

Engineering a Parent-System, Designed to Generate Complex Sub-Systems in the Field of Defense Planning¹

Wolfgang Peischel

National Defence Academy/Austrian Military Journal, 1070 Vienna, Stiftgasse 2a, Austria
wolfgang.peischel@bmlvs.gv.at

Abstract

The main message and added value of this analysis lies in the development of a possible structure of defense planning, plus process logics, and in providing inherent functional principles of a “system-generating system” in the field of defense planning in a broader sense. This includes the identification of the interrelations of the researched basic principles.

The present research starts with the hypothesis that system development, particularly in highly aggregated social entities, is usually initiated by organizational structures that represent a complex system in themselves. This paper attempts to address the inherent functional logics of this specific “system of systems”, which is the precondition for a successful development and for any control of systems and system-modeling per se.

The described system focuses on creation, control and further development of those sub-systems that provide an adequate reaction to existential threats and future challenges in unpredictable, uncertain situations. Functional principles of military system-planning will be deduced, analyzed, and presented in an abstraction that still allows for practical application in the private decision-making sector, as well. A possible civilian benefit might be gained, where these sets of skills (a specific military “unique selling proposition”) are in demand.

Military system planning is based on specific functional principles that are tailored to leadership-decisions and system control in threatening, time-critical, and unforeseeable situations, usually in a volatile environment.

Attempting to explain according to which military scientific deductions a “system-generating system” in the area of defense planning could be developed, it will be shown in which areas military/leadership-science can offer research results also to civilian system development and where defense planning could benefit from other scientific branches.

Into the direction of private economy an insight is to be given, according to which system-logic military decisions are made respectively which basic principles guide planning-/ defense procurement-processes.

1 Good reasons to maintain independent, uniquely “military” development logics

Military system development is exposed to a number of unfavorable influences of all three types of institutional isomorphic organizational change.²

The requirement of measurability of public administration performance, e.g. the pressure to achieve maximum cost-efficiency by outsourcing and ongoing organizational changes that are often triggered by political pressure, leads to a situation that Di Maggio/Powell describe as “coercive isomorphism”.

The unclear perception of a hardly predictable, future European threat situation, seduces national armed forces to “mimetic processes” that aim at unreflected copying and adapting of role profiles, regardless of thorough strategic evaluation, and regardless of whether the capabilities needed to cope with *certain* geopolitical challenges are required in the *current* situation of a respective state.

The tendency towards professionalization of military organizational structures forces higher military leaders to align themselves with the skills of managers in private businesses, whereby, according to Di Maggio/Powell, the normative component of isomorphism is addressed.

However, armed forces, in sharp contrast to the private sector, have to follow the primacy of politics, but at the same time will have to preserve their specific, unique and independent assessment and system building logic, to develop it further, based on military requirements and to maintain their own code of values that necessarily has to be different from the one used in civilian society.

Stephan De Spiegeleire states that defense planning reality shows a lack of human and social science components.³ When planning systems are responsible for the definition of long-term strategic goals, mirroring a level of systemic creativity, which allows to gain a distinct advantage over the (assumed) adversary, human-scientific and in particular philosophy-related approaches will be needed in addition to those that natural sciences provide.

This paper offers a model⁴ by which a military-specific, independent “system generating system” in the field of defense planning can be designed, that builds on a military/leadership-scientific basis.

2 An abstract, ideal-typical structure of defense-planning and its inherent functional logic

Current literature pays too little attention to the fact that system-creation as well as system management, is carried out by an organizational structure, which in itself represents a complex system. It also is neglected that inappropriate (organizational, methodical, hierarchical) alignment of the generating system is often the reason why the attached and subordinated systems do not work properly. A first result should explain, (a) how the core functional principles of the generating system in the area of defense planning work, (b) what problems can be identified, and (c) which of these solutions are usable for any civilian application.

Regardless of whether it is in the field of political leadership, diplomacy, private economy or public administration, planners complain about a missing strategic long-term orientation.

This, among other reasons, might be caused by the fact that the future becomes harder to predict, environmental conditions turn out more volatile, competition gets tougher and resources scarcer. And there are the early errors, already buried in the initial development cycles, which have sped up in a way that errors, coming from false or too short-sighted strategic goals, start to take revenge later on, punishing those who were responsible for faulty analyses and definitions in the first place (yet within their term of responsibility). In addition, cycles change, so do requirements, so do demands.

Particularly at a time of international networking, multipolarity, globalization and asymmetric threats, the value of any generating system lies primarily in the farsightedness of its strategic objectives and the level of creativity it produces. Throughout the whole process, a high level of creativity is indispensable in order to develop the proposed or existing system further, so that it achieves superiority over competitors. Creativity is also needed to find strategic objectives, which preferably permit a non-confrontational goal achievement (“Blue Oceans”), and force competitors to react.

Thus, two principle options of system development can be identified – namely a gradual further development (adaptation), based on the already existing functional principles, or a fundamentally new idea, resulting in a new generating system, or at least in contributing advanced components to an already existing system.

Especially in military planning it is absolutely vital to distinguish reliably and at an early stage for how long it makes sense to adapt and adjust (modify) an existing system or principle (doctrine) and from when on it has to be changed over to a fundamentally new one. This does not only hold true for technological developments but also for other security-political paradigms, operational concepts, command/force structures and planning processes per se. The “Clipper-phenomenon” shows, how in the mid-19th century, the development of lighter and faster cargo-sailing-ships was hailed as a great technological achievement and widely praised as a success of the system “sail-ship”. However, in its final phase, it (the clipper) became a last swash of a passed technology, a final harbinger of the end of a line which would delay the steam ship only by a few years.

Generating systems, in the field of defense planning, need to train leaders in the awareness and recognition of such developments. Regarding the identification of new developments (and possible new threats) the observance of trends is mandatory; here, civil sciences can provide the necessary “early warnings”.

Since any further development of systems adheres to the same judgment processes, the same mathematical, rational and physical rules as well as resource conditions for all competitors, superiority will only be achieved when a winning-margin in creativity can be gained or when one opponent makes a mistake. But such a grave error - as military history and leadership doctrine show - should not be taken for granted by system planners.

This deduction shows, that creativity is a guiding principle to which a generating system, not only in the field of defense planning, should be aligned, in order to

achieve planning- and leadership-superiority, or as Henry Ford had explained in simpler terms, “If I had asked people what they wanted, they would have said faster horses”.

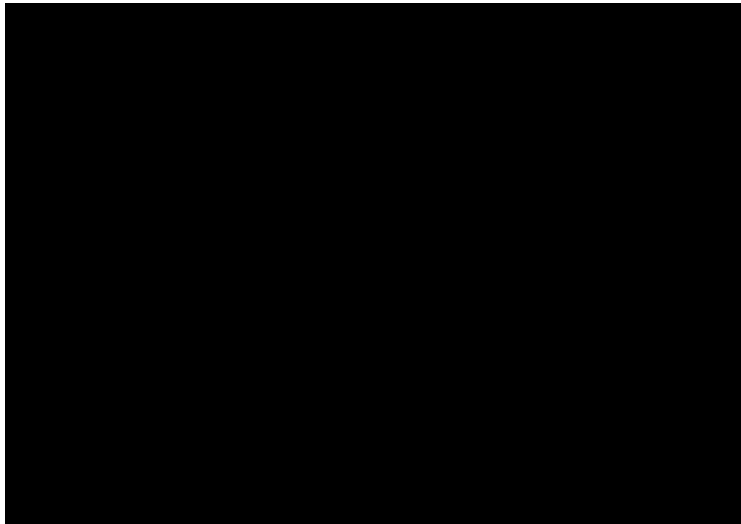


Fig. 1. Ideal-Typical Organizational Structure of a Fictitious MoD

Regarding the concrete search for new principles which are to provide a defense planning system with planning, command and control superiority, one can start from a typical system-architecture of a fictitious European Ministry of Defense (MoD). This starting point might not represent an actual organizational structure of a real national MoD, but should be understood as an ideal-typical structure, derived from a military-scientific leadership doctrine that responds to analyzed requirements for planning systems. Naturally it would mirror typical structures of existing defense ministries. (See figure 1)

The main advantage of this system-architecture lies in the fact that it supports a process-oriented defense planning approach. The organizational elements of defense planning are congruent with the classical planning process steps, following the typical sections like concept planning, definition of military strategic goals, research and development and capability/force-planning. These organizational elements are matrix-type structured and cross sectionally responsible for all services and branches of services. They are, with regard to defense planning and achievement, subordinated to the top defense planner, who is solely responsible for the entire defense planning process. This principle is also mirrored in the process-oriented structure of the European Defense Agency (EDA), and it meets the general trend of new partition-schemes within the capability planning methods that De Spiegeleire analyzes⁵.

The organizational elements of defense planning, defense procurement and operations are directly subordinated to the Chief of the Defense Staff (CHOD). This ensures a dialectic interaction between planning and procurement, whereby a mutual

blockade between the latter can be successfully avoided. Planning, procurement and operations represent steps of a process that directly feeds back requirements and lessons learned from earlier programs and from current operations into the capability planning directorate. The logical linkage of both principles represents the ideal rationale for combining defense planning in a narrower sense, defense procurement and operations, to defense planning in a broader sense. Above that is the logical process chain “capabilities procurement operations”, indispensable for a reliable and realistic life-cycle management (cf. De Spiegeleire, Trend 2. Towards Life-cycle Capability Management).

One of the core principles for the alignment of generating systems in the field of defense planning lies with the deliberate separation of creative steps and their follow-on implementation. In the suggested model, this principle applies fully to the relations of (a) defense planning and procurement, and (b) fundamental planning and capability planning. The organizational element, responsible for the development of a military strategy, contributes to the defense planning-relevant policy. By doing so, it shortens the distance between political leadership and military planners via the Chief of the Defense Staff.

The capability/force planning-element combines and harmonizes the personnel, materiel, infrastructure and educational aspects of deduced capabilities and thereby avoids incorrect planning, usually caused by an overestimation of the materiel component (cf. De Spiegeleire, Trend 1. Towards a Broader Definition of ‘Capability’).

The broader scientific basis on which modern defense planning is built, is maintained by including the organizational element - research and development (R&D) - into defense planning. The R&D element is responsible for the corresponding process step and, in close cooperation with the research and educational level (like defense universities, industry, think tanks, etc.), provides the scientific basis for the armed forces and has an impact on military/leadership science, the relevant humanities and social sciences as well as natural sciences (cf. De Spiegeleire, Trend 5. Broadening the Scientific Base).

3 Generating a parent-defense planning system and derived sub-systems

An ideal-typical system architecture of a fictitious European MoD has been offered above. Now it must be decided which elements serve the generating system of defense planning and which ones primarily support its generated sub-systems (see figure 2). In order to make the entire network between the generating parent-system and the derived sub-systems intelligible to all, any defense planning system requires a definition of “organic leadership”.

Organic leadership is to be understood as a systemic network, consisting of a strategic goal-setting, operational planning, tactical implementation (including C4I), leadership in a narrower sense, management/administration and process-control within the armed forces. Each individual component includes (a) a combination of leadership qualities for goal-setting, planning/evaluation, command and control, human-

oriented leadership, target/actual comparison, and (b) specifications for the different echelons respectively process steps of the defense planning system in a broader sense (military-strategic, operational and tactical level).

Leadership qualities are processed in interactive cycles within each echelon and, at the same time, is the sequence of evaluation steps that are assigned to the different hierarchy levels, executed in a separate, overarching iterative cycle. By this simultaneity of different autonomous process-cycles, can one of the core principles of the generating defense planning system be defined and explained.

Pursuing the hypothesis that a generating system determines the derived sub-systems of defense planning, the constitutive principles of the parent-system and their functions can be identified. Subsequently, it will have to be analyzed in which way any of those principles might influence the development of sub-systems. Finally, it must be answered how all these elements can be aligned and controlled in order to achieve planning/C2- superiority by means of implementing them at all levels of the sub-systems.

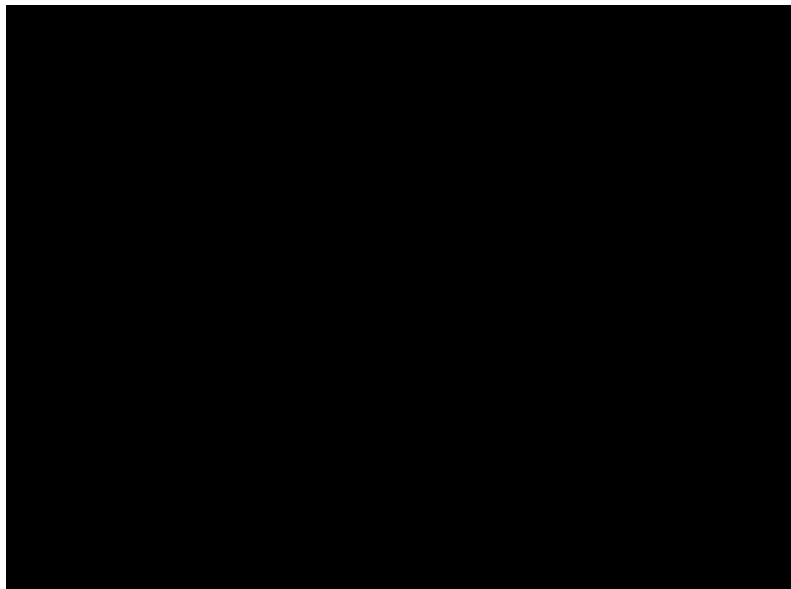


Fig. 2. Interrelation “Parent-Defense Planning System” – Derived Sub-Systems

4 Analysis of the core functional principles of a parent-defense planning system⁶

4.1 Functional principles based on history of thought, military leadership-philosophy or other military/leadership-scientific foundations

The core of fundamental functional principles is mainly formed by those who focus on the creation of the generating parent-system of defense planning out of history of

thought-related, leadership-philosophical or military/leadership-scientific findings. As they are mostly abstract and quite generalized, they would apply to almost all derived system processes without much adaptation. Additionally, they represent basic principles that were barely subject to ongoing historical changes.

The separation of the strategic and operational level: This principle represents a bundle of basics of strategic leadership which jointly serve the overarching goal of relieving the strategic level from too concrete short and mid-term planning and further execution-tasks; in turn, will this separation principle allow focusing on the creative quality of the strategic objectives. Regardless of whether it is about the leadership-theoretical dualism of philosophical deduction and pragmatic operating instruction, or about the differentiation between creative phantasy and critical-analytic thinking within the circular strategic planning process - all these functions aim at “liberating” the strategic level from the constraints of technicalities. Checking identified options for feasibility already in the phase of strategic goal-finding, must lead to a loss of creative quality.

Of course, the feasibility has to be checked, whether by *one and the same staff element* in a subsequent separated phase or by a *different staff element* which is responsible for operational planning and the implementation of strategic goals. The latter variant which uses different staff elements requires a system of simultaneously conducted, autonomous planning-processes on all echelons of military leadership, as explained above.

General military leadership doctrine provides an approach to cope with the demands arising from the dialectic relation between goal-setting and feasibility-check within the strategic planning cycle. It suggests an iterative change of planning-directions from “visionary to pragmatic” to “pragmatic to visionary”, based on the hermeneutic-circle principle which was developed by Clausewitz. As can be shown, the visionary power of strategic goals will be strengthened by separating goal-setting from feasibility-evaluation. Military leadership doctrine describes the dialectic relation of the latter in form of a metaphor: Soldiers of a marching unit follow the polar star, which represents their need of the farthest possible orientation-point to guide them - although no marching soldier ever really wants to reach it.⁷ (cf. De Spiegeleire, Trend 6. Breaking the Dictatorship of the Present). Because far-sighted strategic goal-setting, in most cases, requires restrictions (in the present), the overall logic of which is seldom comprehensible to the subordinate levels, human-oriented leadership is a bridge between strategic goal-setting and operational planning, and, by the same token, an effective instrument to gain the trust of the subordinates for the strategic goals.

This model of separation also fits private businesses, as they also contain strategic and operational levels – both providing the strategic management with the option to pursue intended long-term goals without being locked in immediate, creativity-hampering constraints of short-term (economic) success. What military science certainly will expect from the civilian research branches (besides technological early warning), are ideas for creativity training, preferably under stress conditions, and testing methods for finding or developing creative talent.

Dialectic interrelation between theory and empiricism: The Prussian military theorist Carl von Clausewitz developed a scientific method around a synthesis of Kantian rational a-priori-thinking, and the empiric critical-analytical research of military-historic experiences. This principle will be used as one of the cornerstones of the parent-system model: Its correct understanding would prevent planners from changing structures, due to (wrong) “Lessons Learned” that are not checked adequately for a systemic rationale of malfunctions. The battle of Cannae e.g. would then not be praised for its tactical brilliance anymore – it would much rather have to be taken as an example for choosing wrong strategic goals.

Application of operating instruction versus self-dependent evaluation: Given the required humanistic and military scientific education of military leaders, the qualification for any self-dependent evaluation - in combination with “mission-oriented leadership” - significantly raises the quality, effectiveness, and self-regeneration capability of any parent-system. Already Martin van Creveld found that German staffs in World War II could be kept much smaller in numbers than American ones, because they could build upon a professional independent-evaluation capability and were therefore able to do without a large number of pre-developed contingency and other more detailed plans.⁸

“Divinatory Component”: Dealing with the qualification of military leaders for self-dependent evaluation, one will certainly have to tackle what Clausewitz called “Takt des Urtheils”, “Coup d’oeil” or the “Divinatory Component”. However, could the analysis of these principles easily lead to the fallacy that such qualities were based on God-given, magic, and almost innate ability. By contrast, effective military system planning has to start with the understanding that the above evaluation capability derives from rationally developed conceptual doctrines. These are taught, learned and internalized by frequent practice to make the leader think he acts out of intuition, although in fact, there is always a rationally developed evaluation logic in the background. Indeed, such evaluations, in the eyes of outside observers, may lead to the impression that decisions were taken intuitively.⁹

Operational creativity versus critical analytic assessment: As the analysis of military operations and experience from operations and tactics proves, failure and defeat is mostly due to the lacking ability to recognize other (hitherto unnoticed) options. Military science has therefore started to develop the doctrine of system-generation, based upon the ability for operational creativity.

In this context, Professor Bernd Rohrbach (lecture at the 14th General Staff Course/NDA Vienna) assigned leadership capabilities to the “operating modes” of the human brain. Typically, each of these qualities hinders the other, when called up simultaneously. According to the different individual capacity of staff members with regard to operational creativity and to critical analytical thinking, Rohrbach identified a specific talent for “inventions” or for “management tasks”. Logically, a well balanced ratio between both qualities will predestine a person as a possible superior leader. In case decision-making processes have to be carried out by one person alone, Rohrbach (“Deferred Judgment”) suggests to blank out at first the rational mode (in order to have all brain-capacities available for finding options) and, in a next step, to suppress the creative mode (in order to raise the critical-analytic assessment quality).

Mission-Oriented Leadership: This principle provides the basis for extending the overall creative system-performance through decentralization of execution. It allows for using the mental capacity of all subordinate levels to achieve the overall goal, but in contrast to the principle of all "Powers to the Edge", by strict target-orientation in both directions, i.e. by methodically specifying "room for maneuver" (top-down), and by supporting the self-harmonization of subordinate levels, while at the same time encouraging and permitting creative inputs going from the bottom to the top ("bottom-up" process).

Military Scientific Basis: Military science will have to provide the required scientific quality in the core-subjects of the military leadership doctrine. Only this, not yet sufficiently completed scientific expertise in the *core-subjects* will allow for a harmonized synergetic input from the side of military scientific *accessory subjects* in the fields of human and social science (in particular military philosophy), military history and natural sciences.. Defense universities, in close cooperation with military and civilian research and development elements, will have to act as backbone for broadening and deepening the military scientific basis.

Especially in a period of declining defense budgets, it has become increasingly necessary to preserve and develop collective system-knowledge ("soft skills"). That might be comparable to a tree that throws off leaves before winter and collects its lifeblood in the trunk, in order to be able to sprout again next spring.

Code of Values: Systemic Defense Planning will also have to take into account aspects of values, because the overarching goals like "primacy of politics", "campaign and mission-effectiveness" will require a code of values which necessarily must differ from those of civil society. A deepened understanding of values is indispensable for the trust of the subordinates in strategic goals and thus, in the benefit of separation between strategic and operational defense planning level. A reliable code of values is also inalienable in order to immunize all echelons against unlawful orders and thus, to ensure the primacy of politics.

4.2 Providing the basis for the structural/procedural alignment of derived sub-systems

The functional principles tackled in this paragraph must be seen as an interface between the core of the parent-defense planning system and the derived sub-systems. As such sub-systems are less constitutive for the functional logic of the parent-defense planning system, they are, for reasons of limited space, only mentioned here but not analyzed in depth.

Process-orientation instead of divisional-organized structures: Process orientation favors the holistic development of skills under horizontal cross-viewing of the different services, branches of services, personnel/materiel/infrastructural/educational aspects of any addressed capability development (EDA provides the role-model for such a structure).

Generalist-oriented role profile of military leaders: The general staff role profile for military leaders will gain in importance for creating and controlling process-oriented planning systems.

General standards for derived system-planning processes: These standards comprise specifications regarding the iterative character of planning processes, their periodicity/pulse-frequency, and the rhythm of change between their visionary and pragmatic planning phases. The above standards represent the essential control instruments for the definition of the sequence of goal-setting and feasibility assessment steps and for the ratio between planning range and rotation frequency (of planning loops). They are the basis of all subordinated processes.

5 The final result: “A suggested model of a parent- defense planning system”

The product of the proposed research is a proposal for an (abstract) next-step model of a parent-defense planning system. (See figure 3).

This model is based on functional principles, derived from history of thought-related leadership philosophy or acknowledged military/leadership-scientific findings. It is designed (a) for the regeneration of its own functional logic and (b) for the generation of the sub-systems’ strategic planning-cycle (e.g. threat assessment cycle) capability planning cycle, procurement cycle, operational planning cycle and the tactical decision making processes.

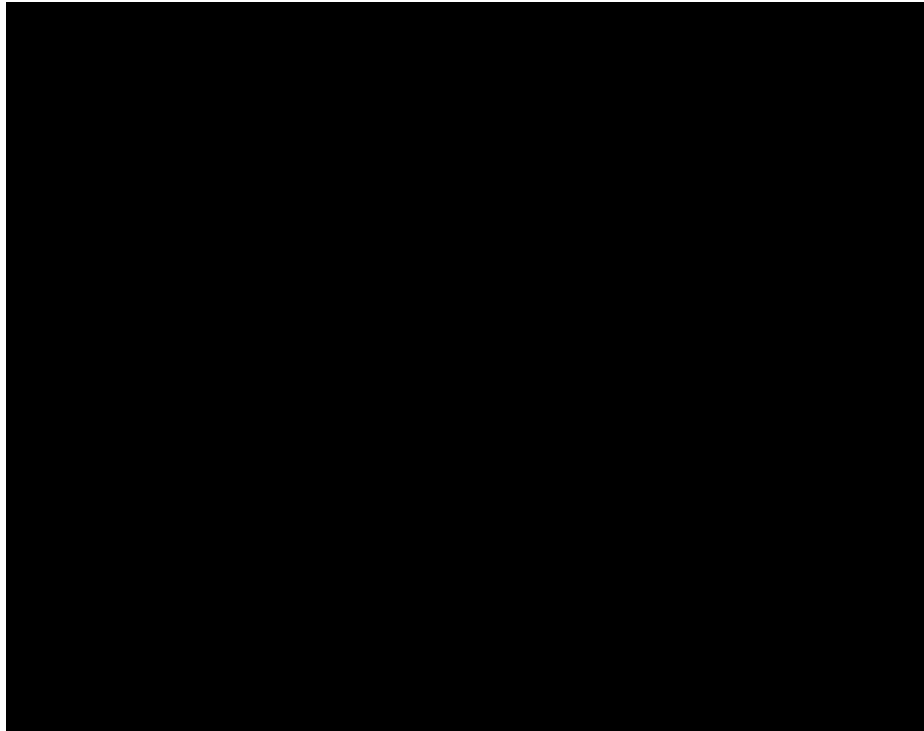


Fig. 3. Model of a “Parent-Defense Planning System” to be proposed

Due to its level of abstraction, it can also be used for strategic and operational planning processes in the private sector or in the (security-) political decision making. The model is constructed as a dialectic synthesis of the antagonistic pairs of factors as analyzed above.

System decisions (regarding e.g. a transformation of systems, the creation of new structures or processes) as well as planning/C2 decisions are to be made in an environment that comprises two different intellectual domains: One of these domains is characterized by theory-heaviness (caused by philosophical-rational thinking) and operational creativity, while the other domain is based on the antagonistic pillars empiricism (systematic empirical research) and critical-analytic evaluation.

The evaluation process usually starts with the finding of usable principle options. Such is normally done by a creative staff cell, consisting of e.g. J2, J3/Plans and J5 (NATO-nomenclature) within the theoretical/creative domain. The Chief of Staff, whose responsibility it is to guarantee continued coordination and harmonization of creative and analytic staff cells, assists the staff with short-listing those options that are eligible for a working hypothesis.

The commanding officer (CO) will then decide which (first) working hypothesis is dealt with in the first loop. As explained above, he bases his decision on an experience-based, but at the same time, a priori rational evaluation (“Divinatory Component”).

The choice of the working hypothesis is by no means to be understood as an anticipated decision that only has to be “legitimized” by the “analytical” staff cell. By contrast, it is the task of this analytical staff elements to try as hard as possible to falsify the hypothesis (see Karl Popper’s “falsification” theorem and “induction-problem”) – as any failed attempt to push the hypothesis “out of the saddle” will increase its validity.

The analytical staff cell takes on the role of the enemy/competitor/alternative option, and tries to falsify the working hypothesis by critical/empirical methods. In case there is a definite reason for doing so, the analytical staff cells might discard a chosen hypothesis; otherwise the latter crosses the boundary to the creative rational domain. There the “creative” staff cell decides if the checked hypothesis will be stored in the “not possible to falsify-basket” (and will have to wait for the final decision of the CO) or whether it has to be modified and sent into the next loop again.

Finally, the CO, who is solely responsible for both intellectual domains, takes the decision by choosing one of the options that have already passed the evaluation cycle successfully. This assessment is based on his experience and at the same time on rational thinking.

Thus, this approach combines the advantages of the empirical and the theoretical science-paradigm and also provides creative, far-sighted goal-setting capability, underpinned by an independent, unerring critical feasibility analysis. Such process is finalized by an “acid test” under conditions of practical implementation.

Notes

- ¹ Defense planning is understood here „in a broader sense“, i.e. as the overarching planning system, including defense planning in the narrower sense, defense procurement and operations, whereas defense planning in the narrower sense only would comprise fundamental planning, research and development and capabilities-/force planning.
- ² Cf. Paul J. Di Maggio and Walter W. Powell: The Iron Cage Revisited - Institutional Isomorphism and Collective Rationality in Organizational Fields Author(s) in *American Sociological Review*, Vol. 48, No. 2 (Apr., 1983), pp. 147-160, Published by American Sociological Association Stable.
- ³ Cf. Stephan De Spiegeleire (2011): Ten Trends in Capability Planning for Defence and Security, *The RUSI Journal*, 156:5, pp. 20-28.
- ⁴ Any deeper analysis that aims at the creation of a complex meta-planning-system will have to include the findings of Kent Palmer, who builds upon Heidegger and Merleau-Ponty (Cf. Palmer, Kent (2000): *Reflexive Autoieptic Systems Theory* http://works.bepress.com/kent_palmer/). However, had the philosophical basis of this research - due to the required brevity – to be limited to Clausewitz and in particular to his dialectic antagonism between theory and practice..
- ⁵ Cf. Stephan De Spiegeleire (2011): Ten Trends in Capability Planning for Defence and Security, *The RUSI Journal*, 156:5, 20-28, trend 3 “Towards Capability Portfolios Based on New Partition Schemes”; the ten trends analyzed in this article are suitable as checklist for the overall effectiveness of planning systems - this is why the suggested ideal-typical model was to be evaluated against the backdrop of these ten trends – following quoted as „De Spiegeleire, Trend 1-10“.
- ⁶ The assessment in this section follows - with respect to specific items - to some extent and in a figurative sense the analysis of military functional principles in the draft-thesis, which is submitted by the author, to the National University of Public Service/Faculty of Military Science and Officer Training, Budapest (title: *Relations between Functional Principles of Democracies and their Armed Forces*, 2013).
- ⁷ Cf. Hans H. Hinterhuber: *Die 5 Gebote für exzellente Führung, Wie Ihr Unternehmen in guten und in schlechten Zeiten zu den Gewinnern zählt*, F.A.Z.-Institut für Management-, Markt und Medieninformationen GmbH, Frankfurt am Main 2010, ISBN 978-3-89981-228-2, p. 63.
- ⁸ Cf. Martin van Creveld: *Kampfkraft, Militärische Organisation und Leistung der deutschen und amerikanischen Armee 1939-1945*, ARES-Verlag, pp. 65-71.
- ⁹ See e.g. the intuitive and offensive qualities of Field Marshal Rommel. Since he never attended a general staff training course, he lacked a number of essential operational skills, like adequate defense tactics and the importance of logistics.