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TECHNOLOGY, ARTIFICIAL INTELLIGENCE, AND ROBOTICS IN FUTURE WARS

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ABSTRACT

This study aims to show the importance of initiating studies on the role of intelligence and its new uses in future wars without further delay and also to contribute to closing the current gap in this subject in the literature. This study aims to analyze the future post-modern wars through the reciprocal interoperability and multi-integration of technology and intelligence. This study, which adopts a qualitative research methodology, will primarily benefit from secondary data sources such as scientific books and articles in addition to scientific data analysis methods such as document and content analysis and interpretation. This study significantly contributes to the role of intelligence and the necessity to promote new scientific studies and to end the present gap in the data without delay. The ongoing developments taking place in technology will bring about the transformations clarified in this study. Ideas will be generated regarding the expected developments in technology and their roles on the battlefields of future wars. The scope of this study is the increasing importance and role of intelligence in developing network technologies as well as the potential areas where autonomous systems which can understand machinery can be used.

Keywords: *War, Technology, Intelligence, Intelligent autonomous systems, Artificial intelligence.*

INTRODUCTION

In the future, investing in capabilities to use automated processes to collect data should be made. Autonomous systems are expected to intelligence collecting, whereas artificial intelligence is expected to provide valuable functions for intelligence analysis and anomaly detection. Weapon technology and war concepts from the Cold War era have been undergoing a great transformation over the last 30 years. Developments in digitalization and communication technologies during this period make possible new autonomous and multi-integrated systems utilizing artificial intelligence as well as unmanned aerial vehicles on the battlefield. It is obvious that all this will change the character of war, if not its nature. Significant transformations are expected in the field of defense technologies, especially over the next 20 years.

Wars generate new inventions, create power, enable cultural changes, and produce new dynamics. Wars bring about terror and destruction but at the same time transmit technology and spread languages and ideas. Today's world is also on the verge of a rapid political, economic, and socio-cultural transformation. In a few decades', fundamental phenomena such as societies,

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families, factories, education, and life-styles will experience huge transformations. The time limitation of this study covers predictions up to 2040. At this point, it is not easy to envisage what kind of world will emerge in terms of wars and technology. We can discuss the dangers of 5G telephones, but we cannot even guess how human life will be affected by 6G. Over the next 20 years, the concept of defense may become obsolete as a result of the huge changes that will be experienced. New technology may emerge and erase what is recorded in our memories and bring the whole electronic spectrum under control or a new epidemic or meteor may turn the state of affairs of humanity in a different direction.

Literature Review

This study significantly contributes to the role of intelligence and the necessity to promote new scientific studies and to end the present gap in the data without delay. Similarly, future wars should be considered carefully and designed in good time. It is costly to invest in such research when revolutionary developments could nullify the national constituents of power and their abilities in a very short time. Therefore, the significance of this study is to anticipate the roles and usage of intelligence in terms of the changes that technological improvements will make to the character of war.

The War Medium of the Future- The Changing Characteristics of War

The requirements of 21st-century defense and protection mediums are different. Although the possibility of conventional war has not ended, the quality of the actors in the war zone has changed dramatically. Non-state elements and terror organizations are now included in the war zone. The design of a country and the undecided future of asylum seekers has become a significant part of war planning. Beyond all these, we are on the verge of a new war culture designated by weapon technology.

The advances keep changing not the nature but the character of war in terms of space and weapon technologies, in particular the extensive developments in GPS, guided missiles, and smart equipment after the 1990s **(Table 1)**.

Table 1. Nature and Character of Wars in the First Half of the 21st Century

NATURE OF WAR	CONCEPTS	TECHNOLOGIES
Consultation Integration of Systems Working Cooperatively	Unity Decision-Making Processes National Systems Command and Control Range of Motion Command Systems of the System Situational Awareness	End to-End Impact Chain Human in Artificial Systems Advanced Machinery Learning Deep Learning
Perpetuity	Deterrence Power Projection Cyber Abilities Civil Defense Integrated Survival	Smart Cities Power Protection Systems Electronic War Counter Measures Cryptology

Nullification/Disposal (Destroy, Avert Danger) Weapon Platforms Firing and Maneuver Activator Subversive Capabilities	A2/AD ASB Distant Battle Hybrid Battle/War Quantum Capabilities Intermediary power (non-lethal weapons)	Kinetics Engagement Clinical Operations Multi Use of Hypersonic Systems Common Fires Fire on Critical Targets RSOM Autonomy Internet of Cyber-Objects Unmanned Air Systems Man-Machine Operations Laser Energy Weapons AI at Hybrid Combat
Subsidiary Activities	Compatible Sustainment/ Usability Communication Systems Host Country Upholding Space Capabilities Multi-application Intelligence Vehicles	Logistics Maintenance Bases Advanced Human Performance and Health Intelligent Equipment Network Technology Operative Vehicle Technology
Facilitative Activities	Civil-Military Cooperation Activities Invasion Government NGO Activities Humanitarian Aid Transportation Liberty Protection of the Civilians	Detection in Mega Cities Residential Area Operation Architectural Cooperative Operation Smart Cities Adaptive Net Defense City, Building, and Region Sensors
Intelligence Detection Recognition Identification	Strategic Warning Target Detection and Warning Generation Picture-Perception Targeting Multi-level Analysis and Strategic Operational Assessment Contra-Intelligence Space Controlling Ambiguity Management Biometric Activities Autonomous/Semiautonomous Systems Display Plotting Positioning	Artificial Intelligence Utilization Man-Machine Combat Nets Multi Sensor Networks Large Area Observation (Machine) Integrated Detection Dynamic Tracing Critical Targeting at Opposition Territory Opposition Detection Optoelectronic 3D Scanning Intelligence gathering (Spy Camera) Systems Cooperative Navigation High Spectral Analysis Naval Surface Signing

Source: Marsili (2021) from Holmqvist-Jonsäter and Coker (2010); NATO STO (2019); Dost Autonomous (2020).

Rapid developments in unmanned systems, data processing, autonomy, network setup, and other technologies will determine a new war form, which will be exploited by not only states but also terror organizations and non-state actors like mafia or pirates. Thus, prospective armies will try to develop new concepts, doctrines, education systems, military policies, and organizational

alterations consistent with the new war environment in order to achieve superiority with their new forces and capabilities in comparison with the other armies in the prospective wars.
It is necessary to do a long-term analysis of how the future of technological advances will transform the operating environment and how man-machine operations will be integrated to develop subsidiary capabilities incorporating the corresponding concepts and scenarios and requirements of the military. Spy cameras, unmanned aerial vehicles, new generation aircraft, sensors, anthropoids (putting artificial intelligence into use), man-machines, autonomous systems, and new platforms have to be thought of in conjunction with the war scenarios.

The Future War Medium

Future wars to a great extent will be machine wars where a high rate of technology is used, which will make engineering even more important. Engineers and technology companies will have to work more closely with the military on the solutions to problems encountered in the war zone and they will be the consultants of the commanders. Even more so, we will see the wars turning into a war of engineering.
Conventional weapons (tanks, aircraft, and war-ships) will either become extinct gradually or be replaced by new smarter models, which will be integrated and synchronized into the intelligent future network and war medium. In the next 10-20 years, the conventional devices and weaponry forms left over from the Cold War era cannot be modernized, so they will completely disappear and be replaced by unmanned and smart machines.
Machinery reform (nanotechnology, bio-technology, unmanned production, new energy sources, cognitive-behavioral-social sciences, human recruitment); the key development will be in the transition to semi-autonomous and autonomous war machines. The requirement for personnel has already been diminished by the application of machines in intelligent ships (Medium, 2020).
Robotic soldiers will take control of their weapons and drones (in addition to taking part in combat by delivering explosives) will protect ships and essential establishments – military and civilian. Drone spy cameras conveying sensors and the utilization of semi-autonomous armies in the design of ants are also being planned.

Defense Technologies of the Future - The Military Technologies of the Future

Seventh-generation military reform will be the result of rapid advancement in the realm of technology. The technologies (such as data processing, connectivity, artificial intelligence, robots, and bio-sciences) which accelerated the Fourth Industrial Revolution have become an intrinsic part of our lives while also being used for the transformation to a new kind of war.
Technological developments will most likely focus on five basic areas (NATO STO, 2019):

- Biology, bio-technology, and medicine.
- Robots, artificial intelligence, new smart weapons, and enhancing human capacity.
- Information and communication technologies, observation, and cognitive science.
- Nanotechnology and advanced equipment.
- Energy technology.

In addition to the above-mentioned items, 3D prints production, and significant developments in the hypersonic area are expected. These developments will also impact the structure, culture,

and processes of the armies. As an example, while the automation damage is decreasing, 3D production sustainment will increase, thus facilitating logistics.

The new technologies approved by the NATO Defense Ministers in October 2019 are the following (NATO STO, 2020):

- Big Data
- Artificial Intelligence
- Autonomous systems
- Space systems
- Hypersonic
- Quantum technology
- Biotechnology
- Upgraded Equipment.

Autonomous Weaponry Systems

Autonomous Weaponry Systems are the new generation of war systems that maintain the military factor backed by artificial intelligence and are incomparable to the older weaponry systems. These systems represent one of the progressive advancements of the 21st century and can act independently of a human-operator to accomplish the mission coded to it at a high level of sensitivity. Today, there is no consensus regarding the identification of autonomous systems. Generally, limited human intervention is required so that once activated they can select the targets and fulfill the operation.

Autonomous Systems

The prospective autonomous weapons systems of the future which automatically select and engage their targets. When the human factor is included in such weapon systems, it is classified as semi-autonomous. Man-machinery systems must possess characteristics such as predictability, reliability, and speed and must be operated in groups as much as possible.

Semi-Autonomous Weapon Systems

These weapons can be run by a remote-control system coordinated by an operator in the field, who identifies the targets and, when necessary, can apply force in the process. The fire and forget type rockets used today are the semi-autonomous weapon systems included in this category. In this case, unmanned aerial vehicles have to be considered within the scope of semi-autonomous weapon systems (Ozer, 2020).

Human Supervised Autonomous Weapon Systems

Even though there is human involvement in the process like in the semi-autonomous weapon systems, Human Supervised Autonomous Weapon Systems are automatic systems with predetermined functions instead of remote control. 'Automatic sentinel weapons' located at border posts are one of the best examples. Thus, these autonomous systems consist of the least artificial intelligence (Amoroso & Tamburrini, 2020).

Artificial Intelligence

Artificial Intelligence is the scientific field that envisages providing machines with problem-solving qualities similar to those of human beings. Artificial intelligence research aimed at military use is focused to a great extent on wielding tactics and developing technology within autonomous weapons systems. However, artificial intelligence can be used for strategy and deterrence research or in the context of cyber security within the area of crisis management (Russell & Norvig, 2009). Today humanlike machines are mostly conceived as a means to solve military issues. The mission to be carried out in a restrictive sense is to identify faces and fulfill certain assignments using certain algorithms. In a wider sense, however, due to 'machine learning' there can be a much wider range of uses. Four fundamental categories can be identified for the use of artificial intelligence in military areas (Scharre, 2018): observation, data analysis, intelligence, and military planning.

Autonomous weapon systems will be the most important military element of the new generation of war, which shows the improvements made in artificial intelligence. These weapon systems do not need human interference so they can fulfill their mission without any human sensing during operations. Although in the current combat zone, autonomous weapon systems do not play a role, future combat zones will be configured by autonomous weapon systems. Future technologies and their features are described in **Table 2**.

Table 2. Future Technologies and Their Functions (2020-2040)

Information	Artificial Intelligence	Autonomy
Data Collecting and Sensor Operation	**Improved Algorithms**	**Autonomous Systems**
Non-Electro Magnetic Sensors	Artificial Intelligence	Autonomous Function Systems
Sensor Integration & Network	Major Data & Distant Data Process and Analysis	Unmanned Platforms
Advanced Signal Process	Advanced Signal Process	**Counter Measures**
Information Analysis & Decision Assistance	**Common Human-Machine Survival**	Active/Passive Electro Magnetic
Major Data & Distant Data Process and Analysis	**Human Machine Interfaces**	Acoustic and Optical Counter Measures
Major Data & Human Decision Making	Integrated Hybrid Human Machine Forces	**Human Machine Teams**
Multi-Medium Situation Awareness	Human-Autonomous Machine Team	Human Machine Interfaces
Planning and Management Ambiguities	**Applied Artificial Intelligence**	Human-Autonomous Machine Team
Advanced Systems Concepts	**Multi-Medium Situation Awareness**	Integrated Hybrid Human Machine Forces
Integrated Human-Machine Hybrid Forces	Planning and Management Obscurities	**Autonomous Behavior**
Units & Regiments	Human Decision Making	Units & Regiments
Modular, Detachable Systems	**HYPERSONIC**	Sensor Integration & Networks

Super ordinate Guaranteed Engineering & Verification	**Counter Measures**	Secure and Flexible Communication
Autonomy	Active/Passive Electro Magnetic	Engagement Rules
Artificial Intelligence	Acoustic and Optical Counter Measures	Legal and Ethical Implications
Autonomous Mission Systems	Weapons-Techniques and Systems	**BIOTECHNOLOGY**
Human Autonomous Machine Team	Weapon Effect	**Bio-informatics**
Communication & Networks	**Platforms and Firing**	Major Data & Distant Data Processing and Analyzing
Secure and Flexible Communications	Fast & Mobile Platforms	Human Flexibility
Reliable Multi-medium Information Sharing	Hypersonic Platforms	Cultural Communication
Temporary and Heterogeneous Network	Reinforced Energy Operation & Management	Group and Organization Behavior
SPACE	Firing	Health Optimization
Operation	**QUANTUM**	Political Impact
Units & Regiments	**Communication**	Electro Magnetic Sensors
Hitting Control	Secure and Flexible Communications	Anti-Electro Magnetic Sensors
Platforms	Reliable Multi-medium Information Sharing	**Synthetic Biology**
Super ordinate Guaranteed Engineering & Verification	**Information Science**	Human Flexibility
Modular, Detachable Systems	Major Data & Distant Data Process and Analysis	Health Optimization
Firing	**Firing Steering**	Advanced and Adaptive Equipment
Fast & Mobile Platforms	**Steering Control**	**Human Reinforcement**
Reinforced Energy Operation & Management	**Sensors**	Advanced Cognitive Performance
Active/Passive Electro Magnetic	Electro Magnetic Sensors	Human & Machine Interfaces
Acoustic and Optical Contrary Measures	Anti-Electro Magnetic Sensors	Integrated Hybrid Human Machine Forces
Weapons-Techniques and Systems		Alternative and Recyclable Energy Sources
Sensors		**Medical Contrary Measures**
Electro Magnetic Sensors		Human Flexibility
Anti-Electro Magnetic Sensors		Health Optimization

Source: Edited by author, from Reding and Eaton (2020); Medium (2020).

In the next 20 years, the subversive power of artificial intelligence is expected to be seen in the following areas (Scharre, 2019):

- Growing digital usage and huge data sets open to the public,
- Wide activity and usage of cyber-physical systems
- New fields of application require great investments due to the increasing adaptation of more artificial intelligence techniques.
- Decision-making and optimal control (power systems, investment, etc.)
- Terminal cognitive domain, unique sensor and data base design mechanisms open to improvement,
- Improved major data analysis mechanisms and computer vision.

Useful implications of artificial intelligence directed toward national security (such as surveillance, data analysis, intelligence interpretations, and defense) will be initiated.

Human-Machine and Super Soldiers

"Super soldiers" will eventually replace common soldiers. On the whole, land assaults will be carried out by energy-information (loaded) weapons and they will be employed on nonlethal systems. Besides the regular units, irregular and hybrid forces will be employed. The combat zone will become multi-dimensional and the operations will be held mostly in urban areas. Military personnel will be organized in cooperation with the robots and smart base systems. While some of the soldiers are busy with the command of the combat operations the others will employ "the super soldiers" who wield physical, cognitive, and sensor capabilities (Russian International Affairs Council, 2019).

For human-machines, steel skeletons, artificial organs, and neural faces will be too employed. Artificial nerve networks will utilize chips that imitate the structure of the human brain. These chips are lined up on a circuit board like neuron networks and the artificial intelligence software functions as the real nerve network, similar to the artificial neural networks used in recent smart phones.

Robotics and Unmanned Aerial/Land Vehicles

Due to the developments in the robotic field (like armed ground robots), the old systems will go out of style and be replaced by new ones. In the digital combat zone, a single operator will control various robotic platforms. The fighting robots will vary from Nano-robots and spy camera devices to robotic vehicles in various forms. Most of these devices will have sensors for reconnaissance and surveillance.

Some of them will be used as evacuation vehicles or possibly explosive assignments. For example, they may take part in networks for protecting against cyber-attacks or advising complex decision-making systems. Robots will be exploited in information collecting, data processing, and lethal firing power platforms. **Figure 1** shows a robot in a combat zone (Xuanzun, 2022).

Örgütsel Davranış Araştırmaları Dergisi
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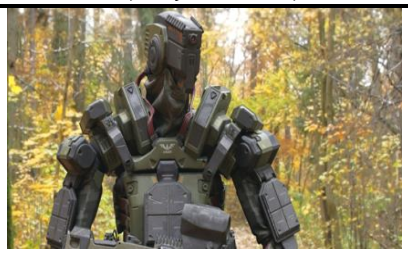

a)

b)

Figure 1. Robots in Combat Zone (Xuanzun, Global Times 2022) and Unmanned Land Vehicles (ULVs)

Source: Allied Market Research, 2022; Grabianowski, 2022

Moreover, robot infantries using unmanned intelligent tanks are being considered.
These systems, which can move by distinguishing any object they confront as a friend or foe, have quite different characteristics in comparison with unmanned vehicles. **Figure 1** shows; this version of the ACER robot clears anti-personnel landmines (Grabianowski, 2022) and an unmanned tank (Allied Market Research, 2022).
Unmanned Aerial Vehicles (UAVs)*:* can be divided into broad-band and narrow-band groups. The broad band ones are the drones that are operated from the ground by a pilot and require personnel and power source to operate. The narrow-band ones are drones that can be purchased for a thousand dollars instead of millions of dollars and used for autonomous operations.
Armed unmanned aerial vehicles (armed UAVs): give armed groups that do not have the capability of going into conventional combat with the states the capacity to stand against them. Because the UAVs are known as semi-autonomous systems operated actively in combat zones and because of the absence of a protection mechanism aimed at the UAVs, the states have to activate aerial protective systems despite the high cost.

MATERIALS AND METHODS

Due to its use of secondary data analysis methods and sources, this study bears the characteristics of a qualitative research methodology base. The survey at the same time applies the inductive method to the detailed data to extend the argument from a set of propositions towards a generalization. In a survey, making use of the secondary sources method is favored as the basic data collection method. In this context, scientific scanning of various scientific books, articles, dissertations, and reports is done. This study is qualified as interpretative and explanatory for the fast advancements and developments experienced in both modern technology and modern intelligence and in the related legal/ executive fields. Thus, scientific research and data analysis methods take advantage of documentation and content analysis together with interpretative methods. Hypotheses are called into question.

Artificial Intelligence in Future Wars

Hypothesis 1- Technology and intelligence capabilities will determine in future wars

The concept of confidentiality has changed dimensions as a consequence of technological advancements and it is becoming increasingly easy to access confidential information. A more flexible intelligence capability is required for a quick reaction. Primarily the advancements in

technology will make an important contribution to the development of target detection possibilities and the impact of covert operations. Operations such as punishment, assassination, sabotage, search, and rescue will have greater appeal due to the opportunities technology provides. GPS or its supplements, satellite guidance instruments, and satellite communication will soon be exploited by many countries. Global communication mediums like media and the internet will become even more widespread and new studies done in this area will lead to the emergence of new means and methods for psychological operations.

Big Data and Advanced Analytics (BDAA): The interpretation of information flow, will gain importance with progressive developments in the digital and cyber world. Particularly, the field of analytics will provide a more comprehensive production process (analysis and visualization of mathematics) for existing systems and a more predictive vision of future systems (NATO STO March, 2020). Analysts will frequently face difficulties in volume, fluidity, variety of information, and accuracy or visualization.

Intelligence, Surveillance, and Reconnaissance (ISR): The widespread advanced sensors and increasing use of autonomous systems will ease detecting, classifying, identifying, registering, and engaging threats exponentially in physical and virtual operational mediums (Oncel, 2020). Administering strict power sources and optimized wave-forms will simultaneously reinforce, search and trace aerial targets with faster and more accurate ISR and multiple intelligence source analysis (Marr, 2017). There will be more robotic elements in future forces and mediums, which will be used mostly for ISR activities. These systems will apply simple reasoning in the beginning for the data filtration of the users, and some tasks will become automatic and will focus on more and more critical issues (Allen, 2018). Integrating mobile calculation with robotic systems will contribute to the tasks planned within a near real-time operational picture.

Situation awareness: The upgraded mapping of assigned positions will strengthen operational planning and increase awareness of the situation. The enhanced situation awareness will include advanced living patterns, human areas, and anomaly detection. This awareness will be magnified by visionary capabilities working with low-power, analytical instruments (artificial intelligence, etc.) and increasing information flow at both tactical and command levels. Geographically marked military systems and social media data will be used for accurate environmental information with continual acceleration (Ortiz *et al.*, 2020).

5G and Internet of Things: 5G applications will provide the Armed Forces with growing activity, flexibility, speed, and lethality. For that purpose, according to the briefing of Dr. Evans (2020), 5G Director, military experiments using this technology are being conducted in five air and land bases in the USA, Hill (Utah), Nellis (Nevada), San Diego (California), Albany (Georgia), and Lewis-McChord (Washington). 12 more bases will join them later. The following are among the most important areas of usage (Dinucci, 2020):

- Hypersonic weapons, including those with nuclear warheads,
- The collection and processing of major data, and by way of fast distribution preventing missiles from mass executions,
- The application of weapons based on automatic systems.
- By generating a war zone network everything becomes interconnected
- Providing a more efficient espionage opportunity for the Intelligence services and Special Forces and enhancing the activity of the killer drones.

As can be seen, 5G will have far more results than a commercial war realm. 5G will not only alter human life but will also give way to wars that may bring an end to the human race due to the new generation of weapons they create.

The Internet of Things (IoT): Studies on the issues of potential risks and opportunities in the military medium are being conducted. Some of the military scenarios that IoT applies are considerably improved. The most important issues are related to security, safety management, and heterogeneity. Among the scenarios, IoT has applied (Wassel, 2018; Seffers, 2020):

- Humanitarian aid and disaster fighting operations,
- War on terror
- Psychological monitoring,
- Logistic and supply chain management

The exploitation of speed and capacity expansion provided by IoT in situation awareness, command control, and logistics systems is being worked on.

Hypothesis 2- Military intelligence will be applied to military conditions, actions, or military policy production, planning, and the enforcement of military operations in future wars

Military intelligence is applied to military conditions, actions or military policy production and planning, and the enforcement of military operations. In this context, using Intelligence Integrated Data System or rather Intelligence Database (ID) is being considered (Rabaey *et al.*, 2007). The problem here is to formulate the mathematical, algorithmic, and practical perception, control, and learning characteristics required to ease the development of these intelligent and autonomous systems. This constitutes the following fields of study (Allen, 2020):

- Integrated intelligence: judgment, transformation into knowledge, logical reasoning, and planning using the base elements synergistically to produce the required function.
- Powerful reasoning in a medium of ambiguity: erroneous detection, system failures, or ambiguous situations where the real systems give errors or the adjustment of the system to a new situation by reasoning out ways to change the dynamic mediums or readjust the situation.
- Socio-cultural modeling/calculation: meaningful information brought together by game theory elements.

Artificial Intelligence, Intelligence Cycle & Autonomy, and Nano-Technology

Artificial intelligence can be used intensively in data and intelligence collection, assessment, analysis, and distribution work. Contemporary artificial intelligence consists of:

- Data collection and analysis,
- Identification of face, speech, and handwriting,
- Critical thinking,
- Manner of walking (gait) identification,
- Behavior analysis ability.

Artificial intelligence has the functions of making further interpretations and employing intelligence besides surveillance. Artificial intelligence is particularly good at the identification of trends in data collection.
Thus, it can be employed for picking/sorting between the major information piles for near real-time intelligence analysis.
Autonomy as a technology that is expected to evolve is open to new methods of usage with potential in the field of intelligence. However, the greatest contribution expected from autonomy is that it will back and accelerate the intelligence cycle and take on more roles in each phase and process. In this context (Rademaker *et al.*, 2021):

- In the process of collection and operation it will reduce deception in due to data fusion coming from multiple sources, each source of data will be checked against the others,
- Anomaly detection/trend recognition and data processing will include registering the confidentiality degree of the intelligence output,
- Autonomy will aid in the distribution phase of data sharing and fusion.
- Where humans and machines will join the process will be determined during the intelligence operation.
- New intelligence autonomy concepts will be prepared to anticipate the use of potential autonomy at different levels of the cycle.

The sensitivity and resolution qualities of the sensors determine the degree of accuracy in the intelligence collected. Unmanned aerial and land vehicles that are equipped with nano-sensors will be undertaking invaluable missions to survey the combat zone provide support for the survival of friendly troops and ensure the early detection and identification of terrorist activities (Butt & Akhtar, 2021). In contrast to conventional sensors, smaller, less expensive, and more powerful nano-sensors together with smart systems will begin to play a role in all areas of our lives.

RESULTS AND DISCUSSION

Weapon technology and war concepts from the Cold War era have been undergoing a great transformation over the last 30 years. Developments in digitalization and communication technologies during this period make possible new autonomous and multi-integrated systems utilizing artificial intelligence as well as unmanned aerial vehicles on the battlefield.
It is obvious that all this will change the character of war, if not nature. Significant transformations are expected in the field of defense technologies, especially over the next 20 years. All these developments will have an impact on intelligence capabilities and processes.
In the future, investing in capabilities to use automated processes to collect data should be made. Autonomous systems are expected to have intelligence collecting functions, whereas artificial intelligence is expected to provide valuable functions for intelligence analysis and anomaly detection.
H1 ve H2 hypotheses are the opinions of the authors and are claims about future wars. It is observed that it is starting to happen. The impact is inevitable in technological development. Technological superiority is the essential condition for victory in future wars...

CONCLUSION

In this study, the trilogy of technology, war, and intelligence has been assessed. The impact of future technologies on the war environment and their effect on intelligence functions as well as their mutual interaction has been elucidated in detail. In the wars of the future, intelligence is due for a significant transformation, especially concerning the applications that will be enabled by autonomous systems and artificial intelligence technologies. In the future, to collect data, investment in technologies using automated processes will be necessary. Autonomous and separable vehicles, remote control sensors, and potent technologies with intelligence networks capable of early warning should be acquired. Such investments must cover all sorts of (data) collection instruments including super-humans (human-machines). In this context, it is necessary to work on the new regulations, the legal framework, and the principles and policies that are required for adapting to this new technology. In the formation of the overall combat image, in order to use the cyber capabilities and sensitivities of friend and foe, the requisite awareness must be maintained. It is necessary to develop our capabilities for monitoring, detection, and espionage as fields of interest in the cyber stage/space. The incoming information will be assimilated with the existing information, analyzed, and a 'judgment' will be reached. To this end, we must prepare ourselves, over and above the use of computers for the transmission of information, for systems with super intelligence or artificial intelligence, and for the human-machine era.

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