Research on trends in the development of the international security environment. Application of Strategic Analysis

Piotr Daniluk
University of Lower Silesia in Wroclaw
PL-53609, Wagonowa Street
piotr.daniluk@dsw.edu.pl

Abstract: Strategic analysis is one of the most important conceptions of systemic research, which enables to recognize and estimate even very complex threats and opportunities which may be challenges for security. This research is conducted simultaneously in many areas – political, economical, social, technological, military and ecological, regardless of what kind of institution or organization is concerned. This multi branch research is the answer to the majority of contemporary and potential problems in homeland, national and international security. Strategic analysis is designed for all kinds of entity: from local governments to complex international or technical systems. This conception of research may be used for even complex areas such as net war or information war included in security information.

Key-Words: security, strategic analysis, information war

1 Strategic analysis as a conception of systemic research in security

Systemic approach is necessary in contemporary security studies. Complex, dynamic and multi areas changes in environment of security entities require the use of sociological, economical, political and technological methods of research.

There are many methods of systemic research in security [1]. One of them is the conception of strategic analysis.

Contemporary strategic analysis, first of all, is a part of strategic management, but its sources were in security sciences and activities of Rand Corporation in times of Cold War [2]. In the mid twentieth century (the 50s and 60s) scientists developed scenarios of environment, Delphi Model, Theory of Game and operations research. They are a part of strategic analysis. In the 70s Royal Dutch Shell used scenarios to forecast energetic crisis [3]. In the 70s and 80s the greatest consulting firms likes BCG, McKinsey, ADL used strategic analysis of micro environment. Contemporary strategic analysis methods are used in foresight programs in many areas – social, political, economical, technological, etc.

Very turbulently social, economical and technological environment requires future thinking, which is an expression of conception of strategic analysis.

2 Types of strategic analysis in security

Strategic analysis is one of the most important conceptions of systemic research, which enables to recognize and estimate complexity threats and opportunities which may be challenges for security on all levels – local, national and international [4]:

- Local – in crisis management as result or prevention of natural, meteorological, technical, chemical disasters. Analysis is particularly important and useful in confrontation of stochastic natural environment with technical system – for example telecommunication systems;
- National – in security management of national areas. This research is conducted at the same in many areas – political, economical, social, technological, military and ecological, regardless of what kind of institution or organization is concerned (for example National Foresight Programs);
- International – in research of international relations in security areas. International global analysis is particularly used in forecasting global trends of demography, energy, food and water.

This multi branch research in strategic analysis is the answer for the majority of contemporary and potential problems in homeland, national and international security. Strategic means that the analysis has very important significance for entity, because it concerns distant future. The future particularly depends on role and greatness of organization.

Strategic analysis may be executed as:

- Stage of strategy planning security (or information security);
- Part of strategic game – testing or simulation of information strategy;
- Conception of consulting service for national, public and private entities. There is the most independent conception of research in information security areas initiated by the client or as results of noticed threats or opportunities.

Strategic analysis may be used as conception of research conducting, but may also be used as methods of teaching students or specialist training in crisis management and also in command and control of many state security services. Strategic analysis is very useful conception of security research in business.

Table 1. shows two ways of leading security training game (make decision game).

Table 1: Two ways of analysis conducting

Actor: Entity of security Information defence (security)	**Actor: Enemy for security Information attack (net war)**
I Strategic analysis in information security	
Analysis of macro environment (factors) – PESTE + Scenarios	
Analysis of micro environment (actors - stakeholders)	Analysis of micro environment (actors - stakeholders)
Analysis of potential of security entity	Analysis of potential of security entity
SWOT/TOWS – main directions	SWOT/TOWS – main directions
Recommendation for starting the game	Recommendation for starting the game
II Strategy / make decision game	
Defence responds	Initiative influence
Responds to the opponent's moves	Responds to the opponent's moves
Last respond (final respond)	Last respond (final respond)
III Summary	
Construction of mistakes list	Construction of mistakes list
Construction of causes of mistakes list	Construction of causes of mistakes list
Improvement of analysis and planning algorithm	Improvement of analysis and planning algorithm

Strategic analysis consists of quality and quantity methods**.** The sense of gravity of this scientific process depends on environmental conditioning and properties of security entity. It depends also on time prospect.

Strategic analysis, as a process, is composed of: environmental analysis, internal analysis and summing up analysis. The role of environment in strategic analysis causes distinction of two kinds of surrounding. There are many kinds of criterions of division, which depend on kind of organization and solving problems.

The most popular and universal division is the one based on factors and actors. Area of factors is connected with long period of time, which is building from the processes. They are in the focus of attention of analysts. Area of actors is connected with middle period of time. The third area consists of actors and factors in organization and their potential influences.

Centric approach is useful for research in Macro environment. Network approach is practical to recognize micro environment as net of actors.
The structure of environments is shown on fig. 1.

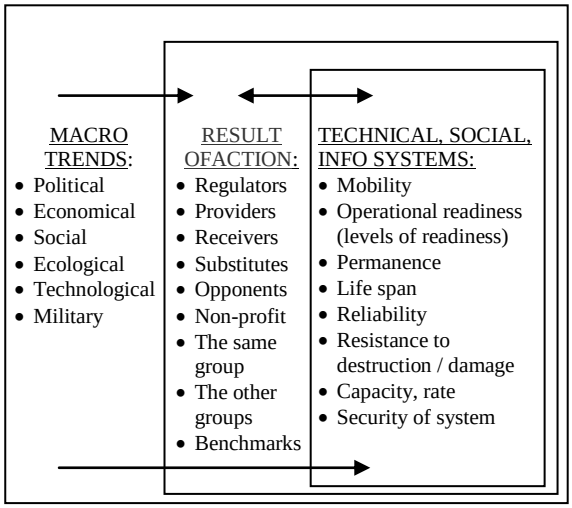

Fig. 1: Structure of environments [5]

This way cyber attack is a consequence actors activities which is a result of their mission, vision, strategic goals. On the other hand actors activities are a result of macro environmental trends. Recognition of entities activities is determined by estimation of important trends of factors, which next will influence significant actors.

This approach to research security shows, that even technical problems have to take into consideration two areas - psycho-sociological context and technical-structure context.

3 Macro environment analysis

Macro analysis concerns international or global security environments and long or middle terms (from 4-5 years for political cycles, depend on elections, to 15-25 years for social cycles). They are most often quality research [6].

Introductory Analysis PESTE provides five main areas of factors: Political, Economical, Social, Technological and Ecological (natural) [7]. The said areas of factors concern all entities of research

and thus they are all equally important, even for information security entity [8].

The next method of this stage of analysis are scenarios. They are based on division of PESTE method and research of trends of these factors. The most popular in trends scenarios in environment is Delphi-Method, which is particularly useful for anticipation of trends. The basic assumption of this method is the fact that any predictions ought to be continuum of contemporary. Delphi is a method to get information for building scenarios.

Fig. 2 shows complexity of environment scenarios.

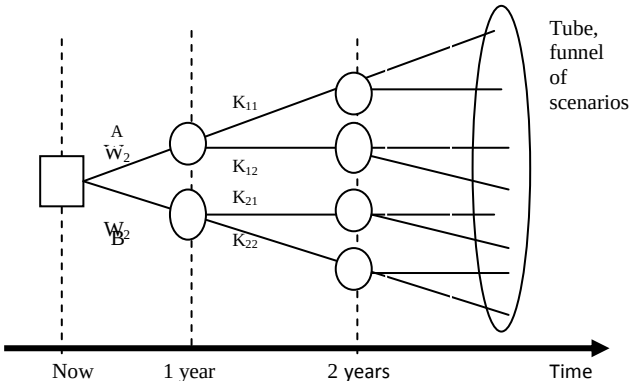

Fig. 2: Complexity of Environment Scenarios

The set of most probable trends of factors in macro environment is a result of the first stage of strategic analysis. They probably will have influence on most of actors in micro environment and also on our subject of analysis.

4 Micro environment analysis

The second stage of strategic analysis concerns near environment which is composed of many actors. They are divided into groups:

- most numerous – stakeholders model;
- most important - M.E. Porter's Five Powers Model;
- most similar – Strategic Groups Model;
- comparison model – as a benchmarking.

This process systematically narrows areas and number of actors from all which have influences for us, to only one object of comparison with our entity. The same way grows the precision of research . We also note increase of possibility using quantity methods with reduction of number of actors.

Stakeholders Model is executed as maps in centric approach and next as matrix in network approach. Most often different kinds of methods of implementation of stakeholders model give different results. Then the quality of Stakeholders Model summary depends on experience of analytical team.

Theory of game may be used in **M.E. Porter's Five Powers Model** and Strategic Group Model[9]. In Five Powers Model actors are multinational or multi-organizational [10]. We can also use many techniques from international relations to estimate power of actors influences. In security areas it is useful to make seven groups of entities: five classical – providers, receivers, new potential players, substitutes and players in sector or domain and two more – social and governmental organizations [11]. Instead of new potential actors – for security research – we may define opponents or enemies. Finally we may take into account the seven collective players.

Analysis of Strategic Group makes it possible to organize many actors in a sector of research. As a result of this process it is possible to reduce the number of objects from many to just a few. This method simplifies the environment by decreasing the number of problematic situations. This means that Strategic Group Model is also very useful as a method of decision making and an analytical tool [12].

In the Cycle of Life Analysis concerning phenomena or entities we may useanalysis of time series and other forecasting methods. They may be used to conduct research, unlike to scenarios of macro environment trends, as the result of actors' activities [13].

The last stage of micro environment analysis is **Key Factor Analysis** similar to summary of scenarios in macro environment, but concerning actors' activities [14].

5 Strategic potential analysis

The third level of analysis concerns interior research of entity. The research is conducted as an approach focusing on: systems [15], processes, functions [16], resources and competence [17]. Systemic approach singles out the following subsystems:

- managerial and executive (for example National Security Systems);
- managerial, operational, logistic (military systems and crisis management);
- managerial, technological, socio-psychological, structural (management and security).

Processing approach is based on reengineering which considers people, technology and process.

Process is researched on three levels: subprocesses (from dozens to hundreds), main process (from several to dozens) and mega process (from three to seven). Approach focusing on resources considers: human, technical, informational, financial and other issues. Functional approach is based on H. Fayol's organization departments such as: finances, marketing, security, administration, operations and others. Competency-based approach, may be sum of previously mentioned items and serve for benchmarking with other systems (organizations).

The most popular approach to organizations as systems is shown in Fig. 3.

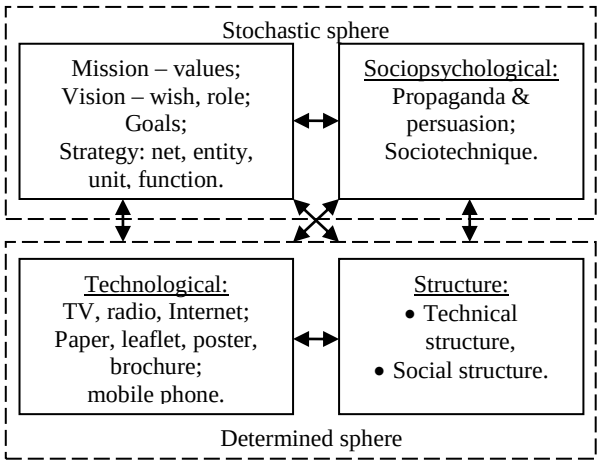

Fig. 3: H. Leavitt's organization model adapted to security information system [15]

Indicator methods may be used in information security to evaluate systems' effectiveness or efficiency. For operational-technical effectiveness we may calculate:

- mobility (portability, stationary);
- operational readiness (states of emergency, levels of readiness);
- permanence, which is determined by: life span, reliability, resistance to destruction / damage;
- capacity / bandwidth and rate;
- security of this system.

6 Integrated analysis

All results of three levels of presented analysis require summary which constitute an integrated analysis.

The most popular method used in this stage is SWOT/TOWS Model [18] (Strengths, Weaknesses, Opportunities, Threats) and modified for security entity SPACE model (Strategic Position and Action Evaluation).

They compare trends and requirements from environment with system competence (strengths and weaknesses). As a result, this comparison builds knowledge about main directions of possible strategies and actions on operational level.

Fig. 4. shows the roles of strategy analysis stages in building knowledge about environment.

I Micro analysis: 1. Stakeholders 2. Main Powers 3. Strategic Groups 4. Benchmark partners 5. Important requirements	II Macro analysis: 1. Domains 2. Factors in domains 3. Trends 4. Dependence 5. Important trends
III Internal analysis: 1. Systems 2. Resources 3. Functions 4. Processes 5. Competence	IV Integrated analysis 1. Key challenges 2. Key phenomena 3. Key problems 4. Key goals 5. Knowledge
V Effects: Knowledge (stage depends on kind of analysis): 1. Key conditions which will influence (external environment analysis - stage I and II) 2. Competence which we have for the key conditions (strategic analysis – stage from I to III) 3. Main directions or strategies which we may use (analysis as a part of planning or management process)	

Fig. 4: Kinds of knowledge in strategy analysis

Strategic analysis as part of planning or management process must be very formalized. However, in many cases turbulent contemporary environment requires very dynamic strategic analysis, as a result of environmental monitoring and orders from politicians or superiors. Finally analysis is more independent and effective.

7 Conclusions– advantages

Contemporary security environment is very complicated and variable. Thus it requires multi field science research which may be realized by the systemic approach.

Strategic analysis is one of the most interesting conceptions of systemic research in security. It's an universal conception of research in dynamic period of future for all security sectors. Strategic analysis is very useful in research concerning information security and information war. We may solve at the same time very different and complex problems which originate not only from technical, but also political, social and economic areas. Strategy

analysis allows us to research information security entities not only from the point of view of determined approach, but also to solve problems connected with manipulation, propaganda, persuasion, mass media, strategy and war.

The best example of universality and usefulness of Strategic Analysis may be the research conducted by The International Institute for Strategic Studies (IISS), among others, in the following areas [19]:

- Arms Control & Arms Reduction;
- Arms Trade & Defence Economics;
- Civil Wars;
- Conflict in the Developing World;
- Evolution of Military Strategy;
- Military Technology;
- Nuclear Warfare & Deterrence;
- Oil & Security;
- Proliferation & Non-proliferation;
- Climate Change and Security;
- Defence and Military Analysis;
- Arctic Climate Change & Security;
- Non-Proliferation and Disarmament;
- Transnational Threats and Political Risk.

Across the Atlantic, Centre for Strategic and International Studies (CSIS) in Washington used this conception of research in the following problematic areas of security [20]:

- Technology: Cybersecurity, Space, Technology Policy;
- Global Trends and Forecasting: Demography, Global Strategy, Media Analysis;
- Global Health: Food and Water, Global Health Diplomacy, Global Health Policy, HIV/AIDS;
- Energy and Climate Change: Alternative Energy, Markets and Trends, Regional Analysis, Security and Climate Change;
- Economic Development and Reconstruction: Development Policy, Disaster Risk Reduction, Food and Water, Global Prosperity;
- Defence and Security: Acquisition and Resources, Homeland Security, International Security, Military Strategy, Nuclear Weapons, Terrorism;
- Human Rights;
- Others Global Trends and Forecasting.

However, the biggest advantage of the analysis is the possibility to look far into the future, far into the macro environment, without losing attention to operational and technical matters. This allows us to conduct a broader and more accurate analysis of tactical and technical systems in an increasingly uncertain environment.

References:

[1] Booth K., *Theory of World Security*, Cambridge University Press, New York 2007.

[2] Ringland G., *Scenario planning*, John Wiley & Sons, Chichester 2006, pp. 11–27.

[3] *Learning from the future. Competitive foresight scenarios*, edit. L. Fahey, R.M. Randall, John Wiley & Sons, New York 1998, pp. 81–108.

[4] Wit B.(de), Meyer R., *Strategy Synthesis: Resolving Strategy Paradoxes to Create Competitive Advantage*, Thomson Learning 2005, pp. 24-28.

[5] Hill Ch.W., Jones G.R., *Strategic Management Theory. An Integrated Approach*, Houghton Mifflin Co., Boston 1989, p. 61.

[6] Ralston B., Wilson I., *The Scenario Planning Handbook*, Thomson South-Western 2006, pp. 21–26.

[7] Collins A., *Contemporary security studies*, Oxford University Press, New York 2007, pp. 127–220.

[8] Faulkner D., Bowman C., *The essence of competitive strategy*, Prentice Hall, 1995, pp. 76–79.

[9] *Security studies. An Introduction*, edit. Paula D. Williams, Routledge, London and New York, 2009, pp. 44–57.

[10] Schwartz P., *The art of the Long View. Planning for the Future in an Uncertain World*, Currency & Doubleday, New York 1991, pp 118-134.

[11] Godet M., *Creating Futures. Scenario Planning as a Strategic management Tool*, Economica, Paris 2006, pp. 182 – 202.

[12] Porter M.E., *Competitive Strategy. Techniques for Analyzing Industries and Competitors*, The free press 1980, pp. 140–157.

[13] Mascarenhas B., Aaker D. A., Strategy over the Business Cycle, *Strategic Management Journal*, 1989, vol. 10.

[14] Thompson A.A., Strickland A.J., *Strategic Management. Concepts and*

Cases, R.D. Irwin, Homewood, Boston 1987, p. 137.
[15] Leavitt H.J., *Applied Organization Change in Industry: Structural, Technical and Human Approaches, Handbook of Organization*, Chicago 1965, p. 160.
[16] David F.R., *Concepts of Strategic Management*, Prentice Hall, New York 1997, p. 164.
[17] Steinmann H., Schreyogg G., *Management*, Wrocław 1995, p. 129–131.
[18] Haijden K. (van der), *Scenarios. The art of Strategic Conversation*, John Wiley & Sons, Chichester 1996, pp. 151–159.
[19] http://www.iiss.org/en/research (25.06.2013)
[20] http://csis.org/category/topics/defense-and-security (25.06.2013)