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The Coercive Logic of Militant Drone Use

Austin C. Doctor and James I. Walsh

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ABSTRACT: While unmanned aerial systems can serve as a force multiplier for militants, these systems do not embody a transformation in modern insurgent warfare or enable militants to engage regularly in strategic coercion. Instead, drone use is consistent with a militant group's relative capabilities and broader strategic objectives. Consequently, these groups are likely to employ drones primarily for theater and tactical military purposes.

Drones provide militants with affordable and novel means of bringing force to bear against opponents as the cost and complexity of this technology decreases and range, lethality, and swarming ability increases. A simple cost-benefit analysis suggests many militant groups should be attracted to making drones a central part of their armory. This framework, however, overlooks important strategic and political considerations, the sum of which strongly suggest most militant groups have determined drone-based airpower does not enable them to engage successfully in strategic coercion in civil war. Instead, drones serve as tactical adjuncts to the existing military strategies of militant groups and are used primarily to support ground operations and to interfere with the military operations of opponents.

Background

Over the past decade, state and nonstate actors alike have substantially increased their production and militarized use of unmanned aircraft systems (UAS)—drones.¹ The refinement and proliferation of affordable UAS technology has prompted more militant groups to incorporate drones into their military and political operations. For instance, militants have introduced drones to armed conflicts in Ukraine, Nigeria, Indonesia, Syria, Iraq, and Libya. Expressing concern about this trend, a May 2019 United Nations report advised, “greater efforts are needed to address the potential risks posed by terrorist use of UAS.”² US defense and political leaders have echoed this call.³

Mitigating the risks posed by such drone use is complicated by the lack of agreement among experts and practitioners regarding the nature

1. Secretary General, International Civil Aviation Organization (ICAO), *Unmanned Aircraft Systems (UAS)*, Cir 328 AN/190 (Montreal: ICAO, 2011), x, https://www.icao.int/Meetings/UAS/Documents/Circular%20328_en.pdf.

2. United Nations Security Council Counter-Terrorism Committee Executive Directorate (CTED), *Greater Efforts Needed to Address the Potential Risks Posed by Terrorist Use of Unmanned Aircraft Systems*, CTED Trends Alert (New York: CTED, May 2019), 1, https://www.un.org/sc/ctc/wp-content/uploads/2019/05/CTED-UAS-Trends-Alert-Final_17_May_2019.pdf.

3. Michelle Tan, “Army Chief: Soldiers Must Be Ready to Fight in ‘Megacities,’” *Defense News*, October 5, 2016, <https://www.defensenews.com/digital-show-dailies/ausa/2016/10/05/army-chief-soldiers-must-be-ready-to-fight-in-megacities/>.

of the threat posed by militant drone programs. Some assessments raise alarm. “Imagine swarms of undersea, surface, and aerial drones hunting submarines hidden in the vastness of the ocean. Or imagine hundreds of airborne drones darting through New York City, seeking out targets and dosing them with nerve agent.”⁴ In 2017, then chairman of the Joint Chiefs of Staff General Joseph F. Dunford Jr. remarked to a Senate committee that drones were “at the top of [the US defense community’s] list for current emerging threats.”⁵ Others, however, have expressed less concern.⁶

How and to what extent do militants advance their strategic objectives with drones? Drawing on Robert Pape’s categories of coercive airpower, this article presents a framework for assessing militant drone operations and their effects in armed conflicts.⁷ The analysis focuses primarily on drone operations conducted by Islamic State, Hezbollah, and Houthi militants as these groups are especially prominent among the few nonstate organizations known to have used drones to kill opponents.⁸

Appeal of Drone Technologies

Two types of drones are available to militants. The first type resembles an airframe that can carry a human crew—a fixed-wing, longer-range aircraft that can remain aloft for hours. These drones are equipped with satellite uplinks for long-distance communication, sophisticated surveillance systems, and sizeable payloads for guided missiles. Only a few militant groups, most prominently Hezbollah and the Houthis, have employed drones with some or all of these characteristics. The second type resembles a hobbyist drone—small, portable, and limited in range and payload. This type of drone has been used more widely by militant groups such as Islamic State.

Yet technological and political developments are rapidly blurring this distinction and may allow many militant groups to obtain drones capable of strategic effects. Commercial outlets are producing larger

4. Zachary Kallenborn and Philipp C. Bleek, “Drones of Mass Destruction: Drone Swarms and the Future of Nuclear, Chemical, and Biological Weapons,” *War on the Rocks*, February 14, 2019, <https://warontherocks.com/2019/02/drones-of-mass-destruction-drone-swarms-and-the-future-of-nuclear-chemical-and-biological-weapons/>.

5. Ash Rossiter, “Drone Usage by Militant Groups: Exploring Variation in Adoption,” *Defense & Security Analysis* 34, no. 2 (2018): 113–26, <https://doi.org/10.1080/14751798.2018.1478183>.

6. Dhia Muhsin, “Houthi Use of Drones Delivers Potent Message in Yemen War,” *International Institute of Strategic Studies* (blog), August 27, 2019, <https://www.iiss.org/blogs/analysis/2019/08/houthi-uav-strategy-in-yemen>.

7. Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1997), 46.

8. Emil Archambault and Yannick Veilleux-Lepage, “Drone Imagery in Islamic State Propaganda: Flying Like a State,” *International Affairs* 96, no. 4 (July 2020): 955–73, <https://doi.org/10.1093/ia/iaa014>; and Don Rassler, *Remotely Piloted Innovation: Terrorism, Drones and Supportive Technology* (West Point, NY: Combating Terrorism Center at West Point, October 2016), <https://ctc.usma.edu/wp-content/uploads/2016/10/Drones-Report.pdf>.

drone systems with wider operative radii and heavier payloads.⁹ Swarm technology continues to improve and is becoming accessible to amateur operators and militant groups.¹⁰ This particular technology could enhance militant groups' use of drones for strategic ends, allowing them to coordinate strikes among many small, inexpensive, and expendable drones to create physical and psychological effects.¹¹

The number of states producing and exporting drones is growing rapidly. States as diverse as Belarus, Iran, and Indonesia produce indigenous drone systems, and many other states import these types of weapons.¹² This proliferation could facilitate militant groups' acquisition of drones through a number of channels.

States that produce drones might provide them to militant organizations to further their foreign policy objectives: Iran, for example, has been accused of giving Hezbollah and the Houthis access to sophisticated, long-range drone systems. Drones are widely traded on international markets, allowing militant organizations to purchase them legally or illicitly. Moreover, the diffusion of knowledge about drone production allows militants to produce drones themselves or modify unarmed drones to carry weapons.¹³

The urban battlespace also lends itself to drone use. Many experts, including US defense leaders, expect the frequency of urban warfare to increase worldwide.¹⁴ The urban terrain limits or removes many obstacles that otherwise characterize drone operations. For example, militants operating in an urban setting are less concerned about drones' limited flight range.¹⁵ Drones are well-suited to the urban environment. They are more difficult to detect and are naturally designed to avoid physical obstacles that might inhibit a small tactical unit, vehicle-borne improvised explosive device, or armed convoy. Some observers warn personnel operating in urban conflicts that "the development of large

9. T. X. Hammes, "The Future of Warfare: Small, Many, Smart vs. Few & Exquisite?" War on the Rocks, July 16, 2014, <https://warontherocks.com/2014/07/the-future-of-warfare-small-many-smart-vs-few-exquisite/>.

10. Zachary Kallenborn, "The Era of the Drone Swarm Is Coming, and We Need to Be Ready for It," Modern War Institute, October 25, 2018, <https://mwi.usma.edu/era-drone-swarm-coming-need-ready/>.

11. Robert J. Bunker, *Terrorist and Insurgent Unmanned Aerial Vehicles: Use, Potentials, and Military Implications* (Carlisle, PA: Strategic Studies Institute, US Army War College, 2015), 25.

12. Matthew Fuhrmann and Michael C. Horowitz, "Droning On: Explaining the Proliferation of Unmanned Aerial Vehicles," *International Organization* 71, no. 2 (Spring 2017): 397–418; Michael C. Horowitz, Sarah E. Kreps, and Matthew Fuhrmann, "Separating Fact from Fiction in the Debate over Drone Proliferation," *International Security* 41, no. 2 (Fall 2016): 7–42; and Peter Bergen, Melissa Salyk-Virk, and David Sterman, "Who Has What: Countries Developing Armed Drones," in World of Drones database (Washington, DC: New America, July 2020), <https://www.newamerica.org/international-security/reports/world-drones/who-has-what-countries-developing-armed-drones/>.

13. Don Rassler, *The Islamic State and Drones: Supply, Scale, and Future Threats* (West Point, NY: Combating Terrorism Center at West Point, July 2018), 22, <https://ctc.usma.edu/wp-content/uploads/2018/07/Islamic-State-and-Drones-Release-Version.pdf>.

14. Tan, "Ready to Fight?"

15. Scott Stewart, "Beyond the Buzz: Assessing the Terrorist Drone Threat," Stratfor, February 9, 2017, <https://worldview.stratfor.com/article/beyond-buzz-assessing-terrorist-drone-threat>.

and capable suicidal drones needs to be considered as the next probable successor to suicide bombing.”¹⁶

These developments mean more militant groups have the capacity to obtain more sophisticated drones. From an operational standpoint, these systems offer a number of advantages. First, drones are easier to operate than many advanced weapons systems such as cruise missiles or fixed-wing aircraft. The technology underlying units from commercial retailers—a basic airframe, computing power, and communication capabilities—is not complex and is widely available. The larger drones used in the September 2019 attacks on the Saudi Aramco facilities in Khurais and Abqaiq are estimated to have cost only \$15,000 or less to build.¹⁷ This expenditure is comparable to the expense of assembling a suicide car bomb—between \$13,000 and \$20,000.¹⁸ Further, these systems obligate opposing forces to expend resources on developing drone countermeasures, which have faced many challenges.¹⁹

Operating larger, fixed-wing drones often requires more extensive training from experts. For example, Iran’s Islamic Revolutionary Guard Corps and Hezbollah embedded long-term advisers in Yemen to train Houthi members to operate such systems.²⁰ But for militant groups committed to projecting airpower, these drones offer an accessible alternative compared to piloting, maintaining, and basing conventional aircraft. The absence of an onboard crew means militants risk fewer human resources when deploying these systems. This aspect of drones is especially appealing to armed nonstate actors who compete against larger and more capable government forces and must carefully husband their current and future recruits.²¹

Second, drones offer militants an opportunity to engage targets that would be too risky to attack or surveil with ground forces.²² While militant forces may not have the capacity to launch a successful ground

16. Craig Whiteside and Vera Mironova, “Adaptation and Innovation with an Urban Twist: Changes to Suicide Tactics in the Battle for Mosul,” *Military Review* (November–December 2017): 84, <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/November-December-2017/Adaptation-and-Innovation-with-an-Urban-Twist-Changes-to-Suicide-Tactics-in-the-Battle-for-Mosul/>.

17. Ben Hubbard, Palko Karasz, and Stanley Reed, “Two Major Saudi Oil Installations Hit by Drone Strike, and US Blames Iran,” *New York Times*, September 14, 2019, <https://www.nytimes.com/2019/09/14/world/middleeast/saudi-arabia-refineries-drone-attack.html>.

18. Dina Temple-Raston, “How Much Does a Terrorist Attack Cost? A Lot Less Than You’d Think,” NPR, June 25, 2014, <https://www.npr.org/sections/parallels/2014/06/25/325240653/how-much-does-a-terrorist-attack-cost-a-lot-less-than-you-think>.

19. Arthur Holland Michel, *Counter-Drone Systems*, 2nd ed. (Washington, DC: Center for the Study of the Drone at Bard College, 2019), <https://dronecenter.bard.edu/files/2019/12/CSD-CUAS-2nd-Edition-Web.pdf>.

20. Eric Schmitt, “Iran Is Smuggling Increasingly Potent Weapons into Yemen, US Admiral Says,” *New York Times*, September 18, 2017, <https://www.nytimes.com/2017/09/18/world/middleeast/iran-houthis-fifth-fleet-admiral.html>.

21. Desirée Nilsson, “Turning Weakness into Strength: Military Capabilities, Multiple Rebel Groups and Negotiated Settlements,” *Conflict Management and Peace Science* 27, no. 3 (July 2010): 253–71.

22. James Igoe Walsh and Marcus Schulzke, *Drones and Support for the Use of Force* (Ann Arbor: University of Michigan Press, 2018).

assault into a neighboring country, drones make surveilling or attacking these territories feasible.²³

Coercive Logic of Militant Drone Use

How and to what extent do militants use drones to advance their strategic objectives? Speaking to interstate relations, the “advent of airpower quite literally added a whole new dimension to the possibilities for coercion.”²⁴ Does the emergence of drone technologies offer a similar watershed moment to militant actors? “Coercion” is the “art of manipulating the costs and benefits to affect the behavior of an actor.”²⁵ Using this definition, how might militant groups use drones to erode their opponent’s will to fight and convince their opponent to make concessions or suffer the costs of coercion?²⁶

Armed actors can use airpower to coerce their opponents in multiple ways. Pape’s discussion of airpower in interstate conflict identifies meaningful differences in militants’ applications of drone systems. While armed drones may be used to execute tactical, operational, or strategic missions, this article focuses on the intended strategic results of drone-based missions and assesses the capacity for strategic coercion presented by militants’ use of drones. By design, strategic effects impair the adversary’s ability to carry out war or hostilities and should neutralize the adversary’s centers of gravity.²⁷

Pape first distinguishes between strategic bombing and theater air attacks.²⁸ Actors in armed conflicts use strategic bombing to coerce opponents in two ways—denial and punishment. In a denial strategy, airpower targets the opponent’s capacity to develop and deploy military forces, weakening it sufficiently to allow ground forces to seize territory. Actors use denial strategies to “dissuade an adversary by convincing them that any military campaign they may launch will fail militarily because the coercer will deny the ability to complete the action successfully.”²⁹

Toward this end, the coercer could threaten to capture territory held by the opponent or threaten to destroy enough of the opponent’s military power to thwart its territorial ambitions.³⁰ Denial involves the direct and

23. Brian A. Jackson et al., *Evaluating Novel Threats to the Homeland: Unmanned Aerial Vehicles and Cruise Missiles* (Santa Monica, CA: RAND Corporation, 2008), 37–42.

24. Tami Davis Biddle, “Coercion Theory: A Basic Introduction for Practitioners,” *Texas National Security Review* 3, no. 2 (Spring 2020): 94–109, <https://repositories.lib.utexas.edu/bitstream/handle/2152/81862/TNSRVol3Issue2.pdf?sequence=2&isAllowed=y>.

25. Alexander B. Downes, “Step Aside or Face the Consequences: Explaining the Success and Failure of Compellent Threats to Remove Foreign Leaders,” in *Coercion: The Power to Hurt in International Politics*, ed. Kelly M. Greenhill and Peter Krause (New York: Oxford University Press, 2018), 96.

26. Pape, *Bombing to Win*, 46; and US Joint Chiefs of Staff (JCS), *Doctrine for the Armed Forces of the United States*, Joint Publication 1 (Washington, DC: JCS, March 2013): I-4.

27. US Air Force, *Air Force Doctrine Publication 1* (Montgomery, AL: Curtis E. LeMay Center for Doctrine Development and Education, March 10, 2021), 6, https://www.doctrine.af.mil/Portals/61/documents/AFDP_1/AFDP-1.pdf.

28. Pape, *Bombing to Win*, 46.

29. Biddle, “Coercion Theory,” 109.

30. Pape, *Bombing to Win*, 14.

large-scale destruction of enemy war-fighting units and personnel with a goal to undermine fundamentally an adversary's capacity to fight and to force that adversary to make strategic concessions. In a punishment strategy, enemy civilians are deliberately targeted to lower morale, leading them to press their government to end the conflict.

Actors use theater air attacks to coerce the enemy in two ways as well: interdiction and close air support. An interdiction strategy seeks to destroy "logistic networks, reinforcements, and command headquarters behind front lines," and its goal is to "stop the movement and coordination of forces throughout the theater."³¹ A close air support strategy involves supporting the military actions of ground troops by providing cover against enemy airpower, engaging in tactical surveillance, and targeting enemy forces in support of ground forces. The following four categories provide a framework to investigate the coercive capacity of militant drone operations.

Denial

Militants can use armed drones to attack opposing military bases and over-the-horizon forces without exposing their personnel to harm. Houthi forces, for example, regularly used drones to surveil and attack Saudi- and UAE-led coalition forces outside of Yemen. Similarly in July 2006, Hezbollah used a military-grade drone to disable an Israeli warship. Following the attack, group leader Sheik Hassan Nasrallah warned Israeli officials, "you wanted an open war and we are ready for an open war."³²

With or without drones, strategic denial is a tall order for militant organizations, which almost always have fewer materiel capabilities than their state-based opponents. Yet some militants do seem to use drones for this purpose. Announcements by the Houthis demonstrate they consider drone attacks to fit within the group's broader "Balance of Deterrence" initiative—an explicit reference to a core principle of coercion theory.³³ For instance, after claiming responsibility for the September 2019 attacks on the Saudi Aramco facility, the Houthis capitalized on the event to coerce Emirati forces. A Houthi military spokesperson stated: "to the Emirati regime we say only one operation [of ours] would cost you dearly. . . . Today and for the first time we announce that we have dozens of targets within our range in the UAE, some are in Abu Dhabi and can be attacked at any time."³⁴

These types of attacks, designed to deny the coalition forces, will likely continue. In a limited but growing number of cases, militants have used drones to deny the advancement of other militants. For example

31. Pape, *Bombing to Win*, 77.

32. Hamza Hendawi, "Israel: Hezbollah Drone Attacks Warship," *Washington Post*, July 14, 2006.

33. Rawan Shaif, "Saudi Arabia's Self-Fulfilling Houthi Prophecy," *Foreign Policy*, October 2, 2019, <https://foreignpolicy.com/2019/10/02/saudi-arabias-self-fulfilling-houthi-prophecy/>.

34. Aziz El Yaakoubi, Maher Chmaytelli, and Tuqa Khalid, "Yemen's Houthis Threaten to Attack United Arab Emirates Targets," Reuters, September 18, 2019, <https://www.reuters.com/article/us-saudi-aramco-houthis-emirates-idUSKBN1W3282>.

in August 2017, Hezbollah used armed drones to strike Islamic State forces in Syria close to the border with Lebanon, demonstrating the broader application of this technology by militant groups.³⁵ Hezbollah, which boasts the longest-standing drone program among militant groups, seems to focus its lethal drone operations on members of other nonstate actor groups, namely Jabhat al-Nusra and Islamic State. Its drone operations against Israeli government forces, by contrast, have been largely nonkinetic.³⁶

This distinction between drone strikes against state opponents and against rivals suggests few militants might use armed drones in true denial strategies against the former, such as striking strategic targets at the opponent's center of gravity. Compared with government forces, most militants operate on the short end of the capability ratio; drones do not give militants an upper hand in this regard. On the whole, militant organizations, such as the Houthis, that possess sophisticated drone systems have a greater baseline opportunity to achieve strategic denial, however, they have not used their drone fleets to shift conflicts fundamentally in their favor.

This pattern of use is unlikely to change, even with advancements in drone-based technologies. Militants' ability to use drones for strategic effect, especially for purposes of denial, against state opponents is limited by logistical and materiel factors. Strategic coercion involves widespread and sustained attacks on an opponent's centers of gravity. Militant groups would need to control enough territory to house fleets of drones and their support operations, such as intelligence collection and analysis, repair facilities, and bases for drone operators.

Moreover, this infrastructure would need to be safe from attack—and resources would have to be diverted to protect this infrastructure. Only militant groups in a position to challenge the state more effectively with other military means could consider using drones for denial. Even capable militant groups such as Hezbollah lack elements needed to use drones for strategic denial; in this sense, they are fundamentally different from most states with modern military capabilities and command and control systems.

Relative weakness leads militant groups to husband their resources and deploy them to maximize their survival, wearing down opponents instead of trying to win through decisive battlefield victories. This is the fundamental political strategy of most militant groups, large or small. This strategy would also apply to a decision about whether to invest in large-drone capabilities—capabilities that create vulnerabilities as previously discussed. As such, militants will unlikely try to develop drone capabilities for the purpose of strategic denial.

35. Angus McDowall, "Hezbollah Uses Drones against Islamic State in Syria: Hezbollah-Run Media," Reuters, August 21, 2017, <https://www.reuters.com/article/us-mideast-crisis-lebanon-syria/hezbollah-uses-drones-against-islamic-state-in-syria-hezbollah-run-media-idUSKCN1B11H4>.

36. Archambault and Veilleux-Lepage, "Drone Imagery," 13.

Punishment

Militants may attack soft targets as part of a punishment strategy. Coercion by punishment intentionally raises costs or risks to civilian populations, which subsequently pressures officials to back down or make concessions. And militant drone operations have indeed caused civilian casualties. Yet the Houthis' drone attacks on soft targets in Saudi Arabia and Yemen—intended to advance the group's political objectives by exposing the Yemeni government's inability to defend its territory and by exerting political pressure on the Saudi government to limit its activities—have focused more on targeting critical infrastructure.³⁷ Notably on June 14, 2019, the Houthis released a poster directed at Saudi and Emirati civilians that cautioned, “for your safety, avoid airports and military locations.”³⁸ They began a sustained strike campaign against Saudi regional airports that same week.

This example illustrates a broader point: militant organizations thus far have shown a lack of will rather than a lack of capacity to use drones systematically in punishment strategies. This fact is welcome but perplexing: even smaller drones offer a seemingly surefire way to incite fear among noncombatant populations. Indeed, many who express concerns about the use of drones in this context draw attention to the potential of these weapons to disrupt airport operations, attack large groups of civilians, or assassinate political leaders.

While small armed drones cannot kill many people, they could create widespread fear and lead to abrupt changes in public behavior. Yet this sort of attack seems to be quite rare, even for groups that otherwise target civilians, such as Boko Haram and Islamic State, and is consistent with Pape's findings about the ineffectiveness of using airpower to target civilians in interstate conflicts.³⁹

Why is this the case? Militant groups may have concluded other armaments are better suited for the task. Suicide bombing, for example, signals resolve and capacity.⁴⁰ Relatedly, a number of militant groups understand counterinsurgent air strikes kill civilians and have leveraged this data for propaganda purposes. They may refrain from using drones to target civilians in order to enhance this narrative. Indeed, one can imagine such attacks might backfire: this type of drone strike might lead the group's enemy, a regime for example, to devote more resources to the fight; it might also cause the civilian population in question to rally around

37. “Several Killed in Houthi Missile, Drone Attack: Yemeni Officials,” *Al Jazeera*, November 7, 2019.

38. Caleb Weiss, “Analysis: Houthi Drone Strikes in Saudi Arabia and Yemen,” *Long War Journal*, August 7, 2019, <https://www.longwarjournal.org/archives/2019/08/analysis-houthi-drone-strikes-in-saudi-arabia-and-yemen.php>.

39. Pape, *Bombing to Win*, 10.

40. Bruce Hoffmann and Gordon H. McCormick, “Terrorism, Signaling, and Suicide Attack,” *Studies in Conflict & Terrorism* 27, no. 4 (2004): 243–81, <https://doi.org/10.1080/10576100490466498>.

the regime. For these reasons, militant groups that engage in terrorism using drones are less likely to achieve their larger political objectives.⁴¹

Interdiction

Coercive militant force also may be used for interdiction purposes, weakening enemy battlefield forces by starving them of needed logistical support. Strikes against civilian airports, factories, and similar targets serve the strategic purpose of threatening command centers, arms depots, or logistical staging hubs. In some cases, these strikes undermine critical sources of economic revenue.⁴² The only militant group to have carried out such drone operations systematically is the Houthis. Since April 2018, the group has conducted a steady stream of drone strikes against airports, munitions warehouses, oil production facilities, and arms depots in Yemen, Saudi Arabia, and the United Arab Emirates.⁴³

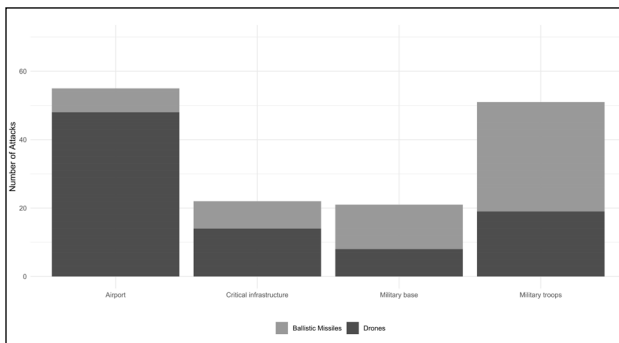


Figure 1. Houthi rebel drone and missile attacks, 2018–19

Starting in April 2018, the Houthis executed 115 drone attacks through October 2019 (figure 1).⁴⁴ Of these attacks, 62 were conducted against civilian airports or critical infrastructure, and 27 were conducted against military bases or troops.⁴⁵ The remaining 26 attacks were reported as intercepted or as striking unknown targets. By comparison, Houthi forces conducted 45 attacks with ballistic missiles against military bases and/or military troops and only 20 attacks against civilian airports or critical infrastructure.

This analysis indicates the Houthi militants use their drone arsenal for specific coercive purposes. Houthi drone operations strike softer

41. Max Abrahms, “Why Terrorism Does Not Work,” *International Security* 31, no. 2 (Fall 2006): 42–78, <https://www.jstor.org/stable/4137516?seq=1>; and Virginia Page Fortna, “Do Terrorists Win? Rebels’ Use of Terrorism and Civil War Outcomes,” *International Organization* 69, no. 3 (Summer 2015): 519–66, <https://www.cambridge.org/core/journals/international-organization/article/abs/do-terrorists-win-rebels-use-of-terrorism-and-civil-war-outcomes/4729B2B926904616190DC38DB3240C8F>.

42. “Houthi Drone Attack ‘Hits Arms Depot’ at Saudi Airport in Najran,” *Al Jazeera*, May 21, 2019, <https://www.aljazeera.com/news/2019/05/houthi-drone-attack-hits-arms-depot-saudi-airport-najran-190521080525385.html>.

43. Weiss, “Houthi Drone Strikes.”

44. Data from Weiss, “Houthi Drone Strikes.”

45. Weiss, “Houthi Drone Strikes.”

targets rather than as part of a true denial strategy, while the group uses its ballistic missiles to attack harder targets protected with air defense systems that can more effectively intercept drones.

Overall, Houthi drone operations against soft targets disrupt sources of logistical support for coalition military activity in Yemen. These drone operations also demonstrate the group's strength and resolve while avoiding a potential rallying of the public around coalition leadership triggered by mass civilian casualties from drone strikes.

The Houthis' drone operations show mixed results in coercing opponents. Drone operations against the Saudis—the group's primary opponent—have had limited success at the strategic level. A 2019 report concludes, “ultimately, UAV use by [the Houthis] has not shifted the strategic calculus of the Saudi-led coalition.”⁴⁶ Indeed, while the Houthis have recently gained ground, the Saudis have also not retreated. In terms of successful coercion, the UAE completed the withdrawal of its forces in Yemen in February 2020. While outright military victory against the Houthis became less and less likely, this decision was also likely shaped by the Houthis' growing capacity and stated willingness to strike airports and critical infrastructure within the Emirates.⁴⁷

Close Air Support

Drones can also be used in theater air attacks to support ground-force operations, giving militants a combined arms capability. As Pape describes it, “the purpose of close air support, which attacks frontline fielded forces, is to thin the front, creating weak spots that the attacker's ground forces can exploit.”⁴⁸ The best-known example of these types of operations is Islamic State modifying unarmed drones—or engineering their own—to carry small munitions in Iraq and Syria. Islamic State effectively used its arsenal to disrupt coalition front lines in a number of campaigns, including the Battle of Mosul.

Bellingcat analyst Nick Waters records 208 drone attacks conducted by Islamic State in 2017 in Iraq and Syria (figure 2).⁴⁹ In contrast to the types of operations typical of the Houthis or Hezbollah, most Islamic State drone strikes were tactical enhancements used in defense of strategically valuable positions, focused on military vehicles and troops in transit or active combat. Less than 5 percent of the group's 2017 drone operations targeted critical infrastructure like information centers or communication towers. All of the 2017 attacks occurred in territories Islamic State controlled or defended in 2017, and more than half occurred in the major battles in urban areas. While Islamic State drone operations had relatively little strategic coercive effect, they have often been quite operationally and tactically disruptive.

46. Muhsin, “Houthi Use of Drones.”

47. Ibrahim Jalal, “The UAE May Have Withdrawn from Yemen but Its Influence Remains Strong,” *Middle East Institute*, February 25, 2020, <https://www.mei.edu/publications/uae-may-have-withdrawn-yemen-its-influence-remains-strong>

48. Pape, *Bombing to Win*, 78.

49. Nick Waters, *Drone Proliferation Database* (Dropbox, 2018).

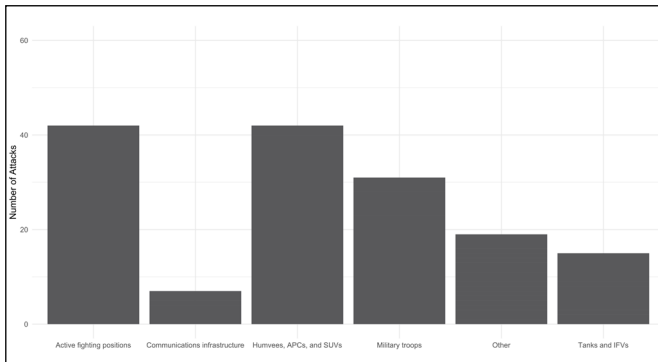


Figure 2. ISIS drone strikes by target type, 2017

Close ground support operations can include nonkinetic approaches as well. Interestingly, many militant groups with access to drones choose not to arm them at all. Indeed, a larger number of armed groups employ drones strictly for intelligence, surveillance, and reconnaissance purposes. For example in 2018, an official associated with the Air Force Research Laboratory reported the Taliban had been using drones extensively to monitor the location and movements of US troops.⁵⁰ Islamic State’s West Africa Province in Nigeria has used drones to collect tactical intelligence, plan more effective hit-and-run attacks, and avoid surprise counterattacks. These drones are helpful for intelligence collection against stationary targets but are less useful for supporting attacks on small and mobile targets.⁵¹

Close air support presents one of the most fruitful areas for expansion in militant drone programs. Homemade, commercial, and military-grade units are all well suited for this purpose, meaning groups without access to military-grade drones can still conduct ground support operations effectively and on a systematic scale. In 2017, then commander of US Special Operations Command General Raymond A. Thomas noted, “[the] most daunting problem [of 2016] was an adaptive enemy who, for a time, enjoyed tactical superiority in the airspace under our conventional air superiority in the form of commercially available drones and fuel-expedient weapons systems, and our only available response was small arms fire.”⁵²

Indeed, Islamic State’s recorded use of drones mirrors Pape’s assessment of how such operations can be carried out to optimal effect. “The most important group support targets are point targets

50. Jared Keller, “The Taliban Are Watching US Troops with Drones ‘24/7’ in Afghanistan,” Task & Purpose, December 14, 2018, <https://taskandpurpose.com/bulletpoints/taliban-drone-surveillance-afghanistan>.

51. Jacob Zenn, “The Humanitarian Dilemma around the Military’s ‘Super Camp’ Strategy in Nigeria,” Council on Foreign Relations, *Africa in Transition* (blog) September 5, 2019, <https://www.cfr.org/blog/humanitarian-dilemma-around-militarys-super-camp-strategy-nigeria>.

52. David B. Larter, “SOCOM Commander: Armed ISIS Drones Were 2016’s ‘Most Daunting Problem,’” Defense News, May 16, 2017, <https://www.defensenews.com/digital-show-dailies/sofic/2017/05/16/socom-commander-armed-isis-drones-were-2016s-most-daunting-problem/>.

requiring direct hits: tanks, armored personnel carriers, self-propelled artillery, bunkers used for communications, logistic storage, or other purposes, and bridges.”⁵³ While Islamic State’s drone operations did not, ultimately, have a strategic coercive effect, the group demonstrated in 2016 and 2017 how drones could be used on the front lines to challenge and deny—even temporarily—the advancement of better-equipped opposing forces.

Conclusion

Some experts argue drones provide militants with a “poor man’s air force,” enabling them to employ airpower as a central part of their political-military strategies.⁵⁴ Yet militant groups do not have powerful reasons to use drones systematically for strategic bombing, such as in denial or punishment strategies. Rather, they use these systems to optimal effect in theater air attacks—especially in interdiction or close-group support operations. A militant group’s drone program coincides with its limited relative capabilities and broader strategic objectives. Due to the rapid advancement and proliferation of drone systems, many militant groups will soon have the capacity to acquire drones that would allow strategic bombing. Most groups, however, will have little incentive to do so.

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53. Nick Waters, “The Poor Man’s Air Force? Rebel Drones Attack Russia’s Airbase in Syria,” *Bellingcat*, January 12, 2018, https://www.bellingcat.com/news/mena/2018/01/12/the_poor_mans_airforce/; and Michael R. Gordon, “A Poor Man’s Air Force,” *New York Times*, June 19, 2003, <https://www.nytimes.com/2003/06/19/international/middleeast/a-poor-mans-air-force.html>.

54. Waters, “Poor Man’s Air Force?”