THE USE OF ARTIFICIAL INTELLIGENCE IN THE DEFENSE SYSTEM WITHIN THE FRAMEWORK OF THE POLICY MAKING CYCLE: THE CASE OF THE UNITED STATES

POLİTİKA YAPIM DÖNGÜSÜ ÇERÇEVESİNDE YAPAY ZEKÂNIN SAVUNMA SİSTEMİNDE KULLANILMASI: AMERİKA BİRLEŞİK DEVLETLERİ ÖRNEĞİ

Fatih ULAŞAN[*]

ABSTRACT

Today, artificial intelligence (AI) has become a field of study that will shape the future in many ways (economic, military, social, cultural and political) and has filled the agendas of nearly all countries of the world. Many countries have realized that this technology can change the balance of power between countries and have begun to develop AI policies. In these policies, areas to invest in the future of the countries have been determined and designs have been made to support these investments with AI. In addition, AI policies differ between countries, and the focus of studies is shaped by the goals, historical and social structures and political objectives of the countries. However, it is very important for public administrators to understand which public policy is most effective and what principles they should pay attention for the formation of public policies. Today, AI seems useful for the public policy process and is thought to be able to help public managers make and implement better decisions. The United States (the U.S.) also have carried out serious studies on AI and have implemented regulations to benefit from AI in the defense industry and policy making processes. The U.S. strategically takes care of AI and considers it as a power component of its national security. The U.S. has made AI as a part of its national security approach and started to develop its defense industry in this direction. In the study, the US's strategic approach and development on AI is analyzed and the use of AI in the U.S. defense industry is examined within the framework of the policy-making process.

Keywords: *United States, Artificial Intelligence, Technology, Defense Industry, Policy Making Cycle, Public Administration*

[*] Dr, Republic of Türkiye Ministry of Justice, E-mail: fatih_ulasan@hotmail.com, ORCID: 0000-0003-3301-4823, Zonguldak, Türkiye.

ÖZ

Günümüzde, yapay zekâ, ekonomik, askeri, sosyal, kültürel ve politik açıdan geleceği çok yönlü şekillendirecek ve neredeyse tüm dünya ülkelerinin gündemini dolduracak bir çalışma alanı olmuştur. Birçok ülke bu teknolojinin ülkeler arasındaki güç dengelerini değiştirebileceğini anlamış ve yapay zekâ politikaları geliştirmeye başlamıştır. Bu politikalarda ülkelerin geleceği için yatırım yapılacak alanlar belirlenmiş ve bu yatırımlar yapay zekâ ile desteklenmesi üzerine tasarımlar yapılmıştır. Ayrıca yapay zekâ politikaları ülkeler arasında farklılık göstermekte ve çalışmaların odak noktaları ülkelerin hedefleri, tarihsel ve sosyal yapıları ve politik amaçları üzerinde şekillenmektedir. Bununla birlikte, kamu yöneticilerinin hangi kamu politikasının en etkili olduğunu ve kamu politikasını oluştururken hangi ilkelere dikkat etmeleri gerektiğini anlamaları oldukça önemlidir. Bugün için yapay zekâ, kamu politikası süreci için yararlı gözükmekte ve kamu yöneticilerinin daha iyi kararlar almasına ve bunları uygulamasına yardımcı olabileceği düşünülmektedir. Amerika Birleşik Devletleri (ABD), son yılların teknolojisi olan yapay zekâ üzerinde ciddi çalışmalar yapmakta ve kamu yönetiminde ve politika yapımında yapay zekâdan yararlanacak şekilde düzenlemeler yapmaktadır. ABD stratejik olarak yapay zekâya değer vermekte ve onu ulusal güvenliğinin bir güç bileşeni olarak görmektedir. ABD, yapay zekâyı ulusal güvenlik anlayışının bir parçası haline getirerek savunma sanayisini bu doğrultuda geliştirmeye başlamıştır. Çalışmada ABD'nin yapay zekâ konusundaki stratejik yaklaşımı ve gelişimi analiz edilerek politika yapım süreci çerçevesinde ABD'nin savunma sanayisindeki yapay zekâ kullanımı incelenecektir.

Anahtar Kelimeler: *Amerika Birleşik Devletleri, Yapay Zekâ, Teknoloji, Savunma Sanayisi, Politika Yapım Döngüsü, Kamu Yönetimi*

Introduction

National security is basically based on the protection of citizens, economies and other institutions of states. Problems of the defense of the country determine the form of security concerns with social and political contents. The nature of the measures to be taken against these situations varies depending on the scope and form of the threats. By fully defining the threats, the limits of the national security of the countries can be determined. In addition, any risk of negativity that may occur against the interests sought to be protected may also fall within the scope of the national security. The interests of countries are also an important element in national security. It serves the national interest by pursuing issues that will provide benefits for the country. How the interests of rights will be determined, who will decide this and by what methods the interests will be achieved are crucial problems (Birdişli, 2011, 165-166). Machiavelli states that the essential thing for security is to have a strong defense. He also said that one of the best ways to protect the state was to have strong armies (Machiavelli, 2005: 64 and 70). Therefore, since states must ensure their security against both internal and external problems and protect the national sovereignty, their armed forces and defense industry must be shaped according to the most advanced technological conditions and the defense industry must be very strong. The possession of the strong and deterrent defense and

modern weapons is only possible with a strong industry. The developments in technology, the increasing demand for information technologies in defense systems, the use of autonomous weapons and vehicles with AI in defense systems along with the developing technology, and the complexity and incomprehensibility of the decision mechanisms of these systems show that states cannot rely on the technology and equipment purchased from other states against the problems that may arise in the future. In this case, the national defense industry is very important for a country's security (Ziylan, 1997).

Almost every country produces a public policy to achieve certain goals. Policy analysis is about "who gets what" and, more importantly, "why" and "what difference it makes" (Dye, 2013: 11). These policies change according to the conditions of the time and increase the number, quality and variety of public services they provide. The social problems that states face are increasing gradually, and new possibilities for solving these problems are emerging. The increase in public services and social problems has forced states to produce more and more result-oriented public policies and has led to the formation of organizations to support public policies (Köseoğlu, 2013: 7). The public policies made by states shape the future of states, and the construction process takes time. Since public policies are generally long-term, it takes time for these policies to have an effect and people must be patient to see the effect of the policies. The costs of public policies impose a serious burden on states. The problems encountered in the policy-making process, the demands for eliminating these problems and improving the process, and the change in the management approach make the use of new methods in the process of the policy making a necessity (Nacak, 2016: 2).

Today, countries' defense industry strategies must be compatible with new technologies, especially AI. One of the most important reasons for this is the transformation created by AI in the military industry as a rapidly developing technological field. The possible effects of AI on the defense industry are large enough to change the balance in the global geopolitical competition and also have a big impact on the global security (Bahcecik, 2023).

States would like to improve their ability to protect their citizens, national interests and other sensitive values and take part in the global competition. Therefore, the discussion of how AI shapes the great power competition becomes increasingly important. In the current global system, the U.S. is one of the most important actors in the development of AI research and technologies. Because of this, it is necessary to understand the strategic understanding of the U.S., which holds the global leadership in AI technologies, and the way of the use of AI in its defense strategy. States that do not want to miss the opportunities offered by AI have entered into competition among themselves with their strategies in these defense areas. For this reason, states give more space to AI in their national strategies to enter into a global competition to achieve leadership or gain superiority in artificial intelligence. The strategic value provided by AI also causes it to be known as a power component. The U.S., which holds the global leadership in AI

technologies, researches and investments, has made AI as a part of the defense industry and described it as a technology that strengthens its place in the international system (Meltzer and Kerry, 2021). The study analyzes the US's strategic approach to AI. How the U.S. uses AI in the defense industry and its impact on its power strategy in the international system is examined. The U.S. is a country with the competent and trained manpower in research and development (R&D) in AI studies. Although the U.S. showed interest in AI since the 1960s, the interest started for the military field in the early 1990s. Later, as the political leaders showed interest in AI, investments in the military field increased and policy and strategy studies on AI deepened (King, 2023). In this article, the contribution of AI to the US military industry and the reflections of the US national strategy on the defense system will be examined within the framework of the policy making cycle. In the first part, the general information about AI and defense industry will be given. In the second part, the framework of the policy making cycle will be analyzed, the use of AI in the defense industry will be shown with cybersecurity and autonomous weapon systems through examples from other countries, and by giving examples specific to the U.S., it is tried to determine how the U.S. uses AI in the defense industry. It will be examined how AI is deployed and how it is structured as a component of the power strategy in the international system. In this article, based mainly on literature review, the opinions of foreign researchers on the use of AI in the U.S. defense system within the framework of the policy making cycle are evaluated. One of the reasons why the U.S. is taken as an example is that this state is very advanced in AI and actively uses the AI systems in the defense system. The method of the study includes historical analysis methods. In this article, document analysis is used. The information collected so far regarding the use of AI in the defense system is evaluated. Documents, books, reports, news, articles, government records, etc. are used in the article. In addition, the AI systems used by countries in the defense system are discussed according to their policy making processes. This study can inform readers about the position of AI in the defense system and can shed light on other researches.

The Related Concepts of Artificial Intelligence and Defense System

Historical Background of Artificial Intelligence in the U.S.

The history of AI policies in the U.S. dates back to the 1950s. The process, which started with the Dartmouth Conference in the U.S. in 1956, led to the emergence of AI as an academic discipline (McCarthy, Minsky, Rochester and Shannon, 2006). Later, the U.S. developed AI with the research and development activities carried out by the Defense Advanced Research Projects Agency (DARPA) institutions. The U.S. has made great progress in AI technologies, especially in the military industry. From 1957 to 1974, the interest in AI increased and AI studies accelerated. After developments in AI, computers have become able to save more data and have also been more accessible for the public and the public sector and cheaper. Thanks to the development of machine learning, algorithms enabling computers to acquire the information based on data forms (databases)

have become possible (Özkök, Keskin, Tanuğur, Önder Yorulmaz and Silahtaroğlu, 2023: 51). For example, Newell and Simon created the General Problem Solver and Joseph Weizenbaum created the ELIZA. These systems made advances toward the goals of the spoken language interpretation and the problem solving (AICorespot, 2021). Government institutions such as DARPA have discovered the potential of AI and have begun to fund the AI research, thinking that it can be useful in areas such as the defense industry, security and planning. The U.S. government has worked on a robot which that can transcribe and translate spoken languages and provide the highly efficient data processing (Anyoha, 2017). These developments in the AI technology have not only created the public interest in the U.S., but also started to attract the political and military attention. The foundations of the great interest in AI in the U.S. after 2000 were laid during the U.S. President Bill Clinton. With the issuance of Executive Order 12881, on November 23, 1993, he created the National Science and Technology Council to strengthen the White House's science and technology strategy and facilitate the adoption of new technologies. The US's interest in AI was first in military technology in the world, and its strategic and political interest increased over time. The U.S, which predicted the future in AI, showed more interest in AI than other states. However, over time, as the developments in AI decreased, this interest continued to decrease, and AI studies slowed down during the reign of George W. Bush, who served between 2001 and 2009. However, the interest in AI increased again during the reign of US President Barack Obama. The steps taken during the Obama administration were developed during the term of US President Donald Trump. The interest in AI has continued to deepen during the term of US President Joe Biden. Basically, the U.S. has laid the background for AI development studies with AI strategy documents (Bilgin and Küçükşabanoğlu, 2023: 281).

The U.S. generally uses AI to improve safety, democracy, confidentiality, confidentiality, public trust, models and computing sources to make them more available to AI R&D specialists, academics and industries. In order for the AI research to develop, new technological breakthroughs must be made and the scientific discovery must be made, and at the same time, economic competitiveness must be developed, as well as preventing future threats and supporting national security against attacks. The U.S. should ensure the reliability of AI by testing it through the use of AI with various technologies and industrial sectors. At the same time, appropriate technical standards must be developed for trustworthy, robust, reliable, secure, portable and interoperable AI systems (TASAM, 2019). The US Federal Strategy provides an action plan for implementation as well as developing a government-wide data strategy. The government seeks to completely take advantage of the value of data for the service and the public good, helping the implementation of ethical governance, informed design, and a culture of learning. Cloud computing is becoming part of an extraordinary digital revolution fuelled by the connection of numerous developing technologies such as big data, blockchain, machine learning, deep learning and AI. The U.S. uses AI in many places (Chraibi, 2020). An example is the COMPAS system, one of the risk assessment tools. COMPAS is a popular risk assessment tool in the United States and is used in both law enforcement and justice

institutions. Its purpose is to help make data-centered decisions through assessment (derived from 137 questions an offender answers in an interview and information from the offender's history), ultimately reducing recidivism and increasing non-offending. The system measures criminological factors such as previous criminal record and economic status, employment, salary and family history, providing a report with a calculated risk score from 1 to 10 that classifies the offender as low/medium/high risk. Courts have an impact on bail, sentencing and parole decisions (Gyuranecz, Krausz and Papp, 2019: 5-6).

Definition of the Defense Industry

The word of the defense means "resistance to attack" (Türk Dil Kurumu, 2023). Defense has become one of the most basic needs of the humanity, although it has political, economic and social dimensions. With the industrial revolution, the emergence of nation states, the control of the violence, the protection of the security of life and property, and the transition to social order, needs began to differentiate. With technological developments, there has been a compression of time and space. David Harvey (2010) tried to explain how technological developments affect societies by introducing the concept of time-space compression. Time-space compression causes spatial social realities to differentiate and spread rapidly, resulting in the formation of new social relations, meanings, structures and rules. With capitalism, the flow of life has accelerated and spatial barriers have disappeared in the world (Avcı, 2021:3791). For example, time-space compression can be understood by having the opportunity to be instantly informed about a situation happening in the world, to hear and see a conflict on the other side of the world at the same time as the people there, to intervene instantly and to reach it through technology. With the increase in population and the development of technology, the risk of major wars has increased, resources have begun to decrease, and it has become much easier to start wars and cause great destruction. Thanks to the technology, battlefields have also begun to change and the distinction between soldiers and civilians in war has changed as people started to fight with machines. With the development of the technology, the link between military power and the industrial system has become very strong, and the military power without the industrial connection remains very weak (Kennedy, 1983: 15).

The word of "*industry*" has Arabic origins and it is defined as all production activities that transform raw materials and semi-finished products into goods by utilizing labor and capital (Koç, 2017; Koç, Şenel and Kaya, 2018: 2). Defense industry is an industrial sector that produces and maintains the tools, equipment, equipment, weapons and ammunition needed for the defense of the country and is linked to the manufacturing industry. The defense industry is not a sector that is considered only from a commercial perspective; It is also a system where reliability, strategy, confidentiality, less external dependence and technological competence are considered. So as to ensure the security of the country, the defense industry provides armed forces with advanced technology

features and confidentiality-based defense systems. In addition, the defense industry meets the needs that require large resources locally within the country, providing economic and social benefits (Ziylan, 1998; Küçükoğlu, 2023:18-19). The development of the industrialization was also reflected in the military field over time and the arms industry developed. The goods that could be produced for the civilian industry could also be produced for the military over time, creating a very close relationship between the state and private capital. Defense is described as a combined product (Bulutoğlu, 1997: 270) and has two main benefits. It is for protection purposes and has a deterrent feature against internal and external enemies. Defense is essentially a service provided by states, and it is possible for everyone in society to benefit from this. Deterrent weapons provide equal benefits for all citizens even if they are not used, and in this respect, they are pure public goods, while protective weapons are partial/semi-public goods (Yayım, 2006: 41-44).

Problem Identification, Agenda Setting, and Policy Formulation

Problem identification means that problems in the public should be analyzed and the problems should be identified clearly. Agenda setting refers to which issues will be addressed by policy makers (Akdogan, 2011). Policy formulation can be considered as a framework which has the solution for problems in the public. All of them are tied together and they basically identify how policies arrive at the agenda (Zahariadis, 2007: 111). The preparation of an agenda and the identification of a problem which arises in any public interest determine the agenda in the process of solving the problem to a point where it can be considered to act upon the attention of government officials. The relationship between AI and agenda setting is an idea that AI can influence the agenda setting by helping the public administration collect and analyze citizen interests through various sensors. By the help of AI, it can easily have access to information sources from social media platforms so that problems can be easily identified and people's thoughts can be measured. For instance, AI can monitor common trends in public opinion and according to the analysis, governments can choose a policy for the common interests of the public. With the use of AI applications in public administration, it is possible to make more understandable, reliable and correct decisions in the policy making process. Governments can more easily identify individuals, organizations and other factors, or the situation with the highest risk on a particular subject, and prepare policies tailored to each situation, as well as examine previous policies and their effectiveness utilizing AI for the better understanding of the data taken before. AI can use the public sector data effectively to make solutions to social problems. In addition, AI can help to solve environmental problems and to promote the economic development (Önder and Saygılı, 2018:651-652).

Policy Adoption

Policy adoption is used in policy making process and policy-makers have to select the choice which can accept the old policy or alter the old policy or abandon the old policy and make a new one. For instance, the pressure for the new policy adoption might come

from policy entrepreneurs, the public or both of them. There can be many factors which influence countries` innovations of the existing policy. This may be difficult to comprehend the policymaking process without a particular attention to diffusion policy programs (Gültekin, 2014:64). There is the intense bargaining and discussion process among policy-makers until they have an agreed decision or a formal decision which comes from voting. The policy-making process is structured flexibly in its various stages. It is possible to be influenced by dominant views on popular issues. On matters that are difficult to understand, the best way is to get support from experts. Decision makers are likely to be influenced by many ideological, professional and personal factors. For example, voters of a political party have a great influence on the party. The identification of the issues and the prevention of negative possibilities from happening are essential for the successful operation of the policy made by AI. There are so many contributions which AI can give for the public administration (Perry and Uuk, 2019:9-11). For instance, an algorithm can analyze and compare the best outputs under each set of parameters given by humans. AI can make important contributions to the regulatory impact analysis (Köylü and Önder, 2017).

Policy Implementation

Policy implementation can be considered as one of the main steps in the policy making cycle. With policy implementation, embraced policies and strategies are carried into effect by public administrators. Policy implementation has an impact on the identification of issues, the formulation of strategies, the adoption of ideas, citizens` emotions, human recourses and financial capacity. Basically, if there are sufficient training, money, and human resources along with the right attitudes, inspiration, and beliefs to make something good take place, the effective and competent public administration policy can be implemented. When AI is involved in the policy implementation process, other factors such as the control of AI, the measures of risks coming from AI and the continuing observation of AI can be extra burdens for the public administration. In a survey, 46 percent of the respondents stated that AI facial recognition programs should be used by the police, 27 percent of respondents think that this system should not be used by the police, and 27 percent of respondents do not have any idea. Additionally, if the facial recognition system becomes widespread, 33 percent of respondents think that the crime rate will decrease, 57 percent of respondents say that the crime rate will be about the same, and 8 percent of respondents say that the crime rate will increase (Pew Research Center, 2022:17). In the point of AI, the uncertainty and complication of the issue make a bigger difficulty for efficient strategies to be created. The issues can be considered nonlinear and difficult to foresee. Maybe possible risks can be alleviated with the alteration of the education system according to the technological development. Even if this project is implemented by states, due to the characteristics of AI solutions and learning methods should continually be adjusted. Because AI is not static and tractable, solutions will not give satisfactory results all the time. However, the deep thought about the issues and adequate resources in making policies can help reduce the risks of AI.

Additionally, policies need to be clearly defined and public responses should be carefully measured. Policy makers and public administrators need to evaluate how many politicians can explain to the public and the public's reactions if AI is introduced into the state system (Perry and Uuk, 2019:11-12). In the example of the U.S. Army, which has used AI applications for logistical planning for many years, machine learning from AI types has the power to determine implementation policies. For instance, the Canadian government would like to make an agreement with an Ottawa-based company specializing in social media monitoring and AI to predict increases in suicide rates. In this way, such an AI project can help to maximize the impact of the adoption of the scope and style of the public and government in the process of influencing each other. With the use of AI applications, the way governments interact with various segments of the population can be various and multiply and the policy implementation process can be improved through the use of the social media (Önder and Saygılı, 2018:652- 653).

Policy Evaluation

In the policymaking cycle, the last step is considered as policy evaluation. Policy evaluation assesses the impact of policies and whether they are the right tools to achieve the desired results. Policies are preferred solutions to existing problems. The real impact of a policy occurs when it is implemented. The consequences of policies should be considered carefully because policies may produce desired results but may also have undesirable side effects (Gültekin, 2014 :46-47). For example, armed robots with AI can be applied to protect borders. Although it is normal to kill terrorists crossing the border, it is unacceptable to kill innocent people crossing the border with terrorists. Also, this process tries to determine the impacts and results of the policy used, it checks whether it achieves its goals or it gives a hope for the success of the policy, whether every action for the policy is obeyed well and whether there is any unintended result. Public administrators should consider how the policy affects the citizens and whether citizens are satisfied with the results. For instance, AI technologies can help government works to be functioned in a better way but employment coming from AI can make citizens unhappy. This is the result which the government desires but unintended results can take place such as unemployment. But sometimes without any success unintended results may happen. For instance, AI can be highly expensive or may not reduce the risks compared with conventional methods. Public administrators should take the necessary precautions to reduce risks when using AI and ensure that the results are unbiased. Public administrators may be hesitant to adopt AI that falls outside of traditional methods. Public managers may think that AI will take away their jobs. For example, military pilots who lead AI based aircrafts may be reluctant to use them. Additionally, it should be ensured that the data given is correct. There are significant differences between policy outputs and results. Outputs are concrete actions or things produced, such as building a house or building a road. The results are considered public outcomes, such as more economical or less time-consuming travel. If outputs are not considered well, the outputs may not produce the intended results and this may cause the citizen to become poorer. Also, when

policymakers start using AI, negative consequences may happen. Policymakers expect immediate results to satisfy citizens and they may not take care of long-time consequences (Perry and Uuk, 2019:12-13).

The Use of Artificial Intelligence in the Defense System in the U.S.

The defense industry is of vital importance today. It plays a prominent role in the existence of states and the formation of their national policies. The defense industry constantly has to renew itself and keep up with time periods. It is very important to be a pioneer in technological developments in the defense industry or at least follow technological developments. Countries need to allocate large amounts of budget for the development of the defense industry. The U.S. military strength and defense industrial achievements were not as strong before World War II as they are today, and America's military power dates back mainly to the aftermath of World War II. States entered an arms race, especially during the Cold War, and the U.S. equipped its defense industry in line with its goal of being a superpower. 7 of the 10 largest companies in the defense industry are US companies. Due to the monopolistic positions of these companies, they have an advantageous position in terms of investments and are at the top of the rankings. During the period 2011–2015, the Stockholm International Peace Research Institute stated that the U.S. has increased its arms exports over the years and has one-third of the world's total arms exports. Between 2011 and 2015, American arms sales to countries around the world increased by about 25 percent. In 2015, the U.S. alone made one quarter of the total world expenditure with an expenditure of 596 billion dollars (Şişman, 2017: 227,230, 236). In 2017, Obama allocated $619 billion for the defense budget, and later, the former U.S. President Donald Trump increased this amount to $692 billion in 2018. Trump increased the defense spending to $717 billion for the 2019 fiscal year and increased the 2020 defense spending budget to $738 billion. Defense expenditures for the 2021 fiscal year, approved by the Trump administration and used by the Biden administration, amounted to 741 billion dollars. Biden gave his first defense budget request for the 2022 fiscal year, and a budget of 796 billion dollars was allocated for defense expenditures with additional expenditures. In 22 years, the Biden administration increased the 2023 budget request to 813 billion dollars, making it the highest defense budget request (İleri, 2022). The US Department of Defense allocated a share of $130.1 billion to research and development in the 2023 fiscal year budget (STM ThinkTech, 2023).

National defense is the name of the sector in which states are carried out to protect their national lands, traditions and the interests of their people. Although the main defense industry consists mainly of technologies such as weapons, ammunition, missiles and military aircraft, AI has recently been included as a separate category. Today, the AI integrated defense trend plays an important role in the national defense and there is an arms race competition. The AI technology can bring a new perspective to the defense system. New autonomous systems can make it possible to take control and analyze

different types of the human behaviors based on the specific input data. Accordingly, wars can lead to fewer human deaths and fewer wars. The technological dominance is considered a main component in ensuring the effective defense and R&D has a key role. Powerful states include AI in their military expenditures, and that is why the expenditures are large (Milavsha, 2022:36-37). Integrated with data sets and various sensors, AI systems can tell the difference between a hostile and a non-hostile target. AI systems are much faster than systems with the operator input, can handle the exponential growth in the volume of data obtained for analysis and can gain the superiority in battles by defeating enemy defense systems with capabilities such as swarming (STM ThinkTech, 2023). For instance, South Korea deployed a robot (SGR-1) team on the border with North Korea, and this system was first tested in 2006. Machine gun-wielding robots have motion and heat detectors to detect targets more than 2 miles away. It obtains a 40 mm grenade launcher and a 5.5 mm machine gun and requires humans to start firing (Prigg, 2014). Each reportedly costs around $200,000, and each was intended to aid and eventually replace human guards (Shayotovich, 2023). The UK Ministry of Defense announced that the Taranis unmanned aerial vehicle design had been awarded to a team led by BAE Systems in December 2006. The Taranis aircraft, the subject of a joint program worth £185 million, has a high level of autonomy and is capable of carrying weapons to a battlefield on another continent. The first test of the Taranis unmanned combat aircraft took place in August 2013 (Airforce technology, 2014). Russia has developed the Uran-9 combat ground robot and was tested in Syria in 2018. Uran-9 is likely to be used to identify enemy targets and coordinates the data flow with units at ground and air bases for strikes (Bendett, 2021).

Autonomous Weapon Systems

The growth of the military is as much about the growth of the technology as any other area. The imagination of future wars has long been associated with robots. Today, many countries that are at an advanced level in the AI sector have produced semi-autonomous AI systems and human-supervised autonomous weapon systems, even if they do not use fully autonomous systems. For instance, the U.S. is the leading actor globally in the management and formation of AI sectors. The main reason for this is the technological superiority and strong economic capacity of the U.S. The reason for this is that the U.S. is economically very strong and can carry out very expensive AI studies. In addition, its manpower and R&D capacity are at a very good level. The other reason is that America's constant war, albeit on a small scale, especially after World War II, provides both an advantage in terms of data and added experiences to the U.S. in the battlefields. For example, AI systems learn by examining the existing data and can make ideas about the future. If a country has the huge amount of data about wars, robots trained with the data can predict more accurately. The utilization of AI at the operational level relates to militaries' choices in how they form and plan to utilize military forces. In this case, AI will need to perform organizational tasks and for this it will need to have the power of the highest-ranking soldiers. This may require the planning and field work. Practices (for

instance, Project Maven at the U.S. State Department) are of defensive, organizational, and operational importance. Autonomous systems which processes drone images rapidly and accurately do not involve in high-status military professional specialties and they do not interrupt the functions of military services in the same way (Horowitz, 2018: 48). The F-35, for example, uses the first version of AI to help capture, organize and deliver the information to the pilot on a single screen without much human intervention. The AI system systematically presents the information from different sensors to pilots on a single screen (Osborn, 2019). It was stated that the U.S. Department of Defense used 7.5 billion dollars on robotic technologies in 2022. The HELIOS was installed on US Navy destroyers with a 60-kW directed energy laser with 100 kW and 150 kW lasers. The U.S. Department of Defense expects 500 kW lasers to be available in 2024, and 1 MW lasers in 2030 (STM ThinkTech, 2023). The U.S. Air Force is testing an AI drone that could serve as a "wingman" for warplanes for deployment in combat. The XQ-58A Valkyrie is the prototype of a next-generation, pilotless experimental aircraft driven by AI and under human supervision. A system that can assist fighter pilots in missions has been developed. The drone will utilize AI and sensors to locate and destroy enemy targets (Hwang, 2023).

Cybersecurity

The process of the protection of critical infrastructures became important with the spread of internet technologies in the 1990s. During this period, cyber security strategies began to be developed at national and international levels against cyber-attacks. Since the 2000s, states have been trying to improve their cyber-attack capacities through various means such as blocking disinformation using web-based platforms, developing electronic warfare skills, perception management and dissemination of information. The importance of the critical infrastructure was first emphasized by the U.S. Presidential Policy Directive (1998) adopted by President Bill Clinton in 1998 (Darıcılı and Çelik, 2021:260). This document states that critical infrastructures are so vitally important that their insufficiency or demolition has a devastating impact on national security and/or national public health and safety. Actually, the U.S. realized the importance of the cyber security with the National Security Strategy Document in 2010 and considered the country's cyber security as a national security problem. In 2010, a special area called "Secure Cyberspace" was allocated for the first time in the National Security Strategy document. This document stated that cyber threats were considered as vital threats for national security systems, the protection of the public and economic problems facing the U.S. In this vein, the document explains how cybersecurity goes beyond the infrastructure protection and includes other threats such as terrorism as a loss of profits for companies.

The 2015 National Security Strategy (2015) mentioned again many problems declared in the 2010 National Security Strategy (2010), and put the special emphasis on cyber espionage, international norms and the need to protect the common global "cyber space". The U.S. has long been a leader in its ability to interpret cyber threats, which it seeks to explain in its national security strategies (Bisson, 2015). For instance, in 1982, Russia

attempted to steal software used to control natural gas pipelines from a company in Canada. The Americans noticed this situation and instead of stopping the operation, they inserted a virus into the software. The software stolen by the Russians was corrupted by the virus, and the water flow increased to an abnormal level and burst the pipe. This incident went down in history as the first cyber-attack. In 1992, the U.S. destroyed Iraq's entire telecommunications infrastructure. In 2003, when the U.S. was planning to invade Iraq, people working in the Iraqi Ministry of Defense saw a message from the American Central Command on their computer screens before the invasion. The message said that "we may invade Iraq in the near future, we don't want to harm you, if you don't want anything to happen to you, go home when the war starts" (Şenkaya ve Adar, 2014). The American Intelligence Agency also uses the computer software as a means of the collection of covert information. For example, PROMIS (Prosecutor's Management Information System) is one of them. The program, developed by the Inslaw company for the U.S. public prosecutors in 1982, was stolen by the government and sold to other countries' intelligence services. This program collects the traces left by people in electronic environments using different databases and combines them in a meaningful way. This program was sold to more than 40 countries, including Turkey, by creating a "back door" by the American intelligence service, and information about the banks and financial institutions of the states could be accessed by the US intelligence service (Bayraktar, 2014:133).

A state may be very advanced in technology, but security vulnerabilities can cause great harm to this state. There are great difficulties in finding the source of most cyber-attacks, and there are great difficulties in detecting and proving the power behind the attackers. Cybercrimes can be committed in many different ways today. These attacks, which are generally carried out to gain the economic benefits, both reduce trust in the state and cause harm to the state and the people. For example, those who violate intellectual property rights based on the internet and e-commerce, cybercriminals, hacker groups, and terrorist organizations have been evaluated as threats (Aysal, 2022: 60-61). For instance, BAE Systems is a British multinational arms, security and aerospace company and its base is in London. DARPA and BAE Systems have collaborated on the AI systems (CHASE) to identify cyber threats to large enterprise networks (Roth, 2019).

Conclusion

Today, AI technologies have become the focus of the ongoing power struggle between states. States design their future plans and strategy documents on the AI technology. AI has the capacity to transform the defense, economy, security and industrial structure on a large scale. This transformation is likely to lead to social, military, political and economic evolutions. But this transformation brings with it some risks and opportunities (Uzun, Yıldız and Önder, 2022: 436). The AI technology has the great potential to change the balance of power. For this reason, states tend to benefit from AI in almost every field, especially in the defense industry. The U.S., which is one of the states that invested the

most in AI, has focused on AI studies since the early 1960s. The U.S. has prepared many strategy documents and made general statements on the role of AI in the defense industry in these strategy documents, and the U.S. has started to make its policies on AI. The implemented policies may vary according to political and technological conditions. According to these changing conditions, it becomes difficult to select which policy to choose and make the necessary strategies for its implementation. It is very important for AI to take part in policy-making processes. Thanks to the predictive power of AI, the risks of policies can be calculated and the evaluation phase of policies is generally positive. The size of the memory of AI and its capacity to systematize it and produce results and predictions have improved greatly. The U.S. is one of the countries that makes the most effective use of AI in the defense industry. Autonomous weapons and cyber security points, which are two critical points for the defense industry, are the areas where states are most sensitive. The defense industry has reached a level where it can change the balance of power thanks to AI. In particular, it will give powerful states much more and disproportionate power than other states, and will provide weak states with the opportunity to catch up with developed countries, even though there are a huge gap between them. The U.S. uses AI effectively in the defense industry.

The impact of the AI technology on the human life is increasing day by day. The process that started 70 years ago with the emergence of the first computer has progressed very quickly and has reached incredible dimensions. Nowadays, developments on AI have advanced a lot and AI systems, which can be easily integrated into electronic systems, have started to be used in almost every field. Security and defense systems are among these areas. In addition to face, voice, iris and fingerprint recognition systems, the use of AI is also common in unmanned aerial vehicles, autonomous weapons and cyber security. Today, one of the most important security topics is defense systems. All security-threatening problems such as terrorism, war and cybercrimes are systematized as security problems. For this reason, states allocate large budgets for defense systems and carry out important R&D studies. Although it is accepted that AI has advantages, there are also serious concerns (Şahiner, Ayhan and Önder, 2021 90-91). AI, which complies with ethical rules, can cause great harm to humanity when it loses ethical values and lacks impartiality. There is no full consensus on this issue regarding autonomous weapons and AI-based cyber security. AI-based armed robots, which have not been fully tested in a possible war and cannot be predicted in advance, may go out of control and turn into killer machines due to a cyber-attack or system malfunction. The U.S. has focused on developing the satellite technology and unmanned aerial vehicles and has achieved significant success in cyber security. It is essential to follow the developments in the field of defense in the world and make innovative moves. In this context, the development and utilization of AI applications, especially in cyber security and defense policies, should be one of the top priorities of countries. The U.S. especially has the opportunity to use the cyber security and defense systems. The U.S.'s constant war, especially after World War II, provides both an advantage in terms of data and adds experience to the U.S. in the battlefields.

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