MODERN METHODS TO INCREASE RESILIENCE IN SECURITY

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Abstract: *Some new world-wide events of the last few years demonstrated us that the ability to anticipate and to respond to security changes is a compulsory asset for a state. The Syrian problem, the Brexit, the Crimean problem, the Comprehensive Economic and Trade Agreement (CETA) negotiations – are only few examples of applied lack of anticipation in the field of security. Clearly, the so-called "security resilience nexus" became a milestone in achieving maturity in security planning. The frailty of the systems and the impact of the unpredictable emergence of security certified the importance one should pay to "resilience awareness". Cultivating awareness appears to be a tailored solution for some common positions in defence. Therefore, increasing applied resilience in security with the help of future studies represents a real alternative for the security planners when keeping in mind the nowadays state of art. In the array of the anticipative methods – scenario planning, future wheel method and the cross-impact analysis achieve notable results. Those methods flourish, in our opinion, on the foundation of the "wild cards" detection and of the "weak signs" discovery. Hence, the article builds up a nexus between security planning, resilience and future studies. One concludes that resilience awareness plays a key role for a state in preparing and responding to sudden disrupts and changes.*

Keywords*: security; resilience awareness; cross impact analysis; scenario planning; future studies*

1. INTRODUCTION

Ever since Kahn's projections on Cold War nuclear issues, security foresight continuously flourished (Kahn, 1960). Even though the foresight methodology achieved nowadays a certain self-reliance, some authors agree that there is no perfect model of predicting security (Glenn, 2014). Authors like K. Fierke or M. Kaldor and J. Solana argue that in the new geopolitical arena, the state must build security into a complicated network of reciprocal influences (Fierke, 2007). This fact conducted to widely debates regarding the man response to crises and change. Particularly, the state of art shows a keen interest of the researchers for better shaping the moments of change and development of the security providers in relation with risks and threats, as Cavelty claims (Cavelty *et al*, 2015).

Among these debates, the concept of resilience is counted as a practical path for preparing to the unknown future. According to Cavelty, resilience is a story that achieved success in the late 10 years. Originally, resilience was first mentioned by C.S. Holling in his researches regarding the ecology, as related to the development of the systems (Holling, 1973). Over decades, in the early 2000, this topic gain momentum in *Critical Security Studies* and

spread itself among *Web of Science* citations (Cavelty *et al*, 2015). As S. Flynn outlines, one of the challenges of cultivating resilience is related to its multiple definitions and approaches (Flynn, 2011). The author identifies three main approaches of the concept: (a) in ecosystems as "the capacity of a system to withstand disruptive risks without failing"; (b) in management, as "the ability to quickly return to a set of prior conditions"; (c) in general thinking as "the ability to transition from one equilibrium state to another". Resilience means accepting somehow that security environment is unpredictable and marked by disequilibrium. Compared to classical approaches of risks, resilience follows a new direction: rather than pointing prevention, it mixes the present with the future to restore or to adapt the system to a certain phase. Therefore, practitioners must shape a global understanding of the concept for dealing with the unknown and security risks. M.D. Cavelty claims that in practice there are two types of resilience in security. The first type – *the bouncing back* one – is cultivated in United Kingdom and in Singapore (Cavelty, *Resilence in security policy*, 2013). This type is based on making decisions about risk management at the lowest appropriate level. It helps the system to return to a certified state from the past. The second type – *the adaptive*

one – is cultivated in USA. This type is based on shared responsibility and tries to bounce back the system in parallel with adapting it to the new set of rules. Resilience overrun the organizational life such dramatically that in the United Kingdom a standard was approved: the BS 65000. According to *BS 65000 - Guidance for Organizational Resilience* (2014 ed.) resilience is "the ability of an organization to anticipate, prepare for, and respond and adapt to incremental change and sudden disruptions in order to survive and prosper" (BS 65000, 2014). This definition proves that cultivating resilience has a positive impact over that system as it strengthens it. Therefore, security practitioners started to offer a key role to resilience awareness. The concept is a new element that tries to shape the importance of perceiving the need for highly-performant tools for dealing with a risk-evolving environment.

While considering the BS 65000 definition, it might be concluded that a suitable solution for building resilience awareness in security could refer to using future studies methodologies in order to anticipate, respond, prepare and adapt. It is agreed that now, the process of security planning must be preceded by foresight to act decisions based on projections of the possible futures (Taleb, Antifragile: Things That Gain from Disorder, 2014). G. Gioacchino and J. Sumberg plead to a similar position related to the development studies (Gioacchino & Sumber, 2016). Even though the lack of foresight accuracy is the main cause of resilience cultivation, the anticipation is also a solution for better preparing for the future. As seen from this point of view, the researchers argue that the value of futures studies is less in forecasting accuracy and more in planning and opening minds as G. Glenn (2014) and R. Popper (2008) claim. It means that foresight could be used for creating practical paths for preparing and responding to security risks and finally, rise resilience awareness. Therefore, this article suggests in the following paragraphs that foresight is a key player in security awareness. Therefore, future studies are useful to identify and classify the suitable methods for cultivating resilience.

2. SHAPING THE TAXONOMY

Facing the numerous foresight methods and techniques, some researchers met the need for synthetizing and refining them, as Bertolucci (2004) shows. Among those efforts, we count Jerome Glenn's *Future Studies Methodology* (2014), Rafael Popper's *Foresight Diamond* (2008)

and Sam Tangredi's taxonomy of the *Foresight Products* (2000). Nevertheless, few efforts were made in synthetizing the suitable foresight methods for increasing resilience awareness. One of the most appropriate solution for synthetizing future studies methods and techniques relates to **time framing and temporalities**. According to M.D. Cavelty, temporalities are strong issues that determine the man interest related to resilience (Cavelty, Mareile, & Kristian Søby, 2015, 3: 14). Therefore, this article proposes a time framing approach of the foresight methods to shape resilience. A possible time framing approach applicable to resilience awareness has, in our view, three main components, as Sam Tangredi (2000) militates: (a) *the estimates* (2-5 years), (b) *the predictions* (5-10 years) and (c) *the scenarios* (10-25 years). All the actions related to anticipating, preparing, responding and adapting must arise in those frames. The state of art reveals two main directions related to *foresight practices* that fit security awareness. The first direction states that as the time horizon progressively grows, the qualitative methods should be used – especially for predictions and scenarios (Glenn, 2014). The second direction reveals that no single method should be used; the prospective studies' methodology makes sense combining different types of methods, as Popper (2008) deducts. Being giving those two hypotheses, a taxonomy based on three frames was delivered, as shown in figure one.

The first frame is expressed through the estimates. The frame presents the current fields of security analysis. Those products strongly affect the resilience awareness, as their outcomes are tangible and noticeable in short time. In addition, their temporality is based on a more articulate class of known data. This means that the processes of *looking into the future* and turning back are easier to complete and more scalable. In the field of security, numerous estimates are provided by the intelligence agencies (like the *National Intelligence Estimates* in USA that are provided by Central Intelligence Agency).

Their purpose is to sum up some important assessments for the political leadership concerning security. The estimates usually combine and merge a variety of components (including technology achievements, economic projections or industrial production) in a decision-making comprehensive way. Estimates usually evaluate the outcome of the near-term policies or the impact of the climate hazards. To increase resilience awareness by developing estimates, one must use mathematical modelling (including decision Modelling or

Statistical Modelling). However, if a researcher wants to cope with complex issues that refer to how future events may change extrapolations, a possible solution is the *Trend Impact Analysis* (TIA). John Stover (1975) and Joseph Coates (1992) make some extensive description of the method and provide samples of applications. In this case, the creation of a database containing potential key events, their probabilities and their impact is necessary. This database will facilitate the process of forward looking and bouncing back.

Least but not last, if a practitioner is interested in the intensity of change in international relations, he must use an index like *the State of the Future Index* (SOFI). SOFI represents a quantitative time series that could indicate the changing points of the future and could show us the probability of getting better or getting worse. The method was refined in *2001-2003 Millennium Project's State of the Future*. A full description of the method is now provided by T. Gordon (2012).

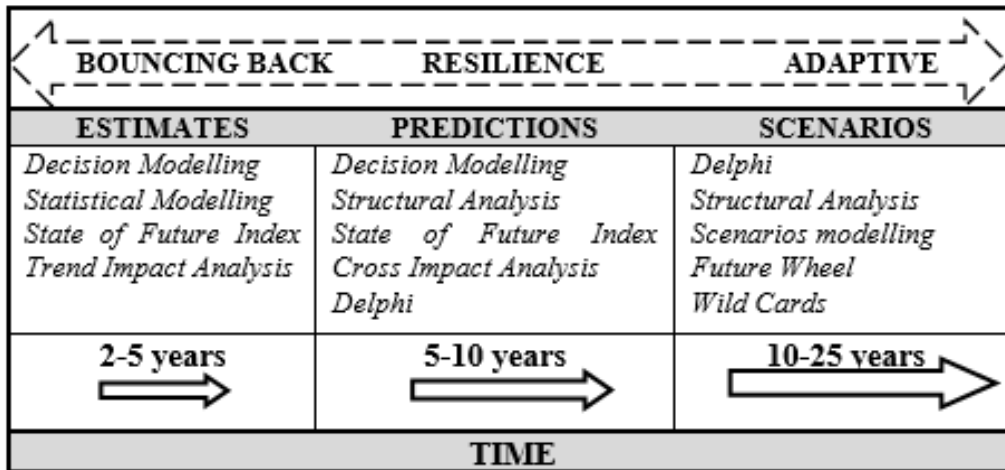| BOUNCING BACK	RESILIENCE	ADAPTIVE
ESTIMATES	**PREDICTIONS**	**SCENARIOS**
Decision Modelling *Statistical Modelling* *State of Future Index* *Trend Impact Analysis*	*Decision Modelling* *Structural Analysis* *State of Future Index* *Cross Impact Analysis* *Delphi*	*Delphi* *Structural Analysis* *Scenarios modelling* *Future Wheel* *Wild Cards*
2-5 years →	5-10 years →	10-25 years →
TIME		

Fig.1 The taxonomy of suitable methods for resilience awareness cultivation

The SOFI could be extended to a 10-year outlook of the future. To be accurate, this extrapolation must simulate historical data for the last 20 years. The SOFI could be used not only for estimates, but also for predictions. The index permits a smoothly transition from past to present, from present to future and vice-versa that makes it reliable to both resilience types.

The second frame is expressed through the predictions. The frame sketches some longer-range assessments. Their relationship with security awareness is rather based on opening mind intention, than on tangible assets. The peculiarity of predictions is related to using trends. This fact inserts the possible futures approach, meaning that there is no certified direction for the evolution of security. In this way, security awareness becomes vital in coping with risks and threats. The predictions argue how trends may combine in international relations to shape significant influences over the system. If the political leadership has the aim of evaluating the validity of any new resilience policy, he must determine the possible directions through predictions. If a practitioner wants to increase resilience awareness by developing predictions, he has many options.

Predictions are situated on the intersection of quantitative and qualitative methods, between estimates and scenarios. The extrapolation of estimates through their specific methods (as TIA and SOFI) outlines the movement of the subsystem towards some new possible peaks. Therefore, the process of forward looking opens some directives for planning and turning back. Nevertheless, one of the most useful tool for resilience awareness is represented by the impact matrices. Impact matrices calculate the influence of factors over the development of the future. The results of impact matrices are not very tangible being influenced by the "wild card identification" (also called black swans or discrete events). This process assumes that the final product of future reality will be different from the results of the prescience patterns and of estimates. This will be true, whether unpredictable events will make their presence felt; the finite product of reality will also subsume elements from all estimates, also according to the advent of "black swans" (Taleb, The Black Swan: The Impact of the Highly Improbable, 2010). Therefore, an analysis of "unpredictable events" will lead to measures and plans with the purpose of avoiding those events. Once "wild cards" and "weak signs" were

identified, the interrelationship called *Cross Impact Analysis (CIA)* can be applied (Glenn, 2014). Seen from resilience awareness perspective, "wild cards" detection and the "weak signs" discovery opens the possibility of cultivating the *adaptive resilience*. However, if the relation between subsystems should be described, to point the system's evolution, structural analysis can be applied. *Godet's Impact Matrix Cross-Reference Multiplication Applied to a Classification (MICMAC)* represents one the most flourishing structural analysis. It is a simulation tool that allows shaping the evolution of the system. The method has three phases in Julius Kane's opinion: listing the variables, describing the relationship between variables and identifying the key variables (Glenn, 2014). However, if planning for medium term resilience is involved, it is recommended to use the actors' strategies analysis. (e.g. Teniere-Buchot's *Chart of Powers*, Battelle's *Explore-Sim*, or Enzer's *Interactive Model for Studying Future Business Environments*).

The third frame is expressed through scenarios. The frame represents the most complex and well-balanced construction from the field of future studies with long term impact over resilience awareness. Being governed by qualitative methods, scenarios purpose is to help decision-makers to view all the possible futures. As P. Schwartz (2012) argues, "the result of the scenario is not a frame of tomorrow, but a tool which could give better decisions for the future." Scenarios mean thinking big for resilience awareness. Those tools represent the most suitable time framing for adaptive resilience. Resilience cultivated through scenarios is synonym with shared responsibility based on "wild cards" detection and on the "weak signs" discovery. In this context, *scenario modelling*, *future wheel* and *Delphi* represent vivid techniques that help security planners to clearly see the problems, the risks and the opportunities of the security environment.

The scenario modelling has as result a possible description of what might occur. It represents the classical method for long-term policy building. *Future wheel* means organizing thinking and questioning about the future. In this regard, future wheel implies a sort of structured brainstorming that collects possible impacts related to multiple concepts. For using future wheel, the group first must identify the drivers of change. Then, must determine each consequence of change in a circle and connect it to the central circle with an arrow, as J. Glenn (2014) militates. As the process continues with second-order consequences and third-order consequences, the researcher obtains a map of the implications of the event, possible influencing the system and building resilience.

RAND originated the Delphi technique in the 1950s, to anticipate the impact of technology on warfare. Ever since, this method had notorious results in day to day future sketching. The method is suitable for obtaining consensus to apply measures that finally grow resilience. C. Hsu and B. Sandford argue that "the Delphi technique is used for achieving convergence of opinion concerning real-world knowledge" (Hsu & Sandford, 2007). If practitioners want to cultivate *adaptive resilience*, the solution is this time framing. They must describe events and trends by considering the "wild cards" and then, they must use scenario modelling, interactive scenarios and participatory methods as *Delphi Methods*.

3. CONCLUSIONS

As stated in the introduction of this paper, the newly worldwide events from the last few years validated the importance of anticipating and responding to security changes. Constrained by the impossibility of maximum accuracy regarding the future studies, man response to risks and threats became a *light motive* of the state of art. In addition, the European practice of security highlighted some important issues regarding integration and exit. The need to better shaping the moments of change allowed resilience to achieve success in the last decade. This article shows a keen interest on how resilience could be better cultivated through future studies' methodology. To offer practical paths for resilience awareness, a taxonomy of the suitable methods was designed on the base of time framing, having in mind the estimates, the prediction and the scenarios. The taxonomy proved the interdependency between the length of the period and the wild cards: the bigger the time frame is, the better are the odds of wild cards to appear and the system to be strengthen. Therefore, a primary conclusion arises related to wild card identification: the system will be more resilient if planners study patterns and wild cards related to a longer period. In addition, wild card and weak signals identification must become the "mantra" that will influence the foresight process. A second conclusion is driven from the taxonomy: The key of long-term development of security is the *adaptive resilience*. In respect to this, the adaptive resilience enables practical paths for planning security. However, when making

estimates, only bouncing back resilience is possible. Nevertheless, in the new geopolitical arena widely aforementioned, adaptive resilience is a more suitable solution. Therefore, scenario building, future wheel and Delphi are necessary for an "A+" security planning system.

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