry or were purchased [commercially](#) and modified.

Scholars and policymakers need to consider the implications of OWA drones for US defense policy. The March 23 and January 20 attacks in Syria show that the United States and other countries will need to think about air defense when providing security force assistance to partners that involves co-locating their personnel. The wars in Yemen and Ukraine show that actors like Iran can produce and proliferate large numbers of drones to US adversaries without being a leader in drone technology. Scholars need to move on from simplistic classifications of drones based on weight and focus more on analyzing the implications of technologies [currently](#) on the battlefield. If scholars want to inform policymakers about the strategic implications of drone technologies, they will need to look beyond Reapers and Mavics.

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Photo: US Marine Corps

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