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Security challenges in the geopolitical state of the modern world as a result of the COVID-19 pandemic

According to the geopolitical dimension, the concept of security is ambiguous. Security usually involves protection from external military threats or risks to a state by another state, as well as protection from internal military threats from non-state entities. In recent decades, the traditional concept of security has been completed by other concepts that have expanded the nature of possible threats, joining to the military threats the threat of terrorism, organized crime and diseases, combined with economic, political, social, environmental and biological risks. Accordingly, the list of threats has been revised, in particular for security at the global, national and individual levels.

Today, we observe the world's leading countries struggling to overcome the financial and economic challenges caused by the COVID-19 pandemic. At the end of the twentieth century and in the first twenty years of the twenty-first century the ecological and biological threats and the insidious danger they bring became especially acute. The means of mass destruction include toxic and bacteriological (biological) weapons. The action of the latter is based on the use of pathogenic properties of biological warfare agents – microorganisms that can reproduce in humans, animals and plants and cause mass diseases. The use of infectious agents for base purposes can have not only military but also terrorist and criminal purposes. Therefore, in recent years, the international community has made significant efforts to analyze the effectiveness of compliance with national laws, codes of conduct and ethics, disease surveillance and response, bioprotection and biosecurity. Together with the developed mechanisms of counteraction and security, the development of microbiological and medical technologies, the real challenge of the scale of civilization at the end of 2019 was the spread of the COVID-19 virus.

Keywords: security challenges; geopolitical situation; COVID-19 pandemic; transformation of society.

Relevance of the research. The world development in the process of transformation of pre-industrial societies into industrial ones, and then into high-tech and informatized ones, was accompanied by changes that indirectly, but often directly, threatened the security of peoples, states and civilization in general. Therefore, a characteristic feature of modern world development has been the intensification of transnational processes, in which global problems have become increasingly important, which, affecting humanity in general and each state (society) in particular, concentrate the contradictions of social development. The significant geopolitical changes taking place at the beginning of the 21st century indicate that the world has entered a phase of another global transformation, and with it, crises and dangers to the world order. Since the early 1990s, the modern world has been living in an unusual environment of transition to polycentrism, the formation of which is accompanied by an escalation of economic, geopolitical, ethno-confessional, demographic and other contradictions between the centers of power and world civilization. The twentieth century was one of the most tragic and dangerous epochs, as it was marked by the growing confrontation between the two antagonistic socio-political systems that existed at the time. But the self-liquidation of one of the components of the bipolar world order did not lead to general peace. On the contrary, having lost the point of equilibrium in the disintegration of bipolarity, civilization has faced growing conflict caused by the conflict of vital national interests of the world's leading states and the emergence of a system of new threats to their security. Reality requires a fundamentally new scientific approach to understanding the situations that arise. This is especially important for transitional societies that are reviving statehood, because the process of statehood is associated with the need to ensure reliable national security [1, p. 15].

Today there are no stable scientific stereotypes about the definition of the phenomenon of security, so it is vital, for almost all modern societies, to substantiate it. This is especially important in the context of geopolitical and global transformations, in which the main indicator is the level of economic development – with positive and negative dynamics. Therefore, the problem of overcoming the financial and economic problems, challenges and threats associated with the COVID-19 pandemic is extremely important.

Analysis of recent research and publications. Many scientists of various fields have interested in the problem of security, dangers and threats in the modern world and their impact on the progress of modern civilization, especially since the beginning of the XXI century. This is primarily due to the change and strategy of threats, which have taken hybrid, complex forms: military threats have become combined with environmental risks and threats, or the components of military-terrorist threats have become the use of biological and bacteriological weapons.

Many Ukrainian and foreign scientists have studied the security problem. Among them, in particular, are A.Kaczynski, S.Komisarenko, A.Kuras, V.Pirozhenko, G.Sytnyk, M.Sungurovsky [1–5; 7]. Foreign scientists and researchers, such as: E.Sean, R.Breeze, S.Schutz, M.Garkel, J.Kukulka, A.Lopez and others, work fruitfully in this field of research [8–13].

The aim of the article is to analyze the threats, problems and their consequences in the geopolitical state of the modern world, which arose as a result of the spread of the COVID-19 pandemic.

Statement of the research. Security, like many other theoretical categories in the social sciences, does not have a single and clear definition. After all, this category has interdisciplinary significance, so scientists from different scientific fields interpret it according to their subject of study and the specifics of cognition and research. But despite this, most researchers agree that security is an anthropocentric category – related to the social essence and value of man. After all, security issues can be considered in every sphere and every aspect of human life.

There is an inseparable link between the social functions of development and security, and this is explained by the unity and interdependence of all spheres and types of human activity. Even the ancient Roman thinker Cicero singled out these functions as fundamental in the development of society and the state: «First of all, nature gave each species of living beings the desire to defend themselves, to protect their lives ... to avoid all that is harmful, and to acquire and obtain everything necessary for life» [3, p. 234].

It is important to explain the lexical and etymological meaning of the word «security», which comes from the Latin word «securitas», which means – without care, without guardianship, without sufficient protection. Literally, security means a lack of threats (in English – danger) and a sense of confidence (in English – safety).

Most vocabulary definitions indicate that security refers to a state of confidence, calmness, providing a sense of state, lack of threat, and protection from danger. It should be noted that in the psychological definition, the threat determines a specific state of mind or consciousness, which is associated with the assessment of phenomena as unfavorable or dangerous for a particular entity (person, society, state, etc.). And from an objective point of view, the concept of security correlates with the real threat, danger and their destructive consequences.

Security, in its direct meaning, is interpreted as a need – primary, elementary and main. In the classical theory of needs, known as the Maslow pyramid, security occupies one of the main positions, along with the fundamental physiological (existential) needs. Thus, security is understood, above all, as freedom from fear. According to the Polish researcher Józef Kukulka, lack of satisfaction of security needs harms the individual, a social group, because it destabilizes their existence and functioning [11, p. 29]. There are tendencies to change the current state of affairs, to resist in relation to unfavorable changes in the field externally – a subject one and to the use of protective resources that can restore their sense of security. And this confirms that security is not only a certain state of affairs, but also a continuous social process in which the acting entities are trying to improve the mechanisms that provide them with a sense of security.

In the public-state dimension, the concept of security is ambiguous. Security usually involves protection from external military threats or risks to the state by another state, as well as protection from internal military threats from non-state entities. In recent decades, the traditional concept of security has been completed by other concepts that have expanded the nature of possible threats: by joining to the military threats the threat of terrorism, organized crime and disease, combined with economic, political, social and environmental risks. Accordingly, the list of objects of threat, in particular for security at the global, national and individual levels, has been revised [2; 4; 7; 8].

In order to understand the relevance of the issue of risks and threats to security, in particular human security, it is necessary to define these concepts. Thus, if the risk is considered a potential negative impact on any value or certain characteristics of value, possible due to the future implementation of a particular process or event, the threat is a phenomenon, factor (set of factors) that can actually create conditions or cause full or partial impossibility of realization of national interests. There is also a broader definition of threat as a social, natural or man-made phenomenon with predictable but uncontrolled undesirable events. Then security is, accordingly, the state of protection of vital interests of the individual, society and the state, as well as the environment in various spheres of life from internal and external threats. Danger, according to A.B. Kaczynski is described as a situation that is constantly present in the environment, which under certain conditions can lead to the realization of an undesirable event, which is associated with a number of dangers [1, p. 14].

The range of objects of protection (objects of influence of threats that need protection) extends from collective security at the global, national or regional levels to the protection of the individual, and in recent years the priority is the protection of the individual. It should be noted that when measures to reduce one of the threats prevail, protection at another level may decrease – for example, the protection at the state level does not always provide protection at the level of religious, ethnic minorities and individual protection.

Rethinking security by expanding the concept of national security, including new risks and threats in addition to the threat of military attack, has contributed to the emergence of concepts such as internal, functional and environmental security. An in-depth concept of security, based on the protection of the individual from threats, causes the creation of a social system in which people would live free from fear and deprivation [15].

The broader concept of security requires a comprehensive approach to the fight with a variety of threats, which involves identifying the interconnections between threats and humanitarian aspects. The main trend of the

twentieth century was the fight against military threats, first in the first half of the twentieth century, and in the second half of the twentieth century – the fight against military threats and, at the same time, the fight against terrorism.

Under this condition, an important issue is the level of security assurance as a result of military spending. This level depends on many factors, including what is considered security and cost-effective means of guaranteeing it. Globalization, while providing many benefits to humanity, has at the same time exacerbated the question of dividing lines between civilizations, cultures, and communities. Today, we are witnessing the world's leading countries struggling to overcome financial and economic challenges, but at the same time, military spending and investment in conventional and strategic weapons continue rising. Of course, the world's attention is focused primarily on the issue of nuclear weapon non-proliferation and conventional armament control, but the issues and measures of controlling the transfer of sensitive products and technologies, which can cause security problems, are gaining weight.

The armament and disarmament system of control has generally dealt with the threats originated by government program measures to prevent the use of chemical and biological weapons (UCBW). Because states have different interpretations of offensive and defensive works, there is still a risk of supporting the potential of offensive MCBW under the guise of so-called protective or defensive research programs, including peacekeeping and counterterrorism programs. The problems of determining the differences between offensive and defensive UCBW complicate the introduction of effective supervision of research [16].

This issue became especially relevant to humanity after the terrorist attacks in the United States on September 11, 2001. Analysts pay considerable attention to the development of threat scenarios involving non-governmental entities. The number of publications and reports on the threats related to bioterrorism continues growing. Some scenarios are based on specific events and processes, while others are based on more general and inaccurate assessments of the vulnerability of countries and objects. Due to the limited number of cases of accidental leakage of pathogens, it is impossible to assess their consequences, it is even more difficult to predict the probability and consequences of bioterrorism.

At the end of the twentieth century and in the first twenty years of the twenty-first century the ecological and biological threats and the insidious danger they bring have intensified! The use of infectious agents for base purposes can have not only military but also terrorist and criminal purposes. Biological threats and the use of biological and bacteriological weapons are not a modern invention. After all, biological weapons have a slightly longer history than the conscious study of microorganisms by mankind. For example, in 1300, the Tatar-Mongols during the siege of Kaffa threw the corpses of those who died of the plague behind the city walls. The Japanese were active in the biological weapons development sector during World War II. These were shameful pages in the history of obtaining microbiological knowledge – with studies on humans, which used more than 5 thousand people, about 600 of whom died. As a result of the experiments, about a thousand wells in Chinese villages were infected to study the development of cholera and typhus outbreaks. Japanese planes dropped flea plague on Chinese cities. The outbreaks that continued in the following years killed about 30,000 people. After the war researchers were pardoned in exchange for complete information about the research. Thus, scientists with a criminal past have become respected citizens and founders of pharmaceutical companies. And some have even published their work in scientific journals, replacing «human» with «monkey» in the section describing materials and methods. An example of research in the United States is the experimental contamination of the New York subway by the nonpathogenic bacterium *Bacillus globigii*, which simulated a potential attack by anthrax. Therefore, in 1972, the signing of the Biological Weapons Convention was initiated, which obliged all member states to refrain from developing and applying it. However, this did not guarantee that the participants kept their promises. It is assumed that some countries continue their research informally. At the same time, countries such as North Korea, Iran, and Syria do not hide it [9, p. 25].

Violations of safety in such studies can sometimes set precedents that violate their «secrecy». For example, an outbreak of anthrax in Yekaterinburg in 1979, when all the victims fell ill in a narrow area in the direction of the wind from a local military facility, gave grounds to claim that the pathogen had developed. An example of biological terrorist attacks is the sending of letters with spores of anthrax pathogens in 2001 [9, p. 31].

The means of mass destruction include toxic and bacteriological (biological) weapons. The action of the latter is based on the use of pathogenic properties of biological warfare agents – microorganisms that can reproduce in humans, animals and plants and cause mass diseases. Such bacteriological agents include viruses, bacteria, fungi and toxic products of their activity, the use of which is possible with the help of infected vectors (insects, rodents) or in the form of suspensions and powders in ammunition.

In the absence of an effective safety assurance system (in particular, biosafety), expanding the network of research in the field of preparedness to respond to biological threats in some countries may also cause a threat [18]. Increasing the number of laboratories with a high level of protection and expanding the range of studied pathogens contribute to the dissemination of potentially sensitive data and knowledge. This complicates the algorithm for handling dual-use biological and chemical substances. In recent years, the international community has made

significant efforts to analyze the effectiveness of compliance with national laws, codes of conduct and ethics, disease surveillance and response, biosecurity and biosafety.

For example, in 2007 the United Nations Office for Disarmament Affairs (ODA) launched the Bio-incident Database, as required by the UN Global Counter-Terrorism Strategy in 2006. The Office requested from the UN member states to update the list of laboratories and qualified specialists, compiled in 1989, in order to provide the UN Secretary General with opportunities to investigate the reports of the use of chemical or BW [16, p. 332].

Threat analysis and risk assessment related to the prevention of chemical and biological terrorism, response to their cases and the liquidation of their consequences as well as the assessment of the effectiveness of countermeasures, are less informative than in the case of traditional military threats from conventional weapons, in particular due to the lack of reliable open information. As a result, many states ignore the direct threats of chemical and biological terrorism, especially in the context of setting priorities for limited resources. As early as May 1986, the US Department of Defense, in a report to a committee of the US House of Representatives, confirmed that, by genetic engineering, bacteriological warfare was becoming an effective option for hostilities; It was also noted that new advances in biotechnology allow the creation of an almost unlimited number of variants of what can be called «substances with specified properties». New infectious diseases unknown to medicine can become especially dangerous during bacteriological warfare. The means and methods of protection against them will have to be created in the conditions of hostilities [16, p. 335]. However, despite these measures, in 2007 the miscalculations in the fields of biopollution and biosecurity at the facilities where the safety rules for working with biological material had to be followed became widely known: at the Institute of Animal Health (IAH), where a live foot-and-mouth disease virus is used in limited quantities for experiments, as well as at two private biotechnology companies, Merial Animal Health Ltd and Stabilitech Ltd, which produced large quantities of foot-and-mouth disease vaccine and used small quantities of the live foot-and-mouth disease virus, like that one which was produced in IAH. The strain of foot-and-mouth disease found during the investigation of the incident on farms near the town of Pearbright in Surrey, UK, where an outbreak of foot-and-mouth disease was recorded, was identical to the strain obtained during the foot-and-mouth disease epidemic in Great Britain in 1967. This strain is widely used in research laboratories and pharmaceutical production, in particular at facilities in Pearbright. Thus, the investigation led to the above mentioned objects in Pearbright [9, p. 23].

Along with the developed mechanisms of counteraction and security, the development of microbiological and medical technologies, the real challenge of the civilization scale at the end of 2019 was the spread of the COVID-19 virus. One of the most serious challenges to biosecurity (biosafety) over the past 20 years has been avian H5N1, H7N9 and swine H1N1 (as well as H5N8, H7N3, H7N7) influenza viruses, prions, SARS, MERS, Ebola, smallpox and poliomyelitis and also drug-resistant microorganisms (including tuberculosis – M (X) DRTB), etc. However, according to the calculations of the WHO [2] and some authoritative scientists in the world at the beginning of the XXI century, the probability of an influenza pandemic in the first half of the XXI century was indicated as extremely high. The Ebola outbreak crisis in West Africa seemed to kill more than 10,000 people from the virus in 2013–2016, and the outbreak in the Congo has been going on since the summer of 2018, with more than 3,000 cases. more than 60 % mortality is spontaneous but locally controlled. Therefore, the local outbreak of coronavirus in China in Wuhan was not initially perceived as a global threat. Nevertheless, for today – June 2020, from November to December 2019 (when the Chinese government officially released information about the outbreak of the virus, although a new study by Harvard Medical School states that satellite images of parking lots near hospitals in Wuhan, China, and also search trends on the Internet indicate that the new coronavirus could have spread to China in August last year), the virus has spread to all continents of the world and acquired threatening pandemic and mutant forms. Since the beginning of the coronavirus pandemic (recognized by the WHO as a pandemic on March 11, 2020), more than 7,1 million people have been recorded worldwide. The total number of patients who died from infection caused by the new coronavirus SARS-CoV-2 in the world is more than 407 thousand people. At the same time, the number of people cured of the coronavirus exceeded 3,2 million people. In the world, Spain ranks sixth in the number of infected after the United States, Brazil, Russia, Great Britain and India, and also sixth in the number of deaths – after the United States, Britain, Brazil, Italy and France. Italy was the first to record threatening deaths from coronavirus – since the beginning of the pandemic almost 34 thousand deaths were recorded. According to the Center for Public Health, in June 24, 39,014 cases of COVID-19 were confirmed in Ukraine, 17,409 of which were recorded as recovered and 1,051 as died.

The difficulty in counteracting the pandemic and overcoming COVID-19 is based on the fact that:

- 1) the final source of origin (natural or artificial) and the method of spread of this virus have not been determined;
- 2) the genome of this virus has not been fully studied and determined;
- 3) the lack of a clear treatment protocol and means of prevention (other than hygienic) of the disease from this virus;
- 4) lack of vaccine.

Aware of all the threats of the COVID-19 pandemic, the governments of most countries have applied quarantine measures from mid-March 2020 to the present day. As a result, a complex global crisis of economic

and socio-humanitarian scale has arisen. The whole complexity of the «war» of mankind with COVID-19 is based on the fact that its origin is of uncertain origin. After all, the Chinese totalitarian government continues hiding the information and data about the origin and spread of this dangerous virus. Although today the world community is aware that the widespread use of BW can cause the death of all living things on the planet. In addition, the possibility of using these weapons in local conflicts by terrorists, etc. cannot be ruled out. Thus, the measures to prevent the spread of bacteriological and toxic weapons are becoming important as the only adequate ones in the countries that did not have them before, as this is no less important than the non-proliferation of nuclear weapons. At the same time, according to experts, the measures to identify and reduce potential threats of UCBW should be carried out in such areas as the research to ensure response capabilities; the consideration of measures to limit sensitive research or public dissemination of their results; the improving disease surveillance and response; the development of registers of sensitive materials and objects with high levels of protection (levels of biosafety BSL-3 and BSL-4) and measures for their more reliable protection; the improving and expanding infrastructure and other capabilities to respond to chemical and biological attacks; awareness raising; general scientific and technical development; policy formulation and implementation taking into account these factors [16].

Due to the coronavirus crisis, according to Academician Mykhailo Tukul, a world-famous molecular biologist and director of the Institute of Molecular Biology and Genetics (IMBiG), scientists' points of view in Ukraine have begun to be listened to more. After all, «Science, in particular those of its areas that will become the main ones for the country's biosecurity tomorrow, is almost not financed by the state». The academician claims that «a center for the study of human and animal pathogens has long been needed in Ukraine. The only center where the best specialists of various institutes would work – molecular biologists, virologists, geneticists, immunologists. It is important that there are many «museums» in the country – in Kharkiv, Odessa, Lviv, Kiev. «Museums» are called collections of samples of terrible pathogenic viruses and bacteria. In fact, these are museums of destructive viruses, some samples date back to the late nineteenth century, and they would be useful for fighting the latest viruses. Our country still has a golden potential, which should be used at full capacity, because there are new and new biological threats, compared to which the coronavirus does not seem terrible. Academician M.Tukalo states that the world has changed rapidly and will be changing fast in the future as well. After all, humanity is moving from globalization to regionalization and even to isolationism, and in this new world, each country will defend itself.

Conclusions and prospects for further research. In summary, it should be noted that there are several areas of control developed in the world practice for possible biological threats. Thus, disease surveillance and response is important for biosecurity, in particular to identify the causes of disease outbreaks, and therefore it is advisable to optimize the measures to collect, evaluate and summarize information in order to improve international disease surveillance and response. Attention should be paid to the problem of global warming, because it is believed that this factor will have to be increasingly taken into account in assessing the causes (natural or intentional) of disease outbreaks. In this context, it is optimal to create a general European (or even global) disease surveillance network, database and information system to enhance the capacity of health and civil defense authorities to respond to both accidental and deliberate releases of biological substances.

In the context of armament and disarmament control, synthetic biology is increasingly becoming a symbol of the complexity of effective international control and oversight of scientific and technological development in order to eliminate the possibility of using its results for UCBW. Synthetic biology is defined as the development and creation of new biological elements, devices and systems, modification of existing, natural biological systems for their useful application. A 2006 report by The Royal Society states that synthetic biology technologies are available worldwide; genetic materials can be ordered by mail, and DNA synthesis—via the Internet [17, p. 18].

The growing complexity of controlling the transfer of knowledge and experience was evidenced by the American report on «imaginary exports». On the one hand, countries are interested in protecting a limited body of knowledge, on the other hand—in the global creation of knowledge. In the first case, countries risk remaining separated from the array of scientific and technical knowledge of which they have no idea, in the second—creating conditions for access to information of organizations (individuals) interested in using scientific advances for criminal purposes. In terms of ensuring biosecurity in the case of exaggeration of the role of certain risks, various problems may arise. For example, for dual-use equipment: when it is necessary to obtain a permit for the use (transfer) of equipment, if it is proved that it has military use. Biological laboratory equipment designed to produce a variety of toxins may be subject to military regulations if it is determined that terrorists may use this equipment for criminal purposes. Such an approach, under conditions of strict and general application, may hinder research.

Thus, the concept of microbiological criminalistics becomes relevant. Microbiological criminalistics is a new field that is being compared to nuclear criminalistics. It can be defined as «a scientific discipline devoted to the analysis for the purpose of attribution (reconstruction of the history of the incident) of signs of an act of bioterrorism, biocrime or careless leakage of microorganisms / toxins» [17, p. 21]. The technical and policy challenges connected to it include the development of strain exchange standards and access to databases. Health authorities are interested in treating victims, not in preserving the crime scene for investigation. The importance

of microbiological criminalistics was proved during the outbreak of foot-and-mouth disease in Great Britain in 2007 [16, p. 231].

Conclusions and prospects for further research. Thus, in the XXI century, mankind is faced with the problem of controlling laboratories that conduct bacteriological, virological or other types of research and accumulation and storage of biological material, as they may be small and officially declare another direction of research, etc., as in the case of the laboratory in Wuhan, China. The problem of the potentially easy availability of biological agents needs special attention, as there are about 1,000 objects in the world that have collections of pathogenic microorganisms and viruses. Biological agents based on microbiological technologies, for example, artificially modified bacteria, are resistant to any known antibiotics, and viruses are more resistant to environmental factors (temperature conditions, disinfectants, etc.). The development of molecular biology, microbiology, genetic engineering, etc. makes it possible to obtain new types of biological agents for the needs of health care, agriculture, and the food industry, which can be used for other, criminal purposes as biological weapons.

Also, the analysis of the impact of the COVID-19 pandemic on gross domestic product per capita in European countries and worldwide in the second half of 2020 should be very important in further research.

In general, it should be noted:

1. In order to reduce the threats connected with the use of biological agents, each country individually and the world community as a whole should establish an effective system of control over the facilities where the works with pathogens of infectious diseases, scientific research in the field of «synthetic biology», etc. are carried out;

2. It is expedient to develop and apply the uniform standards that regulate the rules of transfer of biological material or biotechnologies both within one country and abroad; special attention should be paid to the issue of responsibility of the parties, organizations or individuals for the use of scientific achievements for inhumane purposes;

3. Considerable attention should be paid to the appropriate level of protection in the study and practical application of dual-use technologies and equipment, as well as scientific information obtained during research in the field of biology, medicine, biotechnology, etc.;

4. An important aspect in ensuring biosecurity remains the introduction and support of interagency cooperation, including between law enforcement and health authorities, as well as facilitating investigations by national leaders, especially in the case of intentional use of biological substances;

5. Microbiological criminalistics can become a promising and necessary direction of national and international planning in the field of ensuring readiness to respond to biological threats.

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Наукові інтереси:

- геополітика;
- державні механізми управління національною безпекою.

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Наукові інтереси:

- дослідження бухгалтерського обліку;
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