

**UNIVERSITY OF PUBLIC SERVICES**  
**Doctoral School of Military Sciences**

Gergely Németh:

**The transformation of defence sector and influencing parameters**

PhD Study

**Scientific supervisor of the dissertation:**

**PhD. Tibor BABOS**

**Budapest, 2017**

## **1.) INTRODUCTION**

The foremost aim of this thesis is to introduce a reductionist concept on the overall dynamics of the defence sectors. In doing so, it applies a new approach, which is based on laws and theories identified previously only in the field of natural sciences. This approach identifies the defence sector as a system which functions as a part of its surroundings, where its overall behaviour, and subsequent transformation, is heavily affected by the ever-changing parameters in its environment.

Beyond discussing the validity of and creating the theoretical fundamentals for such an approach, it endeavours to identify the very parameters which bear significant impact on the overall transformation of the defence sector. I assume, that the strategic environment, the dynamics of alliances, the perception of the public as well as the political elite, the most probable battlefield and the function of the defence sector itself, are such factors.

As a result of this study, I expect to validate the overall hypothesis that the defence sectors are heavily shaped by factors in their environments and that these factors and their impacts can be identified in various national defence sector. Consequently, their “influence” occur in a way which can be generalized for a given set of various but similar defence sectors (e.g. in case of smaller and mid-sized European ones).

It is of importance to state that although this hypothesis does sound trivial, consequences of the evolutionary sciences are still often neglected in the war sciences. As one proof for that, we should consider that defence development plans are still founded mainly on various threat-perceptions. So, instead of considering the myriad of factors which shape the tenable form of a defence structure, defence planners will in most cases prefer to pursue political goal and military parity so as to ask for more resources. Unfortunately enough, resources are scarcer than ever and so they tend to severely constrain ambitions. We have witnessed many examples during the last two decades, where ambitions sank on the reef of reality and force structure, which have been ambitioned by the military planners proved to be words in the wind against the realities of public perception and overall financial scarcity. These examples may prove, that ambition-based plans tend to fail if the reality of the parameters is overlooked.

The defence sector will always need to adapt to these realities, in a similar fashion as organisms adapt to their environmental niches. The proper understanding of this ‘necessity for adaptation’ may provide an alternative explanation for the successes and failures of the

defence sectors during the last decades in Europe. It may also imply a logical consequence, namely, the transformation of defence sectors is much less a subject of human control and leadership than the pure force of nature.

The acceptance of this logic, namely that the transformation of the defence sectors occur as a result of a varying behaviour of its components and environment could add a new alternative, or at least, addition to the orthodox view on defence planning. It may also support a new discussion on the validity of aims and objectives in light of the environmental constraints.

## **2.) STRUCTURE OF THE THESIS AND THE INTRODUCTION INTO ITS LOGIC**

There is a wide range of literature for analysing the behaviour of the defence sector. The majority of this literature though, tend to focus on specific symptoms and their origins, like the free-riding behaviour of states, the public perception on defence and its relation to defence spending, or the efficiency of force planning. These are very insightful studies, deliberations. However when it comes to the identification of an overall pattern, they tend to fail in providing a holistic answer for the success or failure of the defence.

The validity of these theories is oftentimes constrained by functional and arbitrary boundaries between various scientific disciplines. They are like “islands of cities” in the medieval era. Useful on their own, but unless connected, less than optimal. It is also true that the various ‘dogmas’ and beliefs can oftentimes become rivals to each other, as if there would only be one true explanation for the phenomena. The rationale behind all this calamity is the immense complexity of actions and reactions in the highly varying environment. If we take, for example, the low level of defence spending as a sound indicator, which explains transformational inefficiencies for one defence sector, that is fine. But if we take two different but equally underfinanced defence sectors, one being efficient and the other one, less so, we may end up with the need for more ‘sound indicators’, like the institutions, the security environment or the dynamics of the relevant alliance.

Consequently, if one factor doesn’t suffice, others are also needed. Most of these would need to come however, from beyond the traditional boundaries of the defence planning. This eventually creates a need for multidisciplinary approach, which can be based on theories

stemming from areas where there is a need too, to tackle high number of variables and agents in a wider system. That is, complexity and the theory of evolutionary selection.

The overall approach, taken from the above mentioned theories is as follows: high number of variables can be understood through the application of the theory of organized complexity and the selection process of these variables can be traced by the use of relevant elements from the general Darwinism. These theories, similarly to our problem, focus on complex systems which are attesting changing behaviour through time and friction. Eventually, the overall behaviour of the system is decided by complex interactions between its agents and the environment. Needless to say, the whole phenomenon is highly decentralized.

The idea of applying concepts of complexity and general Darwinism to the dynamics of the defence sector stands very close to what can be described – by Patrick Porter – as structural determinism. It also shares similarities with economic approaches, as it acknowledges the power of rules and trends. At the same time, it shares some commonalities with the logic of defence policy, in terms of the mutual understanding on the importance of strategic environment. Albeit structural realists, like Jervis and Waltz didn't think that way, their logic about the states, struggling in the anarchic void of international space and accommodating its necessities here and there to may reflect the tale of an organism which thrives to adapt to its environment.<sup>1</sup> One important difference remain though, as even the waltzian world recognizes the genius, which from the viewpoint of complexity is nothing more just a random event, born by circumstances.

*In sum, the structural determinism applied in this thesis is based on the understanding that the transformation of the defence sector, which exhibits system-like behaviour, is the result of unconscious efforts by its sub-systems to adapt to the environment and avoid negative selection.*

This concept accommodates theories from various fields of security studies but it also reinforces these with the theories of organized complexity and evolutionary selection in order to properly understand the complex set of agents and their interactions in and around the defence sector.

---

<sup>1</sup> JERVIS, Robert: Complexity and the Analysis of Political and Social Life. In - Political Science Quarterly, 1997. Vol. 112, No. 4., valamint WALTZ, Kenneth N: Theory of international politics. Waveland Press, 2010. ISBN-13: 978-1577666707



### **3.) RESEARCH HYPOTHESES**

- 1.) The defence sector qualifies as organized, complex and adaptive system, where the behaviour of the system is determined by the interaction of agents residing within and outside of the system.
- 2.) Through the analysis of the interactions of agents in and around the defence sector, certain parameters can be identified, which exert determinant influence on the overall behaviour and evolution of the sector. If the interaction of these parameters and the affected system comply with general rules of the evolutionary selection and complexity, then patterns and dynamics of the overall behaviour (how they impact) of non-identical but similar defence sectors can be generalized.
- 3.) Amidst the changing number of significant variables, in the beginning of the 21<sup>st</sup> century, in case of the European defence sectors, the most decisive factors are; the strategic environment, the dynamics of the alliances, the perception of the political elite and that of the public, the modern warfare and the organic qualities and constraints of the defence sectors.

### **4.) RESEARCH OBJECTIVES**

The overall aim is to identify the defence sector as organised, complex, open and adaptive system which is extremely sensible to exogenous dynamics, which include the system itself and its environment. It is equally important to establish an approach which understands the 'tyranny' of the environment and is able to identify the most important factors within.

The analysis of these factors and their modus operandi could contribute to a better understanding on how small and open defence sectors evolve and which factors exert influence on their transformation.

### **5.) RESEARCH METHODS**

In order to create a comprehensive thesis, I have read and analysed the relevant academic as well as online sources stemming from the last two decades. I organized these sources into a comprehensive concept, which assisted me in researching the hypotheses. This entailed holistic and specialized categories (in compliance with the structure of the thesis) and I also split up sources into natural science and hybrid (which uses natural scientific approach in

analysing phenomena in war sciences). The main objective in this exercise was to organize literature according to the logic of the thesis so as to research defence sector as a system which is pressured by its environment to change its habits and qualities. As a next step, I also double-checked whether my initial findings conform to other studies which also represented holistic researches on the defence sector. As a result, I finalized my research as a hybrid one, which connects natural scientific theories to that of the war sciences. It entailed the analysis of five environmental parameters, which I have chosen in advance.

This thesis may qualify as primary research as it creates a new approach in order to understand how defence sectors function.

## **6.) OVERVIEW OF RELEVANT SOURCES**

Prior to my study, there was no relevant, holistic, Hungarian research regarding the possible explanation of the transformation of the defence sector as a result of interactions between the system and its environment. That said, there are plenty of sources dealing with the individual interactions between subsystems of the defence sector and certain parameters in its environment. There is also an existing literature which aims to understand complexity within the war sciences

The central thesis of this dissertation comes from the book “Behind the Mirror” by Konrad Lorenz. This helped me to depart from the idea of ‘organic evolution determined by environmental factors’ into the organized evolution of institutions and the subsequent literature dealing with the phenomenon within the boundaries of the war studies.

## **7.) RESEARCH PERIOD**

I finalized my researches on 25<sup>th</sup> June, 2017. Data sources used in the thesis are coming from before 2015. Data after 2015 is only used in several cases, where it was deemed necessary. The reason for that is the Defence Investment Pledge to increase defence spending in order to reach 2% by 2024 as declared by NATO Heads of States and Governments at the Wales Summit in 2014. The DIP commenced a politically-driven increase of the spending throughout 2015-2017, however, these initial increments may not be enduring for the long-term. Consequently, the study of these new data would be insufficient to deduce long-term

consequences. That being said the Wales commitment only reinforces one of the sub-hypotheses of my dissertation, namely that alliances play crucial role in the transformation of defence sectors.

## **8.) STRUCTURE**

**The first chapter** aims to build the theoretical foundation of the application of natural scientific paradigms (such as complexity, evolutionary selection and the appearance of these in the context war studies) by introducing these in detail and highlighting their validity in security affairs as well, through various examples. Accordingly, the aim of these examples is to reinforce the first two hypotheses, namely that the defence sector can be understood as organized system which has a deterministically dependence to its environment and its relevant factors. This effort also results the analysis of the defence sector as it interacts with its environment.

In the second chapter, I identify defence sector as a vehicle around a metabolic process, which transforms resources into capabilities which then, in turn provide security. I also include the thorough analysis of the economic perspectives in this context, through the identification of the internal processes as inefficient market. Albeit I also acknowledge, that differently from that of the inefficient markets, a relation exist between the demand and supply sides, namely the political-public preferences and the provision of military capabilities. After concluding with the overall analysis of the internal processes I offer those environmental factors, which I believe possess significant influence of how the sector functions.

By doing so, I highlight the following, relevant, determining factors; the strategic environment, the dynamics of the alliances, the perception of the political elite and that of the public, the modern warfare and the organic qualities and constraints of the defence sectors. Through the analysis of these factors and their characteristics as well as their impacts on the metabolic processes, I validate the second and third hypotheses. As a result of the subsequent analysis of relevant, international examples, I underscore the important, influential and generic nature of these factors (3<sup>rd</sup> hypothesis). In the following chapters (3<sup>rd</sup>-7<sup>th</sup>) I conduct the detailed analysis of these factors coupled with their effects on the defence sectors, which function as open, adaptive and complex systems. These five chapters highlight the extreme dependency of the sector to its environment.



The third chapter details the trends and characteristics of the strategic environment, through the introduction of the evolution of state-owned monopoly of violence and how this process resulted the globalization and prosperity. At the same time, the disruptive technological progress seems to have increased the depth and width of alternative strategic assets, available for those emerging powers which ambitions to rival the world hegemon. The overall proliferation of these new assets provide wide range of alternatives for military solutions and as a result, creates a new, (global) system-level characteristic.

The fourth chapter analyses the dynamics of the alliances and their influence on the transformation of defence sectors as the former create security as positive externals, through the massive volume of the allied defence sectors' capacities. This phenomenon also creates a paradoxona, namely that, while this process is being advantageous for the smaller nations as a whole, they also create an over-supply of security which reduces the public need for the capacities of smaller defence sectors. As a result, the burden-sharing debate turns out to be more advantageous for the bigger allies than it is for the smaller ones, from the perspective of the defence sectors.

The fifth chapter studies the phenomenon of public and political pressure on the defence sector as a result of the security perception. This factor have a significant influence on how the public and political elite defines its demand for security goods. In order to understand this process, I analyse theories dealing with the evolution of the collective judgment on the basis of available information. According to these, the public can fairly reasonably understand its own environment along with relevant security threats and subsequently the reasonable rate of defence spending. That said, the preferences of the society may not only manifest in direct choices but can also take the form of a set of passive behaviour along the exit, voice or loyalty options. This theory may exhibit special relevance to the survival of the defence sectors as in the case of smaller members of alliances, where public opinion is underrated, exit or loyalty can be especially damaging on the long-run.

The seventh chapter deals with the forms of the 21<sup>st</sup> century warfare, which, as a result of emerging complexity poses increasing uncertainty in the context of the perceived outcome of the application of war. The increasing cost of war asserts an increasing burden to the military hegemon in the global system and encourages rival powers to act. This is further reinforced by the emerging alternatives to violent conflicts. As a result, the occurrence of a 3<sup>rd</sup> generation, classical war is highly unlikely, as long as the military edge of the global alliances sponsored by the military hegemon is retained.

The seventh chapter discusses the metabolic processes of the defence sector in relation to the input values (resources), output values (capabilities) and the efficiency of the resource absorption. Here, I also reinforce that through the analysis of individual defence sectors, the impact of designated global and regional factors can be generalized. At the same time I also highlight the economies of scale as a foremost parameter when it comes to the overall efficiency of the defence sectors. It also posits that emerging trends, like the globalization, the changing security environment, the public threat perception, the disruptive nature of technological advances, the growing cost of war asserts a pressure on the defence sector to enhance their cooperation in order to create economies of scale.

In the concluding chapter, I summarize my conclusions and offer my scientific results.

## **9.) SUMMARY OF THE RESEARCH, PROVE OF THE HYPOTHESES**

In accordance with my stated objectives, I analysed the overall processes and transformation of the defence sector. My foremost aim was to prove that the defence sector can be analysed as a system which is in constant interaction with its environment (H1). In order to achieve this, I proved in the first chapter that there is a possibility for analysing the aforementioned interactions through the application of methods from the field of natural sciences, namely the theories of complexity and natural selection, if the system in question exhibits conformity to the behavioural patterns of organic agents interacting with their environments.

Through the application of complexity and selection theories, I also proved in the second chapter, that the evolution of the defence sector is inseparable from its environment which asserts a constant but varying influence on the transformation of the system, both from inside and outside. I also concluded that this process exists and can be identified in case of other European defence sectors as well (H2).

As a result, I became possible to unfold an alternative understanding of the transformation of defence sector. This approach should be considered as new, within the Hungarian war sciences. I also offer the view that synthesis and re-examination of the relevant literature, according to the research concept, which views defence sectors as systems constrained and influenced by their environment may qualify as a new scientific result.

As mentioned before, through the synthesis of the relevant literature and by the application of my own researches, I hypothesised that the overall transformation of the defence sector is determined by the strategic environment, the dynamics of the alliances, the perception of the political elite and that of the public, the modern warfare and the organic qualities and constraints of the defence sectors. I analysed these factors in five chapters in order to further reinforce their validity (H3). The examination of specific and generic examples also proved that the interactions between the environmental factors and the defence sectors can be generalized, so as to apply to other, non-identical but similar defence sectors (H2).

In sum, I have redefined the overall processes and transformation of the defence sector through the application of natural scientific theories. I gathered my observation into a holistic concept, and proved that the triggers behind the transformation of the defence sector are environmental factors, which asserts selection pressure in order to change existing behaviour or qualities of the defence sector. These changes occur in an unconscious and decentralized manner. This observation highlights the boundaries of the conscious strategies and the paradigmatic need for establishing a better understanding on how defence sectors work.

## **10.) THE PROVE OF HYPOTHESES, NEW SCIENTIFIC RESULTS**

1. I have proved that that the defence sector can be identified as a complex, adaptive system, where the behaviour of the system is determined by its exogenous environment.
2. Through the analysis of the interactions of agents in and around the defence sector, I identified parameters, which exert determinant influence on the overall behaviour and evolution of the sector. If the interaction of these parameters and the affected system comply with general rules of the evolutionary selection and complexity, then patterns and dynamics of the overall behaviour (how they impact) of non-identical but similar defence sectors can be generalized.
3. I also proved, that amidst the changing number of significant variables, in the beginning of the 21<sup>st</sup> century, in case of the European defence sectors, the most decisive factors are; the strategic environment, the dynamics of the alliances, the perception of the political elite and that of the public, the modern warfare and the organic qualities and constraints of the defence sectors.

4. I have also gathered my observation and findings into a holistic concept, which highlights the mechanisms of the defence sectors, main agents and interactions in the context of their interrelatedness to the environmental factors. Building on these findings I succeeded to introduce a new approach, which embraces theories of selection and complexity and in doing so, creates a new narrative for the transformation of defence sectors during the last decades.
5. I summarized and synthesized the relevant international literature.

## **11.) PROPOSALS FOR THE FURTHER APPLICATION OF THE FINDINGS**

The proper understanding of the immense complexity of the defence sector stands in contrast with the default instincts and preconception of the human mind which always craves for more control over its environment. So, it is not at all easy to accept that the labour of employees, the achievements of organizations, the resources used, or the brilliant thought and concepts may vanish in a moment because of changes in the balance of environmental parameters. Nor is it easy to recognize and embrace limitations and boundaries of all these concepts as it is equally difficult to change habitual thinking. Despite these difficulties however, one shall recognize that the problems of organized complexity became part of our life and demand our attention.

This thesis should be considered as a humble effort to direct the attention of the academic and hopefully the political elite to these problems.

The Russian, Prussian and Anglo-Saxon military cultures proved to be similar in one sense only, throughout the history, that they both established process-based, closed and strictly centralized hierarchies in the military leadership, which most of the time, remained focused on the actual operational or other, special tasks. Despite its simplicity, this approach bore fruits amidst scarce resources, against political and public expectations and despite the changing realities of the warfare. At least, for a while. The current, rapid and expanding transformational crisis of the defence sectors make this traditional approach, which is fixated on the actual, limited tasks, outdated. In the case of smaller defence sectors, like the Hungarian one, the resources required by the constant transformation are scarce and consequently, the alternative of the optimal adaptation is failure and decay. Even if, we have to admit, that the survival of the defence sector will always be assisted by the very nature of

its symbiosis with the state. That said, if the defence sector uses its resources, provided by the societies in an inefficient way, it will risk the estrangement of the public and the political elite on the long run, because of growing dissatisfaction on behalf of these stakeholders. This may then ignite a downward spiral, reinforced by chains of feedbacks, which will result in a living but immobile defence sector, which is unable to develop itself and its efforts are purely constrained to the maintenance of its already limited functions.

In order to avoid this, it is of crucial importance to properly understand how the environment of the defence sector functions and influences in order to create the optimal course of adaptation and if possible, through the shaping of some factors. In contrast with the bigger defence sectors, which possess larger capacities, therefore, economies of scale allows them to make adaptational mistakes (a few), smaller ones don't have this luxury and are subsequently compelled to pursue coherent adaptation strategies coupled with intellectual honesty.

This thesis may represent a humble contribution to the latter by putting down some of the theoretical yardsticks, first and foremost on the field of system-level analysis and secondly by gathering the existing literature into a coherent concept which may influence the academic discussion on how strategic and defence planning should be pursued in the 21<sup>st</sup> century.

I offer therefore my research results to those universities, think-thanks and governmental organisations which prepare and conduct strategies aiming at the transformation of the defence sector.

## **12.) PUBLICATIONS**

- 1.) NÉMETH, Gergely, Réti Tamás: 6. FEJEZET: KATONAI MŰVELETEK ÉS MISSZIÓK FENNTARTHATÓSÁGI KIHÍVÁSAI. In: Knoll Imre , Lakatos Péter (szerk.) Közzszolgálat és fenntarthatóság . 161 p. Budapest: Nemzeti Közzszolgálati Egyetem, 2014. pp. 99-123. (ISBN:978-615-5491-64-1)
- 2.) NÉMETH, Gergely: A 10. tábori tüzérezred védelmi harcai a Donnál, 1943 januárjában: II. rész In HADITECHNIKA 68:(1) pp. 47-51. (2014)
- 3.) NÉMETH, Gergely: A társadalom biztonságpercepciója és a védelmi kiadások Közép-Európában (előadás). MH BKK Euro Atlanti Nyári Egyetem során tartott előadás (2014)
- 4.) NÉMETH, Gergely: A többnemzeti együttműködési formák és a NATO kapcsolata (előadás) Elhangzott a 2014-ben megrendezett MH BKK Euro Atlanti Nyári Egyetemen. (2014)
- 5.) NÉMETH, Gergely: A 10. tábori tüzérezred védelmi harcai a Donnál, 1943 januárjában: I. rész. HADITECHNIKA 47:(6) pp. 42-45. (2013)
- 6.) NÉMETH, Gergely: A NATO védelmi tervezés fejlődéstörténete (1949-1967) HADTUDOMÁNY: A MAGYAR HADTUDOMÁNYI TÁRSASÁG FOLYÓIRATA XXIII:(3-4) pp. 89-103. (2012)
- 7.) NÉMETH, Gergely: GLOOMY EXPECTATIONS – ANALYSIS ON THE SHORT-TERM FUTURE OF EUROPEAN DEFENCE CAPABILITIES. In HADTUDOMÁNYI SZEMLE 5:(3-4) pp. 176-185. (2012)
- 8.) NÉMETH, Gergely: A NATO védelmi tervezési rendszere a stratégiai tervezés kontextusában. BIZTONSÁGPOLITIKA.HU (2012)

- 9.) NÉMETH, Gergely: A NATO ÚJ VÉDELMI TERVEZÉSI FOLYAMATA ÉS ANNAK HATÁSA A NEMZETI KÉPESSÉGTERVEZÉSRE. In HONVÉDSÉGI SZEMLE: A MAGYAR HONVÉDSÉG KÖZPONTI FOLYÓIRATA 64:(3) pp. 4-6. (2010)
- 10.) NÉMETH, Gergely: ZÁSZLÓALJ-HARCCSOPORT (ANGOL KIRÁLYI EZRED 1. ZHCS) HARCAI, AVAGY A „VIKINGEK” AZ AFGÁN SIVATAGBAN. In FELDERÍTŐ SZEMLE VIII:(1) pp. 113-126. (2009)
- 11.) NÉMETH, Gergely: A NATO KÉPESSÉGFEJLESZTÉSI IGÉNYEINEK MEGJELENÉSE A MAGYAR HONVÉDSÉG FEJLESZTÉSI TERVEIBEN. In HONVÉDSÉGI SZEMLE: A MAGYAR HONVÉDSÉG KÖZPONTI FOLYÓIRATA 63:(4) pp. 14-16. (2009)
- 12.) NÉMETH, Gergely: A globális pénzügyi–gazdasági válság hatása a fegyverkezésre és a biztonságra. In: Vámosi Zoltán (szerk.) Válság és biztonság: A globális pénzügyi és gazdasági válság társadalmi és biztonságpolitikai aspektusa. 2009. pp. 53-68. (ISBN:978-963-88723-0-2)
- 13.) NÉMETH, Gergely: A globális pénzügyi-gazdasági válság hatásai a védelmi költségvetésre (előadás). A konferenciaközlemény anyaga alapján ismertetett előadás , Elhangzott a ZMNE Társadalomtudományi Intézet és a HABE közös konferenciáján , A konferencia időpontja: 2009.11.20. (2009)
- 14.) NÉMETH, Gergely: A M. Kir. 10. tábori tüzérezred védelmi harcai a Donnál 1943. januárjában. pp. 1-32. OTDK III. helyezés (2005)

### **13.) AUTOBIOGRAPHY**

**Gergely Németh**, email: [nemeth.gergely@hm.gov.hu](mailto:nemeth.gergely@hm.gov.hu). Mobil: 06305264170

**Aims:** Further broadening already acquired knowledge regarding the defence sector, with a special emphasis on the trends in international capability development and the possible transformation of the defence sector.

Aquiring new analytical knowledge and leadership experience.

**2017 Defence Advisor (HVK KHTCSF)**

**2013-2017 Deputy Defence Advisor at the Hungarian Delegation NATO HQ**

NDPP liaison officer, Defence Policy and Planning Advisor

**2010-2013 Senior Capability Officer (Defence Planning, HUN MOD)**

NDPP, DPCS, capability planning

**2007-2010 Force Planning Officer (Force Planning, HUN MOD)**

NDPP, DPCS, force planning

**2006 Intern at the Office of Military Intelligence**

OSINT: Middle-East

#### **Education:**

**2009-2017 University of Public Services, Military Sciences (PhD)**

Thesis: The transformation of defence sector and influencing parameters

**2002-2006 National Defence University, Security and Defence Policy Expert**