

ARTIFICIAL INTELLIGENCE, GENOM, CYBERSPACE AND SPACE – CONTEMPORARY THREATS TO THE SECURITY OF THE STATE AND NATIONS

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Abstract: Among many contemporary threats, which include threats in the military, economic or social sphere, issues related to threats in cyberspace, artificial intelligence (AI), genetic modifications of the human genome and threats related to with space exploration. This work, based on a qualitative analysis of the literature, aims to identify selected, often overlooked and not functioning in the common awareness of contemporary threats to state security. The analysis undertaken allows us to conclude that an important factor contributing to the increase in the level of threat to the security of the state and nation today are the contemporary "black swans" in the security sphere, the weakness of political leadership, unknown directions of AI development and changes in the human genome, threats related to the outer space exploration and threats in cyberspace.

Key words: artificial intelligence (AI), cybersecurity, cyberspace, genome, national security, outer space

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The beginning of the 16th century, the Amazon is inhabited by Indians. They run the primal economy in our understanding. They live according to nature. But they too, like every human society inhabiting the world, have their problems. Each of these communities' cares about their daily lives and ensuring the safety of themselves, family, clan, tribe. And the world of the Indians, despite knowing the secrets of the jungle, is full of dangers. The everyday, known and tamed, include deadly animals, attacks by neighboring tribes, river floods, hunger, diseases, injuries while hunting or death in childbirth. However, among the greatest threats are repeated attacks by the Incas. Newcomers from distant mountain valleys kill the defending inhabitants, kidnap others into slavery and

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force the rest to pay tribute. These are all very important issues for everyday security, and experienced chieftains claimed that they were even crucial. After all, these were and are the pillars of their tribal security - food (economics) and reducing the external threat (military). Beyond the perception of the Indians, maybe it was one of the Pano tribes living on the Ucayali, maybe the Guarani on Paraguay, or maybe the Pirahã from the Maici River, there was knowledge about Europe, Ch. Columbus, caravels, the causes of geographical discoveries and F. Pizarro. Apart from a few shamans, they cared little about conquering the Inca Empire. They probably didn't even realize it at first. In this region, the circulation of information at that time left much to be desired. The Indians in the Amazon lived on with a little more security - the Incas stopped their invasions. Then there will be strange white people in dark costumes - it was the Jesuits who set up their reductions in Paraguay, and the Guarani Indians were slowly getting used to the new civilization. The level of security for a while (from the point of view of historical processes) stabilized again. The Jesuits disappeared as a result of decisions made in Europe that were incomprehensible to the Indians, and the Amazon was divided into a number of states and it was dangerous again.

Wars on the continent between new states fighting in different political constellations brought nothing but death, destruction and new frontiers to the Indians. The economic boom, incomprehensible to the Indians, only caused them problems. The boom for sugar cane, coffee, and later rubber resulted in the expansion of plantations and pushing the Indians further and further into the Amazon, where they encountered the original inhabitants with whom they had to fight for their lives. New, unknown diseases decimated the warriors, and some tribes simply died out.

Other Indians, living in the early 21st century areas that were allocated to them, for example, by the Brazilian government, still do not understand why the increase in subsidies for ecological fuels in the European Union causes them to take away their land and create new oil plantations. Or replacing the Amazon forests, which provide shelter, building material and food, for pastures for cattle exported by hacienders. Indians were forced to work, kidnapped, their defenders killed, and entrepreneurs motivated by the desire for profit grew in strength. The institutions appointed to defend the Indians did not work or acted too slowly to really protect them. Until finally the Indians understood the danger that threatened them and came out of the jungle. In this way, the so-called civilized world found out about them (Rogacin, 2014). But nothing has changed (Wallace, 2020). It was too late to counteract the impending danger.

The aim of the undertaken works and analysis of the literature is an attempt to indicate the importance and role of new threats in the contemporary system of national security and the state, although already described in the literature on the subject. It seems that we are not prepared for possible threats from outer space, cyberspace, AI development or changes in the human genome. In addition, the black swan phenomenon known from economics may become a key factor for new threats. Just like the covid epidemic, the decisions of state leaders, or the course of the war in Ukraine.

NATIONAL SECURITY AND STATE SECURITY

In the rich Polish literature on the subject, you can find a number of works more or less holistically (Korzeniowski, 2016; Kitler, 2011; 2019; 2020)

addressing the issue of the definition of security (Stańczyk, 1996; 2011), its essence (Lutostański, 2017), the theoretical approach to the threat (Lubiewski and Drózd, 2020), its classifications, sources and types (Ciekanowski, 2010) and spatial profiles (Wendt, 2008). Equally numerous works indicate the importance of the country's economy and defense issues for ensuring its security. In addition to the issues fundamental to security already mentioned, the changing realities of life, techniques, scientific discoveries, changes in political constellations, the impact and changes in geopolitical location, new media, fake news show us new spheres from which we may encounter a threat (Belza, 2011).

Along with the recurring role and importance, perhaps only in the political and propaganda version, we place more and more emphasis on the narrowed concept of security. Narrowed by adopting the concept of nations and functioning in the literature as national security (Bał, 2010). As a layman, it is difficult to understand such a narrowing of the concept of security by adding the term "national" to it. What about states inhabited by nations with conflicting interests and no common sense of security, such as Israel; Rwanda, Turkey, or Russia, or those threatened by national minorities (Wendt, 2021), not to name too many. This may also result from the research paradigm that has not been fully developed (Bombała, 2017). Of course, they can be considered useful in the field of didactics, ordering or pragmatically assume that we have / should have the greatest influence on national security, but my understanding of national security includes, moreover, according to the literature on the subject, which is consistent with the formal logic, the entirety of contemporary threats to each country (Ciekanowski et al., 2016).

And now you can go back to the Amazon Indians for a moment. Maybe they knew, maybe they didn't, but they certainly weren't prepared for unknown threats. Another question is whether, if they knew, they would be able to defend themselves, take care of their safety, the safety of the tribe (nation). We in contemporary Poland, more broadly in Europe or in the world, research, track, protect, build walls, in a word, we try to counteract possible everyday or known threats, just like the Indians mentioned above. We pay relatively little attention to potential threats already present in the world. Present not only in literature, but increasingly threatening us in the real world.

Among the many contemporary threats, which are investigated by numerous state (nation?) institutions, it seems that researchers, and above all, the state, which in the current reality is responsible, well, let it sound grandiose, for the security of the nation, enjoy relatively little interest issues related to the threats brought by the threats present in cyberspace, artificial intelligence, genetic manipulation of the human genome and threats resulting from the broadly understood exploitation of space. Of course, I do not underestimate everyday threats, economic (Stańczyk, 2020), energy (Mrozowska et al., 2021), political (increasing role and importance of authoritarian systems), military, threats related to the interaction of the media and democracy (Adamowski and Jas, 2004), political and electoral systems (Wendt and Bógdał-Brzezińska, 2020; Bógdał-Brzezińska, 2020a; Borkowski et al., 2021; Wendt, 2021; Wendt and Bógdał-Brzezińska, 2022) or the spread of new diseases. In a word, threats that are increasingly known to us, threats that we deal with better or worse, but still. The purpose of this part of the work, in accordance with its title, is to draw attention to potential threats, the real effects of which we have not yet

encountered in everyday life. Just like the Amazon Indians, who met the conquistadors relatively late, but whose influence, despite the lack of it, threatened the lives or even annihilated many of the Indian tribes.

MATERIAL, METHODS AND LIMITATION OF RESEARCH

The empirical material for the work undertaken was collected on the basis of information from the mass media about potential contemporary threats. It also includes classic, existing and potential threats to the broadly understood security of the state and nation, known from the literature (Ciekanowski, 2010). The study uses case analysis methods and methods typical of security sciences (Sienkiewicz, 2010). According to the literature, most of the methods used in the social sciences and humanities can also be used in the analysis of state and national security (Mróz-Jagiello and Wolanin, 2013; Czupryński et al., 2017). Similarly in the field of international security and space superpower as well as cyber security (Bógdał-Brzezińska and Gawrycki, 2003; Bógdał-Brzezińska, 2020b). Qualitative content analysis was used to examine existing but also omitted content to show significant or unspoken (disregarded) risks. The work also uses the method of comparative analysis, confronting the effects of response to events defined as threats.

The most important of the limitations of the undertaken research is the problem of access to information crucial for state security and defining threats, which by definition belong to classified information resources. Another limitation is the wide range of topics, which is basically impossible to present the whole issue. An attempt to solve the latter problem is a general approach to the subject, the work is a pilot study, constituting an outline of the subject and an indication of the direction of future research.

RESULT AND DISCUSSION

Threats related to cyberspace

Threats related to cyberspace are already well recognized and have a rich literature (Bógdał-Brzezińska and Gawrycki, 2003). They already concern our everyday life, although not all of us pay attention to it yet. Cyberattacks on bank accounts, enterprises or exchanges are already commonplace. The arms race in cyberspace is already underway, cyber battles and wars are being waged (Kozłowski, 2014; Boyte, 2017). Constant surveillance is underway, and G. Orwell's prophecies in China are slowly becoming a real reality. Despite the conducted research (Nikhita Reddy and Ugander Reddy, 2014; Bógdał-Brzezińska, 2020c) and the implementation of preventive measures, the press / media more and more often report new hacker attacks (Bendovschi, 2015) on important institutions, and it is only a matter of time before computer programs are used to paralyze company, city or Internet network in a region or country. An equally important battlefield for maintaining security is the issue of shaping the geopolitical dimension and the impact of one state (formal, informal group) on another actor on the international scene (Bogdanoski and Petreski, 2013; Bógdał-Brzezińska and Wendt, 2020a; 2020b; Potulski et al., 2022).

A great challenge for modern security is universality, even dependence of the economy, state institutions, medical and educational structures, and finally ourselves, on the Internet (Abomhara and Køien, 2015). No wonder that cybersecurity is a fundamental issue, it can even be described as a pillar of the security of a modern state (Ciolan, 2015). However, the state of our current

knowledge does not allow us to fully prepare for the potential threat. A useful translation in this and the following research is the concept of the black swan. Just like in economics, a black swan, an incidental event of great importance for the economy, which could not be predicted due to a very low level of probability of occurrence, affecting on a national and international scale, functions similarly in politics and in the sphere of state security.

Artificial intelligence

In 1942, I. Asimov, a famous science fiction writer, formulated three laws of robots, to which he added the law "0" after their criticism. Thus, they ultimately took the following form: (0) A robot may not harm humanity, or by inaction cause harm to humanity; (1) A robot may not harm a human or, by inaction, allow a human to be harmed; (2) A robot must obey the orders of a human unless they conflict with the First Law; (3) A robot must protect itself as long as it does not conflict with the First or Second Law. Almost eighty years have passed since the 1940s, and humanity has made significant progress in the construction of artificial intelligence (AI). So significant that even though a fully autonomous thinking machine (AI) has not yet been constructed, the world of film writers has created entire series or disaster movies with AI in the lead role from the "Terminator" series to the next parts of "The Matrix". This is not just a fantasy of film producers, nowadays ChatGPT allows you to receive answers to questions asked by a human from AI (Biswas, 2023; Else, 2023; Kalla and Smith, 2023). Answers not always explaining the issue we are asking about but based on information from the global Internet.

V.C. Müller (2014), the future security of work with AI was already considered by O.A. Person and W. Wesler (2017), and M. Brundage and his team (2018) worked on preventing the use of AI in a malicious (insecure) way. The key question in this approach is asked by L. Muehlhauser and N. Bostrom (2014), wondering, assuming that AI surpasses human intelligence, whether we are adequately prepared for the world we know so far from sci-fi movies. And finally, a problem directly related to the subject of security, raised in their work by M.C. Horowitz with the team (2018), the problem of relationships and the use of AI in security. The analysis carried out in the text on the examples of the United States, China, India and Russia leaves many questions about the state and advancement of our allies (USA) in terms of the possible use of AI to disrupt international relations. A separate reproach that raises concern and undoubtedly determines the level of security is the combination of AI with cybersecurity, which is suggestively argued by P.K. Donepudi (2015). Treating the above research and threats with due seriousness, but not necessarily taking into account the implications of the work of Hollywood screenwriters, it should be pointed out that although we have not created AI at the moment (or maybe we do not know it), we are able to defend ourselves against its actions, after its creation, it may be too late.

Modification of the human genome

It's not a dream anymore. Since the cloning of Dolly, the sheep, there has been a global race between superpowers for supremacy in research and genetic modification. From time to time, the media inform us about the potential benefits of working on genetically modified plants, which have already become commonplace. Although in a number of countries genetically modified corn or

soybeans are still censored, the benefits of these modifications are already widely known. Vegetation - yes, animals, yes, but man? Yes, the human genome has been subject to modifications for many years. Medicine knows thousands of examples of research. Cures some diseases, gene therapy is commonly used in some types of cancer. These are positives. But the threats, although we do not know about them, are evident (Furtado, 2019). We have no knowledge of the results of human genotype studies in China, Malaysia or South Korea. They are probably significantly more advanced than research in the US, EU countries or the UK (Callaway, 2016). Embryo manipulation is common and probably more common than we think. Putting aside for the moment all ethical considerations (Rotschild, 2020) related to the creation of a "new, better" man, selection and genetic modifications lead to the creation of a new better "race", possibly the races of the future rulers of our planet.

Outer space - threats from space and space technologies

Like the threats already mentioned above, the cosmic ones have so far been underestimated, and have been widely discussed in the literature for several years (Pelton and Allahdadi, 2015). Outer space (Paikowsky, 2017) is not only the use of space technologies, but also potential problems (Bógdał-Brzezińska, 2020d; Bógdał-Brzezińska and Wendt, 2021) and threats (Wendt and Bógdał-Brzezińska, 2022). In contrast to the "old" use of space (outer space) conducted by more or less responsible (national) states, the dynamic entry of private companies can and is largely free of any control. Goals, resources, means, tools, and above all, it is not subject to any control, which leads to many different risks (Manulis et al., 2021). And in this case, the new cybersecurity rules for the new space will not help (Falco, 2019; Wendt, 2022), private companies simply will not comply with them. And yet there is also a whole range of other, classically understood threats related to outer space. The problem of satellite and hypersonic weapons, cybersecurity of satellite systems. And so far we don't even have a working SDA - Space Domain Awareness System (Bielawski, 2019) (space domain awareness includes the study and monitoring of, among others, satellites orbiting the Earth), which is also in my opinion necessary to ensure security in any country, because at the international level, action is basically excluded (obvious lack of exchange of sensitive information between, for example, China and the USA).

CONCLUSION

No, not only the economy and military are the pillars of national security. In addition to these two pillars, there are many others. The world of international relations (Bógdał-Brzezińska, 2009; Horowitz, 2018), incomprehensible decisions of leaders (e.g. D. Trump of January 5, 2020 or V.V. Putin of February 24, 2022), incompetent governments, social unrest, division of society, possible war with Iran (anyone) that will disrupt oil prices and supplies, an earthquake coupled with a higher than expected tsunami at the site where a nuclear power plant has been built, and not to give any more examples - the unknown effect of the gentle movement of a butterfly's wings startled by protesters on the edge of jungle over Amazon Indians.

Are we prepared for the threat then? No, we're not and probably never will be. Security is affected by many factors, many of which are difficult or unpredictable, such as terrorist attacks (Wendt, 2019), and probably also

impossible to imagine their existence. In security, as in economics, we are dealing with the phenomenon of a black swan. The trivial truth about generals, to stick to the military pillar, always prepared for the rules of wars that have already been fought, has been confirmed too often. It can be extended to security without much error. We are often well, and sometimes very well prepared for the threats we know. We bear the costs of surprise, the asymmetry of forces or resources, but as humanity and as a nation, we have managed to survive so far. This does not release us from the obligation to prepare for new, unknown and thus more dangerous challenges. And that they will come is basically only a matter of time.

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