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Does Drone Warfare Increase the Efficiency of State's Capacity in Counter-Insurgency: The Case of Turkey

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INTRODUCTION

State's structures and its abilities to perform certain policies are seen as one of the main causes of the rise of non-state terror groups.[1] State's monopoly over the use of violence in a given territory and population is contested by other elements of power holders that are aiming to replace that power with theirs instead. History has witnessed a very particular revolt to modern state formations; terrorism. The creation of modern state structure has pretty much succeeded to preserve states' current status quo in all over the world and this has prevented the natural flow of power change in a territory. State capacity theory, in this context, argues state's ability to prevent more conflicts by increasing its economic, bureaucratic and military capacity all together.

This thesis will focus on drone warfare and its impact on counterinsurgency (COIN) operations in relation with the state capacity theory. The increasing usage of unmanned aerial vehicles (UAVs) in military operations against irregular forces has changed the equilibrium in guerrilla tactics of small units against massive military units. In order to understand the true effect of drone warfare in COIN, state's overall capacity and COIN efforts must be evaluated. Therefore, it also requires a ground theory that explains and measures the changes in application of new COIN tactics.

As a result, drone warfare increases the efficiency of counterinsurgency operations against the guerrilla type organized insurgent groups. In order to explain the effect of drones on modern

[1] Cullen S. Hendrix and Joseph K. Young, "*State Capacity and Terrorism: A Two-Dimensional Approach*," *Security Studies* 23, no. 2 (March 2014): pp. 329-363, https://doi.org/10.1080/09636412.2014.905358.

warfare, I will elaborate the newly rising drone[2] power; Turkey. I will utilize state capacity theory to illuminate the impact of drone warfare in the case of Turkey.

The first chapter focuses on the question of what is state capacity and how does it explain the state's ability to fight against irregular insurgent groups. State capacity theorists mainly inquire how state capacity reduces the terror threats against the state's survival by emphasizing state apparatuses such as bureaucratic, political, financial and military capacity.[3] There is a disagreement in the academic circles about whether the military force is a solution to be considered in COIN and this also hugely affected the state capacity discussions regarding the military's role in diminishing the root cause of the attacks since the insurgents are not soldiers but criminals.[4] Without getting deeply into these discussions, I took the military capacity as the only factor that can prevent any possible violent attack that threatens the lives of citizens in which it requires violent counter-measure as well. After explaining the state capacity theory and drawing a frame for our research question, the evolution of drone technology was evaluated aiming to show how it is important to understand the timeline and the factors that have changed the history of aerial vehicles. Rest of the chapter is dedicated to explain the other elements of drone operations that are mostly responsible for the high efficiency in drone warfare more than the drone itself like control station, the software, electronic war equipment, etc.

[2] In this paper, I use the terms "drone" and "UAV (Unmanned Air Vehicle)" interchangeably. "UCAV" (Unmanned Combat Air Vehicle) is used to underline that the drone is armed and the following sentences mostly referred to its strike capacity.

[3] Cedric S. Hendrix, "*Measuring state capacity: Theoretical and empirical implications for the study of civil conflict,*" Journal of Peace Research (2010); 47(3):273-285, DOI: 10.1177/0022343310361838

[4] Caleb Carr "*Terrorism as Warfare: The Lessons of Military History*," World Policy Journal (1996) 13, no. 4 pg. 1-12.

In the second chapter, the tactical use of drones in military operations is examined. Regarding this issue, it can be stated that there are many ways for operational use of military drones in COIN and the most striking feature is the fact that drone operation is capable of conducting many military operations per se, such as surveillance, reconnaissance and lethal strike missions. With the help of highly developed cameras, sensors, guidance systems, laser pointer equipment and destructive payloads, the military UAVs have taken the burden of the expensive costs of conducting those missions with separate units. Besides the tangible operational benefits that drone warfare provides to COIN efforts, the psychological war has also been highly affected from it as well. Just like the radio channels in World War 2 and television in Vietnam and Gulf Wars have been used as a tool to psychologically fray out the adversaries, UAVs visual imagery uplifts the fears of adversaries since the drones are capable of saving the video while blowing up the target. Turkey has been using the drones to uplift morals of Turkish community against terror attacks and deteriorate the terror sympathizers' and militants' will to attack the country. It is also provided in this chapter that drones are also increasing the efficiency of cooperation among state agencies in COIN efforts by accelerating the communication channels through its devices and allowing a real-time intelligence on the ground in which helps other units to take better precautions.

The third chapter is dedicated to Turkey's case as being the newly rising drone power in the world and having effectively used the drone warfare in its war on terror. Turkey's drone adventure goes back to 80's where they procured drones from countries like the USA, Germany and finally Israel. Turkish military elites realized the importance of UAVs and how they can be useful in the fight against the insurgent groups on the mountainous areas. The procurement policy of 80's and 90's

failed and in the early 2000's, Turkey gave a start to manufacture its indigenous UAVs to reduce the dependency on third parties involvement. Other than the Turkish state-owned company Turkish Aerospace Industry (TAI), the private companies like Vestel and Bayraktar also hugely invested in military UAV projects. Bayraktar TB2, Karayel, ANKA are the commonly known and famous UAVs that are manufactured by those companies and proved their efficiency in the battles. Later on, we touched upon the history of Kurdish insurgency and the Turkish COIN strategies to understand the development of the events and their impact on the lost decade of Turkish COIN struggle. At the last part, we elaborate the scarce data giving to the public regarding the drone warfare usage against PKK (Kurdistan Workers Party) elements to explain how it reduced the casualties and military expenses in COIN operations.

In the conclusion, the findings and the arguments are revealed to give a glimpse of what drone warfare is capable of in COIN operations. I summarized the overall research and made some recommendations for future work on this topic. From a broader perspective of theoretical, historical, and technical knowledge on the drone warfare, this thesis concludes that if UAVs get involved in the COIN operations more, they are likely to uplift the chances of being successful in COIN. Nevertheless, it is underlined that the military is not the final solution to uproot the causes of this violent campaign that also includes a supportive population in state's territories. As we put Turkey as an example for its excessive use of drones in COIN operations, the PKK issue is limited per se but also concerns other Kurdish civilians living in Turkey as well. The existing literature about the drone warfare and state capacity theory is very limited and this thesis provides a gateway for new questions on the related matter.

1) State Capacity

States have been the primary actors in both internal and external politics. The state structure bases on the very fundamental economic value of the supply and demand mentality in every meaning. That being the case, the state has attracted many researchers to explain the state apparatuses and their effectiveness in various life segments. State capacity theory is one of the main explanatory variables of state structure and its role in social life by analyzing its ability to do multiple duties ranging from economy, politics, bureaucracy, military, etc.[5] There are many contesting definitions of state capacity, depending on researchers' field of inquiry.

The essence of statehood involves the monopoly of using violence that leaves no room for other competitors to change the status quo. Weber defines the state as a "*human community that claims the monopoly of the legitimate use of force within a given territory*." [6] But the use of force varies from state to state depending on their capacity and effectiveness. Therefore, it has become the focus of inquiry to explain why some states have violent disorder while others do not have through examining the variation of their capacities.[7] In this thesis, I agree with Kocher's point that capacity must be subject-specific to the research question to avoid disarray in the findings. Therefore, the definition of state capacity that I will refer to in this thesis is the ability to project its power and coerce its abiding rules through a structural network of defined state apparatuses to sustain the authority on its territory.

[5] Hendrix, "*Measuring state capacity*," 274.
[6] Max Weber, "(1919/1958*) Politics as a vocation*." In: H. H. Gerth & C. Wright Mills (trans.) From Max Weber: Essays in Sociology. New York: Galaxy (77–128).
[7]Matthew Kocher, "*State capacity as a conceptual variable*." Yale Journal of International Affairs (2010) 5, no. 2: 137–45.

The literature in state capacity mostly concentrates on the economic capacity that is usually about taxation, economic development, and why some countries have not developed as much as others.[8] Besides the economic aspect, state capacity concerns the bureaucratic and military capacity of the state regarding the insurgency and civil war. For a state, ending the insurgency or civil war necessitates using various state apparatuses actively in cooperation with each other rather than depending heavily on military strength.[9]

A successful counter-insurgency requires four conditions; (1) strong military capacity to sustain a considerable threat level for insurgent groups, (2) distinctive strategy that needs to be developed in consideration with the unique needs of the targeted area/issue, (3) effective interagency cooperation within the state organs to increase the damage on the insurgency side by all means, (4) stabile economic/financial capacity to fund the COIN operations and policies for a long period in order for the strategies to be implemented as far as possible.

The first condition necessitates the iron fist for suppression of any armed struggle against the state authority. Even though many scholars, like Galula, prioritize the political solution to take the lead to encounter the violent insurgency before the military action.[10] However, the history of counterinsurgency proved the necessity of armed units to diminish the constant violent threats of insurgency like in the cases of ETA, IRA and PKK.[11] The existence of a strong military posture is

[8] Noel D. Johnson & Mark Koyama, "*States and economic growth: Capacity and constraints* (2017)." Explorations in Economic History, 64, 1–20. https://doi.org/10.1016/j.eeh.2016.11.002

[9] Hendrix & Young, "*State Capacity and Terrorism: A Two-Dimensional Approach*", 329-363.

[10] David Galula, "*Counterinsurgency Warfare: Theory and Practice (1964),*" Praeger Security International, Westport, CT, pg: 55

[11] Patricia L. Sullivan & Johannes Karreth, "*Strategies and Tactics in Armed Conflict: How Governments and Foreign Interveners Respond to Insurgent Threats (2019*)". Journal of Conflict Resolution. 2207-2232 (Authors of this article do not necessarily mention the names of those organizations, but it refers to the nature of the military force against an armed and violent threat)

a huge determiner of how the political solution would proceed to win the targeted population and is a guarantee of continuity of the solution efforts.[12]

The second condition, related with the first one, a counterinsurgency strategy must contain all necessary actions ranging from political, economic, military solutions that are uniquely defined to solve the problems of insurgent population. In counterinsurgency studies, it is hard to apply the same rules/policies in every occasion. Every insurgency problem requires its own unique interpretation of counterinsurgency solutions. Therefore, the responsibility to come up with a unique COIN policy is on the related state's inescapable duty to do.

Third condition suggests utilizing every resources of a state to eliminate the posed threat by insurgency. Utilization means to increase the cooperation and communication of the state's political, bureaucratic and security apparatuses to work in harmony. There is no COIN that is solely political or military. Insurgency emerges from political, social, economic and security problems that must be dealt with a grand COIN policy to answer these problems at once and containing all together.

Fourth condition is about strong financial capacity to fund expensive COIN policies. The military operations and intelligence gatherings make up the majority of the expenses in COIN spending from the state's budget. Since the insurgency movement's initial target is the government investments on the conflicted areas to cut the economic profits to flow into central government's budget, the military cost is overshadowed comparing the worth of state funds that is protected.

[12] Jason Lyall & Isaiah Wilson, "R*age Against the Machines: Explaining Outcomes in Counterinsurgency Wars (2009)".* International Organization, 63(01), pg. 67-106.

Those conditions are the handbook for a counterinsurgent to pursue victory after all. Without accomplishing all these conditions together, the chances of having a successful COIN become nothing but meager efforts.

A COIN campaign depends heavily on its state capacity, which must have the minimum bureaucratic, economic and military capacity to resolve the issue, and if not, then the insurgency removes the state authority in its area of control (e.g., Taliban in Afghanistan, DAESH in Syria and Iraq). The durability of the war with an insurgency groups tends to be longer than with a conventional army.[13] Therefore, the state must be adjusting its resources for a long time challenge that exhausts the state's ability to respond with a counter-measure. The war on terror must be affordable, so guerrilla warfare's most crucial tactic of making the war costly for the state would fail.

A state must have three goals to achieve a successful COIN; the first one is the stability of its regime, the second is ending the separatist armed struggle[14] , and the third is preserving the security of the state's border. Protecting the regime contains the crucial elements of the state's survival like leadership, bureaucracy, judiciary, and military. In order to achieve the COIN objectives, a state must have them fully operative on behalf of itself. It can't be called even if a state manages to defeat insurgency or civil war for good without properly working state apparatuses. In the example of Syria, the civil war pretty much ended with the regime's victory. Still, it is hard to say that regime has a well-functioning judiciary or bureaucratic capacity in

[13] Sarah Simon, "*Leviathan Lost: The Impact of State Capacity on the Duration and Intensity of Civil Wars (2017).*" CUREJ: College Undergraduate Research Electronic Journal, University of Pennsylvania, pg: 10 http://repository.upenn.edu/curej/205.
[14] Simon, "*Leviathan Lost*", pg. 12.

territories under its military control. That being the case, state capacity theory does/must prioritize the stability of the regime.[15]

Second, the constant state of war negatively affects the regime's ability to focus on the nation's well-being. The greatest danger posed by the uprising to the state is tiring, unending wars that weaken the state's ability to invest in public spending. However, the insurgency forces the state to increase its military spending to prevent the insurgents from expanding their capacity. There are several ways to end violent insurgent campaigns. Still, state and insurgency generally agree on a term either through violent clashes and one side yields or both sides compromise to reach an agreement.[16] In both cases, security forces are playing a crucial role that determines how it will end up.

On the other hand, there is a direct relationship between military spending and the threat level to the state's existence and authority.[17] Thereby, the state's military capacity strongly relies on the state's financial capacity since the ongoing war expenditures create a heavy burden on the budget. The state tends to end the cause of this financial burden one way or another and any state's COIN aims to stop the violent attacks that deteriorate its sovereignty and the well-being of the nation.

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[15] David Sobek, *"Masters of Their Domains: The Role of State Capacity in Civil Wars"*. Journal of Peace Research 47, no. 3 (May 2010): 267–71. https://doi.org/10.1177/0022343310362295.

[16] Goran Peic, *"Civilian Defense Forces, State Capacity, and Government Victory in Counterinsurgency Wars*", (2014), Studies in Conflict & Terrorism, 37:2, 162-184, DOI: 10.1080/1057610X.2014.862904

[17] Albert J. F. Yang, William N. Trumbull, Chin Wei Yang & Bwo-Nung Huang, "*On the Relationship Between Military Expenditure, Threat, and Economic Growth: A Nonlinear Approach*", (2011), Defence and Peace Economics, 22(4), 449–457. doi:10.1080/10242694.2010.497723

Thirdly, protecting the integrity of the territory wherein, some parts are claimed by a second party armed group is the final and the most critical objective of the COIN. State's survival lies on a defined border that needs to be protected from any threats to its integrity by forming and applying a set of deterrent security policies. By doing so, the state must closely calculate any capacity that is directly or indirectly affecting the COIN efforts. As we mentioned earlier, the state capacity is strongly correlated with the scope of the strength of the security forces that, after all, will face with the violent insurgent campaign aiming to, partly or wholly, exterminate the state's authority. Consequently, the state has a border and territory to protect, unlike an insurgent group, which drives the state to increase its capacity to deal with the threat.

Once the rebel group extends its activities to a well-prepared armed struggle, COIN's success parallels the effectiveness of the state's military capacity projection on the ground in most cases. Although this fact does not make the military capacity the only way to end the insurgency, it also makes it an indispensable mainstay in the counter-insurgency struggle. Therefore, increasing the military capacity is crucial to end insurgency in which does not matter if it is a violent or peaceful solution. There are a few ways to describe military capacity, but in COIN, the classical measurement is not sufficient to describe the actual capacity to deal with irregular forces. Numerical or financial superiority over the insurgency is not enough to prevent it.[18]

Hendrix and Young claim that increasing military capacity stimulates more terror attacks per se, and they suggest improving political/bureaucratic capacity that is successful at preventing terror

[18] Elissa Berwick & Fotini Christia, "*State Capacity Redux: Integrating Classical and Experimental Contributions to an Enduring Debate*", (2018), Annual Review of Political Science, 21(1), 71–91. https://doi.org/10.1146/annurev-polisci-072215-012907

attacks.[19] But the missing point in these findings is that bureaucratic capacity works as a preventive measurement, whereas the military capacity aims to exterminate the source of terror. The military capacity acts aggressively towards the insurgents and attracts counter-attacks more as it becomes a violent clash. This consequence of aggressiveness does not necessarily prove that military power has lesser importance than bureaucratic/administrative capacity. I suggest that the state capacity must be held as a unified structure that can be improved by boosting interagency cooperation. After this point, the strategies will be decisive in conducting counter-insurgency. For that reason, the state must establish a well-connected network of information flow over time to track down every movement of insurgents along with improved strike capacity to overwhelm the insurgents.

Drone warfare has attracted attentions due to the increased use of drones in the United States' war on terror campaign in Afghanistan, Pakistan, and various other states. The U.S. drone program and its operational use in irregular warfare revealed the vulnerability of guerrilla tactics that is being unsuccessful in coming up with an effective counter-measure so far.[20] Drone warfare revolutionized the counter-insurgency efforts because of its less costly operational use, and it can effectively perform various missions ranging from ISR (Intelligence, surveillance, reconnaissance) to lethal strikes.

Insurgencies and small wars evolved modern warfare by carrying out the battle on terrains where it's hard to conduct a proper military operation. The rapid development of technology has,

[19] Hendrix & Young, "*State Capacity and Terrorism*", 336.
[20] Ahmed S. Hashim & Grégoire Patte, "*What is that Buzz?*", (2012), The Rise of Drone Warfare. Counter Terrorist Trends and Analyses, 4(9), pg. 8-13.

indispensably, changed the facet of modern warfare and even the battlefield wherein some military operations are carried out in cyberspace, including attacks on nuclear facilities (i.e., Operation Olympic Games)[21]. In the overlapping area where the Cyber world meets it's one of the most influential war tools to dominate the actual battlefield, Unmanned Aerial Vehicles (UAVs) or Drones stepped in as a dominating factor both on the air and the ground forces. Its range of effects is hardly released to the public by the drone powers so far. The role of unmanned aerial vehicles stands out in the dangerous, high-risk, long-lasting air operation that human physiology cannot bear.

However, UAVs are just a part of the system that makes them fly over the sky. Reg Austin defines Unmanned Aerial System (UAS) as "*a number of sub-systems which include the aircraft (often referred to as a UAV or unmanned air vehicle), its payloads, the control station(s) (and, often, other remote stations), aircraft launch and recovery sub-systems where applicable, support sub-systems, communication sub-systems, transport sub-systems, etc.*" [22] This means that drone warfare is not merely about flying some aircraft over the terrain to gather footages. Still, a complex system to run various tasks simultaneously in a high efficiency that requires long endurance and low operation cost. Also, this system must collaborate with different security forces depending on the type of operation. This is the utmost reason why only a handful of countries are capable of manufacturing and operating this system.

[21] Mariusz Antoni Kamiński, "*Operation "Olympic Games" Cyber-sabotage as a tool of American intelligence aimed at counteracting the development of Iran's nuclear programme*", (2020), Security and Defence Quarterly, 29(2), 63-71. https://doi.org/10.35467/sdq/121974

[22] Reg Austin, "*Unmanned Air Systems: UAV Design*", (2010) Development and Deployment (1st ed.). Wiley. Pg. 3.

Drones have a place in modern and future warfare since their revolutionary combatting capabilities are expanding into a more sophisticated technological era fostered by A.I. (Artificial Intelligence) developments.[23] Drones offer a broad continuum of war apparatuses like collecting real-time intelligence and strike capacity. The drone operation gives enormous leverage to the counter-insurgency operators by shortening the time gap between identifying the intelligence and eliminating the targets. By using the drone attacks, counter-terrorist operation costs are drastically dropped since the high costs of using fighter jets and their heavy, expensive bombs are replaced by low priced smart ammunitions and expendable drones. Therefore, it is essential to understand how drone warfare has evolved in time and its technological advancement.

1.1) Evolvement of Unmanned Aerial Vehicles

The first unmanned aerial vehicle roots back to WW1, which are pretty much missiles with an engine to hit the far distanced enemy positions.[24] Failure to reach the precise enemy position, not having either a ground station or autonomous flight mode, and no chance to reuse these missiles again does not allow us to consider them as UAVs in the definition. But the most crucial development for aircraft during the inter-war years is to be recognized as vital support by exercising the intelligence, surveillance, and reconnaissance missions for ground forces. Awareness of what aerial reconnaissance can contribute to the war accelerated the investments in developing more enduring versions that can do both reconnaissance and strike missions to show its importance in WW2.[25] The semi-ballistic missiles developed by German scientists during

[23] Mike Fowler, "*The Strategy of Drone Warfare"*, (2014), Journal of Strategic Security, 7(4), 108–119. https://doi.org/10.5038/1944-0472.7.4.8

[24] Jack Miller, "*Strategic Significance of Drone Operations for Warfare"*, (2013, August 19), E-International Relations. 1-13. https://www.e-ir.info/2013/08/19/strategic-significance-of-drone-operations-for-warfare/

[25] John David Blom, "*Unmanned Aerial Systems*", (2010), Amsterdam University Press. Pg. 21.

World War 2 paved the way for further research to develop unmanned aircraft that was soon realized as useful as manned reconnaissance airplanes.[26] Although German V-1 and V-2 rockets mostly failed to hit their targets, they caused the allies to spend more to defend against those rockets than what Germans spent to launch them.[27] In this sense, the V series demonstrated the beneficial outcome of drone warfare in the battle that cost more to the other side.

Later on, some remote control aerial vehicles were used for military exercise as targets. The British army started using those radio-linked drones as moving targets for ground forces fire training. It was dropped soon due to its inability to do escaping maneuvers on air like a human-controlled aircraft, but it still was a milestone for further missile and UAV technology. In the U.S., on the other hand, a more advanced version was included in the inventory as a target drone that will eventually open the way for more sophisticated versions in the '70s; Teledyne Ryan Q-2 Firebee.[28]

In the '50s, the U.S. Navy ordered target drones that will be used as target practicing. To be close to the real aircraft, Ryan Aeronautical Company designed the Firebee to be powered by a turbo-jet engine.[29] Firebee target drone was either carried by aircraft or launched from a catapult. The early versions of this target drone were using parachutes to land safely. The Firebee target drones drew attention to the drone technology more, and later, it was purchased by Israel, and the very first reconnaissance drones were made and used by the Israelis. During the Yom Kippur war, the

[26] Blom, "*Unmanned Aerial Systems*", pg. 21.
[27] Kenneth P. Werrell, "*The Evolution of the Cruise Missile*", (1985), Maxwell Air Force Base, Alabama: Air University Press, 60-62 .
[28] Sinem Kahvecioglu & Hakan Oktal, "*Historical Development of UAV Technologies in the World: The Case of Turkey*", (2016), Sustainable Aviation, 323–331. https://doi.org/10.1007/978-3-319-34181-1_26
[29] Jeffrey M. Sullivan, "*Evolution or Revolution? The Rise of UAVs*", (2006), IEEE Technology and Society Magazine, 25(3), 43–49. https://doi.org/10.1109/mtas.2006.1700021

reconnaissance drones gave Israelis a considerable advantage by providing the enemy spots on both fronts. Many Firebee and Chukar drones were intentionally sent behind the enemy fronts to locate the air defense systems' positions to be blown up by the fighter jets.[30] The U.S. Navy also used the Firebee's that performed 3,425 reconnaissance missions along with electronic and signal intelligence missions during the Vietnam War.[31] Even though all sides suffered significant losses in this war, the Israeli drone program proved how effective its new systems are in real war conditions. By using the Firebee's technology, Israel managed to load a television camera and payload to its drone, Tadiran Mastiff, which is controlled via radio-links and carried out both reconnaissance and strike missions on the Suez Canal.[32]

The Israeli Aviation Industry (IAI) developed their first-generation drones with the first Medium Altitude Long Endurance (MALE) small UAS Pioneer in the '80s. Thanks to the attached camera, the Pioneer was able to transmit the terrain's visual data that proved to be effective on dangerous missions by providing accurate information about enemy posts to the ground control station or the airplanes. The most appealing feature about this is, of course, being expendable due to its cheap material and no human casualty in case of downing by the enemy.

The U.S. was impressed by the pioneer systems' success and reached a deal of $86 million for 9 UAS, and each includes 8 UAV.[33] The Pioneer carried out many reconnaissance missions in Iraq, Somalia, and Balkans as well. The U.S. Navy deployed 2 Pioneers in the USS Missouri and the USS

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[30] Stefan Borg, "*Assembling Israeli drone warfare: Loitering surveillance and operational sustainability*", (2020), Security Dialogue, 096701062095679. https://doi.org/10.1177/0967010620956796

[31] Werrell, "*The Evolution of the Cruise Missile*", 58.

[32] "*Israeli Drones Keep an Electronic Eye on the Arabs,*" The New York Times (The New York Times, May 23, 1981), https://www.nytimes.com/1981/05/23/world/israeli-drones-keep-an-electronic-eye-on-the-arabs.html

[33] "*Unmanned Aerial Vehicles: Maneuver System Schedule Includes Unnecessary Risk",* GAO/NSIAD-95-161, 15 September 1995, 2-3, http://www.gao.gov/archive/1995/ns95161.pdf (accessed: 21.01.2021)

Wisconsin during Operation Desert Storm, and the results were promising for possibilities of future UAV systems, which led to indigenous U.S. drone programs; Predator, Global Hawk, etc. Numerous failures following one after another discouraged the decision-makers from investing more in drone programs. General Atomics' Predator and The Firebee's father Teledyne Ryan Company's Global Hawk drones broke the military's distrust in UAV programs by performing a tremendous operational use, which demonstrated what a drone is capable of. Both UAVs perform the same tasks at different levels, wherein the later improvements would show how economically it is to use drones instead of using manned aircraft in military operations.

However, the real potential was about to come in reality with drone deployment at the front in the USA's war on terror. This time, the adversaries were not conventional armies like in the Dessert Storm or Bosnian War. The rise of non-state actors caught up the U.S. by surprise, and now, The U.S. found itself in a long war that the adversary can operate deadly attacks on its soil (e.g., 9/11 attacks). The first time in the history, The U.S. armed its predator drone to execute lethal strikes against the insurgent groups in Afghanistan, Iraq, and Pakistan.[34] Decapitation theory in COIN gained momentum with the rise in using armed drones for targeted assassination missions.[35] Israel and The US-run a top-secret drone campaign due to its mass civilian casualties in the operations whereas the insurgents use civilians to disguise. It was only after Barack Obama unveiled the secretive operational use of armed drones in Pakistan and its "unintended" civilian

[34] Richard Whittle, "*Predator: The Secret Origins of the Drone Revolution*", (2014), New York: Henry Holt and Company, Pg. 266.
[35] Mike Fowler, "*The Strategy of Drone Warfare*," Journal of Strategic Security 7, no. 4 (January 1, 2014): pg. 118. doi: http://dx.doi.org/10.5038/1944-0472.7.4.8

casualties.[36] Nonetheless, drone warfare has opened a new page in asymmetrical warfare and, for sure, given counter-insurgency a great advantage to increase the state's military capacity in long wars.

As we mentioned earlier in this chapter, drones are incapable of executing various significant military missions without the supporting systems that accompany the flying drone to increase operational efficiency. Any UAS has to have a control station to receive imagery data from UAV and to transmit new commands. These control stations can differ from the operational base, such as; naval forces use warships, land forces have ground control systems, and sometimes those UAVs can be controlled via airplanes. Besides how impressive and feasible the UAS can be, the control stations play a pivotal role in the system to execute the orders and transmit the data via highly developed communication channels. Depending on the UAS, the received data can be processed at the control station or forwarded to a different processing center to make sense of the collected data. The control station is the pilot's cabin of the pilotless aircraft.

On the other hand, electronic warfare is mitigated with much of the drone operations as a part of the system that protects the safety of the drones and the operations. Electronic warfare is used both as a counter-measure to take down drones and as a supportive factor in drone operations. Since the majority of the operations rely on electronic equipment and signals, conducting electronic attack or support missions become a very crucial part of the operations. Whereas the drones represent one of the most significant outcomes of remote control technology and provide less financial burden, electronic warfare stands as the only counter-

[36] Luca Trenta, "*The Obama administration's conceptual change: Imminence and the legitimation of targeted killings*," (2017), European Journal of International Security, 3(01), 69–93 (pg.69). doi:10.1017/eis.2017.11

measure against drone warfare as it also provides the low-cost preventive and supportive military operation.[37] Therefore, the developments in electronic warfare will determine the future of drone warfare in the near future.

However, the latest efforts in UAV technology aim to completely free the machine from human control to get rid of the ever-existing human mistake in UAV activities. Artificial Intelligence (A.I.) allows the UAV to process the data and take decisions without depending on a control station. Even though the lack of human control over a killing machine raises ethical questions, A.I. developments promise a lot for the future of aircraft technology as well as for future warfare.

[37] Zsolt Haig, "*Electronic Warfare in Cyberspace*", (2015), Security and Defence Quarterly, 7(2), 22–35. https://doi.org/10.5604/23008741.1189275

2) Tactical Use of Drones in a Military Operation

Drone warfare successfully combined several important combat missions, including intelligence gathering, surveillance, reconnaissance, and an airstrike. The widespread use of drones has radically changed not only the fight against terrorism but also against regular armies using old-fashion air defense systems that are appeared to be not very successful at detecting drones. As recently stepped-up by possessing one of the largest drone fleets globally, Turkey has been rivaling the U.S. and the U.K. in using the killer drones in operations against both conventional and unconventional armed groups.[38] Drone warfare against the PKK insurgency in Turkey, Syria, and Iraq became an efficiently deterrent factor in favor of Turkish armed forces due to precise hits and successful surveillance of the targets. All-in technical and tactical capabilities put drone warfare in a very privileged place in today's evolving modern warfare.

2.1) Surveillance/Intelligence

In any counter-insurgency campaign, intelligence has the larger share in the success. Real-time intelligence missions play a crucial role in understanding how terrorist organizations work and operate by providing knowledge of what to do when and where. Irregular warfare's main tactic is to abuse the conventional military units' strength by keeping them busy with the threat of imminent attack anytime in any place. The wideness of the battlefield necessitates developing an intelligence circle that is capable of tracking the suspected movements and acquiring correct

[38] Umar Farooq, "*How Turkey Defied the U.S. and Became a Killer Drone Power",* (2019, May 14). The Intercept. https://theintercept.com/2019/05/14/turkey-second-drone-age/

information. In doing so, the time and the methods to acquire such information have diversified depending on the counter-terrorism operation.

Drones opened a new page by taking over the place of spy satellites, which can only give limited footages of the needed intelligence due to its orbiting around the world, and it is not possible to stay in one place for longer periods of time to take an intensive and closer look.[39] Therefore, full-time surveillance has been done by the agents who work on the field or through signal intelligence methods. UAVs revolutionized the intelligence gatherings with the advantage of flying quietly at high altitude for a long time. The sensitive high-resolution cameras that allow making facial recognition on the ground, sensors that make it possible to work on a mission at night, and the ability to fly over the same place put drones in an indispensable position in intelligence gathering operations. The need for clear and continuous intelligence became much clearer when US forces fought against Serbian forces that knowingly hide their outposts during the possible timing of satellites passing over their territory to transmit the imagery to the US bases. This obstacle and the only 2 times a day access to the satellite imagery in given Serbian forces positions due to satellite's constant orbiting around the world led to a search to a different tool to transmit the most up-to-minute aerial imagery of enemy posts and to be able conduct these missions in high flying endurance over a given area of interest remotely.[40]

The border patrol is an essential task that prevents any possible infiltration and smuggling of goods, weapons, etc. The U.S. Customs and Border Security defines their mission as "*(…)*

[39] Ricky J. Lee et al., "*Military Use of Satellite Communications, Remote Sensing, and Global Positioning Systems in the War on Terror",* (2014), 79 J. Air L. & Com. Pg: 82.
[40] Whittle, Predator, Pg. 76.

preventing terrorists and terrorist weapons, including weapons of mass destruction, from entering the United States"[41]. Border patrolling is, in any country, covered mainly by the ground agents and/or troops. Because of its vitality in preventing any possible threat to the country, border patrols tend to be costly. 24/7 surveillance of the borders aims to avoid any human trafficking, goods, arms, and drugs smuggling through state borders. The huge human resources working on the field every day make the operation more costly and this may even cause several coordination problems including humanly mistakes or corruption.

Doing the border patrol with aerial vehicles can make the operations a lot easier depending on the latest technology with the precise facial recognition system, high-resolution cameras, and sensitive sensors. But it may not give the same results in border security as well as it does in military operations. As I mentioned earlier, border patrolling requires a 24/7 job, and not all types of military drones can fulfill the task. CBS (Custom and Border Security, United States) deployed a fleet of 10 Predator-B drones on border surveillance tasks. The drone program, however, did not meet the expectations with the same results in military operations.[42] The failure has many reasons, but the utmost reason is the fact that border security needs long endurance with a low cost because of the border security's need for constant control over the border every day. Therefore, Predator-B was not suitable for long-term surveillance missions, unlike the operation base usage in the counter-terrorism campaign in Iraq, Pakistan, or Yemen. The costs were about

[41] U.S. Customs and Border Protection Website, https://www.cbp.gov/border-security/along-us-borders/overview (access date: 06.10.2020)

[42] Office of Inspector General (OIG), "*U.S. Customs and Border Protection's Unmanned Aircraft System Program Does Not Achieve Intended Results or Recognize All Costs of Operations*", Dec 24 2014, https://www.oig.dhs.gov/reports/2015/us-customs-and-border-protections-unmanned-aircraft-system-program-does-not-achieve-intended-results-or-recognize-all-costs-operations.

$12.255 per hour.[43] This much higher cost with little durability (4 hours in a day)[44] on air along with the failure of cameras from the high altitude to detect valuable information like facial recognition or at least a clear imagery to track down the suspected activities decreased the efficiency of drones to be used in CBS operations with expanded fleets. Therefore, CBS has decided to replace these heavy and overqualified Predator-B drones with much lighter drones capable of all the necessary duties of border security missions.

In a theoretical study, the Bayraktar TB2 UAV was tested in a simulation model containing a 911 km long Turkey-Syria border by creating 151 check-points that are 5km away from each other the results were successful.[45] Since entering the Turkish military and police department's inventory in 2014, Bayraktar TB2 has completed 85.000 hours flight. The difference between these two drones is that the Bayraktar TB2 weighs way less than the Predator-B, which is designed for more complex air operations. TB2, on the other hand, has been designed for both complex military air operations to eliminate specific targets on a battlefield, including targeted assassination missions and "the long time endurance" needed surveillance missions both on the border security and intelligence gathering.[46] Consequently, the surveillance/intelligence missions are getting done by the unmanned aerial vehicles due to their numerous benefits that reduce human loss and allow the operators' technical easiness. But it can be said that TB2's success

[43] OIG, "U.S. Customs".
[44] OIG, "U.S. Customs".
[45] Muhammet Kaya, & Omer Ozkan, "*Sınır Koruma Görevi için İnsansız Hava Araçlarının Rotalanması Probleminin Genetik Algoritma ile En İyilenmesi*", Bildiriler Kitabı. 38. Yöneylem Araştırması Endüstri Mühendisliği Ulusal Kongresi YAEM, Eskişehir (2018), 1-17.
[46] Sibel Düz, "*The Ascension of Turkey as A Drone Power; History, Strategy and Geopolitical Implication"*, vol. 65 (Istanbul, Turkey: SETA, 2020).

comes from its low cost digital technology that allows it to fly with lesser weight on its wings to sustain in long endurance needed operations in higher efficiency.

Reconnaissance

A reconnaissance mission has always been vital for an operation to prevent any possible surprise attack by the enemy units and preserve most current intelligence flow on the ground[47]. By definition, "the process of getting information about enemy forces or positions by sending out small groups of soldiers or *using aircraft.*"[48]

On the other hand, aerial reconnaissance has been done successfully by the drones with the clear advantage of having high-resolution cameras and sensors of the latest technology, which allows identifying the targets on mobile by tracking them above. Most of the drones have long enough flight time on-air that avoids interruption during the operation. Flying steadily at a high altitude for a day marks a clear achievement comparing to conventional air operations. Even in the intelligence cycle, drones' abilities catalyze the operations with no risk of being detected or getting caught. Before executing the strike, UAV's camera must confirm the identification of the target. There are numerous ways to confirm the identity of the target being tracked down. Intelligence from an insider spy can confirm the identification by being close to the target. This way of identification has many risks by jeopardizing the spy's life who works on the field, and this may even end up exposing the operation.

[47] Sky Watch, "*Integrated UAV Reconnaissance Operation*", https://sky-watch.com/media/1535/sky-watch-case-study-integrated-uav-reconnaissance-operations_rev1.pdf (access date: Oct 2, 2020)
[48] Cambridge Dictionary

On the other hand, Drone technology gives a clear advantage of the identification of the target by using the high-resolution cameras that allow it to zoom in enough to make a facial and behavioral identification.[49] Facial identification provides information about the target by analyzing the parts of the face and the body. Still, since the face may change by years and days or even can be disguised, it is mostly used as supportive evident on an identification mission.[50]

Lethal Strike

The last mission for drones to carry out in operation is the lethal strike. Not every UAV has the combat skill since the majority of the drone usage accumulates around ISR (Intelligence, surveillance, reconnaissance). UCAV (Unmanned Combat Aerial Vehicle) attacks differ depending on the operations. When it comes to counter-insurgency, basic ISR gets more complicated that needs long time endurance on the sky to track down or/and take down a more fluid target set.[51] As Gregory points out, "*During the Second World War, the Cold War and even beyond, the kill-chain was linear and sequential, directed mainly at fixed and pre-determined targets, and the time from identification to execution could extend over days or even weeks."*[52] In this sense, Drone warfare opened a new page that accelerated the response time of counter-insurgency by combining ISR missions with imminent attack capacity that shortens the time between identification and execution.

[49] Sinjini Mitra et al., "*Towards Statistically Rigorous Biometric Authentication Using Facial Images*," in *Statistical Methods in Counterterrorism: Game Theory, Modeling, Syndromic Surveillance, and Biometric Authentication* (New York City, New York: Springer New York, 2006), pp. 47-77.
[50] Mitra, "*Toward"s*, 48.
[51] Derek Gregory, "*From a View to a Kill Drones and Late Modern War, Theory, Culture & Society*", (2011), (SAGE, Los Angeles, London, New Delhi, and Singapore), Vol. 28(7- 8): 188-215.
[52] Gregory, "*From a View*", pg. 200.

As one of the infamous uses of drone warfare, targeted killings are commonly used to counter terrorism by eliminating the key targets. Miller distinguish targeted killing from assassination; "*(…) to restrict the former to armed conflicts, including conventional wars, non-conventional (so-called) wars of liberation, and armed conflicts involving terrorist groups."*[53] Although Israel never admitted using armed drones in military operations, The USA and Israel are best known for the targeted killings as their war on terror campaign aiming to shake the hierarchical structure among the insurgents.[54]

In Turkey's case, the mass killing and border control over three fronts contain the majority of drone campaign against the insurgency. After years of fighting with the Kurdish insurgency in 3 different regions (Southeastern Turkey, Northern Iraq, and Northern Syria), Turkey recently focused on targeted killing missions too. In 2018, Turkish armed forces operated a cross-border air operation to kill a high profile PKK leader İsmail Özden who had been on Turkey's red list.[55] According to the drone video footage released by the Turkish Interior Ministry, drones were used during this operation to conduct surveillance and reconnaissance missions for Turkish F-16s to bomb the target.[56]

[53] Seumas Miller, "*The Ethics of Targeted Killing: Osama Bin Laden, Drones, and Counter-terrorism*." Public Affairs Quarterly (2014), 28(4), 317-340.
[54] Jack McDonald, "*Decapitation, repression, or cauterization? The problem of targeted killings".* Handbook of Terrorism and Counter Terrorism Post 9/11, (2019), 53–64. https://doi.org/10.4337/9781786438027.00010
[55] Metin Gurcan, "Ankara to continue targeted killings of PKK leaders abroad". Al-Monitor (August 22, 2018). https://www.al-monitor.com/pulse/originals/2018/08/turkey-iraqi-kurdistan-ankara-targets-pkk-leader-abroad.html
[56] "*Kırmızı Listedeki Terörist Böyle Vuruldu*," Anadolu Ajansı, (August 16, 2018,) https://www.aa.com.tr/tr/dunya/kirmizi-listedeki-terorist-boyle-vuruldu/1233516.

Turkey is using its drones widely in domestic operations, differently from other drone owner states being the only one who uses drones continuously within its territory against its citizens.[57] The feature of traditional Kurdish guerrilla warfare takes place in the mountainous areas due to its clear advantage that prevents an easy tracking down of militant activity. The caves give shelter for militants from Turkish aerial bombardments and armed reconnaissance units. This tactical superiority has been challenged with the new Turkish military doctrine. Using fighter jets for reconnaissance and surveillance missions has huge costs besides the short flying time, which is not enough to detect the human targets. With the help of locally produced low-cost military drones, Turkish counter-insurgency overcame these problems. Long endurance and high technology that allows drones to be operated during night or daylight have resolved the regular army's disadvantage against guerrilla units. Since Turkey officially started using its drone fleets for border controlling and reconnaissance missions in 2016, the PKK insurgency is crippled to carry on its activities in rural areas that were used to be hard to reach for Turkish forces.

Lethal drone attacks, done by the Turkish forces, mainly concentrate either on already given targets or real-time killing of the targets that are detected on patrolling missions. But the Idlib offensive opened a new page in drone warfare. Turkey used hundreds of UCAVs in air operations against Assad's forces in Syria as retaliation for killing 34 Turkish soldiers in Idlib province.[58] It was the first time that drones were used against a conventional army other than against insurgent groups. That drone show on Idlib skies revealed that small, but with big numbers and not so fast

[57] Samuel Brownsword, "*Turkey's unprecedented ascent to drone superpower status."* Drone Wars UK (June 19, 2020). https://dronewars.net/2020/06/15/turkeys-unprecedented-ascent-to-drone-superpower-status/
[58] Alex Gatopoulos, "*Battle for Idlib: Turkey's drones and a new way of war*." Syria | Al Jazeera (March 3, 2020). https://www.aljazeera.com/news/2020/3/3/battle-for-idlib-turkeys-drones-and-a-new-way-of-war

unmanned aircraft are a significant threat to the conventional armies. The countries that rely on old manufactured air defense systems are incapable of detecting and shooting down a low paced drone. Many Russian-made Pantsir (medium-range surface-to-air missile and anti-aircraft system) was claimed to be destroyed in the last two years by the Turkish drones in Libya and Syria.[59]

Turkish drones' strike capacity seems to get expanded with newly tested unmanned aircrafts Akıncı and Aksungur, which are claimed to be able to carry around 14 to 24 MAM-L munitions and can endure 24 to 36 hours flying.[60] This means that one UCAV carrying this amount munitions can dominate the operational air zone and facilitate the ground troops marching on the front while also performing ISR missions on the battlefield. The only obstacle that might be faced is the air defense systems may easily detect these heavy drones since the smaller drones have a clear advantage to be stealth from the surface-to-air missile systems. Even those air defense systems can detect and shoot down the drones; it is affordable to overwhelm air defenses by sacrificing redundant drones throughout the operation.[61]

Another dimension of drone's lethal capacity is that it challenges the classical Clausewitz theory claiming defense is stronger than offense.[62] Clausewitz sees the strength of defense as the one

[59] Joseph Trevithick, "*Turkey Strikes Back And Calls For No-Fly-Zone After Its Troops Die In Syria Airstrikes (Updated)*." The Drive (February 28, 2020). https://www.thedrive.com/the-war-zone/32394/turkey-strikes-back-and-calls-for-no-fly-zone-after-its-troops-die-in-syria-airstrikes

[60] A. Şahin, "24 adet MAM-L tasıyan Aksungur da görebiliriz." Savunma Sanayi Dergilik (September 23, 2020). https://www.savunmasanayiidergilik.com/tr/HaberDergilik/24-adet-MAM-L-tasiyan-Aksungur-da-gorebiliriz

[61] Alex Hollings, "*The Air Force's new stealth drone has a huge advantage over Russian and Chinese air defenses*". SOFREP (2019, March 13). https://sofrep.com/fightersweep/the-air-forces-new-stealth-drone-has-a-huge-advantage-over-russian-and-chinese-air-defenses/

[62] Azar Gat, "*Clausewitz on Defence and Attack*," Journal of Strategic Studies 11, no. 1 (1988): pp. 20-26, https://doi.org/10.1080/01402398808437327

who does not have enough resources to attack must have defensive strategies to force the offense to withdraw from the war by making the war more costly to the offense.[63] Therefore protecting the status-quo is the ultimate goal in defensive strategies. This is also applicable for guerilla warfare in which defense is the main strategy to deal with COIN whereas the offense is used as a coercive strategy to force COIN to make compromises.[64] Drone warfare, however, challenges this idea of defense's relative strength over offense by reducing the financial and humanly costs of the offensive sides wherein the relative strength of defense is relied on winning over the offense according to Clausewitz. In the examples of Nagorno-Karabakh, Idlib and Libya offensives, Turkish drone fleets disproved the relative advantage of defense against offense by defeating three different adversaries in military size, capacity size and regional size. Turkish drone campaign successfully manage to break through the strong Armenian defense lines in Nagorno-Karabakh, to alter the Russian air system's dominance on air-defense against Hafter's forces in Libya and Russia backed Assad's forces in Syria.[65] Nevertheless, it is yet to be challenged by new anti-drone air defense systems in the long run and then, the result of this challenge against Clausewitz can be declared in certainty.

2.2) Psychological Warfare

Drone footages that explicitly show the blown-up targets' images are one of the best tools of psychological warfare against the insurgency. Terrorist attacks are mainly aiming to intimidate the public and spread fear among the enemy's military units. The media plays a massive role in

[63] Carl von Clausewitz, "*On War*", Princeton, NJ: Princeton University Press, 1976, VI, pg. 502.
[64] Stephen Van Evera, "*Offense, Defense, and the Causes of War*". *International Security, 22*(4), (1998), 5-43, pg.14. doi:10.2307/2539239
[65] Jack Detsch, "The U.S. Army Is Using the Nagorno-Karabakh Conflict to Study Drone Warfare". Foreign Policy, (March 30, 2021). https://foreignpolicy.com/2021/03/30/army-pentagon-nagorno-karabakh-drones/

spreading this fear, which is the premier goal of any terror attack. However, this tactic has also been used by counter-terrorists more systematically. There is a tactical advantage of a terrorist attack over counter-terrorism. Because of its scale and target, terrorist attacks tend to gain more attention than the state's military's counter-operations. Raymond H. Hamden explains this as; "*When a terrorist attack occurs, it is often noted that news networks spend extensive hours covering the attack, often shining a spotlight on the terrorist group. In doing so, terrorists are able to gain audiences, often at national and international levels, to watch and feel terrorized by their acts*."[66]

The images were taken during or after the terror attack circulated on the various media outlets and created a psychological advantage for terrorists. The power of the image, therefore media, has the utmost importance to continue this fighting. Since both sides are incapable of annihilating each other's military capacity through violent act, the amount of damage they gave determines who wins till the next round. In this case, drone footages are coming into the stage as of the game-changer in modern warfare and as one of the most giant war machine that can be used to take record of its attacks to be used to demoralize the enemy units. When we take the case from this angle, drone warfare also extends to be an effective psychological war machine.

In order to give an example of this, Turkish drone warfare would be suitable as it gets popular war toys for them every day. Turkish Armed Forces have used drone warfare as it is their primary bearer of the military operations inside and outside of Turkey. During and after the trench operations against the PKK related militant groups in Southeast Turkey in late 2015, drones were

[66] Raymond H. Hamden, "*Psychology of Terrorists, Profiling and CounterAction*", CRC Press, 2019, Pg. 17.

effectively used to gather intelligence by flying above wherein the trenches were dug in self-declared autonomous sites. The areas of conflict were monitored 24/7, consequently not only crippled the PKK's movement in urban areas, but also extended Turkish forces' control in rural and mountainous areas that did not allow the militants to sneak in or out of the border with easiness as it used to be before the drone campaign. "Nowhere was safe for them since drones are striking anything that moves," said a PKK militant in interrogation after he was capture on his way fleeing to Greece in 2019.[67] The fear spread among the insurgents because of the intimidating power of drones who can see everything and kill at the moment before anyone notices. The power of intimidation let the terrorists think twice before they operate another terrorist attack or infiltrate the border.

Another dimension of this psychological war is the audience/population of the counter-terror. The morale of the targeted group plays a crucial part in the counter-terror strategy and subsequently weakening of the threat would raise the support in further steps of the military campaign against the terror groups. "*Community-based approaches rely on the notion that the security of a community is closely related to the degree of cohesion and resilience of that community*"[68] and therefore, as long as the drone warfare increases its efficiency in counter-terrorism, the cohesion and resilience would positively increase in a society that has been suffering from terrorism.

[67] Hakan M. Şahin, "*İHA'lar PKK'nın hareket alanını sıfıra indirdi*." Anadolu Ajansı, (June 26, 2019). https://www.aa.com.tr/tr/turkiye/ihalar-pkknin-hareket-alanini-sifira-indirdi/1515997

[68] OSCE, "*Preventing Terrorism and Countering Violent Extremism and Radicalization that Lead to Terrorism: A Community-Policing Approach*", Vienna, Feb 2014.

During the Azerbaijani offensive in late 2020 in the disputed Nagorno-Karabakh region, occupied by Armenia nearly 30 years ago, the air superiority was mostly accomplished by Turkish drones that fly over the Armenian forces and hit anything moves on the field. According to the drone footages daily released by the Azerbaijani Minister of Defense, so many tanks, air defense systems, radars, armored vehicles, and many troops were perished by TB2 UCAVs provided by Turkey.[69] We've seen the Azerbaijani side releasing these footages to demoralize the Armenian people and armed forces since Armenia did not show any significant resistance or took any reliable solution to prevent drones.[70] Since social media occupies a significant portion of our daily life, the televised war trend, which started with the first Gulf war, evolved into the war on social media, which pretty much relies on psychological war. Thus, drone warfare has made a massive step in the psychological war due to its capability to record the attacks, whereas it is so hard and risky to do the same with other war machines.

2.3) Increased Cooperation

The mentioned sub-titles pretty much constitute a projection of counter-insurgency hard power that faces a challenge from the inside rather than outside. Due to the fragmented armed struggle that is widely scattered in a vast area that vastly includes civilian resistance, the counter-insurgency institutions must create a mechanism to respond to the insurgency as quickly as possible while keeping the communication channels open transparent.

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[69] David Hambling, "*The Magic Bullet Drones Behind Azerbaijan's Victory Over Armenia*." Forbes, (2020, November 11). https://www.forbes.com/sites/davidhambling/2020/11/10/the-magic-bullet-drones-behind--azerbaijans-victory-over-armenia/?sh=7871f6125e57

[70] Robin Forestier-Walker, "*Nagorno-Karabakh: New weapons for an old conflict spell danger*". Asia News | Al Jazeera, (October 13, 2020). https://www.aljazeera.com/features/2020/10/13/nagorno-karabakh-new-weapons-for-an-old-conflict-spell-danger

"Achieving unity of effort is the goal of command and support relationships. All organizations contributing to a COIN operation should strive, or be persuaded to strive, for the maximum unity of effort. Informed, strong leadership forms the foundation for achieving it. Leadership in this area focuses on the central problems affecting the local populace. A clear understanding of the desired end state should infuse all efforts, regardless of the agencies or individuals charged with their execution."[71]

Counter-insurgency encompasses a large entity of hard power and soft power to end the insurgent activities once and for all. Major counter-insurgency studies strongly suggest that one must rely on both soft and hard power to make its objective the new reality on the ground.[72] How vital the soft power is like the local government's political support to take control instead of the foreign counter-insurgency rulers, the hard power always have to have quick military maneuvers against surprise attacks coming from the insurgent groups. Those groups only aim to demolish the legal entities to enlarge their control zones. Thus, there is and will be a constant need for an armed force to respond to such an imminent threat.

On the other side, the cooperation between the units of hard power responsible for the protection of the peace on the ground has been vitalized since the insurgents use many different ways to coordinate lethal attacks and sabotages. Intelligence services and military forces have to have a more transparent channel to respond to such hidden terrorizations by accelerating the

[71] Charlton S. M. Gaerlan, "*Integrating the Interagency in the Armed Forces of the Philippines Approach to Counterinsurgency (AY 09-10)*." USMC Command and Staff College Marine Corps University. (March, 2010). Retrieved from https://apps.dtic.mil/dtic/tr/fulltext/u2/a603249.pdf

[72] David. H. Price, "*Soft power, hard power, and the anthropological 'leveraging of cultural "assets": Distilling the politics and ethics of anthropological counterinsurgency*". In Anthropology and Global Counterinsurgency.(2010). University of Chicago Press. (Illustrated ed., pp. 246–260).

communication. There is one and significant help that drones have offered to interagency cooperation: eyes on the sky.

The visualization of the terrain has increased the efficiency of interagency cooperation regarding the fight against terror groups. We mentioned how drone warfare accelerated the response time and increased the efficiency of counter-insurgency and also the operations against conventional armies that are suffering from the lack of necessary electronic war equipment to encounter it. In that matter, drone footages also replaced the satellite imagery that was taking a much longer time to acquire the needed real-time imagery of the terrain.[73] Also, satellite imagery was ineffective "*due to the use of simple camouflage techniques and the hiding of forces among the buildings and streets of the urban area*."[74] With the help of various sensor technologies, drone cameras are able to detect the militants in camouflage or not. Drone operations are vastly used for markings of the targeted position, zone identifications (friend, enemy, or no-fly) for the fighter jets and helicopters.[75]

Consequently, it benefits the COIN operations in three ways. First, it reduces the costs of using expensive fighter jets and helicopters for reconnaissance and surveillance missions and secondly increases the accuracy of enemy spots with the real-time intelligence flow to the command center due to less detectability in long time target tracking operations. Thirdly, unmanned aerial

[73] Ricky J. Lee et al., "*Military Use of Satellite Communications, Remote Sensing, and Global Positioning Systems in the War on Terror*", 79 J. Air L. & Com. 69 (2014)
[74] Lee, "*Military Use*", Pg. 83.
[75] Abdullah Erboğa, & Merve İrem Ayar, "*Türkiye'de İHA-SİHA'ların Terörle Mücadelede Kullanımı*", PKK Terörünün Analizi - Türkiye Terör Olaylari Veri Tabani (2020). Seta Yayinlari. Pg. 240.

vehicles take the human loss out of the equation and protect the valued air force staff and costly vehicles from the risks of any possible attacks.

In a joint operation carried out on an enormous battlefield, there must be an uninterrupted communication and synchronization between numerous UAV ground systems used by different forces, and these systems must be compatible with one another in terms of structure and technology and can be used jointly based on the needs of different forces. UAV systems' efficient management synchronously (and the fact that communication lines are built over satellite communication links in terms of information sharing) creates enormous advantages and increases the systems' efficiency. Information sharing and coordination between UAV systems with different vehicles and inter-system interfaces is a breakthrough in military tactics. The efficiency of the interagency and operational cooperation has improved by increasing drone usage in counter-insurgency operations. Therefore, drone warfare has a positive impact on the military aspect of counter-insurgency.

3) Turkey's Case as a Rising Drone Power

What has led to the second Drone Age are the newly emerging drone powers like Turkey, who attract all the attention because of the conflicts that she involved in her surrounding areas. Turkey has a long counter-insurgency history in its eastern territory and northern Iraq, which spread into northern Syria in the last decade. The Kurdish separatist group PKK (Kurdistan Workers Party) has been organizing terror attacks against Turkish troops along with the civilians since 1984. Those terror attacks do not constrain only with Turks but also with Kurds who oppose the PKK's Marxist ideology and violently oppressed Kurdish rights operating outside the PKK's view.[76] Since the clashes revolve around the challenging mountainous areas that give a considerable advantage for PKK militants for guerrilla tactics, TSK (Turkish Armed Forces) suffered from the inability to do proper military operations in the mountains.

There were several reasons for that. The first and the most important one is the fact that guerilla tactics have the upper hand against any regular military in the world. The region's mountainous geography made it easier for militants to smuggle arms and militants from the Iraqi border.[77] The second reason is the lack of constant intelligence of the militants' whereabouts. MIT (National Intelligence Organization) and military intelligence had to use insiders/spies or signal intelligence to gather valuable information about the PKK. The slow and inadequate flow of intelligence was one of the main problems in unsuccessful COIN operations. The third reason is the high costs of

[76] Eric W. Schoon, "*The Paradox of Legitimacy: Resilience, Successes, and the Multiple Identities of the Kurdistan Workers' Party in Turkey*." Social Problems, 62(2), 266–285. (2015). https://doi.org/10.1093/socpro/spv006
[77] Cristiana C. Brafman Kittner, "*The Role of Safe Havens in Islamist Terrorism*," Terrorism and Political Violence 19, no. 3 (2007): 307–329, http://dx.doi.org/10.1080/09546550701246791

using fighter jets to neutralize the confirmed targets, which do not significantly affect the insurgent group but put a financial burden on the Turkish side.

Since the relative success of the U.S. drone operations against insurgent groups in Afghanistan and Pakistan realized the Turkish military elite, Turkey tried so hard to obtain the same power in her war on terror. Even though Israel provided a limited number of UAVs, political problems that occurred later on passivized the deal and led Turks to turn their faces on US-made Predators where they faced complete rejection from the U.S. senate. After this point, Turkey managed to establish military drones' production via both private and state-owned companies. “Vestel” and “Baykar Makina” are the first private companies who dedicated themselves to UAV production and its equipment, along with state-owned companies like “TUSAS” and “ASELSAN.” But even before that, Turkey’s longstanding desire for acquiring military drones goes back to the ’80s, and it is vital to understand Turkey’s aggressive UAV usage today in conflicts both in counter-insurgency and cross-border operations in nearby regions.

The ’80s are the starting point of the rising role of military UAV, and its impact on modern warfare is getting realized. This revolutionary unmanned aerial vehicle and its capabilities did not escape Turkish military elites’ notice. The first attempts to include UAVs in the Turkish Armed Forces (TSK) inventory started in the late ’80s.[78] State-owned company TUSAŞ (aka TAI) started developing its first surveillance drone UAV-X1 in 1989 and managed to produce two prototypes that later failed to enter in TSK inventory.[79] After the failed attempt to produce a national UAV,

[78] Unver Kaynak, “*TUSAŞ”*, retrieved from; https://www.tusas.com/uploads/prof-dr-unver-kaynak-makale.pdf (access date: 16.12.2020)
[79] Kaynak, “*TUSAŞ*“.

Turkey headed for procuring UAVs from abroad. In 1989, Turkey was able to get Banshee from Meggitt as it is recorded as the first UAV in TSK inventory.[80] Later on, Germany donated 5 Canadair CL-89 UAV systems, but they did not last long in active use because of several technical and logistical problems. In 1995, Turkey procured her first fully operating drone American made 'GNAT-750' for ISR missions.[81] As one of the countries who realized the importance of drones in its early stages, Turkey followed foreign procurement policy during the '90s except for some national funded projects like 'UAV-X1' (failed), 'Turna' and 'Keklik' (mini UAVs).

In the early 2000s, Turkey decided to fund the national projects regarding having complete authority in drone operations. For that matter, TUSAŞ began with the first male 'ANKA' drone project in 2004.[82] In the following years, VESTEL Group announced its first UAV project 'Karayel.' In 2007, Baykar Makina Co. developed its first unmanned helicopter 'Malazgirt' to carry out cargo surveillance missions to be used in the harsh mountainous areas to back up ground forces. While those projects were at their early stages, the Turkish Air Force announced to buy new UAVs for emergency use against the terrorist elements in Turkey's southeast border. General Atomic participated in the tender with its famous 'Predator' and IAI (Israel Aerospace Industries) with 'Heron' in 2005.[83] But since the contracts included the installation of a Turkish-made ASELFLIR 300T camera, remote video terminal, and portable image valuation system MILSOFT on the procured UAVs, General Atomic had to withdraw from the tender. Only IAI accepted the term to install the Turkish made electronic apparatuses and payloads on its UAVs.

[80] Düz, "*The Ascension",* pg. 8.
[81] Düz, "*The Ascension*", pg. 9.
[82] Düz, "*Türkiye'nin Gökyüzündeki Yeni Gücü İHA'lar*", pg. 11.
[83] Düz, "*Türkiye'nin Gökyüzündeki Yeni Gücü İHA'lar*", pg. 11.

Turkey and Israel made a contract in 2005 for 10 Herons to be deployed in the Turkish Air Forces inventory. According to the signed contract, IAI to provide the UAVs, Elbit Systems to build the ground stations, and TUSAŞ is responsible for the payloads.[84] The first party of 10 Herons was delivered to Turkey, but the political problems between Turkey and Israel made the delivery process even worse. There are many reasons behind these deteriorated relations, but Turkey's pro-Palestinian political stance has been the main issue. Even though the contract was signed in 2005, the Herons were delivered in 2009, and the issue kept its relevance in the coming years as the supply of spare parts and the repair. In this period, the relations saw the bottom. Turkey publicly hosted the top Hamas members as an official visit after Hamas won the Gaza 2006 election. This led to a massive diplomatic crisis between the two countries and the trust issue in the relations later on. In 2010, Israel conducted an operation to prevent human rights activists' flotilla that aimed to break through the Israeli blockade of the Gaza strip and killed 9 Turkish citizens on the vessel 'Mavi Marmara.'[85] This was the last straw that resulted in both countries withdrawing their ambassadors from each other. Therefore, this contract became very traumatic that can still be seen in Turkish dedication to have its military-industrial capacity. Turkish President Erdogan even stated once, "Bad neighbor makes people landlord," which illustrating Israel and the U.S. as not being right partners that eventually forced Turkey to develop its drone technology.[86]

[84] Arie Egozi, "*Heron UAV delay fuels rising dispute between Turkey, Israel*." Flight Global (October 15, 2009). https://www.flightglobal.com/heron-uav-delay-fuels-rising-dispute-between-turkey-israel/89565.article

[85] Norman Finkelstein, "*What Happened on the Mavi Marmara? An Analysis of the Turkel Commission Report*". Türkiye Ortadoğu Çalışmaları Dergisi , 1 (2) , 31-53. (2014).

[86] Sifa Kaymak, "*Türkiye'nin Milli Silahları : SOM, Canik, Kasırga, Alpagu*". Gzt (2019, July 19). https://www.gzt.com/jurnalist/turkiyenin-milli-silahlari-som-canik-kasirga-alpagu-3509458

As we have seen since the ’90s, Turkey first tried to balance foreign procurement policy while developing her military drone (UAV-X1), but later turned to fully import the drones from foreign manufacturers till the end of 2004. The new government decided to decrease military technology dependency on foreign procurement and began to fund its national projects more. The nationalization trend became more of a state policy after the AKP government took control since the 2002 election. President Erdogan’s charismatic leadership has been using the nationalization of military and industrial technology as his long-lasting central political discourse. Even though Turkey developed its first UAV prototype in the 1990s, the UAV-X1 project manager blames the Turkish defense ministry for not supporting the local R&D expenditure while paying millions of dollars to foreign UAV procurement.[87] With Erdogan’s period, those national R&D processes are funded mainly by the government. 2000-2010 is the mixed period where the Turkish government procured foreign UAVs (Israeli made HERON) for urgent use and also generously funded the indigenous UAV projects such as ANKA (TUSAŞ), Karayel (VESTEL), and Bayraktar (Baykar Makina).

ANKA is the first national UAV that is accepted in TSK’s inventory. The project was started in early 2004 and was ready for the test flights in 2010.[88] The prototype ANKA-A and its improved version ANKA-B were prototypes that eventually led to the more sophisticated and serial production version ANKA-S, which had been procured by TSK. ANKA-S is the first MALE (Medium Altitude Long Endurance) UAV that Turkey successfully operated with its national sources. The ANKA-S has a distinguished place among other competitors in its class since it can be controlled via

[87] Kaynak, “*TUSAŞ*”, pg. 2.
[88] TAI Technologies, retrieved from: https://www.tusas.com/urun/anka

satellite and carry out highly sophisticated and precise strike missions along with ISR. ANKA-S can reach 30.000ft with a 200 kg payload, and it can stay up to 24 hours in the sky.[89]

The manufacturer of ANKA-s, TAI, also started on a more advanced version of ANKA that it can have longer flight hours, larger payload capacity, and ability to fly on higher altitude. The project was successfully finished in 18 months since the experiences gained from the previous ANKA projects helped to the development process of Aksungur (a.k.a. ANKA-2). According to the given information by the manufacturer TAI, Aksungur can carry 750 kg to an altitude of 25.000ft, and with 150 kg, it can reach 35.000ft.[90] There are four different versions of Aksungur designed for both land and naval warfare. Both versions also have electronic and signal intelligence capacity. The naval UAV can carry an anti-submarine and anti-vessel payload that will be a power multiplier for Turkey in the disputed East Mediterranean sea. Aksungur is projected to go into mass production in 2021. One good thing about the ANKA drone series is that all versions can be controlled from the same ground station.

Another indigenous UAV project is VESTEL Group's 'Karayel.' ANKA and Bayraktar series have overshadowed this UAV since their statistics are better and battle-proven in various conflicts. Karayel can operate till 22.500 ft altitude with a 70 kg payload. The only advantage of this drone is its heavy but better camera and sensor systems. Since the procurement of Karayel in 2015 by TSK, it was only used for ISR missions and only very recently armed with light-guided bombs. Last year, VESTEL Group signed an agreement with Saudi Intra Defense Company to manufacture

[89] SSB, "*Anka İnsansız Hava Aracı*". (2020). Presidency of Defense Industries. Retrieved from the official website: https://www.ssb.gov.tr/Website/contentList.aspx?PageID=364&LangID=1
[90] TUSAŞ, "Aksungur", (2020). https://www.tusas.com/urun/aksungur

armed version Karayel-Su in Saudi Arabia.[91] This shows the intentions of the Turkish defense industry that Turkey is also assertive in the military drone market.

Meanwhile, Turkey started a new drone manufacturing campaign in the 2000s. Baykar Makina managed to produce one of the most famous UCAVs in the world, Bayraktar TB2. The R&D process started in early 2000 with the earlier version Bayraktar TB UAV. The high performance in autonomous take-off and land-on led to the government funding to the development of the armed version tactical aircraft. First TB2 was accepted in TSK's inventory in 2014, and its first airstrike was conducted in 2016 against the PKK militants in operation. Since its procurement, TB2 showed a very successful performance against both insurgents and regular military forces.

Although the fact that TB2 is not that unique in regards to its capabilities (18.000ft operational and 27.000ft max altitude, 27 hours max endurance, and can only carry 4 Laser Guided Smart Munitions), the main success relies on the perfected interagency cooperation among land forces, air forces and drone operators. "*Baykar Real-Time Imagery Transmission System (BGAM) provides real-time image transmission and processing solutions to the defense industry. BGAM allows high-resolution, non-delay live broadcasts to be monitored by multiple users at the same time. BGAM is a web-based application that allows users to watch live broadcasts securely on the network or tablets using the mobile application via the internet."*[92] Therefore the TB2 proved itself as the most reliable UCAV that improved Turkish counter-insurgency efficiency by providing real-time intelligence and coordinates of the possible targets and the lethal strike capacity whenever

[91] Ahmet Alemdar, "*Suudi Arabistan 2021'den itibaren Türk SİHA'sını üretecek"*. DefenceTurk (April 30, 2020). https://www.defenceturk.net/suudi-arabistan-2021den-itibaren-turk-sihasini-uretecek

[92] BAYKAR, "*Baykar Unmanned Aerial Vehicle Systems*". (2015). https://baykardefence.com/uav-15.html (access date: 21.12.2020).

needed in urgent situations. Baykar Makina is also testing their new UCAV 'Akıncı,' which can reach up to 40.000ft with 1350 kg payload capacity and also can be controlled via satellite.[93] Akıncı UCAV will enter the TSK's inventory in late 2021.

3.1) Turkish Counter-insurgency

The real test for any combat machine is always the real-life conflicts on actual battlefields. Therefore the war is also seen as an opportunity by the arms exporters who want to test their missiles and other war machines to see in a conflict zone. That being the case, the Turkish drones had been tested in several different war zones and conflicts ranging from counter-insurgency, cross-border operations to Iraq, Syria, and the Libyan civil war and Azerbaijan's Nagorno-Karabakh offensive. The new drone warfare notably changed the fate of never-ending Turkish counter-insurgency efforts in its densely Kurdish populated areas. The Kurdish armed group, PKK, has been organizing all types of guerilla attacks on both Turkish troops and civilians in the region. PKK's de facto rule could be felt in every sphere of life due to the pro-Kurdish party's (HDP)[94] victory in many municipalities in the region. To prove the effectiveness of drone usage in Turkish counter-insurgency, we have to look at before and after TSK actively uses the drones.

PKK launched its first violent attack in 1984, and since then, according to official Turkish numbers, over 40.000 people died, including Turkish troops, civilians, and PKK militants.[95] Even though PKK established its power through repression on Kurdish villages and made its ideological approach to the Kurdish question on the east as the sole advocator by eliminating other fractions, the group

[93] Baykar, "*Baykar Unmanned Aerial Vehicle Systems*".
[94] "Halkların Demokratik Partisi (*Peoples' Democratic Party)*".
[95] Nuray Altındağ, "*Türkiye'nin PKK Bölücü Terör Örgütü İle Mücadelesine Dair Bir Analiz*". Anadolu Strateji Dergisi (2020), 2 (1), 33-48. Retrieved from https://dergipark.org.tr/tr/pub/anasamasd/issue/52866/698709

managed to expand its manpower via voluntary joining.[96] The numbers of militants who joined the units on the mountains got higher, and after a point, the group was able to control some of the highways, routes, and villages. As we pointed out earlier in this chapter, the main challenge for counter-insurgency in this region is the mountains. The highly rugged terrain makes it hard to detect and follow the insurgent groups who might easily infiltrate either civilians or the border without being caught up by the slow military units.

Unal and Uludağ made a timeline of TSK's COIN doctrines and strategies to defeat insurgents.[98]

Table 1: TSK's Military Doctrines against the PKK[97]	**Time Frame**
Public Order Approach (Gendarmerie as a law enforcement unit)	1984-1987
Zone Doctrine (Area Control)	1987-1992
Cordon and Search Doctrine (Large scale and cross-border MOPs with aviation units)	1992-2010
Search-Find-Destroy **(Hi-Tech Kinetic, UAVs [dronization], and targeted killings)**	2010-

[96] Aliza Marcus, "*Blood and Belief: The PKK and the Kurdish Fight for Independence*". New York: New York University Press (2007).
[97] Mustafa C. Ünal & Pefra C. Uludağ, "*Insisting on Victory*". Revista Científica General José María Córdova (2019), 17(28), 891–922. https://doi.org/10.21830/19006586.522
[98] Unal & Uludağ, "*Insisting on Victory*", pg. 904.

The insurgency was not a new concept for Turkey since the very same areas struggling with it now also had been a place for anti-government rebels and banditry. Therefore, for a decade, TSK left the Gendarmerie (TSK's branch responsible for the security of the rural areas) alone to deal with these new insurgents.[99] Unal & Uludağ later explain the paradigm shift in TSK's COIN operations, and they started using human and signal intelligence to counter the insurgent group in the rough mountainous area. The new strategy suggested establishing big control stations in the areas where the insurgents are most active. In this way, it aimed to drive the PKK into the corner by tightly controlling the area. But what was acceptable in theory did not go as well as it is planned in reality. PKK intensified its attacks on TSK's military outpost with hit and run tactics that ended up with enormous TSK casualties. Most of the outposts were placed in less strategic positions where the PKK had the advantage of attacking and running into wilder in nights to make it hard for troops to follow them.

Long after experiencing the mass casualties with this doctrine, TSK started using various tools to encounter this new organized threat. The usage of human and signals intelligence (HUMINT & SIGINT) increased the efficiency of COIN efforts that are supported by aerial vehicles like coppers for surveillance and reconnaissance. The newly adopted COIN doctrine gave a military victory on the ground. Soon enough, PKK also adopted the new doctrine that eventually realized the disadvantage of carrying out attacks on military posts with over 60 militants . It embraced more guerrilla tactics merged with terror attacks on civilians, state officers like teachers, imams, engineers and so on to increase the intimidation and fear in the society.[100] The number of

[99] Unal & Uludağ, "*Insisting on Victory*", pg. 915.
[100] Mustafa Cosar Unal, "*Counterinsurgency and Military Strategy: An analysis of Turkish Army's COIN strategies / doctrines."* MILITARY OPERATIONS RESEARCH (2016). 21. 55-88. https://doi.org/10.5711/1082598321155

militants in every unit dropped to 8-10.[101] Consequently, TSK's airstrikes did not stop the small range raids and insurgency activities in the area, and it showed the need for affordable air reconnaissance and surveillance operations to overcome the lack of continuity.

As we mentioned earlier in this chapter, Turkey was one of the few countries that realized the importance of UAVs regarding holding complete aerial control over the terrain due to the experiences with PKK insurgency that operates in rough mountainous areas. The previous attempts to hold the aerial surveillance, reconnaissance, and final strike capacity with using expensive fighter jets and military coppers for such small units showed that it's unsustainable and not achieving the desired goal. After the severe challenges, Turkey managed to operate its indigenous UAVs and UCAVs in its COIN very effectively after 2010 and onwards.

However, the indigenous drones were not ready to be used till 2014. Till then, the handful of Heron UAVs was only used in the most active clash points. Therefore, the second PKK insurgency gained its momentum and increased its activities not only through enlisting more militants but also by improving its relations with mostly the E.U. countries and the USA by using the Kurdish diaspora to gain more legitimacy. 2004-2011 became the up and down period of clashes between both sides that no one declared victory. After the attempted peace talks, "Solution Process 2013-2015" ended with breaking the ceasefire, both insurgent and counterinsurgent implemented a new war doctrine. PKK linked majors in the cities declared autonomy, and declared "People's War" against the central government. This time, objectives were not merely to bring the

[101] Nur Gunay & Umit Tetik, "*ANALYSIS - Turkey's Strategy of Multiple Priority in its war on terror*." Anadolu Agency (January 2, 2020). https://www.aa.com.tr/en/analysis/analysis-turkey-s-strategy-of-multiple-priority-in-its-war-on-terror/1690260

government back to the negotiation table, but instead, it was a full declared war to erase Turkey's authority in the region.[102] The reality is that both sides were getting prepared for an all-out war during 'the Solution Process' wherein PKK was enlisting more Kurdish young and creating no-police zones while TSK was also testing new UAVs, armored vehicles, air to surface bombs and also professionalizing the COIN forces.

PKK's sharp turn from rural guerilla warfare to urban warfare should be read along with the developments in TSK's COIN capabilities and YPG's (The People's Protection Units)[103] military gains in Northern Syria. The first UAVs in TSK inventory began their activities on the southeastern border, where most of the PKK's passing routes to the camps in Iraq are located and strictly monitored by those drones. PKK was losing the advantage of harsh geographical circumstances in the region that allowed them to operate at a certain level of safety from TSK's intervention. TSK's increasing UAV presence throughout the Iraqi border has limited PKK's control over the region and its militants.

PKK's war declaration in the cities got a harsh response from the Turkish security forces and ended up with huge losses for PKK. Turkish forces sieged the cities and evacuated the civilians to entrap only militants in those districts and monitored their activities 24/7 with drones. The clashes were taking place in streets and houses, and the complexity of the urban warfare was preventing any use of air force campaign. Therefore, special ground forces from Gendarmerie, the Police department, and TSK conducted operations to eliminate terrorist street by street and

[102] Spyridon Plakoudas, "*The Two-Fold 'War on Terror' (2015–2017)*," Insurgency and Counter-Insurgency in Turkey, 2018, pp. 59-74, https://doi.org/10.1007/978-3-319-75659-2_5
[103] PKK related Kurdish armed group located in Northern Syria

house by house. Militants planted deadly traps in every corner of the city to slow down the security forces' advancement, but in 6 months, all cities were freed from the insurgents with colossal material and human costs. It has also proved that PKK still cannot deal with a direct clash with the Turkish military on the ground, so after they realized that their urban insurgency did not work as to how they wished, they turned to classical terror attacks such as car bombing, suicide bombing, etc. In 2016, Turkey suffered from these terror attacks more than the direct clashes in the cities.[104] That even proves how dangerous and deadly terrorism can be because of its hardness to guess the place of attack and the time it will occur.

When the trench operations ended and PKK began withdrawing into the mountains with high losses, Turkey launched its lethal drone campaign to hunt them down. Since we have very little publicly accessible information about how drones were used in Turkish COIN operations, we can guess the impact by looking at the number of PKK fatalities per year and Turkish mass drone operations in Idlib and Libya, where the adversaries have larger armed capacity than the PKK. According to the Crisis Group Database, the number of PKK militants killed per the number of killed security officers got four times higher than the pre-drone campaign period.[105]

Following the failure of PKK's urban warfare tactics, the clashes again turned back to the rural areas where the Turkish drone campaign proved its worth. PKK has been forced to withdraw its forces into northern Iraq and Syria, where they enjoy partial freedom from Turkish air raids. Once Turkey had the ultimate control within its territory, the cross-border operations started to cripple

[104] Mustafa Cosar Unal, "*Counterinsurgency and Military Strategy: An analysis of Turkish Army's COIN strategies / doctrines*." MILITARY OPERATIONS RESEARCH (2016). 21. 55-88. https://doi.org/10.5711/1082598321155
[105] See in table 2

the PKK's two strongholds in Iraq and Syria. The very same tactics were applied during these operations as well. Since the data about drone usage in the operations are not publicly distributed, it is hard to do a quantitative analysis to uncover the precise impact on COIN. Still, we can use state capacity theory to have a profound idea about it.

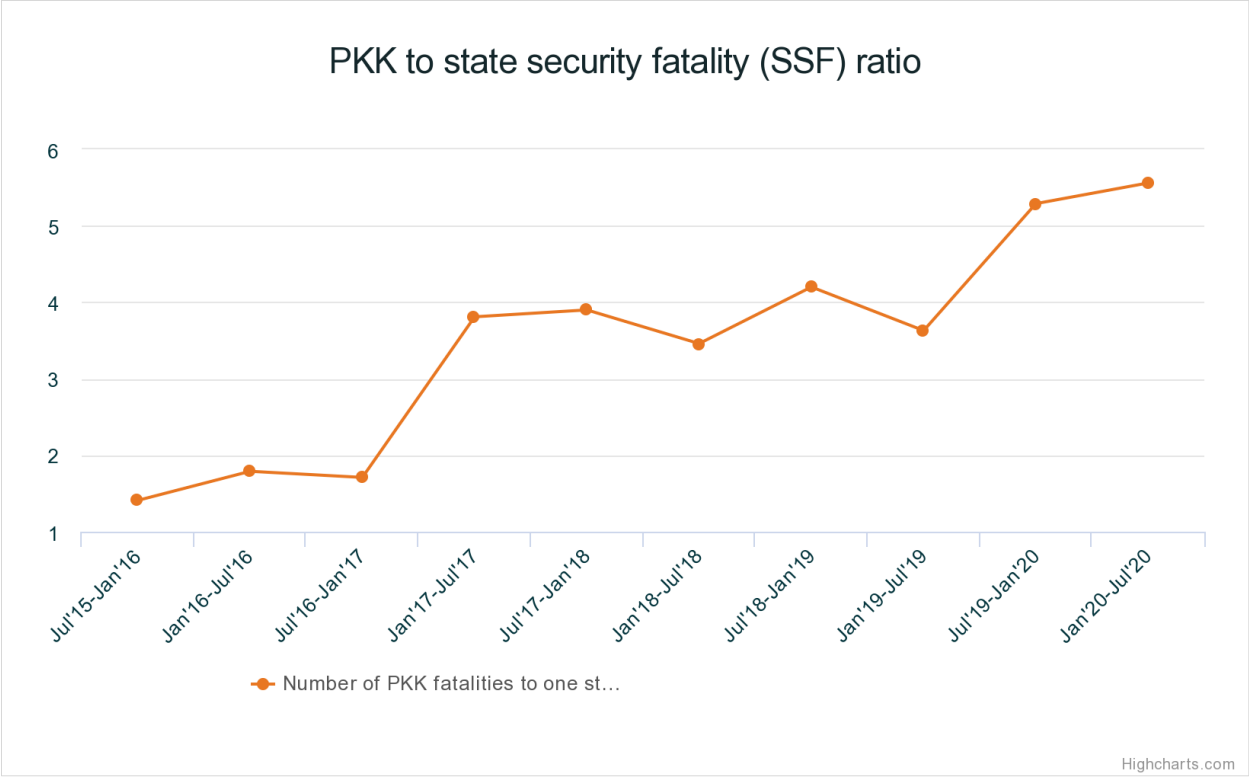

Table 2, Crisis Group Database[106]

Before Turkey launched full-fledged drone warfare against the PKK, the group was quickly adopting a counter-measure to sustain its activities in the region. Therefore, the military success that came after massive operations and costs did not bring sustainability and stability in the COIN

[106] "*Turkey's PKK Conflict: A Visual Explainer*," Crisis Group, March 21, 2022, https://www.crisisgroup.org/content/turkeys-pkk-conflict-visual-explainer

operations, and the insurgency resurrected with new deadly and costly tactics. In this sense, the classic military operations are only delaying the problems for another day with enormous costs of lives along with the financial burden. The essence of success in military COIN strategy lies within the sustainability of the efforts.[107] The core factors that would break the insurgents' wills to fight are the continuity and the affordability of the COIN operations that will unlikely to yield in anytime soon.[108] From this point of view, the classic counter-insurgency should be more affordable and sustainable if the desires are for reaching a more profound solution, and drone warfare, by all means, can be mean to reach the desired solution in COIN.

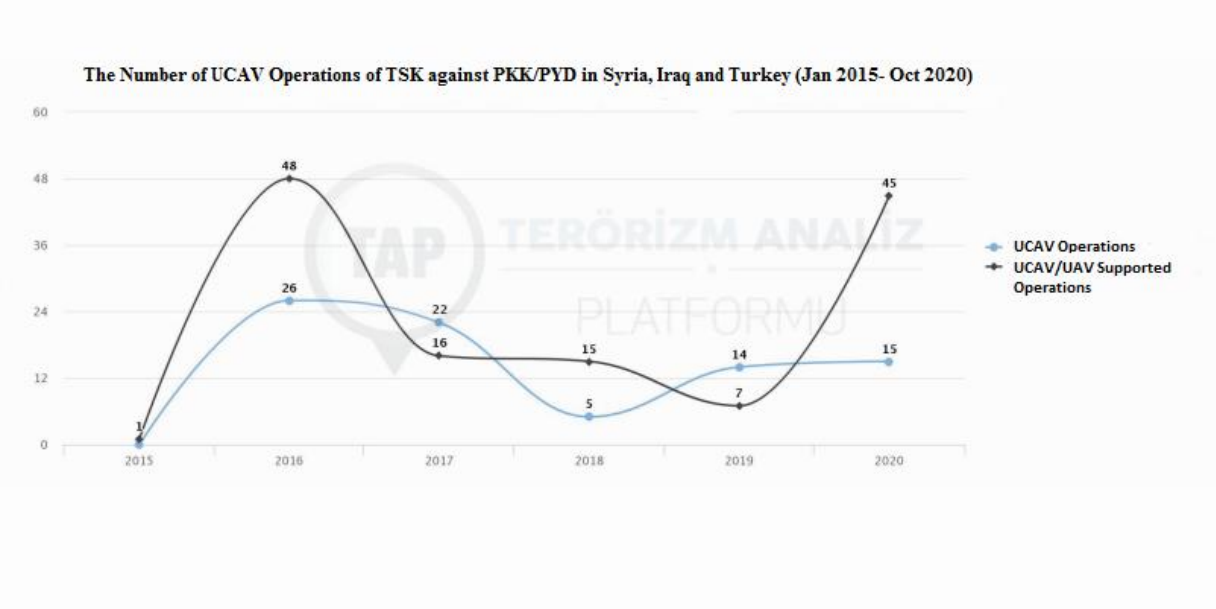

Table 3: Terrorism Analysis Platform Database

[107] Baucum Fulk, "*An Evaluation of Counterinsurgency as a Strategy for Fighting the Long War",* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2011). Pg 38.

[108] Steven Metz, "Abandoning Counterinsurgency: Toward a More Efficient Antiterrorism Strategy", Journal of Strategic Security (2017), 10(4), pg. 64–77. https://doi.org/10.5038/1944-0472.10.4.1648

In the Table 3, we can see the number of UCAV attacks conducted by Turkish Forces by years against PKK/PYD elements. In table 4, we can clearly see the number of casualties that PKK had lost to Turkish drone campaign since 2015. Those stats can be interpreted as PKK losing more than what it costs to Turkish Security Forces.

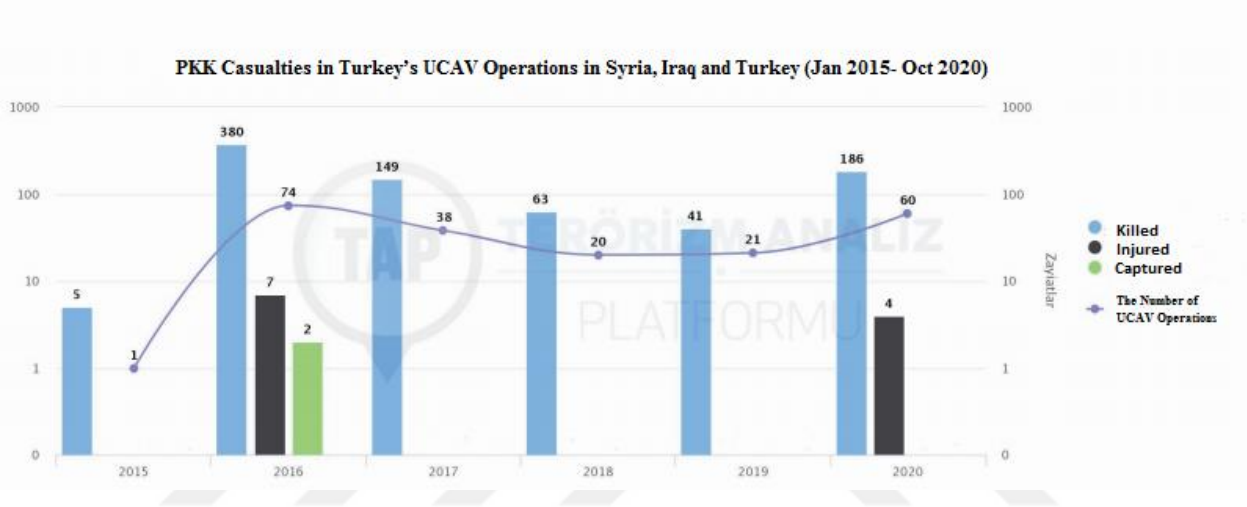

Table 4: Terrorism Analysis Platform Database

UAV/UCAV Operations are not only used for solo operations, but also can increase the efficiency of the outcome by supporting the ground or air operations against the insurgent elements. The increase in number of PKK's casualties in drone operations revealed an unprecedented fact that it is not sustainable for PKK to send units in large numbers to organize serious attacks. The decrease in number of attacks and the number of civilian casualties are the proofs that PKK has been losing its operational capacity that has been flourished from its relatively advantageous strength on mountainous areas in Turkey and Northern Iraq.

However, the state's use of drone warfare against the terrorist/insurgent elements also indicates their unsuccessful counter-terrorism/insurgency. Drone warfare has increased the effectiveness

of surveillance, reconnaissance, and lethal strike missions, which has given a considerable advantage to the war against irregular warfare. Simultaneously, it has shown the deficiency in state capacity to pursue a continuing resolution to the problem. It does not matter how much drone warfare catalyzes the counter-insurgency. One should note that it is not for uprooting terrorism by resolving all the underlying causes but performing an aggressive offensive against the targeted armed groups. In Turkey's case, as we examined here, it also proves our point if we check out the timing of aggressive use of drones that started after the peace negotiations failed in 2015. Anyhow, Turkey is still a solid case to see the effectiveness of drone warfare as a positive catalyzer of COIN efforts.

CONCLUSION

All in all, as it can be clearly seen in the previous chapters, the state capacity theory is one of the best explanatory variables to understand the nature of state versus insurgency fight. This theory provides a broad understanding of what a state can do to enable an effective response to a threat to its existence. In this thesis, it is examined that how drone warfare is technologically and militarily affordable and a game changer with its newest advancement in Turkish UAV/UCAV sector.

Therefore, in the previous chapters, drone warfare was analyzed according to four criteria to demonstrate how it has drastically changed the classical COIN strategies: strong military stance against an armed violent threat, supportive element that helps COIN strategies, increasing the efficiency of interagency collaboration and being budget friendly.

The purpose of this research was to identify an effective military strategy for dealing with the guerrilla warfare, which is one of the biggest challenges of regular armies in the last century. Based on the analysis set forth, it can be concluded that there are multiple advantages that drone warfare brings, which are important for the improvement of counterinsurgency efforts such as

being financially affordable and militarily efficient compared to its alternate manned aerial vehicles that conducts intelligence, surveillance and reconnaissance missions.

Along with the theoretical discussions, Turkish COIN campaign has come out victorious from its war on terror after the clashes recurred in 2015, by using its most crucial avionic technology to alter the technical and financial problems in the military operations in a long war. The success of Turkish drone campaign has showed an enormous potential in actual battlefield and, therefore, spread into different regions and different wars like Libya, Iraq, Syria, Nagorno-Karabakh and lately Donbas and Crimea.

The real success behind the Turkish TB2 and ANKA UCAVs, unlike their equivalents in the military drone market, comes from being financially and militarily efficient in terms of fulfilling most of the duties that normally other expensive and costly military aircrafts cover . In addition to the fact that these affordable high tech drones increase the state's military capacity on the field, the critical duties of surveillance/intelligence gathering, reconnaissance and strike in a military operation become more conveniently exercised by these UAVs/UCAVs. As long as the variety of these drones increase in the battles, the state's ability to deter its adversaries will also increase.

In order to understand how drone warfare increases the efficiency against irregular forces so successfully, technological background must be understood in the first place. The control units that operators control these drones remotely are the headquarters. The locations of these control units are far from the range of any possible threats of the adversaries and in a highly protected military bases. For that reason, it is nearly impossible for insurgents to take down a UAV unlike attacking helicopters which operate in advanced attack and reconnaissance missions

in hot and high environment that requires to get in the range of possible counter-attacks with, for example, manpads.

Even though UAVs are in use in military operations for decades now, it has been mainly used against the irregular insurgent groups who lack an air dominance or any proper equipment to encounter such balance broker technological advancement. United States, Israel and United Kingdom are largely waging drone warfare to eliminate insurgent groups and secure the flow of real-time intelligence in order to obtain the most accurate data about the enemy positions. UAV operations on insurgent groups proved to be effective since guerrilla warfare's relative advantage against the regular army units has been altered by a new avionic technology. Low-cost air operations and longtime surveillance capacity embarked a new page in the history of war against irregular warfare.

Counterinsurgency (COIN) differs from region to region due to a complex historical, political and sociological background, but armed struggle is the commonality in every insurgent campaign. COIN operatives, therefore, have to deal with the violence by using hard power to suppress it. Nevertheless, COIN operations enjoy the temporary success while insurgent groups hold the upper hand by operating in small units and, therefore, become more mobilized than large army units in the afterwards of a defeat. This brings us to the bitter fact that insurgents can be defeated many times but have the chance to resurrect their forces for future fights. In the case of a state, however, one defeat means losing the war against insurgents and brings enormous burden on its economy, military forces and political institutions.

This relative advantage showed its importance as a great resistance in Afghanistan against the Soviet occupation forces back in 80's.[109] Local irregular forces, Mujahedeen, accomplished to take the heavily armed Soviet army to his knees by forcing them to retreat the areas that they occupied. The success behind this struggle can only be explained in terms of the inadequate state capacity of the USSR in this particular area. The other reasons (The USA supporting the Mujahedeen with arms, training to resist against Soviet occupation) do not contribute to seeing the full picture. The economic burden of occupation was more than the USSR could bear on its shoulders and later on, it can also be interpreted that this huge economic burden not only did bring the end of the occupation, but also contributed the dissolution process of the Soviet Republics. Thus, it is important to understand how dangerous an insurgency can be and how drone warfare is effective to eliminate many of its threats against a state.

After the US drone campaign in Afghanistan, Pakistan, and Yemen and in other places got the attentions, the ethical questions of using those flying death machines are questioned among public and academic circles. Drone warfare is a perfect tool for "kill rather than arrest", but here lies a huge dilemma and also an ethical question: Would it be fair to expect counter-insurgency to call out terrorists to surrender in the initial contact while under the same circumstances, terrorists just kill rather than capture counter-terrorist? The easiness of killing the targets with drones, without questioning or calling for surrender, is also being called as "tyranny of distance"[110], which explains the unavoidable vast 'power gap' between both sides.

[109] "*Soviet Union Invades Afghanistan,"* History.com (A&E Television Networks, November 24, 2009), https://www.history.com/this-day-in-history/soviet-tanks-roll-into-afghanistan (access date: 06.04.2021)
[110] Geoff Martin, Erin Steuter, Drone Nation the Political Economy of America's New Way of War, Lexington books, Lanham, Maryland, 2017. Pg. 20.

Although this study mostly covers the drone usage in the counterinsurgency operations, I humbly think that its actual limits can only be measured in a conflict whereas two, or more, sides equally have the drone warfare capacity to challenge each other. This scenario came, as a small but promising example, to reality in 2020, as many researchers seen as the “first drone war” in Libya where both sides hold almost equal drone capacity (by fleet size, not by the equipment quality).

As a conclusion, bureaucracy and military capacity must show great efforts to encounter insurgent threats at all level. Military operations and technological advancement are not enough to erase/eradicate insurgent elements completely. Rest of the state apparatuses must comply with the joint COIN efforts in order to achieve peaceful resolution at the end. Otherwise, it does not matter how sophisticated and precise you kill, the insurgency will not quite easily yield to the violent response since the state’s superior military capacity leads to insurgents to wage guerilla warfare. As we have seen in various examples, every measure has a counter-measure. Sooner or later, insurgents may come up with a counter-measure for COIN drone campaign and when it happens, it is likely to witness a new wave of clashes and casualties that will increase the uncertainty and fear in the society. In order to establish a perpetual peace, states must approach the matter with utmost dedication by increasing the effectiveness of their economic, bureaucratic and military capacities.

Differently from other researchers who emphasize on state capacity, I recommend to develop an insurgency capacity as well within the theoretical structure of state capacity. As the insurgency consists of state alike capacity and performs a challenge to the state capacity, I believe the literature is not quite successful to cover the issue because of the lack of enough inquiry in

insurgency capacity. Even though the insurgent groups usually aim to replace the state to establish its own state, the organizational structure and decision-making mechanism of insurgency differs from the state organs. Since this thesis does not aim to focus merely on state capacity, I will leave this mark in the literature for future studies on the matter.

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