

TARTU UNIVERSITY

Faculty of Social Sciences

Johan Skytte Institute of Political Studies

Levan Beruashvili

WHY OPT FOR MILITARY DRONES IN CASE OF SUPERIORITY IN AIR SPACE? THE
CASE OF THE SECOND KARABAKH WAR (2020)

MA Thesis

Supervisor: Eiki Berg, PhD

Tartu 2024

Authorship Declaration

I have prepared this thesis independently. All the views of other authors, as well as data from literary sources and elsewhere, have been cited.

Word count of the thesis: 17,138 words

Levan Beruashvili, 15.01.2024

Non-exclusive licence to reproduce thesis and make thesis public

I, Levan Beruashvili, (Personal code 39511140166) herewith grant the University of Tartu a free permit (non-exclusive licence) to the work created by me Why opt for military drones in case of superiority in air space? The case of the second Karabakh war (2020)

- Reproduce, for the purpose of preservation, including for adding to the Dspace digitalarchives until the expiry of the term of copyright;
- To make the work specified in p.1 available to the public via the web environment of the University of Tartu, including via Dspace digital archives until the expiry of the term of copyright;
- I am aware of the fact that the author retains the rights specified in p.1;
- I certify that granting the non-exclusive licence does not infringe other persons 'intellectual property rights or rights arising from the personal data protection legislation.

Why opt for military drones in case of superiority in air space? The case of The Second Karabakh War (2020)

Levan Beruashvili

Abstract

This thesis analyses the Second Nagorno-Karabakh War in 2020, and it will examine the historical context of the first Karabakh War as well in order to understand the root causes of the conflict. The particular focus will be on the thesis question: Why opt for military drones in case of superiority in air space? In order to answer the question of this research, three theoretical approaches will be used. The balance of power theory explains the imbalances in power when we compare both countries' military expenditures and military capabilities, especially when we are talking about airspace superiority. The military cost and benefit analysis explains cost-related aspects of why it is better to use drones instead of conventional aircraft, and the military strategic theory explains what, why and how were used in order to achieve success and minimise costs. The national security strategy documents of Azerbaijan and Armenia were also analysed briefly in order to understand how both countries perceived the incoming threats and approached the war.

Table of contents

1. Introduction -----	6
2. Theoretical Framework -----	10
2.1 Theory of The Balance of Power -----	11
2.2 Military Cost and Benefit Analysis -----	13
2.3 Military Strategic Theory -----	16
3. Methodology -----	18
3.1 Research Design -----	18
3.2 Case Selection -----	19
3.3 Method Selection -----	19
3.4 Data Collection -----	20
3.5 Limitations of The Study -----	21
4. Case Study -----	22
4.1 The First Nagorno-Karabakh War in 1988-1994 -----	23
4.2 The Second Nagorno-Karabakh War in 2020 -----	26
4.3 Arms Build-up Until 2020 -----	30
4.4 Classification of Delivered Weapons -----	35
4.5 Tactical Aspects of The War -----	37
5. Empirical Analysis -----	40
6. Findings -----	53
7. Conclusion -----	56
Bibliography -----	58

1. Introduction

On the morning of the 27th of September 2020, Azerbaijan launched an air and artillery attack on Nagorno-Karabakh. According to Weise, “Baku says it was conducting a “counter-offensive in response to a military operation.” (Weise et al., 2020). From the very beginning, Azerbaijan Used drones intensively despite the fact that they had a massive advantage in air space. According to Kofman, the differences between Armenian and Azerbaijan air forces are significant. “In terms of tactical aviation, Armenia has eighteen, whereas Azerbaijan has fifty-five. As for combat helicopters, Armenia has twelve, while Azerbaijan has fifty” (Kofman, Nersisyan, 2020). The essential aspect of this war is to understand why Azerbaijan did not use this advantage in air space. Thus, the research question of this thesis will be: Why opt for military drones in case of superiority in air space? This thesis will try to answer this question from three theoretical perspectives.

The first theory which will be used in this thesis is the theory of balance of power. Balance of power theory is an essential aspect of this research, as it describes the difference in power prior to the Second Nagorno-Karabakh War. Azerbaijan, compared to Armenia, had better weapon systems, which were more modern and capable, and had more soldiers to deploy in a war. However, the point of interest of this thesis is the superiority of air space, which was significantly in favour of Azerbaijan. The second theory used here is military cost and benefit analysis. It is crucial for this research as it explains the cost-related aspects of using drones instead of conventional aircraft in the Second Nagorno-Karabakh War. The final theory of the thesis is the military strategic theory, which will explain the strategic thinking behind both parties. The theory also will help to understand why Azerbaijan was so successful in using drones against Armenia.

Drone warfare in the modern age is not a new phenomenon by any means. They were used in the Vietnam War by the USA, and according to the Imperial War Museum, “drones also began to be used in a range of new roles, such as acting as decoys in combat, launching missiles against fixed targets and dropping leaflets for psychological operations”. The development of new drones has not stopped there. Nowadays, a lot more countries have UAVs, and they are becoming

more and more technologically advanced, affordable, and accessible. There has been a lot of academic research done on the subject of drone warfare, the morality behind the use of drones in war and how humanitarian law deals with drone usage. What type of direct or indirect damaging effects does drone usage allow countries to have? And how have drones changed modern warfare? These are some of the questions that previous research has dealt with.

Authors such as Michael Boyle, in his article “The Costs and Consequences of Drone Warfare”, look at Drone Warfare From the perspective of the USA and its use of Unmanned Aerial Vehicles in Pakistan, Yemen and Somalia during the President Obama administration. Boyle argues that during President Obama’s administration, drone usage increased significantly, and drones became a new way of warfare. Authors like Alaa Hijazi, Christopher Ferguson et al., in the article “Psychological Dimensions of Drone Warfare”, concentrate more on psychological aspects of drone usage, not only on the operators of drones but also on target people. What type of direct and indirect damaging effects does it have on the target people. Vogel, in his article “Drone Warfare and the Law of Armed Conflict”, concentrates more on the type of role international law plays in drone warfare.

On the one hand, some authors argue that drones are changing how modern warfare is fought. Stulberg argues that “It is now conventional wisdom that we stand at the dawning of the unmanned aerial vehicle (UAV) revolution in military affairs” (Stulberg, 2007, p. 251). Analyst Samuel Bendett, in talks with David Hambling, argued that “The Azeri drones were indeed a ‘Magic Bullet’ insofar as they were able to take out Armenian air defences and ground assets” (Hambling, 2020). Marson and Forrest go as far as describing drones used in the Second Nagorno-Karabakh War in 2020 as ‘Reshaping Battlefields and Geopolitics’ “These drones point to future warfare being shaped as much by cheap but effective fighting vehicles as expensive ones with the most advanced technology” (Marson, Forrest, 2021).

There are a couple of reasons why drones can be considered to be game changers in modern warfare. Examining previous research on drone warfare makes it possible to distinguish important characteristic differences between drones and conventional aircraft. Therefore, the first characteristic of drones is that “The strength of operational-tactical unmanned aerial vehicles is that the air defense systems find it extremely hard to detect them due to their small size” (Modebadaze, 2021, p. 93). Thus, it is more problematic for radar systems to detect drones

compared to conventional aircraft. Second, cost-wise, they are significantly cheaper compared to conventional aircraft. They are easier to acquire, which allows significant advantages not only to superpowers but also to countries with relatively weaker air forces. “The case of Poland underscores this point: in 2012, Warsaw discussed replacing its fleet of SU-22 fighters with armed UAVs as a result of their perceived lower costs and useful capabilities” (Fuhrmann, Horowitz, 2017, p. 405). Third, “UAVs, by making long-range precision strikes more accessible, will eliminate close combat from the battlefield, which would relieve states from the need to deploy ground troops” (Calcara et al., 2022, p. 131). Thus, drones allow not only a reduction of close combat in warfare but also a saving significant amount of human life.

On the other hand, some authors argue that drones have not changed the nature of modern warfare and, therefore, cannot be regarded as game changers. One of the arguments towards this idea is that only military superpowers can effectively use drones. “Emerging drone states will have to work through the difficulties of establishing the necessary human and material infrastructure for out-of-area drone use” (Joshi, Stein, 2013, p. 70). The costs associated with buying a drone are not the final price, as the maintenance and creating infrastructure add extra costs. Another essential aspect of modern drones is that they are “generally “cheap” because it was designed with an emphasis on costs, as a result, it is also vulnerable to an array of even basic countermeasures and is prone to mishaps and failures that ultimately compromise their effectiveness” (Gilli A, Gilli M, 2016, p. 66). However, more importantly, as Hetch argues here, drones give a significant advantage to the states, but alone, they do not win wars. “Without the drones, the Azeris would not have achieved the success that they did. However, it is just as clear that the drones did not win the war by themselves and did not make the ground battle easy” (Hetch, 2022, p.33).

In most cases, authors either argue that drones are shaping new ways of modern warfare, and they are becoming game changers in this regard. Or argue that drones are not revolutionizing modern warfare. At least not to a degree, as other authors might think. Not much research has been done on the topic of why countries use drones in the first place, especially in the case of airspace superiority. Therefore, in this research, the main question is: Why opt for military drones in case of superiority in air space? Furthermore, a single case study will be used in this research to try to examine the case of the second Nagorno-Karabakh War in 2020. The case of

the Second Nagorno-Karabakh War is one of the better examples for explaining why countries might opt out for military drones rather than conventional aircraft, even when they have superiority in air space.

The thesis will consist of five chapters. The first chapter will be the theoretical framework where the theory of balance of power, Military cost and benefit analysis and military strategic theory will be described and analyzed. The second chapter will be about methodology, where research design, case selection, method selection, collection of the data and the limitations of the study will be discussed. The third chapter will be a case study where the First and Second Nagorno-Karabakh Wars will be explained. The fourth chapter will be an empirical analysis where the theoretical frameworks mentioned above will be used to explain why Azerbaijan opted for military drones instead of conventional aircraft. The final chapter will be the findings and conclusion, where the most critical aspects of the research will be discussed.

2. Theoretical Framework

This chapter introduces the theoretical background of the thesis. Three theoretical approaches, the balance of power theory, military cost and benefit analysis and military strategic theory, will be used in order to explain later why opt for military drones in case of superiority in air space. While there has been much research done on drone warfare and the consequences of using drones, there is very little research done on why states use drones in case of air superiority, which inspired me to research the topic. The goal of this research is to concentrate not on the aspect of drone warfare or how drones change modern warfare but on the aspect of why states opt for military drones instead of conventional aircraft.

All three theoretical frameworks will be used in order to explain different aspects of the research question. While the theory of balance of power argues that Azerbaijan had significant superiority in air space, and in most cases weaker side suffers due to that, it still does not explain why Azerbaijan opted to use military drones instead of conventional aircraft. The theory of cost and benefits analysis argues that military drones, compared to their conventional counterparts, cost significantly less, which is an important aspect of why Azerbaijan used drones in the Second Nagorno-Karabakh War. The theory of military strategic thinking explains what type of strategy was used by both sides, which allowed Azerbaijan to use drones and achieve success even without using conventional aircraft.

2.1 The Theory of Balance of Power

In international relations, the “Balance of Power” concept is usually associated with the realism tradition of thought. The theory of realism, in simple terms, examines international relations through the competition between states for power. As long as we follow Waltz’s idea of self-help, “the aim of maintaining the power position of the nation is paramount to all other considerations” (Waltz, 1959, p.160). The concept of “Balance of Power” can be interpreted differently in the different schools of realism. For structural realism, the term is understood as a struggle for survival where the states follow their self-interests. Given the anarchic nature of the international system and the nonexistence of a single vastly superior power among great nations, it is crucial for countries to become as powerful as possible to defend themselves from threats coming from other nations. Defensive realists, mainly Kenneth Waltz, argue that pursuing to obtain as much power as possible can be a determining factor for their downfall. Defensive realists argue that “countries with a strong willingness to balance power against the threat of power-seeking states may have to face, in turn, the countermeasures that jeopardize the very survival of the state” (Grafov, 2019, p.22). On the opposite, offensive realists such as John Mearsheimer argue that nations should try to maximize their power because having superior power ensures their own survival. (Mearsheimer, 2007, p.72).

Throughout history, the term “Balance of Power” has had many different meanings. According to Michael Sheehan, this is caused by using the term freely in all contexts. It is not difficult to find the essence of the “Balance of Power”, but it is difficult to define it exactly. (Sheehan, 1996, p.2). Even though the term has been defined many times by different authors, they all share certain defining characteristics. The definition of the term which captures the essence of the idea more effectively than others comes from Dina Zinnes. The term “involves a particular distribution of power among the states of the system such that no single state and no existing alliance has an overwhelming or preponderant amount of power” (Zinnes, 1967. p.272). Waltz argues that because of the anarchic nature of the international system, any nation at any time could use force. “All states must constantly be ready either to counter force with force or to pay the cost of weakness” (Waltz, 1959, p.160).

In summary, the general principle of the term “Balance of Power” is that if any nation or coalition gets powerful enough to threaten other nations or coalitions, other states should recognize this and take measures in response to increase their military power to restore the balance. Thus, this dynamic creates a system of equilibrium, where if one side gets stronger, the opposite side should strengthen its military capabilities to balance it. (Schweller, 2016, p.4). Meanwhile, the Balance of Power theory suggests that if your opponent increases their military capabilities, you should follow the same path to balance it. That has not been the case for Armenia since the end of the first Nagorno-Karabakh War. Nor during the Second Nagorno-Karabakh War in 2020.

2.2 Military Cost-Benefit Analysis

The term Cost and Benefit Analysis “Is a decision support tool that documents the predicted effect of actions under consideration to solve a problem or take advantage of an opportunity. Is a structured proposal that functions as a decision package for organizational decision makers” (U.S. Army, 2018). Nowadays, CBA has many different meanings and purposes; therefore, it can be applied in various spheres. According to Richard A. Posner, it mostly aligns with welfare economics, which means using economics to guide and shape policies not only in the public but also in the private sphere. In general, the term is used more commonly in the public sphere. Posner argues that the term ‘Cost and Benefit Analysis’ can be viewed from different perspectives and be defined along several dimensions. He divides it into three categories. The first category refers to CBA as a pure evaluation method: it is a method of evaluation where the analysis is done solely for the purpose of assessment, and there is no intention to use it any further than that. The second category refers to CBA as an input into a decision method: while pure evaluation is used solely for assessment purposes, input into a decision can be used as a viable method for decision-making, but it depends on the decision-maker if he wants to use it or not depending on other relevant factors. Third, the category refers to CBA as an exclusive decision-making method, where it is used as the primary factor determinant in the decision-making process. (Posner, 2000, p. 1154).

Depending on the dimension of CBA, it can also be explained as a policy assessment method that quantifies in monetary terms the value of all policy consequences to all members of society. (Broadman, Greenberg, Vining, Weimer, 2011, p.2-3). The main goal of the CBA is to make a social decision-making process more accessible and more rational. According to Broadman, the idea of the CBA is to have a more efficient allocation of society’s resources. “The term denotes the use of the Kaldor-Hicks (wealth maximization rather than utility maximization) concept of efficiency to evaluate government projects” (Posner, 2000, p. 1153). The Kaldor-Hicks criterion (The Related decision rule) is an essential aspect of CBA because of its necessity for practical application. “The decision rule states that a public policy, program or project should be adopted, if and only if gainers could fully compensate losers, and still be better off” (Melese et al., 2015,

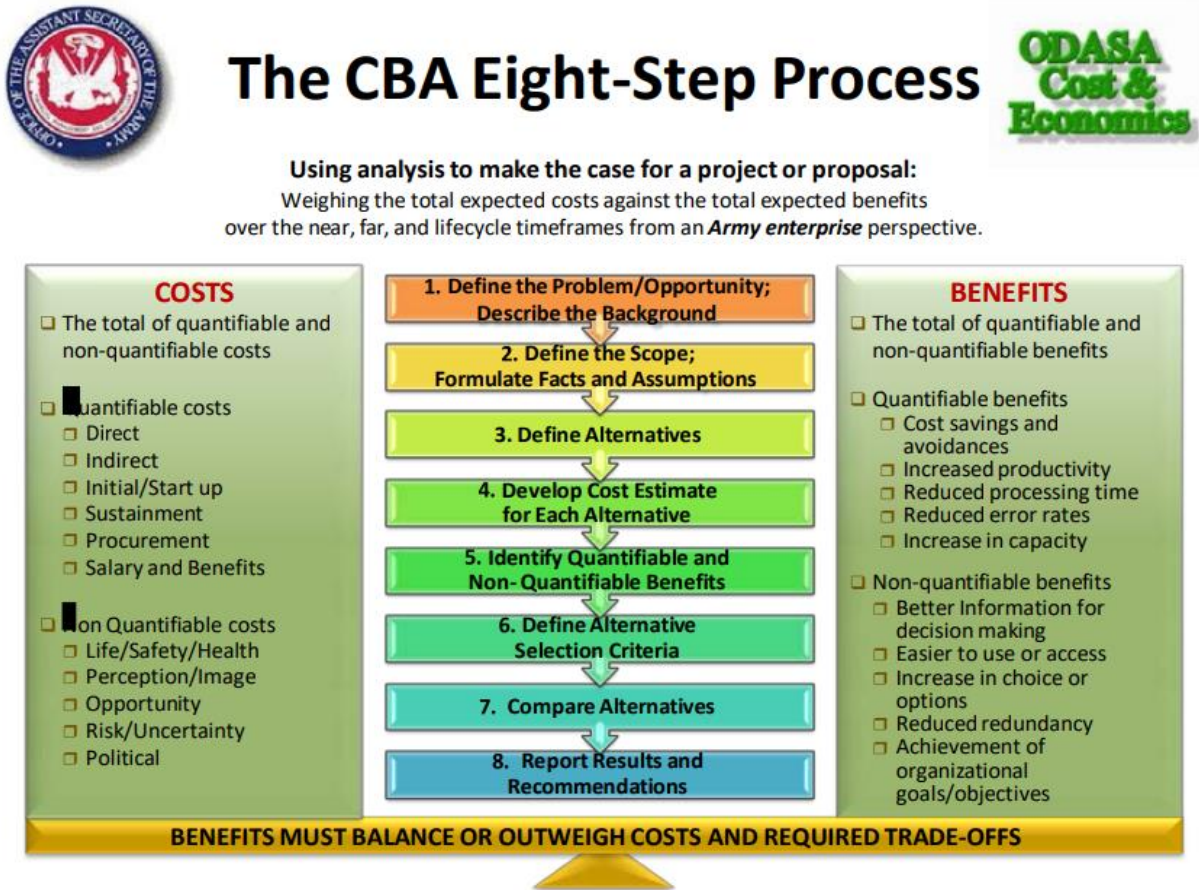
p. 3). The term ‘Cost and Benefit Analysis’, as seen above, is commonly used in the public sphere, but the usage of this term for this thesis will be in the military sense.

“Military Cost-Benefit Analysis” (CBA) is mainly used to guide governments not only in times of war but also in peace. The nature of defence reforms is complex and takes a lot of time, political debates and investment. Thus, Military CBA contributes considerably to “inform such complex and contentious decisions by carefully structuring the problem and capturing relevant costs and benefits of alternative courses of action” (Melese et al., 2015, p. 1). The main reason why Military CBA is more important for this thesis is that there is a big difference between military CBA and public CBA in how it is applied. While in public CBA, if we follow the Kaldor-Hicks criterion, all the projects which have positive net benefits can be adopted in the end. That is not the case in military CBA, as the national defence can involve non-monetary benefits, and therefore, it is impossible to measure non-monetary achievements, which in itself introduces significant challenges for the security sector.

The main idea behind CBA is that there is a choice to be made between different options in order for CBA to be helpful in choosing the best option. “The primary objective of developing a CBA is to identify and obtain approval of the optimum course of action to solve a specific problem or capitalize on a specific improvement opportunity” (U.S. Army, 2018). Hitch and McKean, in their text “The Economics of Defence in the Nuclear Age”, argue that there are two main ways in which Military CBA can be applied. “First, to guide defence policy. Second, to guide defence investments” (Melese et al., 2015, p. 4). They argue that a single analysis cannot comprehensively cover all the problems that can arise in a large organization. Thus, when the comparison is between alternative courses of action, the main focus is set on specific aspects of government problems. It is crucial to prioritize specific aspects and disregard others temporarily; therefore, “the resulting analysis is intended to provide assistance in finding optimal or at least good solutions to sub-problems” (Hitch and McKean, 1960).

Figure 1

The Process of CBA



Note. CBA Process shows different steps which has to be taken in order to analyse if benefits outweigh the costs. From U.S. Army Cost Benefit Analysis Guide, 2018.

<https://www.asafm.army.mil/Portals/72/Documents/Offices/CE/US%20Army%20Cost%20Benefit%20Analysis.pdf>

When it is not possible to monetize the benefits, Military Cost-Benefit Analysis can be described using terms such as “System Analysis” or “Cost-Effectiveness Analysis”. Both terms can be alternately called “Multi-Criteria Decision-Making” (MCDM) or “Multi-objective decision-making” (MODM), which, according to Melese “, rapidly evolved after WWII to address the challenge of measuring non-monetary benefits of defence investments”. (Melese, Ritcher, Solomon, 2015, p. 5). Military Cost-Benefit Analysis will be a helpful theory to explain cost-related reasons why Azerbaijan decided to use military drones instead of conventional aircraft.

2.3 Military Strategic Theory

Strategy is a set of ideas and plans written on paper until they are converted into military actions. Gray states that, “The general theory both of war and of strategy insist that they address and command phenomena that effectively are permanent in nature, but also are ever certain to manifest themselves in belligerencies that can be very different in character” (Gray, 2014, p. 6). Kenton White argues that “Strategy is an intellectual activity: it is the level of effort that orders the military behaviour that should deliver some, at least, of the consequences commanded by the political high ground of policy arms” (White, 2021, p.133). According to Albino, for a military strategy to be successful, it should not only depend on the effective combination of the given country’s available forces but also on how that strategy will be employed. Therefore, the way in which countries adopt a given strategy can be a determinant factor in whether it fails or succeeds. “Strategic thinking is traditionally focused on which part or combination of land, air and naval forces is most effective” (Albino et al., 2016, p.2). Military strategy can be offensive and defensive, but, in some cases, it can also be a combination of both actions.

Brodie argues that in basic terms, strategy means “Discovering how the resources of the nation, material and human, can be developed and utilized for the end of maximizing the total effectiveness of the nation in war” (Brodie, 1949, p.476). However, later, he further develops this idea and adds that “Strategy must also anticipate the trials of war and by anticipation to seek where possible to increase one’s advantage without unduly jeopardizing the maintenance of peace or the pursuit of other values” (Brodie, 1949, p.477). Brodie not only aims to explain what strategic theory is in general terms but also dives more deeply to describe how strategy is created in the first place. He argues that for the strategy to be effective, it is essential for military planners to understand the strengths and weaknesses of both parties involved. “Since great changes occur from one war to the next, military planners are obliged to make far-reaching decisions on issues concerning which there is little or no directly applicable experience” (Brodie, 1949, p.473). Ultimately, Brodie concludes that economic factors also play a crucial role in creating a successful strategy. He uses Classical economic theory as an example, which can be directly applied to military strategy. “The most efficient utilization of potential and available resources to the end of enhancing our security” (Brodie, 1949, p.478).

In his article (Is Strategy an Illusion?), Betts also argues about the importance of the strategy and why it is one of the most critical aspects of the war. “Strategy is the essential ingredient for making war either politically effective or morally tenable. It is the link between military means and political ends, the scheme for how to make one produce the other” (Betts, 2000, p.5).

Meanwhile, Brodie argued that for a military strategy to be successful, it should follow specific requirements such as acknowledging both the strengths and weaknesses of all involved parties and understanding economic factors. In contrast to Brodie, Betts argues that while strategy is a necessary aspect of the war, in reality, it is almost impossible to create a successful strategy. He argues, “Effective strategy is often an illusion because what happens in the gap between policy objectives and war outcomes is too complex and unpredictable to be manipulated to a specific end” (Betts, 2000, p.5).

Betts does not argue the fact that it is impossible to create a successful strategy or that it has never been achieved before. Instead, he argues that at face value, the idea that someone can follow specific requirements and create a good strategy is a false narrative. There are many factors which cannot be taken into consideration in the planning process due to the complex dynamics of war. For a strategy to work to some extent, “It must be possible to analyze patterns of military and political cause and effect, identify which instruments produce which effects in which circumstances, and apply the lessons to future choices” (Betts, 2000, p.16).

3. Methodology

The following chapter will present the methodological approach adopted to answer the research's central question: Why opt for military drones in case of superiority in air space? Explain why the Second Nagorno-Karabakh case was chosen and how the data was collected. What are the limitations of the research.

3.1 Research Design

This thesis will be a case study of the Second Nagorno-Karabakh War in 2020. The case study will be used for a couple of reasons. First, Robert Yin argues that “A case study is an empirical inquiry that investigates a contemporary phenomenon (the “case”) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, 2014, p. 16). what Yin implies by saying this is that case studies are intended to address complex phenomena, which helps analyse them comprehensively. Second, and more importantly, “The defining feature of case study research is its focus on ‘how’ and ‘why’ questions” (Ponelis, 2015, p. 537). Creswell argues that case studies are a qualitative design in which the “Researcher explores in depth a program, event, activity, process, or one or more individuals. The case(s) are bound by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time” (Creswell, 2009). Because this thesis tries to observe the Second Nagorno-Karabakh War, and the central question is: Why opt for military drones in case of superiority in air space? Thus, it is most appropriate research design to delve more deeply into the case’s analysis to answer the central question of the thesis.

3.2 Case Selection

Throughout the past two decades, there have been many wars where drones reigned supreme, but given that, the research question focuses on: Why opt for military drones in case of superiority in air space? The case of the Nagorno-Karabakh War in 2020 is the obvious choice to Analyse. The case of the Nagorno-Karabakh war is an obvious choice because it provides an excellent example of modern air warfare. However, it is also unique because conventional aircraft played a minimal role. In addition, the case gained most of the attention from the international community and academic researchers. The reasons for this interest can be explained twofold. First, because of Information campaign tactics used during the war by both sides but more prominently by Azerbaijan. Daily Releasing videos of how drones destroyed Armenian weapon systems. Second, because the Second Nagorno-Karabakh can be argued to be a prime example of drones reigning supreme, this implies that given how specific the thesis question is, it is essential to look at specific parameters while choosing which case to observe. The First parameter, the case, should have apparent superior power, at least in terms of air space superiority, when one state is more potent than the other. The second parameter is that this state should also have a superior drone arsenal, which can be later used to win the war while mainly depending on those drones. While there can be additional parameters, such as the defending state should not have countermeasures or mechanisms against drone attacks. There is no need to look further, as the Second Nagorno-Karabakh War contains all the prominent futures mentioned above. Azerbaijan had a significant edge in terms of air space power, yet despite that, they did not use this advantage in their favour and opted to use military drones instead.

3.3 Method Selection

Qualitative observation will be used to observe how things developed in the Second Nagorno-Karabakh War and understand what caused Azerbaijan to use drones from the beginning. While trying to understand the phenomenon, three theoretical approaches will be adopted to explain

how each theory answers the question of why Azerbaijan opted for drones instead of conventional aircraft. A qualitative observation study is used in this thesis for a couple of reasons. “To investigate “how” or “why” qualitative research questions, “when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context” (Morgan et al., 2017, p. 1061). An observational study is primarily used “To answer a research question based purely on what the researcher observes. There is no interference or manipulation of the research subjects. These studies are often qualitative in nature” (George, 2023). In order to answer the central question of the thesis, it is necessary to examine many different sources for complete analysis. The main benefit of qualitative observation is to understand complex phenomena more comprehensively. It is essential because it allows us to catch subtle factors which can be determinant in answering the central question of the thesis.

3.4 Data Collection

The data for this thesis is collected and examined from primary and secondary sources. The primary sources are government websites for national security documents in each country. Moreover, the secondary sources are research papers, news articles and books. The data sources used in this thesis include national security strategy documents from both Armenia and Azerbaijan, which were found on official government websites. National security documents are essential to analyse as they allow us to understand how each country views the situation around them and how they approached the war later. The SIPRI database played an essential role in understanding how much money both countries spent to buy new weapon systems and which countries were selling these weapon systems. Also, it was essential to understand how each country was preparing until the war broke out in 2020. More specifically, the period of 2011-2020 was chosen as both countries acquired most of their weapon systems during this period. Different academic research papers, journals and news reports were used to understand better what happened in the Second Nagorno-Karabakh War. This is an essential aspect in order to understand better what happened during the war and not depend only on governmental sources

from both countries as, in most cases, either they exaggerate some facts or, in some cases, lessen the losses they suffered. The data sources were chosen specifically in order to provide insight into the case study at hand and to help answer the central question of the research.

3.5 Limitations of The Study

This thesis will primarily examine academic sources such as research articles and books and other sources such as news articles and data from both the Armenian and Azerbaijan official sites, as well as the national security strategy documents from Armenia and Azerbaijan. It is important to note that while in the case of the Second Nagorno-Karabakh War, drones played an essential role in winning the war, it is not going to be the case in every situation as the Second Karabakh War is a pretty unique case with unique parameters and if these parameters are not met using a drone instead of conventional aviation might be the wrong choice. It worked in the case of the Second Karabakh War because all the required parameters were met, and drones were used because all these parameters were at hand. However, it is also essential to understand that acquiring a hundred per cent truth is almost impossible. As the primary sources of information are states involved in a war, there is a big possibility that their numbers are exaggerated when they are talking about what they achieved during the war. Similarly, they can downplay their losses, which is also part of the information war. There are other sources that either report from the site or analyse the information given to us by state officials. Independent research teams, in this case, Oryx, are third-party actors who examined all the footage released from the Azerbaijan side, where numbers do not add up precisely as President Aliyev suggested. Nevertheless, looking at all the numbers given by all parties, we can have a more or less accurate picture of what happened.

4. Case study

Historical Overview

The dispute between Azerbaijan and Armenia over the territory of Nagorno-Karabakh is quite a complex phenomenon. Therefore, the historical background of the conflict needs to be explained. First, the first Karabakh war in 1988-1994 will be addressed. Later, the main focus will be on the Nagorno-Karabakh war in 2020. The essential question this research will try to answer is: Why opt for military drones in case of superiority in air space? Thus, the Second Karabakh War is critical to this research and requires a more profound understanding.

The conflict from the beginning over the territory of Karabakh, by both Azerbaijan and Armenian sides, was on the historical background to whom this land truly belongs. On the one hand, Azerbaijan has historical claims over the land and argues that because of the city Shusha, which is according to UNESCO, “Historical and Architectural Reserve of Azerbaijan” (UNESCO, 2001). They have more legitimate claims over the territory of Nagorno-Karabakh. On the other hand, the Armenian side has a historical claim over the land, and they believe it belonged to the old Greater Armenian (Avdoyan, 1995, p. 163). Thus, both sides have arguments for historical claims on the land.

4.1 The First Nagorno-Karabakh War in 1988-1994

In February 1988, “The assembly of Nagorno-Karabakh asked the authorities in Moscow to be unified with the SSR of Armenia. This request was not granted because the soviet constitution did not allow for borders to be changed” (Companjen, 2010, p.11). The fact that the assembly of Nagorno-Karabakh wanted to transfer (NKAO) from Azerbaijan to Armenia was not appreciated in Azerbaijan. Thus, the very first response from the Azerbaijan side was “In the form of massacres of Armenians in Sumgait in 1988. The first serious mass killing of Armenians took place in Sumgait during the last days of February 1988. Between 26-50 Armenians were brutally killed by the enraged mob” (Hovhannisyanyan, 2004, p.54). Azerbaijan side then started the deportation process to clear Nagorno-Karabakh from Armenians. “The Azeri-Turk authorities were then in the process of ‘cleaning’ Shusha of Armenians by means of deportations” (Cox, Eibner, 1993, p.38). On the contrary, the same processes started in Armenia as well, and they started to deport Azeri Turks from Armenia.

Because of the degrading state of the Soviet Union, Gorbachev feared that doing something in a given situation might end badly for the Soviet Union. Thus, he “Sent Soviet troops to carry out forced relocations of Karabakh Armenians and turned a blind eye to Azeri atrocities against Armenians in Sumgait, Baku, and other Azeri cities” (Uhligh, 1993, p.48). While the Soviet Union tried to take things under control, “Baku stuck to its gun by protesting against Nagorno-Karabakh’s merger with Armenia. The strikes continued to paralyse the life in Nagorno-Karabakh and Yerevan till the day the devastating earthquake visited the area” (Dash, 1989, p.73). Gorbachev tried to find a solution to the situation at hand, and in 1989, “The Kremlin placed Nagorno-Karabakh under its own direct rule. But while the new arrangement bypassed Baku, the soviet authorities re-emphasised that the Armenian enclave remained part of Azerbaijan” (Cox, Eibner, 1993, p.40).

As expected, it was only a temporary solution and the demands renewed to transfer NKAO to the Armenian SSR. In 1990, for the first time, Armenian officials created a budget that included funds for Nagorno-Karabakh. “Rumors spread through Azerbaijan that Armenian guerrillas were going to seize the province as well as the strip of land separating it from the Armenian Republic”

(Melander, 2001, p. 66). Thus, it prompted Azerbaijan and the Soviet Union to create a “Joint operation called “Operation Ring” was launched to disarm Armenian militias and cut off support from rural enclaves. Armenian villages in Karabakh were encircled by Soviet and Azeri troops and residents were forcibly deported” (Hirschfeld et al., 2023, p.35). According to Hirschfeld, in a similar fashion, Armenian forces retook some of the lost territories back and deported all the Azeri inhabitants from those villages.

Not long after, the Soviet Union collapsed. Armenia and Azerbaijan declared themselves as independent countries. One of the pivotal moments for Karabakh was when “Karabakh Armenians held their own referendum in 1991 where they voted in favour of national independence. Azerbaijan responded in 1992 by dissolving Nagorno-Karabakh as a separate territorial entity, thereby officially absorbing it into the Republic of Azerbaijan” (Chorbajian et al. 1994. p.3) soon after Azeri forces encircled Karabakh with a punishing siege. However, by the spring of 1992, “Armenia managed to gain the upper hand in the conflict. Most Azeri civilians had been expelled from Karabakh, and Armenia seized enough territory to create a land bridge uniting the country into a single geographic unit” (Hirschfeld et al. 2023, p.37). If, at first, the goal for Karabakh forces was to defend themselves from Azeri attacks, now “The imperative of survival has been transformed into a license for plunder, carrying the Karabakh advance deep into Azeri territory on several fronts, and resulting in the outright destruction of major cities” (Uhlig, 1993, p.49)

Even when Karabakh forces were in a desperate situation against the Azeri army, they still managed to overcome all the disadvantages to free their land. Therefore, as “Karabakh forces have won victory after victory, an influx of captured Azeri arms and ammunition has given powerful momentum to their advance, shattering the organisation and morale of the Azeri military and permitting rapid conquest of Azeri territory” (Uhlig, 1993, p.49) In 1993, “The Armenian military opened a second offensive south of the Karabakh region and managed to seize control of 18 additional villages, some of which were located close to the Iranian border” (Hirschfeld et al. 2023, p.39). Azerbaijan made its last efforts to reclaim lost territories. The Azeri army was “Now largely consolidated under Aliyev and reinforced by fighters from Afghanistan. Turkey supplied Azerbaijan with 150 military advisors, and Russia provided 200 more. These reinforced troops undertook a major offensive to reclaim territory north, south and

east of Karabakh” (Hirschfeld et al, 2023, p.40). However, this was not enough as “Karabakh Armenian forces reversed Azerbaijani gains. The local Armenian forces re-took nearly all of Nagorno-Karabakh and successfully defended the Lachin strip, which is one of the strategically important territories” (Chorbajian et al. 1994. p.15). Fighting continued till 1994, when the ceasefire agreement was signed. Which also established the line of contact, the Republic of Artsakh.

4.2 The Second Nagorno-Karabakh War in 2020

Ever since the first Karabakh conflict was somewhat resolved, there was not much fighting going on until 2016 when Azerbaijan launched an offensive attack, “Seizing strategic heights and testing the ability of its forces to take on the Armenian military. More recently, serious fighting broke out in July of this year between the two countries, resulting in a Russian-brokered ceasefire” (Kofman, Nersisyan, 2020). Until the Second Karabakh war started, there was an essential shift in Armenian defence policy in March 2019, when “Defense minister, David Tonoyan, famously announced that Armenia’s policy was no longer “land for peace” but “war for new territories.” If Azerbaijan dared to initiate another war, Armenia would take more Azerbaijani territory “(Reynolds, 2021). Tactically, “The Armenian defenses had been built over decades to deter the Azerbaijani leadership from launching a decisive push. Yerevan’s approach to the occupied territories visibly showed the influence of Soviet military thinking and doctrines” (Kasapoglu, 2021, p.8).

According to Kasapoglu, the Armenian defence was heavily prepared with “Echelons, fire-sacks strongpoints linked to each other along the key terrain to form hardy ‘defensive belts’ and, finally, minefields to halt the adversary’s advance. In fact, the harsh topography of Nagorno-Karabakh and the adjacent territories favored the defensive side” (Kasapoglu, 2021, p.8). Not only that, “The Armenian defenses in Nagorno-Karabakh were heavily fortified and supported with complex tunnel/trench networks built in the mountainous terrain.” (Kasapoglu, 2021, p.9). It can be argued that “From a military standpoint, the Armenian positions were dangerous for any offensive belligerent, posing the risk of inflicting severe casualties and disrupting the operational tempo of the offensive party” (Kasapoglu, 2021, p.9). This can be one of the factors as to why Armenia felt this strongly about themselves and also were sure that Azerbaijan would not dare to start the war.

There were not any significant clashes between the countries, which could have resulted in a war, until the 27th of September, when the Second Karabakh War started. The reasons behind the renewed war, according to different sources, can vary as the Armenian side argues that “On the morning of September 27, Azerbaijan launched air and artillery attacks on Nagorno-Karabakh,

while Baku says it was conducting a “counter-offensive in response to a military operation” (Weise et al., 2020). Armenia’s defence ministry confirms this by saying, “An attack on civilian settlements in Nagorno-Karabakh, including the regional capital Stepanakert, began on Sunday morning” (BBC, 2020). Iskandarov argues that Azerbaijan started the attack because of provocations from the Armenian side: “The provocation of Armenian Armed Forces in the so-called “front-line” prompted Azerbaijan to launch a counter-offensive operation with a code name of “Operation Iron Fist” on September 27 2020, and shattered the status quo over the Nagorno-Karabakh problem” (Iskandarov, Gawliczek, 2021, p.30). Kofman also confirms that Azerbaijan started an offensive attack: “On the morning of Sept 27, Azerbaijan launched an offensive across the line of contact held by the Armenian military and local forces belonging to the breakaway region of Nagorno-Karabakh “(Kofman, Nersisyan, 2020).

According to Kofman, the initial phases of the Azerbaijani offence can be divided into several stages. In the first three days, “Azerbaijani troops attempted a ground assault with armored formations, while providing fire support with artillery, drones, and loitering munitions. Armenian troops withdrew from the first line of defense in the southeast and northern regions of controlled territory” (Kofman, Nersisyan, 2020). However, accomplishing this task was challenging for Azerbaijan forces as the Armenian side inflicted heavy damage with missiles and artillery. Azerbaijan forces started to wear down Armenian air defence systems, “Destroying 13 short-range surface-to-air systems (Osa-AKM and Strela-10), but they eschewed the use of combat aviation. Overall, the initial offensive resulted in the loss of dozens of armored vehicles, and limited gains in the south” (Kofman, Nersisyan, 2020).

From the end of the third day until the beginning of the sixth day, Kofman describes it as position warfare, where Armenia made some progress in the north. The more significant offensive attacks “On the Armenian side took place on the fourth day. As Armenian armored vehicles and artillery maneuvered into the open, they found themselves relatively exposed to the use of combat aerial vehicles, loitering munitions, and drones marking targets for artillery” (Kofman, Nersisyan, 2020). As Armenia had zero to no air defence against drones, they suffered considerably. The issue can be explained twofold. First, “The S-300PT and PS series and the 9K37M Buk-M1, were both developed in the 1980s. While the missiles are still potent, their sensors are designed to detect, identify and track fast-moving fighters, and their moving-target

indicators disregard small, slow drones” (Gressel, 2020). Second, which made the situation worse, “Armenia had no jammer able to interrupt the signals linking the drones to their guidance stations” (Gressel, 2020). The total loss roughly amounted to “84 tanks thus far by Armenia, along with numerous multiple launch rocket systems and artillery systems, compared to a total of 13 to 15 air defense systems, suggests a fairly low availability of air defense” (Kofman, Nersisyan, 2020).

On day six, Kofman reports that both sides were exhausted, and Azerbaijan started to attack Stepanakert with multiple launch rocket systems. Moreover, “Azerbaijan used an Israeli-made LORA tactical missile to destroy a bridge on the way from Armenia to Karabakh. Azerbaijani forces sought to target Armenian ground lines of communication to prevent the deployment of reserves and stall counteroffensives” (Kofman, Nersisyan, 2020). Armenian forces also started to fire against “Infrastructure in Azerbaijan, using BM-30 Smerch 300 mm multiple launch rocket systems to hit the airport of Ganja about 60 kilometers away from the Armenian border, and using tactical missiles as well “(Kofman, Nersisyan, 2020). Thus, both sides were firing multiple rocket launcher systems at each other, targeting critical infrastructure. Starting the day seven, Azerbaijan bolstered their forces. “The Azerbaijani attack knocked Armenian forces from their forward positions in the north and may have temporarily seized the border settlement of Mataghis” (Kofman, Nersisyan, 2020). On day eight, both sides exchanged artillery attacks. While Azerbaijan continued their attack on Stepanakert, Armenia was attacking targets in Azerbaijan.

Afterwards, the focus of fighting shifted towards the south, as Azerbaijan only gained a few territories and, cost-wise, took some damage. “Azerbaijani offensives proceeded in the direction of Jabrayil and Fuzuli, near the Iranian border. Subsequent days of fighting focused on this region, and Azerbaijani forces briefly captured Jabrayil, but were partially enveloped” (Kofman, Nersisyan, 2020). However, according to Kofman, As the territories are relatively flat, it makes it more optimal for Azerbaijan forces to make some progress as the Armenian forces control more of a mountain territory. “Azerbaijan’s army controls a stretch of terrain in the south, recapturing territory that has long been held by Armenian forces as a buffer zone “(Kofman, Nersisyan, 2020). Afterwards, the Azerbaijan army “Made significant headway in the southern lowlands between Nagorno-Karabakh and Iran. Azerbaijani forces took territory in the regions of Fuzuli,

Jabrayil, and Zangilan and eventually secured Azerbaijan's entire border with Iran" (Welt, Bowen, 2021, p. 9). The recent military battles "Significantly altered the existing status quo in the South Caucasus. Azerbaijan regained control over all seven districts surrounding Nagorno-Karabakh and reclaimed the city of Shusha, an important enclave inside the latter, only ten kilometres away from its capital Stepanakert "(Ruys, Silvestre, 2021, p. 672).

In 2020, "Azerbaijan not only recaptured Armenian controlled territories outside the Nagorno-Karabakh Autonomous Region, but also conquered and ethnically cleansed several districts of the former autonomy itself" (Saparov, 2022, p.61). "Over the course of a six-week war, Azerbaijan's somewhat larger and significantly more modern military proved superior to the forces of Armenia and the self-declared, Armenian-backed Nagorno-Karabakh republic" (Hedenskog et al., 2020). Later, on November 9-10, "The war came to an end with a three-party agreement between by Armenia and Azerbaijan, negotiated and brokered by Russia" (Hayrapetyan, 2022, p. 88). A cease-fire agreement which was mediated by Russia introduced "2000 Russian troops into the conflict zone to serve as peacekeeping forces and to guarantee the security of a land corridor between Armenia and Nagorno-Karabakh" (Welt, Bowen, 2021). The human cost According to Broers, was devastating, "with some 4,000 Armenians and 2,900 Azerbaijanis killed in action, 170 civilians slain, and tens of thousands displaced, mostly Armenians from the heavily bombarded towns of Nagorny Karabakh" (Broers, 2021, p. 259).

4.3 Arms Build-up until 2020

It is crucial to understand what was happening in both countries prior to the 2020 war period. In this case, both countries prioritised enhancing their military capabilities through external help as, in both cases, they have less developed arms industries. According to SIPRI, from 2011 to 2020, “Russia was the largest exporter of major arms to both Armenia and Azerbaijan. It supplied nearly all of Armenia’s major arms during the period and almost two-thirds of Azerbaijan’s” (Wezeman et al., 2021). Russia was the primary arms supplier for both Armenia and Azerbaijan. However, for Azerbaijan, other countries, such as Turkey, Israel, and Belarus, played significant roles in assisting Azerbaijan in building up its military forces. Russia’s arms supply in 2011-2020 was “94 per cent of Armenia’s imports of major arms and 60 per cent of Azerbaijan’s” (Wezeman et al., 2021). According to SIPRI, the volume of Azerbaijan’s imports compared to Armenia was eight times higher. “In 2020, Armenia’s military spending accounted for 4.9 per cent of its gross domestic product (GDP), and Azerbaijan’s accounted for 5.4 per cent” (Wezeman et al., 2021). However, military spending levels in US dollars are not even close as, according to Statista, “In 2020, Armenian spent US\$ 634 million and Azerbaijan spent US\$2237.8 million” (Statista, 2023).

In terms of the military armed force size, there was no significant difference as, according to Kofman, “Azerbaijan fielding 80,000 and Armenia 65,000 personnel, Azerbaijan also has access to several battalions of Turkish-supplied mercenaries from Syria, while Armenia can quickly mobilise additional fighters from the region of Nagorno-Karabakh” (Kofman, Nersisyan, 2020). In 2020, according to World Bank Data, the estimated number of Armed Forces personnel in Azerbaijan was 82,000, and Armenia had 47,000 in total. While numbers can vary, it is also essential to consider Nagorno-Karabakh forces. Their estimated numbers are “between 18,000 and 20,000 officers and soldiers, with a mobilisation reserve of 20,000-30,000 reservists” (Blandy, 2008, p. 14). Nevertheless, while there is not a massive difference in the number of military armed personnel both states have, there is a significant difference in how much money they spend to modernise their armies and give them a better chance to fight. In this sense, as mentioned above, Azerbaijan spent roughly four times more than Armenia in 2020. In order to

make better sense of the quantitative and qualitative differences in their weaponry, there will be a list of weapons both countries acquired in the past decade.

Between 2011 and 2020, Armenia got most of its military arsenal from Russia, where “It accounted for 94 per cent of Armenia’s imports of major arms. Over the decade 2011–20, Russian deliveries to Armenia included armoured personnel carriers, air defence systems and multiple rocket launchers and tanks.” (Wezeman et al, 2021). More specifically, according to the SIPRI Arms Transfer Database, Armenia in 2011 got ten Tigr APVs. In 2012, Armenia got two hundred Igla-S Portable anti-aircraft missile systems, and later, in 2016, they got another two hundred Igla-S. In 2016, Armenia got twenty-five 9M723 Iskander short-range ballistic missiles, four 9P78 Iskander SSM TEL, six BM-9A52 Smerch self-propelled MRL, two-hundred Verba Portable SAM, one T-90S Tank. In 2017, they got a hundred Kornet anti-tank missiles. In 2019, four Su-30K Aircraft, two Tor-M1 mobile surface-to-air missile systems, and fifty 9M338 SAM. Although in a small amount in 2011, Armenia also got weapons from Ukraine, four L-39C Albatros Trainer Aircraft. Jordan was also one of the suppliers for Armenia, and in 2018-19, they delivered a hundred and twenty 9M33 short-range surface-to-air missiles and four Osa Mobile Surface-to-air missile systems (SIPRI,2023). Most of the weapons were used in the 2020 war against Azerbaijan.

From 2011 to 2020, Azerbaijan also got most of its military arsenal from Russia. “Russia’s supplies to Azerbaijan included armoured vehicles, air defence systems, transport and combat helicopters, artillery, multiple rocket launchers and tanks. All of these weapon types were used during the 2020 war over Nagorno-Karabakh” (Wezeman et al., 2021). According to the SIPRI Arms Transfers Database, in 2011, Russia delivered two hundred 48N6 SAM and two S-300PMU2 Favorit SAM systems. From 2012-13, roughly thousand Igla-S Portable SAM. During 2011-14, Azerbaijan also got twenty-four Mi-35M combat helicopters. In 2012-14, eighteen 2S19 MST-A-S 152mm self-propelled guns, eighteen 2S31 Vena, eighteen BM-9A52 Smerch, also hundred 9M317 SAM and hundred 9M38 SAM. In 2013-15, Russia also delivered a thousand Bastion anti-tank missiles and a hundred T-90S tanks. From 2010-15, sixty-six Mi-8MT/Mi-17 transport helicopters. During 2013-17, TOS-1 MLR. In 2017-18, seventy-six BTR-82A IFVs, twenty-four Khrizantema tank destroyers and eight-hundred Khrizantema anti-tank

missiles. (SIPRI, 2023). While Russian Weapons “Accounted for 94 per cent of Armenia’s imports of major arms and 60 per cent of Azerbaijan’s” (Wezeman et al., 2021).

The second largest importer for Azerbaijan during 2011-20, According to the SIPRI, was Israel. “SIPRI estimates that arms exports to Azerbaijan accounted for 17 per cent of Israel’s total exports of major arms in 2016–20, showing the growing importance of Azerbaijan for the Israeli arms industry” (Wezeman et al., 2021). SIPRI Arms Transfers Database, Israel delivered in 2010-11, ten CARDOM 120mm self-propelled mortar, 2011-12, ten Aerostar UAVs, in 2011-13 Hermes-450 UAVs, in 2013, five Heron UAVs, five Searcher UAVs, hundred LAHAT anti-tank missile, two-hundred-fifty Spike-NLOS SSM/ASM, in 2014, six Shaldag FAC. In 2016, forty Barak-ER SAMs, forty Barak-LRAD SAMs, one Barak-MX SAM system, two EL/M-2288 AD-Star air search radars, and in 2015-18, six OPV-62 FACs. Hundred Harop loitering munition, hundred Sandcat APV, ten SandCat Spike-LR SMM launchers, two hundred fifty Spike-MR/LR anti-tank missiles, Orbiter-3 UAV, Skystriker loitering munition. In 2016-20, hundred Orbiter-1K loitering munition. In 2017-18, two Hermes-900 UAVs, fifty LORA SSM, four LORA self-propelled MRL, and ten SandCAt SPEAR 120mm. In 2019, a hundred Spike-NLOS SSM/ASM. Looking at the weapon systems which Azerbaijan got from Israel shows how significant the role Israel’s weaponry played in modernising Azerbaijan’s armed forces. Israel delivered roughly “27 per cent of Azerbaijan’s imports of major arms over the decade 2011–20. Most of these deliveries took place in 2016–20, with Israel accounting for 69 per cent of Azerbaijan’s imports of major arms in that period “(Wezeman et al., 2021).

According to the SIPRI Arms Transfers Database, Turkey also delivered some advanced weapon systems to Azerbaijan, but less than Israel and Russia. 2010-11, Turkey provided thirty-five Cobra APVs and thirty-seven ZPT APVs. In 2011-13, thirty T-107 107mm MLR. During 2012-14, Fourty T-122/300 MLR. In 2015-16, twenty T-300 MLR. From 2016-17, hundred and eight TRG-300 300 mm guided rockets. In 2018-19, ten SOM ASM. In 2020, twelve Bayraktar TB-2 armed UAV. (SIPRI, 2023) “Turkey accounted for 2.9 per cent of Azerbaijan’s imports of major arms over the decade 2011–20. Deliveries from Turkey to Azerbaijan in this period included armoured patrol vehicles, rocket artillery, missiles and armed UAVs. The armed UAVs” (Wezeman et al., 2021). According to the SIPRI Arms Transfers Database, Belarus and Ukraine also delivered weapons to Azerbaijan in small amounts compared to the other three countries

mentioned above. Belarus delivered in 2009-12, eleven Su-25 Ground attack aircraft in 2011-12, ninety-three T-72M1 Tanks in 2013-14, two Buk-1M SAM systems in 2017, twenty-six 2A36 Giansint-B 152mm towed guns in 2018, three hundred A200 guided rocket and in 2018, six Polonez self-propelled MRL. Meanwhile, in 2006-11, Ukraine delivered sixteen Mig-29 fighter aircraft. In 2012-13, nineteen BTS ARVs and, in 2013, one 80K6M air search radar (SIPRI, 2023).

As it appears, Azerbaijan, compared to Armenia, not only has acquired more weapon systems in quantity but also has a superior arsenal in quality. More specifically, “Azerbaijan has made a qualitative leap since 2010, largely thanks to purchases from Russia, Turkey, and Israel. Thus, the Azerbaijani army has superior tanks, armored personnel carriers, infantry fighting vehicles, and light utility vehicles” (Kofman, Nersisyan, 2020). This difference is most visible when looking at the “Number of artillery systems, especially self-propelled and long-range multiple launch rocket systems. Armenian forces have such systems, but in significantly smaller numbers. Larger caliber rocket systems, like BM-30 Smerch purchased from Russia” (Kofman, Nersisyan, 2020). It is essential to note that while Armenia does not have a quantitative or qualitative advantage in both cases, these weapons can definitely reach not only military targets but also civilians. While Armenia does not have weaponry as advanced as Azerbaijan’s, they still have an edge in terms of tactical ballistic missiles. “The country has at its disposal a brigade of Iskander-E systems, capable of engaging objects across the territory of Azerbaijan. The Armenian Armed Forces also possess eight obsolete SS-1C Scud-B missile systems and at least four Tochka-U” (Kofman, Nersisyan, 2020).

Tactically, the Armenian defence system is “Completely modeled on the Soviet model. Its forces are still based on conscription. Its equipment is aging, almost entirely of Russian origin. It is notable that not only most of the Armenian weapons are from Russia, but in most cases, these weapons are either renewed versions of old soviet weaponry or are ageing weapons. The most modern air-defence system Armenia has now is “The S-300PT and PS series and the 9K37M Buk-M1, were both developed in the 1980s. While the missiles are still potent, their sensors are designed to detect, identify and track fast-moving fighters, and their moving-target indicators disregard small, slow drones” (Gressel, 2020). While this has been the case in most systems since 1980, it is still interesting that Russia only sells air defence systems that cannot be

modified. “These systems are also incapable of plot-fusion: accumulating and combining raw radar echoes from different radars into one aggregated situation report. Plot-fusion is essential to detecting small and low-observable targets such as advanced drones or stealth aircraft” (Gressel, 2020).

Gressel continues his argument by saying that Russian air defence systems, which are sold to different countries, are capable of “plot fusion”. “There is, therefore, a huge difference in performance between Russian air-defence systems protecting Russian bases in Armenia and Syria and those Russian air-defence systems exported to Armenia and Syria” (Gressel, 2020). Thus, Armenia has ageing weapons and air-defence systems that can only detect conventional aircraft and cannot be adjusted to slow-moving objects. Azerbaijan, in the last decade, has acquired many different types of drones: “Baku has medium-altitude, long-endurance drones, such as Hermes-900 and Heron; loitering munitions such as Orbiter 1K, SkyStriker, and Harop; and Turkish Bayraktar TB2 unmanned combat aerial vehicles “(Kofman, Nersisyan, 2020). It is not a coincidence that Unmanned aerial vehicles have been playing an essential role in this war. As it appears, Armenia had no defence against them. “The failure to consider the new threat of ‘drones’ and ‘remotely operated munitions’ had devastating consequences. The much-publicised use of the notorious Turkish Bayraktar drones contributed significantly to the outcome of the fighting” (Julien, 2023).

Azerbaijan not only purchased different types of drones but also renewed their old weapons. “Azerbaijani military have converted a Soviet-era civilian airplane into an ad hoc unmanned aerial vehicle. Special equipment takes the place of a human pilot in the cockpit of an airplane, replacing the crew with a kit that takes just a short time to install” (Malyasov, 2020). Azerbaijan also “Repurposed old Antonov An-2 aircraft, a single-engine biplane, and are using them as disposable drones. Armenia has indigenously produced drones, but, in general, these systems are vastly inferior to Israeli designs in terms of performance “(Kofman, Nersisyan, 2020). “It is worth mentioning that An-2 is an archaic agricultural aircraft that first flew in 1947. Later, it became known that Azerbaijan was using these aircraft to identify enemy air defense positions” (Malyasov, 2020).

4.4 Classifications of Delivered Weapons

While it is important to know what type of weapons both countries acquired until the war started in 2020, it is also essential to understand why there is a big difference in the quantity and quality of weapon systems both countries bought to modernise their military forces. In both cases, we can see that different types of tactical guided missiles were acquired. In Armenia's case, they purchased 9M33 surface-to-air missiles and an OSA mobile SAM system from Jordan and some Igla-S and Iskanders from Russia. On the Azerbaijan side, they acquired Buk-1M from Belarus, Barak-ER/LRAD/MX, LORA SSM, and Spike-NLOS SSM systems from Israel. 48N6 SAM, S-300, 9M38 and 9M317 SAM systems from Russia. In this case, Azerbaijan bought more advanced systems and more quantity. Because many different types of weapon systems are purchased from both sides, there will only be a brief explanation of some of the weapon systems.

Tactical guided missiles, "are generally categorised according to the location of the launch platform and target. There are five types: air-to-air, air-to-surface, surface-to-air, antiship, and antitank, or assault" (Britannica,2023). "A surface-to-air missile system may range in complexity from a single installation, entirely self-contained, to a continent-wide net of radars, communication links, evaluation centers and firing units "(Wanddell, 1961, p.7). Surface-to-air missiles (SAMs) "Were developed to protect ground positions from hostile air attacks, specifically high-altitude bombers flying beyond the range of conventional anti-aircraft artillery" (Britannica, 2023). Usually, those types of missiles have two components: "A radar system is stationed on the ground. On top of that, the missile has a heat-seeking system, such as an infrared sensor, on its tip, which can identify infrared rays emitted by the targeted plane" (Mehta, Srivastava, 2014). On the contrary, surface-to-surface missiles (SSMs) were developed to counter enemies on the ground.

The 9K38 Igla is a "Man-Portable Air Defense System (MANPADS) developed by Soviet Union in the 1970s. It succeeded the older Strela-3 with better range and seeker sensitivity. The system uses an 9M39 Surface-to-Air missile (SAM)" (Nair, 2023). The Igla-S is a "Portable anti-aircraft missile system is designed to engage low-flying air targets of various types on counter and overtaking courses in conditions of natural (background) and artificial thermal interference"

(Missilery.info). In military usage, portable Surface-to-air missiles (MANPADS) are usually “The short-range component of a wider air defence system, providing the ‘last-ditch’ defence against attacking aircraft. They are effective only over ranges less than about seven kilometres, and are used against aircraft that are within view of the operator” (Australian Government, 2008). Ballistic missiles, in most cases, are categorised as “short-range, medium-range, intermediate-range, and intercontinental ballistic missiles. SRBMs are effective traveling less than 1000 km, MRBMs from 1000 to 3000 km, IRBMs from 3000 to 5,500 km, and ICBMs more than 5,500 km” (Arms Control Association, 2019).

According to Sanders, “UAVs have been used chiefly for surveillance and reconnaissance. However, lately they have been employed as weapons platforms to destroy selective targets. Unmanned vehicles are smaller, lighter, and less expensive than their manned counterparts” (Sanders, 2003, p. 117). While UAVs have their unique purpose, Loitering munitions are a totally new generation of UAVs as they are designed “To provide unprecedented levels of flexibility and precision in modern warfare. Unlike traditional UAVs that are used for reconnaissance or surveillance, loitering munitions are designed to attack targets directly, making them a game-changer in modern warfare” (Uvision, 2023). Loitering munition is also known as kamikaze drones. They are equipped “With a range of advanced sensors, guidance systems, and explosive warheads that enable them to locate, track, and engage high-value targets with pinpoint accuracy” (Uvision. 2023). One of the essential aspects of this weapon is also how hard it is to detect them.

4.5 Tactical Aspects of The War

One of the critical aspects of this war was the extensive use of UAVs by Azerbaijan forces. While UAVs gave a significant advantage to Azerbaijan's army, it is essential to understand the tactical aspects of drone deployment, which ultimately gave Azerbaijan such a massive advantage in air space. It can be argued that the 2020 Karabakh war was the first conflict where "Unmanned aircraft overwhelmed a conventional ground force, grinding it down to the point of impotency and paving the way for the Azeri ground forces to roll in and take possession of a strategic chokepoint" (Rubin, 2020, p. 5). The wide range of "Relatively low-cost drones can offer countries air power at a fraction of the cost of maintaining a traditional air force. The situation in Nagorno-Karabakh also underscored how drones can suddenly shift a long-standing conflict and leave ground forces highly exposed" (Dixon, 2020).

Previously, "The Armenian army was superior: it had better officers, more motivated soldiers, and a more agile leadership. In all previous wars with Azerbaijan, this proved to be decisive. But Azerbaijan found a way to work around it" (Gressel, 2020). This is a moment when drones proved their worth and provided air-space superiority for Azerbaijan forces, "They allowed the Azeris to reconnoitre first the Armenian position and then the placement of reserves. Armenian positions then could be extensively shelled with conventional artillery, weakening their defences" (Gressel, 2020). According to Andrews, it was possible because Armenian forces lacked tactical proficiency while manoeuvring. Thus, "Azerbaijani UAS were able to detect Armenian units in camouflaged positions with the use of electro optical and thermal cameras" (Andrews, 2021, p. 4). Another essential aspect of why Azerbaijan's drones were so dominant was "Because Armenia had no jammer able to interrupt the signals linking the drones to their guidance stations. Only in the last days of the war did Russia use the Krasukha electronic warfare system" (Gressel, 2020). Even if Armenia had jammers to interrupt the signals, it is challenging to say Azerbaijan drones would have been any less viable option as "The Azeris also used the Israeli Harop loitering munition, which was able to work under adverse conditions (although at reduced effectiveness) as it does not, unlike drones, require a guidance link" (Gressel, 2020).

Nevertheless, it is interesting how Azerbaijan approached this war on a tactical level. They used different types of drones in combination with conventional weapons to “Work around the strength of the opponent’s armed forces. This intellectual creativity should probably be assigned to Turkish military advisers, who, by refining Azerbaijan’s way of fighting, contributed as much to Baku’s victory as the delivery of hardware” (Gressel, 2020). Azerbaijan not only modernise their military arsenal by acquiring different types of drones from Israel and Turkey, but they have also converted a “Soviet-era civilian airplane into an ad hoc unmanned aerial vehicle. Special equipment takes the place of a human pilot in the cockpit of an airplane, replacing the crew with a kit that takes just a short time to install” (Malyasov, 2020). Azerbaijan’s newly converted drones, of course, were not on par with Israeli or Turkish drones. However, on a tactical level, they managed to do their job perfectly. They were used as bait for Armenian air defence systems to identify their positions. “Remotely piloted Soviet-era AN-2 biplanes flew at low altitudes as decoys to force the Armenians to respond against the perceived threat. This allowed the Bayraktar TB2 UASs flying above the biplanes to target the Armenian radars and missile launchers” (Andrews, 2021, p. 3).

Azerbaijan created air superiority relatively fast, so they were able to shift their attention towards Armenian “Tanks, artillery, and personnel throughout the depth of the Armenian defense. This allowed special operations teams to infiltrate behind Armenian lines and seize observation points along the planned route of attack to provide intelligence, target coordinates, and battle damage assessments” (Andrews, 2021, p. 4). Azerbaijan’s tactical use of their UAVs was working not only well in plain territory but also “This tactic worked well in mountainous territory the Armenians thought would be easy to defend. In the mountains, there is only one road connecting the front to the rear, which made it even easier for drones to spot targets “(Gressel, 2020).

Azerbaijan also targeted “lines of communication to slow Armenian reinforcements and supplies reaching the front. Azerbaijan ground forces alternated between conducting deliberate attacks and consolidation on the objective, then preparation for the next advance while fires and EW continued to weaken Armenian forces” (Andrews, 2021, p. 4). Drones were also used to find Armenian reserves, “Bringing in artillery, multiple-rocket systems with cluster munitions, their own missiles, or using Israeli-made LORA ballistic missiles to destroy bridges or roads linking

the reserves with the front” (Gressel, 2020). This also made one Armenian side unable to send reserves into battle and the second Azerbaijan force’s job relatively easier as” The Azeri army could move in any number it wished to overwhelm the isolated Armenian positions. This procedure was repeated day after day” (Gressel, 2020). The final nail into the coffin was when the battle of the Shusha happened, and Armenian forces realised that they had no chance of winning this battle. “The Armenian army started to disintegrate, and Yerevan had no choice than to agree a ceasefire on adverse terms” (Gressel, 2020).

Another strategy which was used by both sides was “A propaganda campaign on social media that showed the destruction of enemy equipment and personnel. Azerbaijan was particularly effective with the daily release of full motion video showing the effectiveness of the precision weapons” (Andrews, 2021, p. 4). It can be argued that this tactic is one of the main reasons why UAVs seemed so powerful and why so much attention was directed towards UAVs. “Although Armenia deployed some of their own indigenously produced drones, and later footage showed their side using the more sophisticated Russian-made Orlan-10 UAV, it was Azerbaijan who took control of the skies” (Shaikh, Rumbaugh, 2020).

5. Empirical Analysis

The empirical part of the thesis will concentrate on the research question, “Why opt for military drones in case of superiority in air space? In previous chapters, the theory of balance of power, the theory of military cost and benefit analysis and the military strategic theory were explained. In this chapter, the balance of power theory will explain why, even in an unbalanced situation where Azerbaijan had a clear advantage in air space, they did not use this advantage and opted for using military drones instead. The military cost and benefit analysis will explain why using drones instead of conventional aircraft was significantly better cost-wise. The military strategic theory explains what was used, why and how in order to achieve success. All three theories will be used to explain different reasons why Azerbaijan decided to use drones instead of conventional aircraft.

Another aspect of the empirical part would be military doctrine analysis, where both Armenian and Azerbaijan military doctrines of 2020 will be analysed in order to understand how and why Azerbaijan was so successful in using drones and why they have not used their main advantage in air space its conventional aircraft. Each section will have observations from the Second Nagorno-Karabakh War in order to explain better the reasoning behind the decision to use drones instead of conventional aircraft.

Theory of Balance of power

The balance of power theory argues that if any nation or coalition gets powerful enough to threaten other nations or coalitions, other states should recognise this and take measures in response to increase their military power to restore the balance. Thus, this dynamic creates a system of equilibrium, where if one side gets stronger, the opposite side should strengthen its military capabilities to balance it (Schweller, 2016, p.4). If we look at the first Nagorno-Karabakh war and how it ended, it was an undecisive result. Even back then, Azerbaijan had an advantage in terms of manpower and weaponry, but they still lost the war. Because Karabakh forces had better momentum, and the mountain terrain gave them an advantage. “Karabakh forces have won victory after victory, an influx of captured Azeri arms and ammunition has given powerful momentum to their advance, shattering the organisation and morale of the Azeri military and permitting rapid conquest of Azeri territory” (Uhlig, 1993, p. 49). However, as time passed, Azerbaijan started to acquire more and more weapon systems, and Armenia failed to innovate and catch up. “The balance of power methodically shifted against Armenia, largely due to its failure to understand the emerging challenges to its own security, prosperity and regional influence” (Kopalyan, 2021).

Armenian side was overconfident that they were on par with Azerbaijan in terms of military power, which was not helpful at all. The Armenian side also believed that in case of war, both countries would be, as Kopalyan mentions, “Mutually Devastated”. The Armenian side believed that they had an advantage in case of war because of the mountain terrain. The costs of having such a war for Azerbaijan would have been costly, and the Armenian side did not even believe it was possible for Azerbaijan to have a lengthy war in those circumstances. “In March 2019, defense minister, David Tonoyan, famously announced that Armenia’s policy was no longer “land for peace” but “war for new territories.” If Azerbaijan dared to initiate another war, Armenia would take more Azerbaijani territory “(Reynolds, 2021). However, from where this overconfidence came is interesting to look at as Armenia thought Russia would step in in case the war broke out: “Up until 2020, it was customary to assume that Moscow’s goal in the South Caucasus was to preserve the status quo. That was why Yerevan looked for Russian help during the second Karabakh war” (Atasuntsev, 2023).

However, this was not the case for Russia as over the last two decades, “the Kremlin has been under no illusions that, with a petrodollar-fuelled Azeri defence budget three times the size of Armenia’s, the balance of power has been inexorably tilting towards Azerbaijan” (BBC, 2020). Moreover, the only solution for Armenia would have been to accept a diplomatic settlement, but the Armenian side refused. On the other hand, “Azerbaijan and Turkey were confident in the success of their offensive action, as Russia had from the onset of the war indicated that it had no intention of assisting the Armenians outside of their recognised borders” (Gressel, 2020). Therefore, as Waltz argued, if the country is not ready to take the necessary steps to balance its opponents, then they have to pay the cost of being weak. (Waltz, 1959, p.160). This was the case in the Second Nagorno-Karabakh War in 2020.

Figure 2

The Military Forces of Armenia and Azerbaijan

Country	Personnel	Tanks	Infantry Fighting Vehicle	Armored Personnel Carrier	Artillery	Multiple Launch Rocket System	Tactical missile units	Tactical aviation	Combat helicopters
Armenia and Republic of Nagorno-Karabakh	65,000	400	~300	~400	Up to 600	100+	20+	18	12
Azerbaijan	80,000	500+	386	~800	800+	257	7	55	50

Note. The military forces of both countries show the relative size of their weaponry. From The Second Nagorno-Karabakh War, Two Weeks In, 2020. <https://warontherocks.com/2020/10/the-second-nagorno-karabakh-war-two-weeks-in/>

Figure 2 shows the relative size of the army personnel from both countries and their weaponry. While there is no significant difference in armed personnel each country deployed during the Second Nagorno-Karabakh war, if we look at tactical aviation and combat helicopters, it shows “Azerbaijan fielding 80,000 and Armenia 65,000 personnel, Azerbaijan also has access to several battalions of Turkish-supplied mercenaries from Syria, while Armenia can quickly mobilise

additional fighters from the region of Nagorno-Karabakh” (Kofman, Nersisyan, 2020). that Azerbaijan had a significant advantage in air space. So, to answer the question of why Azerbaijan did not use this advantage in their favour and why they opted to use military drones instead, it is important to understand what type of defence systems Armenia had prior to the war. At the same time, the Armenian defence system is Completely modelled on the Soviet model. Its forces are still based on conscription. Its equipment is ageing, almost entirely of Russian origin. It is notable that not only most of the Armenian weapons are from Russia, but in most cases, these weapons are either renewed versions of old soviet weaponry or are ageing weapons. The most modern air-defence system Armenia has now is “The S-300PT and PS series and the 9K37M Buk-M1, were both developed in the 1980s. While the missiles are still potent, their sensors are designed to detect, identify and track fast-moving fighters, and their moving-target indicators disregard small, slow drones” (Gressel, 2020).

Despite the fact that Armenia lacks new modern defence systems, it is still notable that against conventional aircraft, these systems are still more than potent enough. “Azerbaijan has an indisputable advantage in the numbers of aircraft and combat helicopters, but despite the much larger capacity of Azerbaijan’s air force over Armenia’s, both sides have air defense systems that make large-scale use of manned aviation costly” (Kofman, Nersisyan, 2020). “The effective range of the Strella-10s and Osas against the TB-2 drone sized targets was shorter than the range of the missiles these carried; whereas the longer-ranged Kubs and S-300s were optimised against targets bigger and faster than the drones” (Hetch, 2022, p.34). So, for these systems, drones were invisible targets, and the only way Armenia could counter Azerbaijan’s drones was to use Tor against them, which could be a threat to both Bayraktar TB2 and Israeli-made suicide drones. This is one of the important aspects to answer the question of why opt for military drones in case of air superiority. Even if Azerbaijan tried to use conventional aviation instead of drones, it would be more costly for them as the Armenian side was much more prepared against conventional aircraft than military drones, despite having some weapons which could threaten, in theory, even the drones in practice that was not a case.

Military Cost and Benefit Analysis

The main idea behind CBA is that there is a choice to be made between different options in order for CBA to be helpful in choosing the best option. “The primary objective of developing a CBA is to identify and obtain approval of the optimum course of action to solve a specific problem or capitalize on a specific improvement opportunity” (U.S. Army, 2018). The theory of military cost and benefit analysis is used here to explain why using military drones was a better idea in terms of paying the price for the war than using conventional aviation. First of all, if we look at the relative price of the drones used in the second Nagorno-Karabakh, we can see that according to Military Today, “The unit cost of the Bayraktar TB2 is around \$5 million. While the contracts control unit also costs around \$5 million” (Military today, 2023). Another drone which was used is the Hermes 900, which, according to Janes data, “The Hermes 900 ranges in price between USD 5.83 million and USD 6.85 million per unit” (Kadidal, 2022). During the second Karabakh war, Azerbaijan also used smaller drones such as The Hermes 450, which was “made by Elbit Systems, is a medium-sized drone designed for reconnaissance and surveillance missions, and can fly for over 20 hours straight. Each drone costs about \$2 million” (Berman, 2013).

While if we look at the conventional aviation of the Azerbaijan army it is visible right away that conventional aircraft cost much more than military drones. Azerbaijan has in their arsenal Mig-29, which, according to the Aviationist, “New price for a MiG-29, depending on version, ranges from approximately \$11-20 million USD” (Demerly, 2019). The price of mi - 35 attack helicopters according to Aerocorner, will roughly cost US\$36 million. Not only are the prices high for attacking aviation but also for transporting aircraft such as the Alenia C-27J Spartan, which has an estimated price of US\$33 million (Aeroconrner). Similarly, “The Ilyushin IL-76 is a strategic and tactical airlifter designed by Ilyushin powered by four Soloviev D-30 turbofan engines. Estimated price is US\$50 million” (Aerocorner). Taking into consideration the first fact that despite ageing weaponry, Armenian radars were more than capable of taking down Azerbaijan’s manned aviation and looking at the price difference, which, in the case of Ilyushin IL 76, is ten times the price of Bayraktar TB2, it is another important reason as for why Azerbaijan decided to use military drones instead of conventional aviation.

Military Strategic Theory

Kenton White argues that “Strategy is an intellectual activity: it is the level of effort that orders the military behaviour that should deliver some, at least, of the consequences commanded by the political high ground of policy arms” (White, 2021, p.133). According to Albino, for a military strategy to be successful, it should not only depend on the effective combination of the given country’s available forces but also on how that strategy will be employed. Therefore, the way in which countries adopt a given strategy can be a determinant factor in whether it fails or succeeds. “Strategic thinking is traditionally focused on which part or combination of land, air and naval forces is most effective” (Albino et al., 2016, p.2). Military strategy can be offensive and defensive, but, in some cases, it can also be a combination of both actions.

During the second Nagorno-Karabakh war, one of the critical aspects was the extensive use of UAVs by Azerbaijan forces. While UAVs gave a significant advantage to Azerbaijan’s army, it is essential to understand the tactical aspects of drone deployment, which ultimately gave Azerbaijan such a massive advantage in air space. It can be argued that the 2020 Karabakh war was the first conflict where “Unmanned aircraft overwhelmed a conventional ground force, grinding it down to the point of impotency and paving the way for the Azeri ground forces to roll in and take possession of a strategic chokepoint” (Rubin, 2020, p. 5). The wide range of “Relatively low-cost drones can offer countries air power at a fraction of the cost of maintaining a traditional air force. The situation in Nagorno-Karabakh also underscored how drones can suddenly shift a long-standing conflict and leave ground forces highly exposed” (Dixon, 2020).

Previously, “The Armenian army was superior: it had better officers, more motivated soldiers, and a more agile leadership. In all previous wars with Azerbaijan, this proved to be decisive. But Azerbaijan found a way to work around it” (Gressel, 2020). This is a moment when drones proved their worth and provided air-space superiority for Azerbaijan forces, “They allowed the Azeris to reconnoitre first the Armenian position and then the placement of reserves. Armenian positions then could be extensively shelled with conventional artillery, weakening their defences” (Gressel, 2020). According to Andrews, it was possible because Armenian forces lacked tactical proficiency while manoeuvring. Thus, “Azerbaijani UAS were able to detect

Armenian units in camouflaged positions with the use of electro optical and thermal cameras” (Andrews, 2021, p. 4). Another essential aspect of why Azerbaijan’s drones were so dominant was “Because Armenia had no jammer able to interrupt the signals linking the drones to their guidance stations. Only in the last days of the war did Russia use the Krasukha electronic warfare system” (Gressel, 2020). Even if Armenia had jammers to interrupt the signals, it is challenging to say Azerbaijan drones would have been any less viable option as “The Azeris also used the Israeli Harop loitering munition, which was able to work under adverse conditions (although at reduced effectiveness) as it does not, unlike drones, require a guidance link” (Gressel, 2020).

Nevertheless, it is interesting how Azerbaijan approached this war on a tactical level. They used different types of drones in combination with conventional weapons to “Work around the strength of the opponent’s armed forces. This intellectual creativity should probably be assigned to Turkish military advisers, who, by refining Azerbaijan’s way of fighting, contributed as much to Baku’s victory as the delivery of hardware” (Gressel, 2020). Azerbaijan not only modernise their military arsenal by acquiring different types of drones from Israel and Turkey, but they have also converted a “Soviet-era civilian airplane into an ad hoc unmanned aerial vehicle. Special equipment takes the place of a human pilot in the cockpit of an airplane, replacing the crew with a kit that takes just a short time to install” (Malyasov, 2020). Azerbaijan’s newly converted drones, of course, were not on par with Israeli or Turkish drones. However, on a tactical level, they managed to do their job perfectly. They were used as bait for Armenian air defence systems to identify their positions. “Remotely piloted Soviet-era AN-2 biplanes flew at low altitudes as decoys to force the Armenians to respond against the perceived threat. This allowed the Bayraktar TB2 UASs flying above the biplanes to target the Armenian radars and missile launchers” (Andrews, 2021, p. 3).

Azerbaijan created air superiority relatively fast, so they were able to shift their attention towards Armenian “Tanks, artillery, and personnel throughout the depth of the Armenian defense. This allowed special operations teams to infiltrate behind Armenian lines and seize observation points along the planned route of attack to provide intelligence, target coordinates, and battle damage assessments” (Andrews, 2021, p. 4). Azerbaijan’s tactical use of their UAVs was working not only well in plain territory but also “This tactic worked well in mountainous

territory the Armenians thought would be easy to defend. In the mountains, there is only one road connecting the front to the rear, which made it even easier for drones to spot targets “(Gressel, 2020).

Azerbaijan also targeted “lines of communication to slow Armenian reinforcements and supplies reaching the front. Azerbaijan ground forces alternated between conducting deliberate attacks and consolidation on the objective, then preparation for the next advance while fires and EW continued to weaken Armenian forces” (Andrews, 2021, p. 4). Drones were also used to find Armenian reserves, “Bringing in artillery, multiple-rocket systems with cluster munitions, their own missiles, or using Israeli-made LORA ballistic missiles to destroy bridges or roads linking the reserves with the front” (Gressel, 2020). This also made one Armenian side unable to send reserves into battle and the second Azerbaijan force’s job relatively easier as” The Azeri army could move in any number it wished to overwhelm the isolated Armenian positions. This procedure was repeated day after day” (Gressel, 2020).

In most engagements, the Azerbaijan Army used the Bayraktar TB-2s and Israeli-made loitering munitions to destroy the Armenian military’s land warfare platforms. In the aftermath of the clashes, “Azerbaijan’s pressing drone warfare operational tempo eliminated more than 40 Armenian main battle tanks (T-72 variants), more than 15 infantry fighting vehicles and armored personnel carriers (APC) and more than 30 pieces of artillery and multiple-launch rocket systems in total” (Kasapoglu, 2021, p.20). “Over the course of a six-week war, Azerbaijan’s somewhat larger and significantly more modern military proved superior to the forces of Armenia and the self-declared, Armenian-backed Nagorno-Karabakh republic” (Hedenskog et al., 2020, p. 1). “In 2020, Azerbaijan not only recaptured Armenian controlled territories outside the Nagorno-Karabakh Autonomous Region, but also conquered and ethnically cleansed several districts of the former autonomy itself” (Saparov, 2022, p. 61).

The Second Nagorno-Karabakh War showed that without proper defence systems such as radars, sensors, and counter-drone weapon systems, the traditional ground forces are in big trouble. The results of the war speak on that aspect as by mid-October, 2020, according to the official declarations, “the Azerbaijani offensive had destroyed more than 190 main battle tanks and armored vehicles in total. Open-source monitoring reported total Armenian losses in the main battle tank and armored vehicles segments at around 110 platforms during the same period”

(Kasapoglu, 2021, p.20). By the end of the war, the same open-source intelligence outlets confirmed 190 main battle tank losses for the Armenians in total, along with some 100 armored personnel carriers and infantry fighting vehicles” (Kasapoglu, 2021, p.20). “The Armenian defensive along the Nagorno-Karabakh front collapsed for several reasons. Among them, obsolescent conscription and mobilisation patterns, chronic reliance on Soviet doctrines and, more importantly, the Armenian leadership’s lack of modern warfare understanding loom large.” (Kasapoglu, 2021, p.25). while the Armenians thought they were prepared for Azerbaijan attacks, but they were outclassed in every sense when it comes to tactical aspects of the war. In general, after the war, the total estimated costs of the Armenian army’s military equipment destroyed and captured were “by the Azerbaijani forces during the war is estimated to be \$4.008 billion, according to data compiled by the researchers at the Economic Research Institute of the university” (Mehdiyev, 2020).

Another strategy which was used by both sides was “A propaganda campaign on social media that showed the destruction of enemy equipment and personnel. Azerbaijan was particularly effective with the daily release of full motion video showing the effectiveness of the precision weapons” (Andrews, 2021, p. 4). It can be argued that this tactic is one of the main reasons why UAVs seemed so powerful and why so much attention was directed towards UAVs. “Although Armenia deployed some of their own indigenously produced drones, and later footage showed their side using the more sophisticated Russian-made Orlan-10 UAV, it was Azerbaijan who took control of the skies” (Shaikh, Rumbaugh, 2020)

The second Nagorno-Karabakh war is a prime example of how the tactical use of drones gives an even more significant advantage in specific situations than conventional aircraft can give. Turkey played an essential role for Azerbaijan to win this war. “For Turkey, the war in Karabakh was a showcase for Ankara’s growing role in the strategically important South Caucasus. The victorious Azerbaijani military was supplied, trained, and supported by the Turkish army” (BBC, 2020). As for answering the central question of the research: Why opt for military drones in case of air superiority? The answer, considering all of the factors mentioned above, is that there is no single one reason as for why Azerbaijan used military drones instead of conventional aviation. There is a combination of answers which, in the end, made Azerbaijan use its military drones. The first reason is that price drones are significantly cheaper than their manned counterparts. The

second reason is that Armenia had no radar systems that could counter drones, but they were absolutely capable of dealing with conventional aircraft. The third reason is tactical, as Azerbaijan had superior tactics with superior weapon systems that were more modern and capable, which, in the end, neutralised the main advantage of the Armenian army, which was fighting in the mountains.

National Security Strategy Documents of Armenia and Azerbaijan

While examining Armenia's national security strategy, a couple of points were interesting to me. First, Armenia calls its national security strategy a defensive doctrine in nature. According to the military doctrine of the Republic of Armenia, the main aim of the doctrine is to ensure constant protection and the security of the Republic of Armenia, as well as the security of fundamental values. The second point is that Armenia acknowledges that alliances against the Republic of Armenia are strengthening and expanding. This point especially concentrates on the strategic alliance of Turkey and Azerbaijan and how they are trying to maintain a blockade of Armenia. The third point is about how Azerbaijan tries to resolve the Nagorno-Karabakh issue by using force. Armenia acknowledges that the continuous build-up of a state that is hostile towards Armenia jeopardizes regional peace and stability. While this is a crucial point coming from Armenia to acknowledge potential threats, it is also important to note what Armenia is doing during this period. As mentioned above, how Armenia approached this war while acknowledging all the potential threats and issues in their national security strategy document makes no sense. What this means is that, first, Armenia failed to counterbalance the growing disbalance in military power with Azerbaijan. As time passed, Azerbaijan started to acquire more and more weapon systems where Armenia failed to innovate and catch up. "The balance of power methodically shifted against Armenia, largely due to its failure to understand the emerging challenges to its own security, prosperity and regional influence" (Kopalyan, 2021).

The issue at hand is that Armenia acknowledged that the gap in the balance of power was growing in favour of Azerbaijan and still did nothing to balance it. However, somehow, they still believed that they were on par with Azerbaijan in terms of military power. The Armenian side also believed that in case of war, both countries would suffer. The Armenian side believed that they had an advantage in case of war because of the mountain terrain. The costs of having such a war for Azerbaijan would have been costly, and Armenia did not even believe it was possible for Azerbaijan to have a lengthy war in those circumstances. Another factor is how overconfident the defence minister of Armenia was while announcing "that Armenia's policy was no longer "land for peace" but "war for new territories." If Azerbaijan dared to initiate another war, Armenia would take more Azerbaijani territory "(Reynolds, 2021). Armenian national security

strategy document states that it is a defensive doctrine, while its defence minister argues on the contrary. If Armenia was confident because they thought Russia would help them, this was not the case, as we saw later once war broke out. For Russia, over the last two decades, "the Kremlin has been under no illusions that, with a petrodollar-fuelled Azeri defence budget three times the size of Armenia's, the balance of power has been inexorably tilting towards Azerbaijan" (BBC, 2020). Somehow, Armenia failed to understand that even Russia was not willing to help them.

Azerbaijan's national security strategy right away identifies Armenia as a significant challenge to Azerbaijan's national security. According to the national security strategy document of Azerbaijan, the territory of the Republic shall be united, inviolable and indivisible. Furthermore, the restoration of its territorial integrity by making use of all means laid down in international law is a vital objective of the National Security Policy of the Republic of Azerbaijan. The main goal of this strategy is to first Protect the independence and sovereignty of the Republic of Azerbaijan, restoring its territorial integrity and ensure control over its territory, and second, Maintain the capability of the Armed Forces of the Republic of Azerbaijan to mobilize and to conduct military operations for the purpose of preventing and repulsing foreign armed aggression. It is interesting that the Azerbaijan side is still willing to peacefully settle the conflict in the framework of the OSCE Group with a view to eliminating the consequences of the aggression against it and ending the occupation of a part of its territory. The whole idea of the national security strategic document is to help the development of military structure by acquiring modern defensive and offensive capabilities, developing the effective capacity to counter opposing military operations and developing and strengthening special forces.

The difference between the two documents is visible right away. At the same time, Armenia tries to acknowledge the upcoming threats, such as Azerbaijan getting stronger by acquiring more modern military weapon systems and having strategic connections with Turkey. They are doing nothing to counter these developments to balance the growing imbalance between the countries. Another aspect is that while Azerbaijan expanded their relationship with Turkey on the contrary Armenia made its only partner not even to help them when war broke out. Armenian side was overconfident to the point of delusion where Azerbaijan acknowledged its weaknesses and made sure to strengthen them by Acquiring different types of weaponry so in case war broke out, they would have been prepared. Meanwhile, Armenia did not improve in any way they thought

victory in the first Nagorno-Karabakh war was good enough, and in case second war started the result would have been similar. Because for some reason, Armenia believed that the advantage of mountain terrain which played significant role for them to win in the first Karabakh war would have been enough. However, as we saw later, it was not even close as drones neutralized their main advantage.

6. Findings

The findings chapter of the thesis will look at all the critical aspects of the research. In this thesis, three theoretical approaches are used to explain and answer the central question of the thesis: Why opt for military drones in case of superiority in air space? Each theory contributes to explaining specific aspects of why Azerbaijan decided to use drones.

First, from the perspective of the balance of power theory, it is established that Azerbaijan, compared to Armenia in the Second Nagorno-Karabakh War, was superior in every aspect. Azerbaijan had more superior weapon systems that were more capable and advanced. Azerbaijan had more military personnel, and what is most important is that Azerbaijan had a significant advantage in air space as they could deploy more combat jets and helicopters than Armenia. While examining the Second Karabakh War through the lens of the balance of power theory, it is established that Azerbaijan was a superior power. However, an interesting aspect of this superiority is that Azerbaijan did not use it in their favour. In order to answer the question of why Azerbaijan decided not to use air superiority as their main advantage, it is essential to look at the Armenian weapon systems and radars. The most modern air-defence system Armenia has now is “The S-300PT and PS series and the 9K37M Buk-M1, were both developed in the 1980s. While the missiles are still potent, their sensors are designed to detect, identify and track fast-moving fighters, and their moving-target indicators disregard small, slow drones” (Gressel, 2020). Despite the fact that Armenia lacks new modern defence systems, it is still notable that against conventional aircraft, these systems are still more than potent enough. “Azerbaijan has an indisputable advantage in the numbers of aircraft and combat helicopters, but despite the much larger capacity of Azerbaijan’s air force over Armenia’s, both sides have air defense systems that make large-scale use of manned aviation costly” (Kofman, Nersisyan, 2020). Thus, Azerbaijan understood that using its main advantage against Armenia would have been much more costly than it would have liked. The solution to this was using military drones instead, which Armenia had no chance to defend against.

Second, from the perspective of military cost and benefit analysis, it is established that Azerbaijan overall had spent significantly more than Armenia for its military arms build-up until

2020. According to SIPRI, the volume of Azerbaijan's imports compared to Armenia was eight times higher. "In 2020, Armenia's military spending accounted for 4.9 per cent of its gross domestic product (GDP), and Azerbaijan's accounted for 5.4 per cent" (Wezeman et al, 2021). However, military spending levels in US dollars are not even close as, according to Statista, "In 2020, Armenian spent US\$ 634 million and Azerbaijan spent US\$2237.8 million" (Statista, 2023). Thus, Azerbaijan was able to acquire different types of drones, which were later used to gain superiority in air space even without using conventional aviation. Another aspect of this question is the price comparison between different types of drones and conventional aviation. According to the military today, "The unit cost of the Bayraktar TB2 is around \$5 million" (Military Today, 2023). Another drone which was used is the Hermes 900, which, according to Janes data, "The Hermes 900 ranges in price between USD 5.83 million and USD 6.85 million per unit" (Kadidal, 2022). During the second Karabakh war, Azerbaijan also used smaller drones such as The Hermes 450, which was "made by Elbit Systems, is a medium-sized drone designed for reconnaissance and surveillance missions, and can fly for over 20 hours straight. Each drone costs about \$2 million" (Berman, 2013).

While if we look at the conventional aviation of the Azerbaijan army, it is visible right away that conventional aircraft cost much more than military drones. Azerbaijan has in their arsenal Mig-29, which, according to the Aviationist, "New price for a MiG-29, depending on version, ranges from approximately \$11-20 million USD" (Demerly, 2019). The price of mi - 35 attack helicopters, according to Aeroconner, will roughly cost US\$36 million. Not only are the prices high for attacking aviation but also for transporting aircraft such as the Alenia C-27J Spartan, which has an estimated price of US\$33 million (Aeroconner). Similarly, "The Ilyushin IL-76 is a strategic and tactical airlifter designed by Ilyushin powered by four Soloviev D-30 turbofan engines. Estimated price is US\$50 million" (Aeroconner). Looking at the price of this weaponry and also taking into consideration that Armenia had a weapon system which could counter conventional aircraft in case Azerbaijan used any, it is understandable as to why Azerbaijan opted for military drones in the end. There is less price to pay if Armenia were able to destroy drones, while there is much more price to pay if Armenia managed to destroy Azeri conventional aviation.

Third, from the perspective of military strategic theory, Azerbaijan used drones in a way that gave Armenian defence systems and ground forces no chance to counter. “Unmanned aircraft overwhelmed a conventional ground force, grinding it down to the point of impotency and paving the way for the Azeri ground forces to roll in and take possession of a strategic chokepoint” (Rubin, 2020, p. 5). Drones allowed Azerbaijan forces “To reconnoitre first the Armenian position and then the placement of reserves. Armenian positions then could be extensively shelled with conventional artillery, weakening their defences” (Gressel, 2020). According to Andrews, it was possible because Armenian forces lacked tactical proficiency while manoeuvring. Thus, “Azerbaijani UAS were able to detect Armenian units in camouflaged positions with the use of electro optical and thermal cameras” (Andrews, 2021, p. 4). Armenian forces also lacked any type of weapon which could counter drones. However, even in the case of Armenians having something to counter drones with, it is less likely they could also counter Israeli Harop: “The Azeris also used the Israeli Harop loitering munition, which was able to work under adverse conditions (although at reduced effectiveness) as it does not, unlike drones, require a guidance link” (Gressel, 2020). The main takeaway from a strategic standpoint is that Azerbaijan was able to utilise drones in a way that Armenia forces had no chance to counter in any way. While Azerbaijan’s use of drones was impressive, it is notable that Turkey played a significant role in helping Azerbaijan to win this war. The first contribution was that Azerbaijan bought different weapons systems from Turkey, more notably Bayraktar TB2, which was the highlight of the war. “For Turkey, the war in Karabakh was a showcase for Ankara’s growing role in the strategically important South Caucasus. The victorious Azerbaijani military was supplied, trained, and supported by the Turkish army” (BBC, 2020).

7. Conclusion

In this thesis, the Second Nagorno-Karabakh War in 2020 was examined from the perspective of three theoretical approaches. The case of the Second Nagorno-Karabakh War is a pretty unique example of why countries with superior military power, especially in terms of superiority in air space, might decide to use drones instead of conventional aircraft. While not much research has been done on this topic, the idea of not using your main advantage against your enemy and still achieving more than you wished for is quite intriguing. The main objective of this research is to find out how these different theoretical approaches can explain the reasons why Azerbaijan opted for military drones instead of conventional aviation.

In the process of writing this thesis, I have tried to explain a very specific situation where one country has a significant advantage over another country but decides not to use this advantage and opts for a different solution, which is the use of military drones. The Second Nagorno-Karabakh War is unique in this sense because of specific reasons which explain why Azerbaijan opted for military drones instead of using their main advantage in air space conventional aviation. Three theoretical approaches were chosen for this research in order to answer the question: Why opt for military drones in case of superiority in air space? Each theory gave a specific explanation as to why Azerbaijan opted for drones. However, there are other factors that played a significant role in Azerbaijan's decision to go with drones. Armenia had no defence systems against drones, which is as important as knowing that in case Azerbaijan used their advantage and brought out conventional aviation, Armenia could defend against them. The price which Azerbaijan would have paid if they used their conventional aviation is significantly more than they would have paid, even if Armenia managed to destroy their drones, is not comparable. In some cases, conventional aviation costs five or ten times more than military drones.

The thesis was designed to be a single case study which adopted a qualitative approach. In this case, the qualitative approach is the most appropriate approach to such a study. Three theoretical approaches were adopted in order to see how they would explain Azerbaijan's decision to use drones instead of its conventional aircraft in the Second Nagorno-Karabakh War. While

analysing the Second Karabakh War, I also analysed their national security documents to look at how they acknowledged incoming threats and how they approached this war.

The goal of the research was to determine the factors which contributed to the use of drones instead of conventional aircraft in Azerbaijan, which has been successfully determined. However, looking at this study from a very specific window is another critical aspect. What this means is that Azerbaijan preferred drones because of specific reasons, and because of those reasons, they were successful in achieving their goal. This case does not prove that in every situation, if we apply a similar solution, the result will be a success. This case proved that in situations where one country is significantly superior to another, in situations where another country does not have proper countermeasures against drones but can defend against conventional aviation, drones are a viable option. However, if these specific requirements are not met in some cases, using drones against opponents who can counter drones easily wastes resources and money.

Bibliography

- Aerocorner. Alenia C-27J Spartan. <https://aerocorner.com/aircraft/alenia-c-27j-spartan/>
- Aerocorner. Ilyushin IL-76. <https://aerocorner.com/aircraft/ilyushin-il-76/>
- Arms Control Association. (2019). Missile Defense Systems at a Glance. <https://www.armscontrol.org/factsheets/missiledefenseataglance>
- Albino, D, Friedman, K, Bar-Yam, Y, Glenney, G, W. (2016). “Military Strategy in a Complex World”. <https://arxiv.org/abs/1602.05670v2> (last accessed 08.11.2023)
- Aerocorner. Mil Mi-24, Mi-25, Mi-35. <https://aerocorner.com/aircraft/mil-mi-35-24d/>
- Avdoyan, L. (1995). Nagorno Karabakh: An historical perspective. *International Journal on Group Rights*, 3(2), 161–167. <http://www.jstor.org/stable/24674479>
- Boyle, J, M. (2013). “The cost and consequences of drone warfare” *International Affairs*, 89(1), 1–29. <https://doi.org/10.1111/1468-2346.12002>
- Broadman, E, Anthony, Greenberg, H, David, Vining, R, Aidan, Weimer, L, David. (2011). “Cost-Benefit Analysis Concepts and Practice” *Boston: Prentice Hall* 4th ed 2-3. <https://doi.org/10.1017/9781108235594>
- BBC News. (2020). Armenia and Azerbaijan fight over disputed Nagorno-Karabakh. <https://www.bbc.com/news/world-europe-54314341> (Last accessed 15.11.2023)
- Broers, L. (2021). Requiem For the Unipolar Moment in Nagorny Karabakh. <https://bit.ly/3NbuGgj> (Last accessed 25.11.2023)
- Berman, L. (2013). Israel intentionally crashes UAV after detecting malfunction. *The times of Israeli*. <https://www.timesofisrael.com/israel-intentionally-crashes-uav-after-detecting-malfunction/>
- Britannica, T. Editors of Encyclopaedia (2023). *missile*. *Encyclopedia Britannica*. <https://www.britannica.com/technology/missile> (Last accessed 01.12.2023)
- Betts, K, R. 2000.” Is Strategy an Illusion?”. *International Security* 25(2), 5–50. <https://www.jstor.org/stable/2626752>
- Brodie, B. (1949). “Strategy as a Science”. *World politics* 1(4), 467–488. <https://www.jstor.org/stable/2008833>

- Britannica, T. Editors of Encyclopaedia. (2023). *surface-to-air missile*. *Encyclopedia Britannica*. <https://www.britannica.com/technology/surface-to-air-missile>
- Cohen, A, E. (2023). “Strategy Military”. (last accessed 10.09.23). <https://www.britannica.com/topic/strategy-military>
- Chorbajian, L, Donabedian, P, Mutafian, C. (1994). “The Caucasian Knot: The History and Geopolitics of Nagorno-Karabagh”. *Zed Books*. https://books.google.ee/books?hl=en&lr=&id=OUlnYdOHJ3wC&oi=fnd&pg=PR8&ots=v4z4m9H6Dr&sig=Tixoyi87Q-obSoZ14U98zxHf2Vg&redir_esc=y#v=onepage&q&f=false (Last accessed 06.11.2023)
- Cox, C, Eibner, J. 1993. Ethnic Cleansing in Progress: War in Nagorno-Karabakh. *Institute for Religious Minorities in Islamic World*. <https://www.csi-int.org/app/uploads/sites/13/2023/08/EN-Report-Cox-Eibner-English.pdf> (Last accessed 11.11.2023)
- Calcara, A, Gilli, A, Gilli, M, Marchetti, R, Zaccagnini, I. 2022. “Why Drones Have Not Revolutionized War: The Enduring Hinder-Finder Competition in Air Warfare. “*International Security* 46(4), 130-171. https://doi.org/10.1162/isec_a_00431
- Companjen, F. J. (2010). Nagorno-Karabakh: Embedded in Geo-politics. *Atlantisch Perspectief*, 34(4), 9–14. <https://www.jstor.org/stable/48580809>
- Creswell, W, J. (2009). Research design: Qualitative, quantitative, and mixed method approaches. *SAGE Publications*. https://www.ucg.ac.me/skladiste/blog_609332/objava_105202/fajlovi/Creswell.pdf
- Demerley, T. (2019). “For \$4.65 Million This Nice, Low Time MiG-29 Can be Yours- IF you Hurry. The Aviationist”. <https://theaviationist.com/2019/01/07/for-4-65-million-this-nice-low-time-mig-29-can-be-yours-if-you-hurry/>
- Dash. L. P. (1989). Nationalities Problem in USSR: Discord over Nagorno-Karabakh. *Economic and Political Weekly*, 24(2), 72–74. <http://www.jstor.org/stable/4394241>
- Fuhrmann, M, Horowitz, C, M. 2017. “Droning On: Explaining the Proliferation of Unmanned Aerial Vehicles” *International Organization*, 71(2), 397-418. doi:10.1017/S0020818317000121
- Gressel, G. (2020). Military lessons from Nagorno-Karabakh: Reason for Europe to worry. *European Council on Foreign Relations*. <https://ecfr.eu/article/military-lessons-from-nagorno-karabakh-reason-for-europe-to-worry/> (Last accessed 15.11.2023)

- Gray, C, S. (2014). “Politics, Strategy, and the Stream of Time”, *Infinity Journal* Volume 3(4), 4–9. <https://www.militarystrategymagazine.com/article/politics-strategy-and-the-stream-of-time/>
- Gilli, A, Gilli, M. (2016). “The Diffusion of Drone Warfare? Industrial, Organizational and Infrastructural Constraints” *Security Studies*, 25(1), 50–84.
<https://doi.org/10.1080/09636412.2016.1134189>
- Grafov, D. (2019). “Offensive versus Defensive Realism: Russia’s Policy of Countering the United States in Syria and Beyond”. *Contemporary Arab Affairs*, 12(3), 21–40.
<https://www.jstor.org/stable/48599823>
- George, T. (2023). What Is an Observational Study? Guide & Examples. Scribbr. <https://www.scribbr.com/methodology/observational-study/> (Last accessed 02.12.2023)
- Hayrapetyan, L. (2022). The Nagorno-Karabakh war of 2020 and the change of the regional status quo. *University of Warsaw*. DOI: 10.14746/pp.2022.27.1.6
- Hirschfeld, K., de Beurs, K., Brayfield, B., Melkonyan-Gottschalk, A. (2023). The Karabakh Conflict, 1988–1994. In: *New Wars and Old Plagues*. Palgrave Macmillan, Cham, 31-46.
https://doi.org/10.1007/978-3-031-31143-7_3
- Hedenskog, J, Lund, A, Norberg, J. (2020). The End of the Second Karabakh War: New Realities in the South Caucasus. *Swedish Defence Research Agency*.
- Hijazi, A, Ferguson, J, C, Ferraro, R, F, Hall, H, Hovee, M, Wilcox, S. (2017). “Psychological Dimensions of Drone Warfare” *Current Psychology*, 38, 1285–1296.
<https://doi.org/10.1007/s12144-017-9684-7>
- Hambling, D. (2020). “The ‘Magic Bullet’ Drones Behind Azerbaijan’s Victory Over Armenia” *Forbes*. (last accessed 07.09.2023)
<https://www.forbes.com/sites/davidhambling/2020/11/10/the-magic-bullet-drones-behind--azerbajjans-victory-over-armenia/?sh=662509415e57>
- Hovhannisyan, N. (2004). The Karabakh Problem: The Thorny Road to Freedom and Independence” *Armen and Bersabe Jerejian Foundation*. <https://karabakhfacts.com/nikolay-hovhannisyan-the-karabakh-problem-the-thorny-road-to-freedom-and-independence/> (Last accessed 15.11.2023)
- Hitch, J, C, McKean, N, R. (1960). “The Economics of Defense in the Nuclear Age” *CA: RAND Corporation*. <https://www.rand.org/pubs/reports/R346.html>.

Hetch, E. (2022). "Drones in the Nagorno-Karabakh War: Analyzing the Data." *Military Strategy Magazine* 7(4) 31–37. <https://www.militarystrategymagazine.com/article/drones-in-the-nagorno-karabakh-war-analyzing-the-data/> (last accessed 08.25.2023)

Imperial War Museum "A brief history of drones." <https://www.iwm.org.uk/history/a-brief-history-of-drones> (last accessed 09.14.2023).

Iskandarov, K., Gawliczek, P. (2021). Characteristic features of the second Karabakh war. *Social Development and Security*, 11(3), 30-40. <https://doi.org/10.33445/sds.2021.11.3.3>

Jiang, W, Marggraf, R. 2021. "The origin of cost-benefit analysis: a comparative view of France and the United States" *Cost Effectiveness and Resource Allocation*, 19. <https://doi.org/10.1186/s12962-021-00330-3>

Joshi, S, Stein, A. (2013). "Emerging Drone Nations." *Global Politics and Strategy* 55(5) 53–78. <https://doi.org/10.1080/00396338.2013.841805>

Kofman, M, Nersisyan, L. (2020). The Second Nagorno- Karabakh war, Two Weeks In. *War on the Rocks*. <https://warontherocks.com/2020/10/the-second-nagorno-karabakh-war-two-weeks-in/> (Last accessed 20.11.2023)

Kadidal, A. (2022). Thai navy orders Hermes 900 UAVs. *Janes*. <https://www.janes.com/defence-news/news-detail/thai-navy-orders-hermes-900-uavs>

Kasapoglu, C. (2021). Hard Fighting in The Caucasus: The Azerbaijani Armed Forces' Combat Performance and Military Strategy in the 2020 Nagorno-Karabakh War. *Sam Papers* 18. <http://sam.gov.tr/pdf/sam-papers/SAM-Papers-No.-18.pdf>

Kopalyan, N. (2021). "Why Armenia Lost and Why Azerbaijan Will Also Lose: The trappings of Strategic Narcissism" <https://evnreport.com/opinion/why-armenia-lost-and-why-azerbaijan-will-also-lose-the-trappings-of-strategic-narcissism/>

Military today. (2023). Bayraktar TB2 Unmanned aerial combat vehicle. https://www.militarytoday.com/aircraft/bayraktar_tb2.htm

Modebadze, V. (2021). "The Importance of Drones in Modern Warfare and Armed Conflicts" *KutBilim Sosyal Bilimler ve Sanat Degisi*, 1(2), 89–98. <https://dergipark.org.tr/en/pub/kutbilim/issue/69586/1110169>

Marson, J, Forrest, B. (2021). "Armed Low-Cost Drones, Made by Turkey, Reshape Battlefields and Geopolitics" *Wall Street Journal*. (last accessed, 07.09.2023)

<https://www.wsj.com/articles/armed-low-cost-drones-made-by-turkey-reshape-battlefields-and-geopolitics-11622727370>

Melese, F, Ritcher, A, Solomon, B. (2015). “Military Cost-Benefit Analysis (CBA): Theory & Practice” *Routledge Studies in Defence and Peace Economies* (1) 1–25.

<http://hdl.handle.net/10945/43577>

Mearsheimer, J. (2007). “Structural realism” *International relations theories: Discipline and diversity* 83, 77-94.

Melander, E. (2001). The Nagorno-Karabakh Conflict Revisited: Was the War Inevitable? *Journal of Cold War Studies*, 3(2), 48–75. <https://www.jstor.org/stable/26925121>

Morgan, J. S., Pullon, H. R. S., Macdonald, M. L., McKinlay, M. E., Gray, V B. (2017). Case Study Observational Research: A Framework for Conducting Case Study Research Where Observation Data Are the Focus. *Sage Journals* 27(7), 951–1114.

<https://doi.org/10.1177/1049732316649160>

Military doctrine of Armenia (2007).

https://www.files.ethz.ch/isn/155588/Armenia%20Military%20Doctrine%202007_eng.pdf

Mehdiyev, E. (2021). Security Sector Reform in Azerbaijan: Key Milestones and Lessons Learned. *Geneva Centre for Security Sector Governance*.

https://www.dcaf.ch/sites/default/files/publications/documents/SSR_in_Azerbaijani_feb2021.pdf

National Security Strategy of The Republic of Armenia. (2020).

<https://www.mfa.am/filemanager/security%20and%20defense/Armenia%202020%20National%20Security%20Strategy.pdf>

National security concept of the Republic of Azerbaijan. (2007).

<https://www.files.ethz.ch/isn/154917/Azerbaijan2007.pdf>

Office of the Deputy Assistant Secretary of the Army. (2018). “U.S. Army Cost Benefit Analysis Guide” <https://www.asafm.army.mil/Portals/72/Documents/Offices/CE/US%20Army%20Cost%20Benefit%20Analysis.pdf> (Last accessed 03.12.2023)

Posner, A, Richard, (2000). “Cost-Benefit Analysis: Definition, Justification, and Comment on Conference Papers” *The Journal of Legal Studies* 29 (2): 1153–1177.

<https://doi.org/10.1086/468108>

Ponelis, R., S. (2015). Using Interpretive Qualitative Case Studies for Exploratory Research in Doctoral Studies: A case of Information Systems Research in Small and Medium Enterprises.

International Journal of Doctoral Studies 10, 535–550. <https://ijds.org/Volume10/IJDSv10p535-550Ponelis0624.pdf>

Reynolds, A, M. (2021). Confidence and catastrophe: Armenia and The Second Nagorno-Karabakh War. *War on The Rocks*. <https://warontherocks.com/2021/01/confidence-and-catastrophe-armenia-and-the-second-nagorno-karabakh-war/> (Last accessed 03.11.2023)

Ruys, T, Silvestre, R, F. (2021). Military Action to Recover Occupied Land: Lawful Self-defense or Prohibited Use of Force? The 2020 Nagorno-Karabakh Conflict Revisited. *Stockton Center for International Law* 97, 665-732. <https://digital-commons.usnwc.edu/ils/vol97/iss1/31/>

Shaikh, S, Rumbaugh, W. (2020). The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense. Center For Strategic & International Studies. <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense> (Last accessed in 02.12.2023)

Saparov, A. (2022). Place-name wars in Karabakh: Russian Imperial maps and political legitimacy in the Caucasus. *Central Asian Survey*, 42(1), 61–88. <https://doi.org/10.1080/02634937.2022.2085664>

Sheehan, M. (1996). “The Balance of Power History and Theory” *Routledge* 1-236.

Schweller, L, R. (2016). “The Balance of Power in World Politics” *Oxford Research Encyclopedia of Politics*. <https://doi.org/10.1093/acrefore/9780190228637.013.119>

Stulberg, N, A. (2007). “Managing the Unmanned Revolution in the U.S Air Force.” *Orbis*, 51(2), 251-265. <https://doi.org/10.1016/j.orbis.2007.01.005>

UNESCO. (2001). Shusha historical and architectural reserve. [Susha historical and architectural reserve - UNESCO World Heritage Centre](https://whc.unesco.org/en/whv/100) (last accessed 10.10.2023)

SIPRI. (2023). Major Arms Transfer Database. <https://doi.org/10.55163/SAFC1241> (Last accessed 01.12.2023)

Uhlig, M. A. (1993). The Karabakh War. *World Policy Journal*, 10(4), 47–52. <http://www.jstor.org/stable/40209334>

Vogel, R., J. (2010). “Drone Warfare and the law of armed conflict” *Denver Journal of International Law and Policy*, 39(1), 101-138. <https://heinonline.org/HOL/P?h=hein.journals/denilp39&i=101>

Waltz, N, K. (1959). “Man, the State and War” *Columbia University Press* 1-253.

- Wanddell, M, C. (1961). Surface-To-Air Guided Missile Systems Methods of Tactical Analysis. *Defense Technical Information Center*, 1-150. <https://apps.dtic.mil/sti/citations/tr/AD0258634>
- White, K. (2021). “Strategy: Theory for practice and the use of history” *Comparative strategy* 40(2), 133–137. <https://doi.org/10.1080/01495933.2021.1880812>
- Weise, Z, Cienski, J, Herszenhorn, M, D. (2020). The Armenia-Azerbaijan conflict explained what you need to know about the deadly clashes over the region of Nagorno-Karabakh. *Politico*. <https://www.politico.eu/article/the-nagorno-karabakh-conflict-explained-armenia-azerbaijan/>
- Welt, C, Bowen, S, A. (2021). Azerbaijan and Armenia: The Nagorno-Karabakh Conflict. *Congressional Research Service*. <https://sgp.fas.org/crs/row/R46651.pdf> (Last accessed 18.11.2023)
- Yin, K, R. (2014). Case Study Research: Design and Methods. *Sage Publications, Inc*.
- Zinnes, A, D. (1967). “An Analytical Study of the Balance of Power Theories” *Journal of Peace Research* 4 (3): 270-288. <https://www.jstor.org/stable/422670>