



Drone Operations by Non-state Actors in the Middle East: A case study of Hezbollah and ISIS

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Abstract

This study examines the impact of drone technology on the operational capabilities of armed non-state actors (ANSAs) in the Middle East, following 2010; the Middle East entered a new era of conflict, the escalations led to the appearance of new terrorist groups like Islamic state in Iraq and Syria (ISIS), and regional competition led to increased involvement of armed groups in the conflicts. Drone technology has extensively contributed to these conflicts through armed non-state actors in the region. The research focuses specifically on Hezbollah and ISIS in drone warfare. It explores how the adoption of unmanned aerial vehicles (UAVs) has reshaped traditional paradigms of asymmetric warfare by enhancing reconnaissance, precision strike capabilities, and long-range operations. The research has conducted a comparative analysis between both groups in terms of when Hezbollah, supported by state sponsorship, has developed a structured and technologically sophisticated drone program, whereas ISIS has employed an improvisational, low-cost approach aimed at disrupting enemy forces through innovative tactics. The research indicated how drone technology has significantly increased their reach and precision in targeted strikes, highlighting their ability to project power and adapt to evolving battlefield conditions. Ultimately, the increasing accessibility and deployment of drone technology by (ANSAs) in conflict zones, particularly in the Middle East, poses significant challenges to traditional security paradigms and necessitates a deeper

understanding of its impact on asymmetric warfare. The aim of the study is to answer the question of how have Hezbollah and ISIS utilized drone technology to reshape their operational capabilities and asymmetric warfare strategies in the Middle East? The study underscores the growing need for flexible security policies in response to the proliferation of drones beyond state control and their integration into hybrid and irregular warfare strategies.

Key words: Drone, Hezbollah, ISIS, Middle East, Strategy, Asymmetric Warfare.

هێرشى درونى له لایه‌ن گروپه چه كاداره كان له رۆژه‌لاتى ناوه‌راست (حزب الله) و (داعش)

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پوخته

ئهم توێژینه‌وه‌یه له کاریگه‌ری ته‌کنه‌لوژیایی درون ده‌کوئیته‌وه له‌سه‌ر به‌رزکردنه‌وه‌ی توانای هێرشى جه‌نگى گروپه چه‌كداره‌كان له رۆژه‌لاتى ناوه‌راست، له‌دوای سالی ٢٠١٠ قووناغیكى نوێ هاته‌ ئاراوه به‌تایبه‌تى دواى ده‌رکه‌وتنى گروپى تیرورسى داعش، ئهم په‌ره‌سه‌ندنه مملانیی هه‌رێمی به‌دوای خویدا هینا بوه هوى چالاک بونی گروپه چه‌كداره‌كان له ناوچه‌که‌دا. له‌م باره‌یه‌وه ته‌کنولوجیای درون ده‌ورێكى بالای هه‌بو له‌م مملانییه هه‌ریمیه‌دا، ئهم توێژنه‌وه‌یه به‌تایبه‌تى تیشك ده‌خاته سه‌ر گروپه چه‌كداره‌کانی وه‌ك (حزب الله) و (داعش) له به‌کارهێنانى درون له هێرش و چالاکیه‌کانیاندا. توێژینه‌وه‌که هه‌ولده‌دات ئه‌وه بخاته رو که به‌کارهێنانى درون له‌لایه‌ن ئهم گروپانه چوون توانی شیوازی کوونی جه‌نگى نارێکخراو بگۆریت به‌تایبه‌تى له‌ بواری چاودێریکردن و هێرشى ورد و دورمه‌ودا دا، بو گه‌یشتن به‌ ده‌رئه‌نجامه‌كان، توێژینه‌وه‌که شیکاریه‌کی به‌راوردکاری ئه‌نجامداوه له‌ نیوان هه‌ردو گروپدا، له‌ کاتیکدا حزب الله گروپێکی پالپشتی کراو له‌ لایه‌ن ده‌وله‌ته‌وه‌ توانی ئاستی توانای سه‌ربازی خوێ بباته قوناغیكى به‌رزى تاکتیکی و ستراتیژی له‌ بواری به‌کارهێنان و به‌ده‌ستخستنى درون دا، به‌لام جیاواز له‌مه‌ داعش له‌ رینگای داھینان و پیشخستن له‌ ئامېره ته‌کنه‌لوژییه‌کان و به‌ دابینکردنیا به‌ نرخێکی که‌م په‌ره‌یان به‌ چه‌کی درون دا له‌ بواری تاکتیکی دا. له‌ کوتایدا توێژینه‌وه‌که ئه‌وه‌ی درخستوه که چوون درون کاریگه‌ری دروست کردوه له‌ هێرشى جه‌نگى ئهم گروپانه به‌تایبه‌تى له‌ روى ستراتیژی و تاکتیکی جه‌نگیدا، هه‌روه‌ها چۆنیه‌تى به‌هێزبونیا و کاریگه‌ریان له‌ سه‌ر گۆرینی بارودۆخی جه‌نگه‌کان. بویه ده‌ست گه‌یشتنیا به‌ ته‌کنولوجیایى درون و به‌کارهێنانیا له‌ پێکدا‌دانه‌کاندا مه‌ترسیه‌کی گه‌وره‌یان له‌ ناوچه‌کدا دروست کردوه به‌تایبه‌تى له‌ روى ئاسایش و تاکتیکی جه‌نگیدا. توێژینه‌وه‌که هه‌ولده‌دات وه‌لامی ئه‌وه‌ بده‌ته‌وه که چون (حزب الله) و (داعش) له‌ رینگه‌ی درونه‌وه‌ توانیا ستراتیجی جه‌نگی بگورن و توانای هێرش‌بردنیا پیشبخه‌ن له‌ رۆژه‌لاتى ناو‌راست. له‌گه‌ل

ئه‌وه‌شدا، توژیینه‌وه‌که پئویستی و ریشوینی گونجاوی ئاسایشی ده‌رخستوه له بلا‌وبونه‌وه‌ی ته‌کنولوژیای درون کاتیک له ده‌ره‌وه‌ی ده‌سته‌لاتی ده‌وله‌ت له لایهن گروپه‌ چه‌ کداره‌ کانه‌وه له جه‌نگه‌ ناریک‌خراوه‌ کاندای به‌کارده‌هینرین.

کلیلی وشه‌کان: درون، حزب الله، داعش، رۆژه‌لاتی ناوه‌راست، ستراتژی، جه‌نگی ناریک.

1. Introduction

Armed non-state actors (ANSAs) in the Middle East have increasingly integrated (UAVs), or drones, into their military operations. Once symbols of state-level air superiority, drones have now been appropriated by non-state entities to achieve both strategic and tactical objectives. This evolution challenges traditional understandings of air power and highlights a significant shift in the character of asymmetric warfare (Veilleux-Lepage & Archambault, 2022; Lsacconjarias & Maged, 2019). Operating UAVs requires unique capabilities, organizational structures, and logistical adaptations from ANSAs, influencing their battlefield roles and strategic profiles.

The deployment of drones by groups such as Hezbollah, ISIS, and Iran-backed militias in Syria and Iraq has demonstrated the increasing significance of UAVs in modern irregular warfare. Hezbollah, for instance, has developed a sophisticated drone program backed by Iranian state resources, while ISIS has employed a more improvisational, low-cost approach aimed at maximizing disruption (Veilleux-Lepage & Archambault, 2022). As drone technology becomes more accessible, its use by non-state actors poses growing risks to state and regional security and compelling state actors—especially in the West—to adapt their strategies (Lsacconjarias & Maged, 2019).

From 2006 to 2023, violent non-state actors (VNSAs) conducted 1,122 documented armed UAV strikes globally, with 91.3% concentrated in the Middle East and North Africa (Haugstvedt, 2024). Iraq recorded 248 attacks, followed by Saudi Arabia and Syria. Most UAV strikes by non-state actors targeted military infrastructure, although some, like the Houthi movement in Yemen, have focused on civilian and economic targets—including airports and energy facilities. Amplified through traditional and social media, these strikes serve not only tactical but also psychological and propaganda purposes.

Despite their increasing frequency and sophistication, these attacks have not resulted in large-scale fatalities. However, they have succeeded in disrupting critical infrastructure and shaping battlefield dynamics. From 2016 to 2020, ISIS and the Houthis were largely

responsible for most UAV strikes in Iraq, Syria, and Saudi Arabia (Haugstvedt & Jacobsen, 2020). These operations reflect broader trends of innovation, strategic adaptation, and technological appropriation among ANSAs. While most attacks typically involve a single UAV, their increasing integration into coordinated military campaigns indicates growing organizational maturity and operational planning.

The strategic logic behind drone use varies across groups, shaped by each organization's objectives, resources, and constraints. While Hezbollah emphasizes long-range surveillance and deterrence, ISIS prioritizes low-cost tactical disruption. The Houthi movement, for instance, has employed UAVs for both military and symbolic effect, frequently targeting economic infrastructure to indirectly weaken adversaries (Veilleux-Lepage & Archambault, 2022). Despite widespread UAV deployment, the political impact of these strikes remains limited, with little direct evidence of significant changes in the regional political landscape resulting from drone campaigns (Haugstvedt & Jacobsen, 2020). Nonetheless, the operational sophistication of non-state drone programs is increasing, and their integration into hybrid warfare strategies signals a long-term shift in the conduct of conflict in the region.

This study investigates how drone technology has transformed the operational capabilities of Hezbollah and ISIS in the Middle East, focusing specifically on Hezbollah and ISIS. It explores the ways in which these groups have adopted UAVs for reconnaissance, targeting, psychological warfare, and strategic disruption. By comparing two distinct models of drone adoption—state-supported and improvisational—the paper seeks to evaluate how drone proliferation is reshaping asymmetric warfare and what this means for regional and international security responses. Despite this growing phenomenon, a comprehensive comparative analysis of the divergent drone adoption models by key ANSAs like Hezbollah and ISIS, and their implications for asymmetric warfare, remains underexplored.

1.1 Methodology

This research utilizes a qualitative and comparative case study methodology, backed by descriptive data analysis and thematic content analysis. The aim of this research is to examine the impact of drone technology on the strategies employed by armed non-state actors in the Middle East. It draws from various secondary sources such as academic literature, books, journal articles, research papers, institutional reports, policy papers, and media news reports. The study covers drone operations from 2010 to 2024 and uses

Hezbollah and ISIS as primary cases to compare their drone program development, deployment strategies, organizational support, and operational effectiveness. The analysis incorporates both the technical aspects of drone use and their symbolic and strategic purposes. The 2010 start date was chosen to capture the significant proliferation and tactical evolution of drone use by non-state actors following key regional conflicts and technological advancements.

1.2 The importance of the study

This study highlights how drone technology is transforming the nature of modern warfare by providing non-state actors with airpower capabilities formerly exclusive to states. The study demonstrates that drone utilization in conflict enables smaller groups, such as ISIS, to achieve significant operational effects, while more organized entities like Hezbollah can leverage them to project state-like defense capabilities. The research reveals the escalating threat posed by drone proliferation in unstable regions, where these technologies targeted infrastructure, military personnel, and civilian locales. The study promotes prompt international dialogue and legislation to regulate this emerging conflict zone, especially concerning advancements in AI-enabled and autonomous drone systems. The study ultimately offers academic and policy entities a robust framework for analyzing drone-enabled insurgency and proposing informed, adaptive solutions.

1.3 Theoretical framework: Asymmetric warfare theory

Asymmetric warfare, particularly in colonial conflicts, frequently entails small-scale engagements characterized by targeted assaults on vulnerable objectives rather than conventional confrontations. The connection between small wars and colonial wars is crucial for comprehending asymmetric warfare. The asymmetric warfare in the Middle East is influenced by past wars, like the Arab-Israeli war, the Iran-Iraq War, and the Lebanese Civil War. Non-state actors have grown on regional power vacuums, resulting in intra-state and asymmetric regional conflicts. Asymmetric warfare has emerged as a substantial concern owing to globalization and the capacity of both state and non-state actors to get new methods of attack (Wahlert, 2007). Asymmetric warfare has been employed throughout documented history, with strategies and armaments originating from 500 B.C. Miles (1999 p.1) stated Sun Tzu's methods from 500 B.C. "If the enemy is superior in strength, evade him. If his forces are united, separate them. Attack him where he is unprepared. Appear where you are not expected." "Exploiting an adversary's weakness

while exploiting one's own strengths is the heart of the 'art of war". The United States military confronts asymmetric threats with historical parallels, and comprehending prior instances can enhance the preparedness of current and future military leaders. Instances of asymmetric warfare encompass guerilla warfare, terrorism, domestic terrorism, international extremism, state-sponsored terrorism, weapons of mass destruction, information warfare, and urban warfare. Asymmetrical warfare has always utilized tactics and weapons to exploit on vulnerabilities and advantages. The strategies that Sun Tzu developed in the year 500 BC are still relevant in the context of modern asymmetric warfare (Miles, 1999).

Asymmetric warfare theory provides a lens to understand how non-state actors like Hezbollah and ISIS, despite their conventional military disadvantages, and leverage drone technology (an unconventional method) to exploit the vulnerabilities of state adversaries. This framework will be used to analyze the strategic logic behind their drone adoption, the tactical innovations employed, and the resulting shifts in the balance of power, particularly in comparing the state-sponsored model of Hezbollah with the improvisational approach of ISIS.

The deployment of drones in military operations has profound ramifications for security, terrorism, and international relations (Andersen, 2017; Gurcan, 2013). Drones are crucial components of asymmetric warfare in the region. This demonstrates the potential for uncontrolled drone proliferation among non-state actors all across the globe. The deployment of drones in battles has altered the balance of power, enabling less formidable factions to confront more dominant state military (Rogers, 2022; Cordesman, 2020). Non-state groups such as Hezbollah demonstrated its evolution from a non-state entity to a state-sponsored organization capable of utilizing drones for offensive operations during the 2006 conflict with the Israel Defense Forces. This established a novel standard for non-state entities' use of drones in asymmetric warfare (Haugstvedt & Jacobsen, 2020; Lsaconjarias & Maged, 2019).

Finally, Asymmetric warfare has consistently existed, evolving in its methods and technologies to exploit the vulnerabilities of a more powerful adversary. The study highlights the effectiveness of unconventional methods, from Sun Tzu's strategies to modern applications of drones and information warfare, in overcoming stronger conventional military forces. Asymmetric warfare is employed by non-state actors in the

Middle East to effectively challenge state enemies. The evolution of asymmetric warfare in the region is heavily affected by geopolitical competition and technological development. The evolution of technology is also well illustrated with unmanned aerial vehicles (drones), as these offer more air power but also raise ethical and strategic challenges. To effectively terminate problems in numerous current and future conflicts, a clear understanding of asymmetric warfare and its historical, technical and cultural developments is crucial.

2. Hezbollah

Hezbollah is a Shiite Muslim political party and militant organization located in Lebanon, where it has cultivated a reputation as a state within a state. Established during the turmoil of the fifteen-year Lebanese Civil War (1975–1990), the Iran-supported organization is motivated by its aggressive antagonism against Israel and its hostility to Western hegemony in the Middle East. Hezbollah, the Shiite force sponsored by Iran, was once the most powerful non-state entity in the Middle East. However, this was drastically diminished in 2024 due to Israel's military operation against the group (Robinson and Masters, 2024).

Hezbollah is classified as a terrorist group by the United States and several other nations and scholars (Schulz, 2024; Robinson & Masters, 2024). Hezbollah also upheld strong military ties with authoritarian, anti-Israel governments in Iran and Assad regime in Syria. Cross-border confrontations between Hezbollah and Israel have intensified recently, especially during Israel's prolonged war with Hamas in the Gaza Strip. In a significant escalation of its conflict with Hezbollah, Israel eliminated longstanding leader Hassan Nasrallah in late 2024 and initiated a military attack against the organization in southern Lebanon. Hassan Nasrallah co-founded Hezbollah in the early 1980s and headed the organization for almost thirty years, until his death in an Israeli airstrike in September 2024. Numerous Middle East specialists attributed the transformation of Hezbollah into the most formidable non-state military entity in the area, as well as Iran's most powerful anti-Israel proxy, to the Beirut-born Shia cleric (Robinson & Masters, 2024).

Hezbollah as the first non-state actor to emerge as a significant component of the Axis of Resistance has been instrumental in what it regards as 'resisting' Western intervention in Middle Eastern matters (Schulz, 2024). Furthermore, Hezbollah presents itself as a Shiite resistance organization, having formalized its ideology in a 1985 manifesto that committed to expelling Western forces from Lebanon, advocating for the elimination of the Israeli

state, and pledging loyalty to Iran's supreme leader. It also promoted an Iran-influenced Islamist dictatorship while emphasizing the need for the Lebanese populace to possess the right to self-determination (Robinson & Masters, 2024). Due to its actions and influence, Hezbollah is often classified as a terrorist group and as a persistent danger to security and stability in Lebanon and the wider Middle East. The American government has continuously reaffirmed this designation. Hezbollah was deemed a direct threat to stability in the Middle East during a US Senate hearing on June 8, 2010, which was intended to evaluate its power. Since the beginning of the last conflict between Israel and Hamas in Gaza, the characterization of Hezbollah has undoubtedly intensified owing to the persistent missile exchanges between Hezbollah and the Israeli military (Schulz, 2024).

2.1. Hezbollah's Drone Program

Hezbollah's drone program is more advanced than that of other organizations. Hezbollah and Iran have been using unmanned aerial systems for a longer period than other organizations. Hassan al-Lakkis, a key figure in Hezbollah's technical operations, assisted the organization in intercepting Israeli feeds in 1997. He later served as chief procurement officer and was instrumental in developing Hezbollah's UAV program. Al-Lakkis's importance to Hezbollah is underscored by multiple Israeli assassination attempts, culminating in his killing in December 2013 (Ressler, 2016).

Hezbollah has also launched drone attacks in Syria, using tiny, commercially purchased quadcopters to drop Chinese-made submunitions on opposing militias. These quadcopters have replaced their previous fleet of military drones, mostly manufactured in Iran. Israel is worried about Hezbollah's capabilities (Veilleux-Lepage & Archambault, 2022). Since its establishment, Hezbollah has profited from its strong affiliation with the Iranian government, and several drones used by Hezbollah in the last decade are thought to be modified versions of domestically produced unmanned aerial systems created by Iran for military applications. Several Iranian government officials have publicly confirmed that the Iranian government provided UAS technology to its ally Hezbollah (Ressler, 2016). Because drones provide a clean, efficient, and tactical means of accomplishing strategic goals, they are a simple and apparently cost-effectiveness alternative to deploying conventional soldiers (Trapp, 2018).

In 2004, Hezbollah advanced their UAS program significantly when, in November, the organization operated a UAS from southern Lebanon into Israeli airspace. The UAS

allegedly traversed the northern Israeli town of Nahariya, thereafter veering westward and reentering Lebanese territory, ultimately landing in the Mediterranean Sea along the coastline. During this UAS flight, Hezbollah successfully operated the device above Israeli airspace for duration of fifteen to thirty minutes. Israeli radar did not detect the device, but local residents noted its loudness. The UAS, designated Mirsad-1 by Hezbollah, is thought to be a version of either the Mohajer-4 or Ababil-T drones, both manufactured by Iran. Hezbollah disseminated a low-resolution twenty-second video of the trip the next day, claiming that the aircraft could go 'deep' into Israel. The flight was undoubtedly a public relations success for the organization. This also served as an early indication of an impending surge in UAS flights (Rassler, 2016).

2.2. Hezbollah Drone Operations

There have been three distinct stages to Hezbollah's drone program. From 2004 to 2007, the group conducted solo observation and pilot-to-target flights. From 2012 forward, they began flying bigger and heavier drones toward Israel. Lastly, in support of Bashar al-Assad, they began offensive drone operations. Claims have been made that Hezbollah shares quadcopter technology and knowledge with other parties affiliated with Iran, such as the Houthi Movement (Veilleux-Lepage & Archambault, 2022).

Hezbollah, a pro-Iran Shi'ite organization located in Lebanon, first used drones, which was a significant advance taken by Hezbollah and their UAS program in November 2004 (Stalinsky & Sosnow, 2017; Rassler, 2016). An early user of drone technology, the Lebanese Hezbollah was the first non-state organization to fly military-sized remotely piloted systems (RPSs) for spying and attacking operations (Lsaconjarias & Maged, 2019). Hezbollah in 2004 launched an Iranian Mirsad-1 drone that crossed from Lebanon to Israel (Pollak, 2016). It remained above the Western Galilee city of Nahariya for about 20 minutes and thereafter returned to Lebanon before any interception by Israel. The Mirsad-1 is a revised iteration of the original Mohajer drone used for reconnaissance against Iraqi forces during the Iran-Iraq War (Stalinsky & Sosnow, 2017). Furthermore, during the first Gulf War, Iran sent drones from the Mohajer drone family on surveillance and striking missions. Long- and medium-range rockets, ballistic missiles supplied by Iran and Syria, and several C-802 anti-ship missiles acquired by Hezbollah were all part of the group's growing military capabilities (Lsaconjarias & Maged, 2019). To this extent, Hezbollah Secretary-General Hassan Nasrallah asserted that the Mirsad-1, equipped with 40 to 50 kg of explosives, can

target any location deep within Israel. Reports indicate that Hezbollah has around 200 Iranian-manufactured UAVs, including models designed for low-altitude flights to evade radar detection (Stalinsky & Sosnow, 2017; Rossiter, 2018; Pollak, 2016).

The next drone flight of Hezbollah occurred in April 2005. It penetrated 18 miles into Israeli airspace and returned to Lebanon before interception by the Israel Air Force (IAF). In the same month, the Israeli and American intelligence authorities suspected that Iran had supplied Hezbollah with around six drones (Stalinsky & Sosnow, 2017). Following the launch of that unmanned aerial system (UAS), Hassan Nasrallah, the secretary general of the organization, gave a speech in which he declared that Hezbollah's drones could be packed with 40–50 kg of explosives and could be used to strike critical targets deep into Israel (Rassler, 2016).

Hezbollah's other drone operation occurred in August 2006, during the Israel-Lebanon conflict, when Hezbollah sent three Ababil drones, each laden with 40-50 kg of explosives, towards Israel. Israeli F-16s intercepted the drones, one near Haifa, another in western Galilee, and the third in Lebanon close to Tyre (Stalinsky & Sosnow, 2017; Rassler, 2016). In 2006, during the 34-day combat with Israel, Hezbollah had a chance to show how it had evolved from an irregular non-state player to a state-sponsored agent with hybrid capabilities. The active engagement of Hezbollah in the Syrian war has improved its drone capabilities (Lsaconjarias & Maged, 2019). On October 6, 2012, Israeli F-16s intercepted and downed a Hezbollah drone inside Israeli airspace. Nasrallah said on Hezbollah's Al-Manar TV that the drone was constructed in Lebanon but manufactured in Iran. After an inquiry, Israel said that the drone was launched from Lebanon and traveled about 300 kilometers to the Negev in the south before being intercepted. Due to its range surpassing 200 km, it is classified as a Medium Altitude Long Endurance (MALE) drone. The drone allegedly recorded visuals of Israel's nuclear installation at Dimona, in addition to ballistic missile sites, airstrips, and the Israeli military's preparations for collaborative exercises with the United States. A source indicates that the first effort by Israeli F-16s to intercept the drone with a Python IV missile was unsuccessful; hence, the drone evaded an assault by what is regarded as the most sophisticated weapon globally (Stalinsky & Sosnow, 2017).

The use of armed drones by militant organizations has escalated, with several nations and non-state entities obtaining these capabilities. In 2014, Hezbollah executed an armed drone attack on Jabhat Al-Nusra near Aarsal, Syria, resulting in the deaths of several

combatants (Rossiter 2018). This was Hezbollah's first airstrike on adversarial targets, establishing it as the first non-state actor to execute an armed drone assault (Stalinsky & Sosnow, 2017). In support of Bashar al-Assad, Hezbollah has conducted offensive drone operations, which have progressed through three main stages of the program's evolution. Other parties affiliated with Iran, including the Houthi Movement, have received drone technology and training from Hezbollah. Additionally, reports suggest that the organization collaborated with Iraqi militias to execute drone strikes. Hezbollah asserts that it has reduced its reliance on Iranian imports by developing indigenous drone production capabilities and converting missiles into precision-guided munitions (Pollak, 2016; Veilleux-Lepage & Archambault, 2022).

The Syrian conflict has facilitated Hezbollah's advancement in the use of (UAVs). Hezbollah was not only enhancing its expertise in drones but also acquiring a new array of combat abilities in Syria. This involves coordinating attacks, enhancing logistics for deployed soldiers, refining offensive operational abilities, and mastering ground control and retention (Alami, 2017). Hezbollah has attacked targets in Syria and gathered information via drones. Roughly 200 of these drones were available for assault and surveillance missions. By analyzing its operations and working with other parties such as Russia, Iran, and the Syrian government, Hezbollah has greatly enhanced its drone capabilities. They have also coordinated operations with ground troops and used drones to enhance combat information. Through their engagement in Syria, Hezbollah has gained tremendous expertise in the efficient use of drones (Pollak, 2016). Hezbollah and other factions active in Syria have used tiny drones to deploy bomblets on adversaries. Despite their modest lethality, these strikes have significant psychological and disruptive impacts on the ground. Outside the battlefield, even minute incendiary bombs released from a drone may inflict significant damage on munitions stockpiles and energy infrastructure by igniting explosive materials on the ground (Rossiter 2018). Hezbollah has also acquired the capability to engage in combat with bigger formations and in conjunction with other military forces, a practice it had not previously undertaken. It certainly has an armored brigade. It has also acquired the ability to use information and reconnaissance to formulate more complex attack tactics (Alami, 2017).

3. Islamic State in Iraq and Syria (ISIS)

The Islamic State's origins can be traced to Abu Musab al-Zarqawi, who founded al-Qaida in Iraq (AQI) (Gulmohamad, 2014). In 2004, after the US-led invasion of Iraq, Zarqawi declared allegiance to Osama Bin Laden and established al-Qaeda in Iraq (AQI), which emerged as a significant entity in the insurgency. Following Zarqawi's death in 2006, AQI established an overarching entity known as the Islamic State in Iraq (ISI). The US military surge gradually undermined the ISI, while Sunni Arab tribesmen who opposed its violence established Sahwa (Awakening) councils. Abu Bakr al-Baghdadi, a former US detainee, assumed leadership in 2010 and initiated the reconstruction of ISI's capabilities. By 2013, it was once again conducting numerous monthly strikes in Iraq (BBC News, 2015).

In June 2014, the organization officially proclaimed the formation of a caliphate, a state administered in accordance with Islamic law, or Sharia, by God's representative on Earth, known as the caliph. It demanded that Muslims globally pledge allegiance, Ibrahim Awad Ibrahim al-Badri al-Samarrai, often known as Abu Bakr al-Baghdadi, and relocate to areas under its dominion. IS has aimed to eliminate barriers to reinstating divine authority on Earth and to protect the Muslim community, or umma, from nonbelievers and rebellions (BBC News, 2015). ISIS has emerged as a significant political and military force in the Middle East and North Africa. It has controlled, governed, and dominated extensive regions of Syria and Iraq, as well as towns and settlements in Libya. It functions in Sinai and has executed assaults throughout Europe (Beccaro, 2018).

3.1 Islamic State in Iraq and Syria (ISIS) Drone Operations

In order to expand its influence over Iraqi and Syrian territory, ISIS in the Levant has turned to innovative terrorism in combat. Whether it is the group's communication or military tactics, the non-state actor emphasized the significance of deploying remotely piloted systems and their operational impact on the battlefield. While ISIS's initial utilization of drones began almost immediately following its caliphate declaration in early 2014 (Veilleux-Lepage & Archambault, 2022), a more structured and well-funded drone program, involving extensive modification of civilian drones, commenced in 2015 (Lsaconjarias & Maged, 2019). In August 2014, the group released footage of a DJI Phantom quadcopter performing reconnaissance before a ground assault in Syria (Veilleux-Lepage & Archambault, 2022). However, in June 2013, Iraqi police captured five individuals associated with the Islamic State who were allegedly preparing an operation to use

remote-controlled helicopters for spreading sarin and mustard gas in a terrorist attack on unidentified locations in Iraq (Rassler 2016).

The Islamic State's first significant unmanned aerial system declaration took place five months thereafter. In August 2014, the organization uploaded a video to YouTube including aerial footage of a Syrian air base captured by a commercial drone (a DJI Phantom). In November of that year, the Syrian army allegedly downed an Islamic State drone performing reconnaissance in eastern Syria, specifically in Deir Ezzur province. In December, the organization released another film with overhead footage of Kobane, a town located near Syria's northern border with Turkey, which the group had held for a while. The Islamic State used drones in its film of Kobane to provide expansive views of the town and to pinpoint the sites of three suicide strikes against Kurdish and Free Syrian Army ground forces in a highly sophisticated manner (Rassler 2016; Almohammad & Speckhard, 2017). With the proliferation of fronts, ISIS has ramped up the deployment of drones since the first quarter of 2016 (Lsaconjarias & Maged, 2019). The Islamic State has used surveillance drones in combat for almost two years. However, a rise in assaults since October 2016, mostly aimed at Iraqi forces, has shown its efficacy in integrating widely available technologies into a potentially formidable new weapon (Schmitt, 2017).

Asymmetrical, non-state actors such as ISIS have shown the significance of drone technology and the implications of dual technologies on drone proliferation via their employment of drone warfare as a pillar of their asymmetric/hybrid tactics. ISIS has emerged as a new regional security challenge. In the spring of 2017, ISIS's drone threat peaked, launching 60–100 aerial drone bombing assaults each month throughout Iraq and Syria (Chávez & Swed, 2020a; Lsaconjarias & Maged, 2019). Nearly all of the attacks that occurred in 2017 were connected to the defense of Mosul and Raqqa by the ISIS (Haugstvedt, 2024). For instance, the Islamic State drone recorded itself releasing a bomb that triggered a series of significant explosions at an ammo depot inside a stadium in Syria. Amaq, the media department of the Islamic State, published footage of the attack in Deir Ezzor. The video showed a bomb detaching from a drone, followed by a minor explosion that seemingly triggers a series of more substantial detonations (ABC News, 2017).

The initial attack on Western forces identified occurred in March 2016, following the emergence of IS drones in 2015. Several days after a drone surveillance of an American base in Iraq and the Islamic State's release of the video, a targeted artillery strike resulted

in the death of one American marine, indicating that the drone was employed to locate targets for the ensuing artillery assault (Veilleux-Lepage & Archambault, 2022). In addition, from 30 September 2016 to 11 February 2018, researchers documented 338 cases of UAV use by ISIS in Iraq and Syria, including 262 actions involving offensive operations. This included the use of "booby trapping" UAVs designed to destroy upon recovery, using them as one-way attack UAVs, and supporting vehicle-borne IED strikes, among other applications (Blazogiannaki, 2024; Veilleux-Lepage & Archambault, 2022).

Moreover, in the latter months of 2016, the Islamic State used around 80 unmanned aerial vehicles against Iraqi troops and their supporters. Approximately one-third of the aircraft, including some as little as model airplanes, either deployed bombs or were equipped with explosives designed to explode upon impact (Schmitt, 2017). Furthermore, ISIS's use of drones equipped with explosives designed to detonate upon impact was a recent advancement. Air Force Colonel John Dorrian described the incident as a Trojan Horse-style strike, stating that an improvised device aboard the drone detonated after its return to base (Al-Jazeera, 2016).

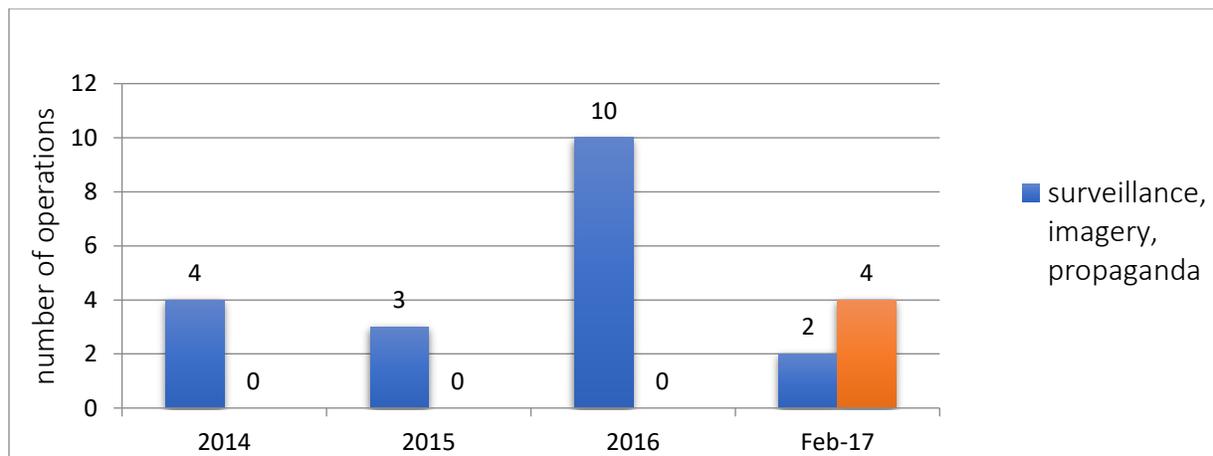


Figure 1 ISIS drone usage from 2014 to February 2017

Figure 1 indicates the ISIS drone usage from 2014 to February 2017, which explores the evolution of ISIS's drone operations over time, categorized into blue for surveillance, imaging, and propaganda, and red for bomb strikes. Figure 1 illustrates a gradual increase in ISIS drone usage from 2014 to early 2017, initially dominated by surveillance and propaganda activities. ISIS mostly used drones for information collection and media creation. As commercial drones become more widely available and their operational integration improves, this trend indicates that drone technology will be more relied upon

for propaganda and war surveillance. It is worth mentioning that no drone bomb strikes were documented during this time, which suggests that ISIS had not yet used drones offensively in its military operations (Almohammad & Speckhard, 2017).

However, by February 2017, things had changed drastically, as ISIS started using drones for bombing missions. In the first two months of the year, there was a doubling of drone bombs to four, while the number of drone operations pertaining to surveillance fell to two. Previously, ISIS had only used drones for propaganda and surveillance, but then they actively deployed them in battle, which shows a developing tactical adaptability. The proliferation of drone bombs highlights the increasing risk of non-state actors utilizing commercial drone technology as a weapon, thereby raising new security concerns for anti-terrorism efforts. Furthermore, ISIS may have been focusing on offensive drone usage or experiencing operational limitations in reconnaissance operations, as seen by the decrease in drone flights connected to surveillance (Almohammad & Speckhard, 2017). In this respect, Rassler (2018, p. 4) noted that "[t]he peak of the Islamic State drone bomb threat came in spring 2017 during the fight to wrest Mosul from Islamic State control in northern Iraq. Around that time, the Islamic State was conducting between 60 and more than 100 aerial drone bombing attacks per month, spread across both Iraq and Syria." However, Veilleux-Lepage and Archambault (2022) indicated that, since 2021, the IS drone operations seem to be terminated, and have not detected any drone activity related to the group since October 2021.

To this extent, ISIS seems to possess the most advanced drone program among non-state organizations. Kurdish soldiers (Peshmerga) downed a drone in October 2016 that had been hovering over them. They suspected it was affiliated with ISIS, which has been executing reconnaissance operations using tiny, commercially available drones in northern Iraq. As the troops endeavored to dismantle the drone, it exploded, resulting in the deaths of two Kurdish soldiers. The Kurdish forces seem to be the first victims of ISIS's drone program initiative (Sims, 2018).

3.2. Islamic State in Iraq and Syria (ISIS) Drone Program

ISIS established its drone program independently, without assistance from state players. This distinguishes the jihadi militant group from other groups supported by Iran. Furthermore, since August 2014, ISIS has utilized the program to boost its effectiveness on the battlefield. A brief description of ISIS's utilization of drones reveals that the

organization swiftly improved its proficiency in drone operations and effectively boosted its combat capabilities through the application of this technology in surveillance missions, command and control, and executing attacks on opposing forces (Almohammad & Speckhard, 2017). IS's drone program differentiated itself from other non-state entities by its tactical, technological, structural, and visual characteristics. It favored using drones as aerial artillery vehicles for deploying explosives instead of utilizing loitering bombs or pilot-to-target ordnance. The military employs integrated drone use alongside its propaganda efforts, using drones to guide and record VBIED assaults, identify and target artillery, and enhance the efficacy of other combat systems (Veilleux-Lepage & Archambault, 2022). The highest-ranking ISIS agent overseeing their drone program is a jihadist named Muhammad Islam. He is in his forties and holds a degree in computer technology from a British university. Muhammad is a European citizen with Malaysian heritage. Within ISIS, Muhammad has the title of Emir, which may denote manager, director, or minister (Almohammad & Speckhard, 2017).

The importance of the Islamic State's drone program resides not in its technological complexity but rather in the assembly of basic, inexpensive, and easily replaceable equipment that constituted the group's drone fleet, together with the innovative use of those drones. Islamic State strategists recognized that the technological prowess and financial assets of the United States and its other state enemies in Iraq and Syria surpassed those of the organization. However, these strategists certainly acknowledged the surveillance, propaganda, and operational advantages of deploying commercial and homemade drones, particularly their capacity to augment the group's ability to achieve surprise. To cultivate its drone capabilities, the Islamic State used a straightforward approach and employed innovative shortcuts. Due to significant international pressure, the Islamic State developed homemade drone platforms and prioritized the procurement and utilization of cost-effective commercial quadcopter and fixed-wing drones, which are readily accessible in numerous countries worldwide (Rassler, 2018). In this regard, Iraqi authorities said that drone-dropped explosives, mostly from quadcopters, resulted in the deaths of around a dozen government troops and injuries to over fifty more. It presents a danger to ground forces and serves as an effective propaganda tool (Schmitt, 2017).

Moreover, the organization used considerable effort to project the idea of successful statehood via propaganda, with drone images serving as a crucial component of this

initiative. IS had a propensity for emphasizing an aerial viewpoint in their military campaign photography, categorizing the pictures into three types: ongoing attacks, ongoing VBIED attacks, and drones surveilling the ground. Drone photographs supported ISIS assertion of sovereign statehood by illustrating vertical sovereignty, a crucial element for legitimizing and naturalizing the caliphate (Veilleux-Lepage & Archambault, 2022). Furthermore, ISIS first deployed its hobbyist versions, and the group's propaganda outlets became overwhelmed with images and claims related to drones. The organization disseminated images of the extensive assault on Peshmerga bases in the north of Mosul, in which US Navy SEAL Charles Keating IV was killed, highlighting their drone integration (Chávez & Swed, 2020b).

The ISIS marked its entry into the landscape of non-state drone threats with three successful UAV operations in August and September 2014. The event occurred on August 23, 2014, near Raqqa province in northern Syria. The UAV footage was subsequently used in IS propaganda films. An unidentified IS drone captured images of assaults on Falluja, Iraq, on August 30, 2014, for internet propaganda purposes. During the recent IS campaign on September 12, 2014, in Kobani, northern Syria, an unidentified drone was used to record video footage of a suicide bomber and ground assaults on the city for propaganda objectives (Bunker, 2015).

The Islamic State has used these drones for several functions (Rassler, 2018). In urban combat scenarios, IS used drones for C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance), improvised munitions dropping, and IED conversion. In addition to enhancing their intelligence-gathering skills, IS also used drones to obstruct Coalition operations (Veilleux-Lepage & Archambault, 2022). The Islamic State was expected to increase the frequency and severity of its employment of this strategy (Schmitt, 2017). Significant adoption necessitates the use and leverage of technology to provide a distinct edge. Militant organizations have identified advantageous uses for drones; however, these may be very context-dependent. The urban landscape of Mosul proved conducive to drone operations executed by IS, since adversary forces were consistently in proximity, allowing tiny drones with limited range to effectively engage them. Drones are less applicable for organizations' operating in densely forested regions or scenarios where direct engagement with enemy troops is infrequent (Rossiter 2018).

4. Comparative Analysis of Drone Programs and Operational Capability of Hezbollah and ISIS

Hezbollah and ISIS have both utilized drones in their military strategies; however, their approaches, capabilities, and goals are quite different from one another. Unlike ISIS's program, characterized by innovation and adaptability, Hezbollah's drone program is more advanced and linked to its state-like powers. This underscores the organization's distinct and resource-constrained nature. This can be attributed to the significant differences between their organizational structures, resources, and ideological goals.

4.1 The Development of Drone Program and Capability

It is mostly due to Iran's help that Hezbollah has built a drone program highly sophisticated for a non-state entity. Hezbollah functions as a non-state group exhibiting state-like capabilities. One of the most significant aspects of their approach is the use of drone operations in a more comprehensive strategy of asymmetric warfare against Israel and other opponents.

Iran provided Hezbollah with the technical skills, training, and equipment necessary to launch its drone program in the early 2000s. This period was the beginning of the program's development cycle. The group has developed its operation drones for the purposes of conducting reconnaissance, surveillance, and limited offensive operations (Robinson & Masters, 2024). The drones that were utilized by Hezbollah, such as the Mirsad-1 and Ababil types made in Iran, had the capabilities to deliver explosives and carry out operations that had a long range (Stalinsky & Sosnow, 2017). Hezbollah and Hamas are classified as non-state hybrid organizations; they possess more advanced weapons than typical non-state entities that depend on irregular tactics, and their personnel are decently trained. As non-state hybrids with access to Iranian-manufactured drones, both organizations have engaged in drone technology experimentation for over a decade, much surpassing their counterparts in capability (Sims, 2018).

In contrast to Hezbollah, the ISIS, has developed into a non-state organization that is extremely adaptable and scattered, and it places a higher priority on global jihad and territorial dominance. The group creatively adapted commercially available drones for military applications. These modifications allowed the group's drone program to be one that was less sophisticated but highly innovative.

During the height of the organization's territorial authority in Iraq and Syria, which occurred around the year 2014, the group began its drone program. The group made use of drones that were readily available for purchase, such as the DJI Phantom series, and modified them to deliver explosives or carry out surveillance (Schulz, 2024). In light of the fact that the ISIS drone program was mostly self-funded, the success of the program was contingent on its capacity to innovate despite the minimal funds it had.

4.2 The Operational Impact of Using Drones

In the case of drones' operational use, they are primarily utilized by Hezbollah for the purposes of gathering information and carrying out targeted attacks against Israeli military targets. Hezbollah utilized drones during the 2006 Lebanon War to monitor the movements of Israeli troops and to disrupt their activities. According to Schulz (2024), Hezbollah has increased the number of drone missions it conducts as a response to Israeli military strikes in the Gaza and southern Lebanon regions. According to Robinson and Masters (2024), the organization has been using drones for the goal of monitoring and identifying Israeli infrastructure, which includes military stations and communication networks.

To accomplish a wide range of operational goals, including invasion, propaganda, and reconnaissance, ISIS used drones. To demonstrate its military might, ISIS made use of drones to record its fights and distribute propaganda videos. In addition to this, the group armed drones with explosives and used them to attack military installations in Iraq and Syria, in conjunction with coalition troops (Robinson & Masters, 2024). ISIS was able to show its adaptability to shifting battlefield circumstances by using drones in urban combat situations like Mosul and Raqqa (Schulz, 2024). In this regard, Chávez and Swed (2020b) assessed that numerous experts evaluate civilian drones as very useful in the asymmetric circumstances of VNSAs. These drones provide increased marginal value to non-state actors, expanding their capacity to project power, dispute airspace, and alter power dynamics in opposition to more formidable adversaries.

4.3 The significance of Strategic Objectives

Drones provide armed non-state actors with the same advantages as they provide to professional armed forces (Sims, 2018). The drone operations carried out by Hezbollah are in line with the organization's overall goals, which include eliminating Western presence

from Lebanon and combating the power of Israel. According to Robinson and Masters (2024), Hezbollah is able to exert influence and maintain pressure on Israel via the use of drones, which are a financially efficient instrument. This assertion is especially true in light of the fact that Israel's actions have resulted in a diminution in Hezbollah's conventional military capabilities. It is closely connected to the group's ideological adherence to jihad, as well as its alignment with Iran's anti-Israel and anti-Western aims (Sousa, 2014). The group's use of drones is also an integral part of this ideological commitment.

Hezbollah, which is connected to its state-like capabilities and Iranian assistance, uses drones as an instrument of resistance and a technique of maintaining pressure on Israel. Drones are also a method of maintaining pressure on Israel. This is the relevance of drones from a strategic standpoint. Furthermore, drone use is combined with ideological commitment to jihad and its relationship with Iran's agenda against Israel and Western countries. Additionally, Dekel and Orion (2017) illustrated that the main strategy of Hezbollah was the creation of a balance of deterrence vis-à-vis Israel with the capability to attack Israel's civilian and strategic depth with tens of thousands of accurate missiles, rockets, and drones to inflict direct damage on strategic installations.

Interrupting adversary efforts, and preserving its image as a technologically adept and inventive organization were all strategic aims that ISIS attempted to achieve via its drone operations throughout its campaigns. The aim was to achieve these objectives by utilizing drone capabilities. ISIS was able to carry out operations that were both astonishingly cost-effective and impactful because of the utilization of drones in urban combat settings (Schulz, 2024). In contrast to Hezbollah, ISIS was able to run its drone program without the assistance of others. This was a reflection of the organization's decentralized and self-sufficient structure.

Regardless of having limited funds and a separated organizational structure, ISIS had the capacity to establish its power via the use of drones, which became a symbol of innovation and adaptability for the group. Moreover, drones are strategically significant for ISIS warfare capability due to their low cost and highly effective operation, especially in urban battlefields. In this regard, Chávez and Swed (2020b) illustrated that civilian UAVs are beneficial in all types of combat. At the strategic level, VNSAs use drones for propaganda production— both to showcase their newly acquired aerial capabilities and to disseminate

compelling cinematography of other operational achievements. Despite this, ISIS is widely acknowledged for its use of drones.

Finally, the analysis indicated the drone capabilities of both Hezbollah and ISIS, as well as their drone deployment strategies. In connection to this, the drone technology significantly increased their military capability and developed their warfare strategy. To this extent Lsaconjarias and Maged (2019, p. 14) noted that "the presence of this type of capability in the hands of non-state actors marks another step in terms of asymmetric and hybrid capabilities." Hezbollah's ability to use drones shows a big improvement in its military skills, highlighting that it can build the necessary systems and have the right people, similar to what countries do when using this kind of technology. Likewise, ISIS's deployment of remotely piloted systems was effectively integrated into its asymmetric warfare strategy. The main purpose of drone assaults was to confuse enemy forces, thereby impeding their counter-insurgency strategies. Fallen munitions often resulted in fatalities among enemy soldiers and damaged military equipment, thereby rendering them ineffective in the conflict. ISIS coordinated its drone and VBIED operations, with the latter also managed by a drone operator, targeting retreating forces to maximize losses.

5. Conclusion

In order to get a better understanding of the tactical gains achieved by Hezbollah and ISIS, as well as the larger implications of drone technology in asymmetrical warfare, it is necessary to conduct an analysis of the similarities and contrasts between the drone programs of both groups. Hezbollah's drone capabilities, firmly established in its quasi-state infrastructure and financially supported by Iran, demonstrate a deliberate and long-term integration into the organization's military strategy. UAVs belonging to Hezbollah are used for various purposes, including reconnaissance, targeted strikes, and psychological warfare. These drones also strengthen Hezbollah's operational capabilities and its ideological offensive against Western forces and Israel.

The usage of drone technology by ISIS characterizes innovation driven by necessity. Lacking external funding and operating in a decentralized manner, ISIS used commercially acquired drones for several purposes, including intelligence collection and propaganda dissemination. Its versatility in urban warfare allowed for the improvised use of low-cost technologies to overcome conventional military operations in urban environments like Mosul and Raqqa. This significantly altered the strategies used to combat insurrections.

The strategic gap between Hezbollah and ISIS in the use of drone technology highlights differences in asset availability, operational form, and ideological objectives. The statecraft expertise shown by Hezbollah sharply contrasts with the guerrilla-style improvisation demonstrated by ISIS. Both parties have indeed shown the confusing capabilities of drones in modern conflict scenarios. The use of drone technology by armed non-state actors such as Hezbollah and ISIS signifies a significant transformation in the conduct of warfare. The study found that the use of these capabilities signifies a substantial progression in asymmetrical and hybrid warfare, eroding the distinction between state and non-state military operations. This growth undermines traditional security frameworks, necessitating a reassessment of counterinsurgency techniques, particularly since technological advancements may equalize combat dynamics.

The widespread use of drone technology by armed non-state actors is not only a tactical advancement but also a strategic transformation that is swiftly altering the dynamics of war and power in the Middle East. The study demonstrates that the accessibility, flexibility, and affordability of drones have enabled entities such as Hezbollah, ISIS, and Iranian-backed militias to contest conventional military supremacy, extend influence across borders, and destabilize the precarious equilibrium of regional security. The former battlefield, formerly controlled by state air forces, has transformed into a congested and disputed aerial space, where commercial quadcopters and weaponized UAVs are used as tools for surveillance, sabotage, and psychological warfare.

The already unstable Middle East has become much more complicated as a result of this technical transition; asymmetry now involves both aerial and ground-based guerrilla tactics. This complexity extends to tactics and aerial precision. Beyond the obvious effects on the battlefield, the dangers pose a greater threat of entrenching instability, causing unanticipated escalations, and further blurring the line between the war and peace zones, as well as between civilians and soldiers. Drones represent movement, rebellion, and transformation in this setting; they are more than just weapons. While they pose a threat, they also present an opportunity for the international community to reconsider

Finally, the sky now serves as a shared and unpredictable space. Unregulated drone warfare might lead to everlasting insecurity. Stronger countermeasures, wiser strategy, ethical foresight, and global agreement are required to avert this. Therefore, how the states react to non-state actors' drone use will influence war and peace in the Middle East.

References

- ABC News (2017) Syria: Footage shows Islamic State drone blowing up stadium ammo dump. <https://www.abc.net.au/news/2017-10-25/footage-shows-is-drone-attack-on-syrian-government-stadium/9085750> [Accessed: January 18, 2025].
- Alami, M. (2017) Analysis: Hezbollah enters drone age with bombing raids in Syria, *Middle East Eye*, <https://www.middleeasteye.net/news/analysis-hezbollah-enters-drone-age-bombing-raids-syria> [Accessed: March 21, 2025].
- Almohammad, A. and Speckhard (2017) ISIS Drones: evolution, leadership, bases, operations and logistics, *International Center for the Study of Violent Extrimism* [Preprint]. <https://www.researchgate.net/publication/316679605>.
- Andersen (2017) 'putting lethal force on the table: how drones change alternative space of war and counterterrorism,' *Harvard National Security Journal*, 8.
- BBC News (2015) what is Islamic State? <https://www.bbc.com/news/world-middle-east-29052144>.
- Beccaro, A. (2018) 'Modern Irregular Warfare: The ISIS Case Study,' *Small Wars & Insurgencies*, 29–29(2), pp. 207–228. <https://doi.org/10.1080/09592318.2018.1433469>.
- Blazogiannaki, A. (2024) the evolving asymmetric threat of unmanned aircraft systems: a weapon of choice for Non-State actors, How alliance could diminish such threat, *Integrated Air & Missile Defense Centre of Excellence*. <https://www.iamd-coe.org>.
- Bunker, R.L. (2015) Terrorist and insurgent unmanned aerial vehicles: use, potentials, and military implication, *The United States Army War College*.
- Chávez and Swed (2020a) Off the Shelf: The Violent Non-state Actor Drone Threat, *Air and Space Power Journal*. <https://www.researchgate.net/publication/343745815>.
- Chávez and Swed (2020b) the proliferation of drones to violent non-state actors, *Defence Studies*. Volume 21, Issue 1 pp.1-24 <https://doi.org/10.1080/14702436.2020.1848426>.
- Cordesman, A.H. (2020) the gulf and Iran's capability for asymmetric warfare, *Center for Strategic and International studies (CSIS)* <https://www.jstor.org/stable/resrep29333>.
- Dekel, U. and Orion, A. (2017) the next War against Hezbollah: strategic and operational considerations, *Institute for National Security Studies*. [11-The-next-war-against-Hezbollah-strategic-and-operational-consideration.pdf](https://www.inss.org.il/wp-content/uploads/2017/06/11-The-next-war-against-Hezbollah-strategic-and-operational-consideration.pdf)
- Gulmohamad, Z.K. (2014) the rise and fall of the Islamic State of Iraq and Al-Sham (Levant) ISIS, *Global Security Studies*

<https://makhaterltakfir.com/File/Article/The%20Rise%20and%20Fall%20of%20the%20Islamic%20State.pdf>.

Gurcan, M. (2013) 'Drone warfare and contemporary strategy making: Does the tail wag the dog?' *Dynamics of Asymmetric Conflict*, 6(1–3), pp. 153–167. <https://doi.org/10.1080/17467586.2013.859284>.

Haugstvedt and Jacobsen, O. (2020) 'Taking Fourth-Generation Warfare to the Skies? An Empirical Exploration of Non-State Actors' Use of Weaponized Unmanned Aerial Vehicles (UAVs—'Drones')'. 14(5), pp. 26–40 <https://www.jstor.org/stable/26940037>.

Haugstvedt, H. (2024) Still aiming at the harder targets: an update on violent Non-State actors' use of armed UAVs, *Perspectives on Terrorism*, 18(1), pp.132-143, <https://doi.org/10.19165/2024.9050>

Jazeera, A. (2016) 'Booby-trapped' ISIL drone in deadly Iraq attack, *Al Jazeera*, <https://www.aljazeera.com/news/2016/10/12/booby-trapped-isil-drone-in-deadly-iraq-attack> [Accessed: October 12, 2024].

Isaconjarias, G. and Maged, H. (2019) Fear the drones: remotely piloted system and non -state actors in Syria and Iraq, *IRSEM*.

Miles, F.B. (1999) Asymmetric warfare a historical perspective, *U.S. Army War College: Strategy Research Project*. [Asymmetric Warfare: An Historical Perspective](#)

Pollak, N. (2016) the transformation of Hezbollah by its involvement in Syria, *the Washington Institute for Near East Policy*, No 35, [The Transformation of Hezbollah by Its Involvement in Syria | The Washington Institute](#)

Rassler, D. (2016) remotely piloted innovation: terrorism, drones and supportive technology, *Combating Terrorism Center at West Point*. [Drones-Report.pdf](#)

Rassler, D. (2018) The Islamic State and drones: supply, scale, and future threats, *Combating Terrorism Center at West Point*. United States Military Academy <https://ctc.westpoint.edu/wp-content/uploads/2018/07/Islamic-State-and-Drones-Release-Version.pdf>.

Schmitt, E. (2017) Papers offer a peek at ISIS' drones, lethal and largely Off-the-Shelf. <https://www.nytimes.com/2017/01/31/world/middleeast/isis-drone-documents.html#> (Accessed: January 25, 2025).

Schulz, C. (2024) State Actors vis-à-vis Non-State Actors in the Middle East, *Vienna International Institute for Middle East Studies*, No.6 [Report6 VIIMES 18Dec2024.pdf](#)

Sims, A. (2018) the rising drone threat from terrorists, *Georgetown Journal of International Affairs*, 19(1), pp. 97–107. <https://doi.org/10.1353/gja.2018.0012>.

Sousa, D. (2014) Three phases of resistance: How Hezbollah pushed Israel out of Lebanon, E-International Relations. <https://www.e-ir.info/2014/04/28/three-phases-of-resistance-how-hezbollah-pushed-israel-out-of-lebanon/>.

Stalinsky, S. and Sosnow, R. (2017) A decade of jihadi organizations' use of drones – from early experiments by Hizbullah, Hamas, and Al-Qaeda to emerging national security Crisis for the West as ISIS launches first attack drones. *The Middle East Media Research Institute* (MEMRI). <https://www.memri.org/reports/decade-jihadi-organizations-use-drones-%E2%80%93-early-experiments-> (Accessed: January 6, 2025).

Trapp, S. (2018) Drone Wars: To What End? An Investigation into the Long-Term Risks of U.S. Drone Warfare, *Master Thesis, Diplomatiscbe Akademie Wien*. https://www.fatt.at/Portals/0/BlogItems/PDF/20181024_DA_Trapp_Thesis.pdf.

Veilleux-Lepage, Y. and Archambault, E. (2022) A Comparative Study of Non-State Violent Drone use in the Middle East, *ICCT Report*. <https://www.icct.nl/sites/default/files/2022-12/Drones%20in%20the%20Middle%20East%20-%20Full%2> (Accessed: November 18, 2024).

Wahlert, M.H. (2007) Non-State Actors and Asymmetric Warfare: A New Paradigm for International Relations. https://corescholar.libraries.wright.edu/etd_all/100/.