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APPLICATION OF FUTUROLOGY FOR THE ANALYSIS OF THE SECURITY ENVIRONMENT (IS IT POSSIBLE TO DETERMINE THE FUTURE?)

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ABSTRACT

In the 21st century, previously unseen processes could be identified in the security environment, one element of which was extremely unexpected and rapidly changes in the security situation. In the rapidly changing security environment, it has become increasingly important to define the future, that is, to predict future challenges, risks and threats, which is necessary for a country to be able to respond to emerging threats. In security studies, there are various methods (e.g. matrix analysis) available to define the current security environment, which are only limited in their ability to present the future. Therefore, the author examined future research (futurology), how can it be used to determine the future in the field of security? In his brief analysis of futurology, he examined the differences between forecasting and visioning the future. During the analysis of futures research analysis methods, he emphasized the procedures that are suitable for predicting changes in the security environment, as well as for determining the future security situation.

Keywords: security, analysis, futurology, security studies

INRTODUCTION – THE IMPORTANCE OF KNOWING THE FUTURE

In the 21st century, based on our experience so far, extremely rapid changes can be observed in the international community, which are increasingly extreme and more sudden compared to the past. Such events and variations occur that have never been seen before. As a result, international relations are constantly changing, in which they are no longer always valid, and new processes arise. The outcome of the new processes is not known, because there is no relevant experience. Unexpected and unknown processes also make it difficult to define the security environment. Knowledge of the security situation is extremely important for the existence of countries. In the 21st century, the security situation is constantly deteriorating, which can also be defined as a trend. Therefore, it is necessary to accurately define the security situation, especially the emerging challenges, risks and threats, and predict their impact. Not only the negative, but also the positive safety factors must be examined, because they also determine safety.

This made it necessary to forecast[1] the country's security situation and development. State decision-makers need to be aware of future security risk factors in order to respond to negative security processes and protect the country, but this requires predicting changes in the security situation. For this, it is necessary to develop methods in the theory of international relations and in security studies that help to define the security of the future as precisely as possible.

In the theory of international relations and in the security studies, more and more studies are being prepared that deal with the prediction of the security situation, but concrete analytical methods can be seen behind only a few. Knowing the future, that is, the future risk factors,

[1] I will discuss the difference between forecast and foresight later, as they are not synonymous.

provides state decision-makers with the ability to activate appropriate protection mechanisms that can prevent the reduction or elimination of the effects of negative security factors. Among the various traditional methods for assessing the security situation, there are also those that are suitable for determining future prospects. In addition, the methods of futurology include those that can be used to determine the future development of the security situation.

1 FUTUROLOGY

The main question is whether it is possible to define the future to any degree? Yes, because within the framework of futurology, there are methods and procedures that provide the opportunity to determine the future's occurrence with different probabilities. For this, it is necessary to define what futurology is.[2]

The futurology is an almost century-old discipline, which can now be considered an independent discipline. In 1928, Oskar Morgenstern[3] wrote for the first time in the field of economic science about the possibility of prognostication. In 1945, Ossip K. Flechtheim[4] published the first work[5] on future research, but he has coined the word futurology in 1943. Futurology was first developed as a part of economic science, in order to predict economic processes, but nowadays the results of futurology are used in all sciences, so the theories of security and the theory of international relations are also used.

There are many concepts of future research, but I think a concept from 1977 best reflects its content: 'futures research is the preliminary knowledge that deals with the scientific exploration of the future, outlining the possible variant of future development.'[6] A scientific approach to future research is considered futurology. So the science of futurology and its methods help in determining the future. An important defining the futurology is that the future must be separated from the forecast, because the future refers to a fact that will occur later compared to the present, while the forecast shows the way to the future. In addition, the statement that there are several futures must be taken into account, because in the present, as a result of the decision points, several alternative futures exist. Thus, the decisions to be made in the present influence the development of the future, so there is no future written in advance. The goal of futurology (that is, forecasting the future) is to define future alternatives as accurately as possible using different analysis methods. So the future is relatively easy to determine, but the probability of its occurrence ranges over a wide spectrum. Therefore, the goal is to define the future as accurately as possible. [7]

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[2] Meaning of futurology – https://dictionary.cambridge.org/dictionary/english/futurology, downloads: 31.08.2023.

[3] Oskar Morgenstern is an Austrian economist of German origin who continued his work in the United States of America after the Anschluss, where he worked with János Neumann. This resulted in the foundation of game theory. In 1928, he wrote the work "Wirtschaftsprognose: Eine Untersuchung ihrer Voraussetungen und Möglichkeiten" as a scholarship recipient of the Rockefeller Foundation.

[4] Ossip K. Flechtheim, born in what is now Ukraine as Nikolayev, is a German lawyer and political scientist who worked in Germany, except during the period of Nazi rule, because he emigrated first to Switzerland and then to the United States of America, but returned to Germany at the end of the war. He is considered one of the founders of futures research.

[5] FLECHTHEIM, Ossip K.: Teaching the Future. The Journal of Higher Education, Vol. 16, No. 9, 1945. pp. 460–465.

[6] Lajos BESENYEI– Csaba DOMÁN: Time series models of business forecasts (A jövőkutatás feladatai és gondjai). Nemzeti Tankönyvkiadó, Budapest, 2011. https://dtk.tankonyvtar.hu/xmlui/handle/123456789/12937; downloads: 31.08.2023.

[7] Erzsébet GIDAI: Tasks and problems of future research. (A jövőkutatás feladatai és gondjai.) Gazdaság és Társadalom, 2000/1–2. p. 85. http://real.mtak.hu/42384/1/GT_2000_1_2_02_Gidai_u.pdf; downloads: 31.08.2023.

An important finding in futurology is that a distinction must be made between forecast and foresight. The difference between the two concepts is shown by the fact that the different trends in futurology were also formed based on different interpretations of the two concepts. The two concepts also show the evolution of futurology, because in the beginning the emphasis was placed on forecasting, while nowadays the search for a vision of the future plays a greater role. Forecasting basically focuses on one problem at a time, which tries to define the future picture based on simplified measurable data, using different - mainly statistical - models, while foresight uses a system-level approach to the future to learn about the future, thus, among other things, it strives to create complex scenarios. [8]

2 ANALYSIS METHODS FOR SECURITY SITUATION

In security studies, there are many methods and procedures for defining the security environment, which are able to outline the security situation with varying degrees of accuracy and detail. Security analysis procedures can be divided into structured and non-structured methods, which are well suited for determining the security situation. Structured methods provide a much more objective result, because non-structured methods also involve subjective elements. Nevertheless, non-structured methods can also provide in determining the security situation. Within the methods, there are simple and complex ones that allow the identification of different elements of security. Of course, complex methods are capable of more accurate and detailed results. The simple methods (such as graphical, comparative, pattern and anomaly analysis) can determine one element or factor of security. However, with complex methods, a comprehensive picture can be obtained, which can guarantee an accurate and comprehensive assessment of the security situation. Among the complex methods, matrix analysis provides one of the best opportunities for mapping the security environment. The matrix frameworks create an opportunity to examine the factors affecting security in all segments of security, thus providing an opportunity to determine the indicators arising from them. In this way, the situation of the security complex can be established. There are many security matrixes that can be used for different purposes, ranging from determining the situation of the operational environment in the military field, through assessing the investment environment in the economic field, to strategy creation in the political field. The closest to the complex definition of the security situation is the mapping of the security situation of the given country during strategy making process. One implementation of this could be the security policy matrix, which analyzes the security situation at all levels of security (individual, community, national, regional, international and global) and in all dimensions (political, military, economic, social, environmental). After drawing up the matrix, there are several methods for analysing the security factors, the most popular of which is the SWOT analysis, but there are other procedures as well. These include the joint analysis of the probability of occurrence and effectiveness of security factors. [9]

3 DETERMINING FUTURE PROBABILITY

Everyone is capable of determining the future, but the probability of these view of the future occurring is different, usually extremely low. Therefore, the goal of analytical methods

[8] Future Research, Scenarios. (Jövőkutatás, Forgatókönyvek.) Európai Környezeti Információs és Megfigyelő Hálózat 2020., https://eionet.kormany.hu/jovokutatas-forgatokonyvek; downloads: 2020.12.24.

[9] VIDA, Csaba: The new method of the analysis of the security environment: Introduction of the Security decriptor matrix (Peter, SPILÝ (edit.) Liptovsky Mikulas, Slovakia, Akadémia ozbrojených síl generála Milana Rastislava Štefánika (2020) 576 p. pp. 525-536, 11 p.

is to determine the most probable future. However, this can only be done by having a sufficient (as large as possible) amount of information and using appropriate analytical methods. Nowadays, disruptive technologies are already helping, among them artificial intelligence can provide more and more support. It can be concluded that the increase in the amount of relevant data provides more and more opportunities to define the future more precisely.

In order to define the future, it is necessary to present the structure of the future. The future is the alternative future versions that follow the decision points following the present, that is, more future alternatives can be seen from the present, the number of which increases exponentially with the number of decision points. So, the more distant future we look for, the more alternative futures we have to reckon with, so logically moving away from the present, the probability of predictability of the future decreases. However, this can be increased by using different analysis methods.

Some structured and non-structured analytical methods also provide an opportunity to learn about the future, but most of them can predict one segment of the future or determine the future with limited probability. Of course, there are methods that can give more accurate results. One of these simple methods is pattern analysis, since the future continuation of the pattern shows the future. A similar possibility is included in the process analysis, if the given process is not interrupted in the present. Among the complex methods, by repeatedly applying the strategic security environment analysis, the trends for the future can be determined, which provide a kind of picture for understanding the future.

The methods used thereby provide an opportunity to select those future alternatives that are more likely to occur. In the case of probability, the most ideal would be 100% probability, which is currently not possible, so the goal is to reach a probability greater than 50%, for which the use of traditional methods is not always enough.

Four types of knowing the future can be distinguished. One is the foresight, when a moment in the future needs to be determined. The other is examining the path to the defining moment of the future, how to get to that point. The third, when the future development of the subject of the investigation is analysed, while the fourth, the development of relations between the subjects of the investigation is reviewed. These require different methods capable of foresight.[10]

4 ANALSIS METHODS FOR THE DETERMINE TO FUTURE

Futurology can also provide significant support for determining the future security situation, whose researchers have developed many methods and procedures throughout the history of futurology in order to make it easier to outline the future. The goal is to define the future as precisely as possible, that is, to have the greatest possible probability of the occurrence of the outlined future. A central issue is the degree of probability of occurrence. A significant part of futurology methods and procedures have been adopted from other disciplines, so some methods are specially linked to their original function, so it is necessary to examine the methods that can be used not only in the given field, but also in other disciplines. Until now, the largest collection of futures research methods was published by Jerome C. Glenn and Thodore J. Gordon in their publication called Futures Research Methodology – Version 3.0[11] back in 2009, in which the methods are classified into 37 groups on 1,300 pages. The authors published a

[10] VIDA, Csaba: The importance of forecasting in the analytical work (Az előrejelzés fontossága az elemző-értékelő munkában), Felderítő Szemle, 2021/4. pp. 89-121.
[11] GLENN, Jerome C. – GORDON, Theodore J.: Futures Research Methodology – Version 3.0. The Millenium Project, 2009.

collection in which studies by experts in the field were used to present the various methods. Several of the futurology methods and procedures included in the volume are also suitable for forecast and foresight of the security environment.

After analysing the methods, it can be concluded that the following (e.g. six procedures) are suitable for forecast the security environment.

Environmental Scanning

The method comes from the economic sector because it is extremely close to the business strategy making process. This method is aimed at assessing the environment of the subject of the study, that is, determining the indicators that have an impact on the subject of the study and influence the direction of its future changes. It is emphasis placed on indicators that include single signals (individual factors that predict change), milestone events (those that trigger paradigm shifts), expert forecasts, and statistical findings. In addition, the resources of the subject of the investigation are determined, and they are compared with the indicators, thus obtaining the future development directions. A large amount of data is very important in the environmental scanning method, which basically determines the success of the forecast. [12]

Futures Wheel

This method is basically used to determine trends, thus forecasting processes, during which the change/development of the subject of the study is examined in relation to the future. The method was created by Jerome Glenn in 1972. The procedure identifies the primary, secondary and tertiary changes, effects and events in the subject of the investigation and determines the future through them. So, a structured thinking about the future, which is depicted in a circle. For example, when examining the future effects of an event, the event is at the center, while the primary, secondary, and tertiary effects are placed on the rings surrounding it, as well as connecting related effects. The following rings must be outline until the effects of the effects can be determined, so a continuous ripple effect can be written with it. [13] This creates a picture of the trend or process in relation to the future. The future wheel is also a qualitative method and is basically only suitable for forecasting.

Delphi method

The method is the most popular futures research procedure developed by Olaf Helmer at the RAND[14] research center in the 1950s. Basically, it can be considered a non-structured method. The method is a system that ensures the structuring of a group communication process, within the framework of which the opinions of experts in the given topic (regarding the forecast) are requested independently, after which the answers are synthesized and similar/identical findings are sought, because they show the most likely forecast or vision of the future. Feedback is also possible during the discussion and negotiation. It is very important that the experts do not discuss their positions in a group, because then the group dynamics will negatively influence/distort the final result. The research must be independent and anonymous, but it is also important to select the right experts, because only the opinions of experts can be relevant.

[12] TOIVONEN, Saija – VIITANEN, Kauko: Environmental scanning and futures wheels as tools to analyze the possible future themes of the commercial real estate market. Land Use Policy, Volume 52, 2016. pp. 51–61. https://www.researchgate.net/publication/289995839_Environmental_scanning_and_futures_wheels_as_tools_to_analyze_the_possible_future_themes_of_the_commercial_real_estate_market; downloads: 15.07.2021.

[13] The Futures Wheel – Identifying Consequences of a Change. Mind Tools. https://www.mindtools.com/pages/article/futures-wheel.htm; downloads: 10.09.2022.

[14] Research and development – Kutatás-fejlesztés.

The method is quantitative as well as exploratory. The real-time Delphi method was developed due to the fast data processing capabilities of IT systems.[15]

Trend Analysis

Trend analysis is a forecasting model, which is basically a mathematical and statistical method, because after identifying the characteristics of events that can be described with numbers, it predicts their future development. It is close to the model of patterns because the method assumes that the patterns of the past will continue in a series of numbers in the future. So you identify the trend based on what happened in the past as a pattern from which you infer that the series will continue in the future.[16] Megatrends, new trends or branching trends are distinguished based on outlined trends. Megatrends are valid for a long period of time, even spanning a generation, and new trends are new directions emerging from changes and development. In branching trends, the trends are connected to each other, or several branches develop within a defining megatrend, i.e. a new trend can be defined. Based on this, trend analysis can be classified as a quantitative method. Weather forecasting can be considered the most classic trend analysis.

Causal Layered Analysis

Causal layer analysis was created by Sohail Inayatullah in 1998 as a theoretical model of futurology, in which he integrated experiential, evaluative, critical thinking and group work methods. Basically, the theory is not suitable for forecast, but for outlining alternative foresight. Its goal is an in-depth analysis of the factors determining future developments. The analysis consists of four layers. The first is the level of reality (the litany), which is the unquestionable image of reality, that is, the definition of the issue itself. The second is the social level, which provides a systemic analysis of the issue. The facts established at the first level are explained at the second level and, if necessary, verified. The third is the idological level, in which the ideological, worldview and discursive suggestions of the issue are developed more deeply. The fourth is the level of myths and metaphors, which examines issues based on emotional dimensions. So an analysis that moves up and down the above layers of analysis that shows the discrepancies that also represent alternative foresight. [17]

Back casting

Despite its name, the back casting method is a futurology procedure. Its difference lies in the fact that it does not infer the future from the present and the past, but looks back from an outlined - ideal - vision of the future and examines the events and decisions that connect it to the present. So the result of the method is how the outlined future can be achieved. It provides a suitable procedure especially in the case of a desired future, when the probability of the occurrence of the given future is very low. The developer of the method was John B. Robinson, who in the 1970s developed a kind of alternative to traditional energy forecasting. There are four different types of back casting method: goal-oriented, path-oriented, action-oriented, and participation-oriented. Goal-oriented projection examines how to achieve a designated goal in

[15] SALEH, Mohamed – AGAMI, Nedaa – EL-SHISHINY, Hishman: A Survey on Future Studies Methods. Conference Paper, 2008. https://www.researchgate.net/publication/238737064_A_Survey_on_Futures_Studies_Methods; downloads: 31.08.2023.

[16] Futurology: Trend. https://future.fandom.com/wiki/Futurology:_Trend; downloads: 31.08.2023.

[17] INAYATULLAH, Sohail (edit.): The Causal Layered Analysis (CLA) Reader – Theory and Case Studies of an Integrative and Transformative Methodology. Tamkang University Press, 2004. https://www.researchgate.net/publication/228570392_Causal_layered_analysis_an_integrative_and_transformative_theory_and_method; downloads: 10.06.2021.

the future. Path-oriented projection looks for how and by what path the defined future can be reached. Action-oriented reflection examines what efforts and activities are necessary in the future to achieve the outlined future. The participation-oriented version examines the relationship between the future and the present based on community solutions and shared knowledge. It is important to define that the projection method does not research the actual future or the most probable future, but possible futures. [18]

In addition to the six methods above, there are other futurological methods that make it possible to forecast in the security situation and to determine the future security situation. The procedures usually use different methods and approaches, so the use of several methods can determine a more accurate result. Furthermore, which method should be used usually depends on the given goal. Based on the analysis of futurological methods, it can be concluded that they are suitable for determining the security situation of the future.

5 IMPORTANCE TO DETERMINE THE FUTURE – PRACTICE AND ONE EXAMPLE

Determining the future evolution of the security environment as precisely as possible is vital for every country, therefore, when applying the methods that outline the security environment, it is also necessary to include methods that are also capable of determining future processes. Thus, when analysing the security environment, it is necessary to use several methods, a mixture of security environment analysis methods and futurological methods, because then a more accurate picture of the security environment is available.

In my opinion, the most suitable framework for the complex analysis of the security environment is matrix analysis, while different methods, including futurological methods, are used to determine the elements (fields) of the matrix. The matrix provides a kind of framework to analyse future processes in all dimensions and levels of security. Thus, in the case of the fields of the matrix, the current and future security factors must be examined one by one. Different security analysis methods can be used to determine the current factors (threats, risks, challenges, impact mechanisms, influences etc.), which may include the enumeration or summary simple procedure, in which the safety factors characteristic of the given field are determined. After that, it must be determined to determine the characteristics of the safety factors (efficiency, probability of occurrence, etc.). After analyzing the identified factors, the current situation of the security environment is determined. In the following, using the methods of futurology, the future change of the security factors belonging to the given matrix field, the determination of future security processes, and the development of new future factors are determined. It is very important to define the period of the future that we are looking at. For example, 5-10 years for security strategies. After determining the future security factors, it is also necessary to formulate the characteristics of the future factors. After that, the future security situation is outlined. After determining the security environment of the present and the future, a comparative analysis is also necessary, which helps to determine the future changes of the security environment and their trends.

In addition to the above method, there are other procedures and methods for determining the future development of the security environment.

[18] KÖVES, Alexandra: Back from the future: Researching possible answers to complex, system-level problems using the backcasting method. (Vissza a jövőből: Komplex, rendszerszintű problémákra adott lehetséges válaszok kutatása a backcasting módszer segítségével.) Prosperitas, 3. évfolyam 2. szám, 2016. pp. 17–36. http://publikaciotar.repozitorium.uni-bge.hu/1079/1/Koves-Alexandra.pdf; downloads: 04.10.2021.

SUMMARY

The exact determination of the future evolution of the security environment is in every country's interest, so it is important that security studies have analytical methods capable of determining future security processes. In the case of classical analysis methods, it is also possible to make findings pointing to the future. It can be concluded that among the analysis systems of futurology there are methods that are suitable for analysing the security environment. Thus, they can be used in addition to classical methods to determine the future situation of the security environment. Futurology methods provide more and more accurate opportunities to make predictions and visions more likely to occur.

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