How much is enough?

An examination of military strategic planning at the Swedish Armed Forces

Inaugural speech to the Royal Swedish Academy of War Sciences Department IV on 13 March 2013 by Dennis Gyllensporre[1]

Resumé

Hur mycket försvarsförmåga krävs? Att frågan inger förhoppning om konkreta och definitiva svar gör att den alltjämt är tilltalande i försvarsdebatten. I denna artikel analyseras den militärstrategiska planeringen utifrån detta perspektiv. Analysen omfattar processer, produkter och kontexter. Tillståndet i planeringen är bättre än någon gång tidigare efter det kalla kriget. Detta beror framförallt på ett väl fungerande samspel mellan försvarsmaktsplanering, försvarsplanering och perspektivstudier. För att öka förmågan att hantera komplexitet och osäkerhet finns det emellertid anledning att fortsätta att utveckla planeringen. Detta bör göras stegvis och anpassat till de processer som styr Försvarsmaktens verksamhet. I det korta perspektivet är det av vikt att öka kunskapen om begränsningarna i nuvarande planering.

THERE IS AN unprecedented public debate on security and defence policy in Sweden. All camps, it seems, weigh in; academia, journalists, politicians, bloggers, and concerned public, albeit from different perspectives. While this is a positive trend, it has provided fertile ground for confusion and misinterpretations. In attempts to address the question, *how much is enough?*, some take defence spending as a point of departure, arguing vividly for increased or reduced defence budgets. Others apply a reversed causality by professing that a relevant level of ambition should dictate spending. Within this category, regressive voices cultivate a notion that the Cold War territorial forces still have utility in numbers. These commentators address the question by quantifying force size and structure. Yet other groups approach the question incidentally by examining the security policy and advocating for NATO membership or by examining the future security environment, beyond the current defence resolution period. If not before, this cacophony makes it clear that this question is, on the one hand, fundamental and strikes a chord to the extent that it cannot be ignored, on the other hand it is ambiguous.

This article neither critiques the public perspectives and standpoints nor does it provide any firm recommendations for arriving at a quantified answer to the opaque question. Instead, by shedding light on the Swedish Armed Forces' (SwAF) strategic planning, the aim is to complement the debate. To this end, the article is cued by three questions: a) To what extent can the military planning provide clarity on the subject? b) Is the current planning regime fit for its purpose? c) If not, how can it be improved?

Content, Process and Context

A credible defence strategy for any nation rests on the continuous ability to develop, acquire and, if necessary, timely employ a relevant set of military capabilities.[2] Regardless of how the security environment and the national interests evolve, the military forces must be optimized to support the nation's objectives in the most cost-efficient way. Strategy is often described as a matching set of *ends*, *ways* and *means*.[3] The challenge will be to find a harmonious balance between political objectives, force structure and the application of force.[4] Hence, links between national security strategy, military doctrine and budget appropriations for military capabilities are important. Indeed, the military culture is conceptually underpinned by a cause-and-effect relationship. Planning as well as doctrine reinforces thinking along linear relationships that helps us predict future events to achieve the desired effects.[5] Notwithstanding, military forces occasionally fall short of meeting requirements in terms of effectiveness or efficiency. At the core of the problem lies the need to recognize that the causality between national strategy and budget-lines is anything but straightforward or deterministic. The role of the military strategic planning is to provide that critical link.

According to Henry Mintzberg, strategy and planning are inextricably intertwined as planners formulate, codify, operationalize strategy as well as monitor its implementation.[6] To review the subject from a planning perspective, Bob De Wit and Ron Meyer offer a holistic approach of strategy by adopting process, content, and context as its dimensions.[7] The approach implies that the "research design is open to gathering data on any number of aspects of the setting under study in order to put together a complete picture."[8] This freedom of manoeuvre allows the research not only to focus on defence planning but to consider all military planning disciplines of relevance. Indeed, planning at the military strategic level (hereafter *planning*) has a wide scope as it aims at translating political aspirations as well as providing military advice.[9] While recognizing that the political environment is an important element of context, the interaction between the political and military level is beyond the scope of this article.[10]

When Robert S. McNamara took office as Secretary of Defense in 1961 he was dedicated to changing planning and implementing analytical rigour to arrive at precise needs.[11] In their seminal work *How Much Is Enough? Shaping the Defense Program, 1961–1969,* Alain Enthoven and Wayne Smith shared valuable lessons regarding strategy, force development, and financial planning during the formative 1960's of the United States' (US) Armed Forces.[12] This period, and its associated experiences, is relevant for the contemporary SwAF for three reasons. First, the Swedish budget system is an offspring of the US planning. Second, during this period emphasis was put on efficiency and audit trails. Third, the underpinning principle of decision-making was established as choices among defined and feasible alternatives.

With reference to the first research, above, question on providing clarity on the subject the analysis is advised by the following hypothesis:

$H_{Question}$: Current planning provides a sufficient answer to the question: how much is enough?

Furthermore, to guide the research related to the second question it is assumed

that an examination of the current planning from the perspectives of context, content, and process, has utility. To this end the following hypotheses are identified to guide the analysis:

$H_{Product}$: Sufficient output is generated

$H_{Process}$: The processes are fit for their purpose

$H_{Context}$: The underlying principles are relevant

To avoid conflict of interest, examples and illustrations from the Swedish post-Cold War experience have been excluded. Instead, international experiences as well as Cold War references are made.

Despite these initial theoretical musings this article has a practical perspective. Military planners interact with the real world, they do not have the luxury of looking at a problem, making a plan and theorizing as to why it will or will not generate the desired effects.[13]

How much is enough? One question- three incomplete answers

The SwAF planning regime includes three distinct but interrelated disciplines; defence planning '*Försvarsmaktsplanering*', contingency planning '*Försvarsplanering*', and long-term planning '*Perspektivstudier*'.[14] Defence planning is the process whereby resources are allocated to ensure that forces are prepared to meet capability requirements, including availability, sustainability and deployability. Equally important, it is the mechanism to ensure that military spending is within the budget set by the Government and the Parliament and that every 'krona' is spent wisely. Contingency planning focuses on how to employ the forces to execute operations in a wide range of conflict scenarios in response to real crises or as preparations for potential contingencies. Long-term planning is more elusive as it outlines new ideas and concepts with a view to shaping the future, including ambitions and priorities. The three planning disciplines have their parent processes in the Government administration. Defence planning is designed to meet the needs of the budget process subjected to all government agencies. The contingency planning supports the national decision-making on contingency responses, within the country or abroad. The long-term planning has links to the process of preparing defence resolutions.

Until the end of World War II these disciplines were amalgamated in one process, but dominated by contingency planning.[15] Gradually, planning diversified and in particular defence planning and contingency planning became divorced. Notwithstanding, contingency planning dominated until its peak around 1958. Bengt Wallerfelt argues that the linkage between defence planning and contingency planning started to erode in conjunction with the Defence Resolution of 1958.[16] This was in part due to the fading role of the military instrument in the security policy. Olof Santesson claims that the Supreme Commanders became less consulted on security policy matters by the political leadership and that their attention was increasingly on administration and defence planning matters.[17] In a similar vein, Claës Skoglund notes that the Defence Staff became too occupied with defence planning at the expense of contingency planning.[18]

A comprehensive review concludes that the correlation between defence spending and the military threat started to decline during the late 1960's, and contin-

ued to so until 1996, the end of the period of study.[19] The divergence in planning came to an extreme during the early phase of the post-Cold War period, when contingency planning was in effect dormant during the so called 'strategic timeout'. The long-term planning evolved along a different path. During the Cold War it was an integral part of the defence planning.[20] In the mid 1990's, as the SwAF became organized as a single agency, it gained a semi-independent role. Long-term planning became a continuous effort with a significant body of dedicated staff that issued annual reports. Arguably, the most significant divide between defence planning and long-term planning occurred in 1999 when the SwAF presented two reports on the same day, albeit with diverging outlooks.[21] During the 2000's, the strategic timeout, visionary transformative planning was at its pinnacle. Since 2009 the scope and resources have been gradually reduced. As a consequence the long-term planning has realigned with defence planning.

Defence planning: How to get value for money

Until 1961 the US military planning and financial management were disjoint administrative disciplines, and little attention was given to the ability to resource the military aspirations.[22] The Planning, Programming, Budgeting System (PPBS) was introduced to rectify this shortcoming by providing an integrated system that translated strategy and objectives, into specific programs, and the development of programs into a budget request.[23] Not unlike the prevailing aspirations of the SwAF, the objective with the PPBS was to "provide the operational commanders-in-chief with the best mix of forces, equipment, and support attainable within fiscal constraints".[24] The PPBS introduced considerations to military planning, thereby ensuring realistic ambitions from the outset. To this end an intermediate step, involving programming, was introduced to bridge planning and budgeting, two conceptually divorced disciplines.[25] Together with the cost-effectiveness analysis, the launching of programming was the most significant tool introduced by the PPBS.[26]

While planners were concerned with how to employ military forces to meet political objectives, budgeters were focussing on ensuring balance between required and available resources as well as accountability as to how resources are spent. Programs were made up of a set of program elements that are related by function or organization. The program elements were the building blocks in the budget as these represent equipment systems or complete force elements. A hierarchal tree-structure was established in which programs are mutually exclusive and collectively exhaustive. Many nations and international institutions followed suit and based their capability development on the PPBS,[27] and Sweden was no exception.[28]

During most of the post-Cold War period state spending in Sweden was sectorial and fragmented.[29] Appropriations were introduced at different times and to various sectorial Parliamentary committees without oversight.[30] Planning suffered from short-sighted priorities as the general elections were held every third year. The accumulated financial debt grew and a financial crisis emerged in the early 1990's. As a part of the recovery plan a State Budget Act was passed by the Parliament.[31] To instil fiscal discipline the legislation introduced a budget ceiling for Government spending. As a consequence, the budget was itemized in

twenty-seven expenditure areas, reflecting the policy areas, and systemized the presentation of appropriations.[32] Parliament would decide on the budget totals before taking a stand on individual expenditure areas, one of them being on defence and preparedness for civilian contingencies.

The process takes budget petitions '*budgetunderlag*' from the agencies as key input. The initial budget submissions are reviewed by the Ministry of Finance.[33] The Minister for Finance presents a compiled budget, including recommendations for the indicative funding levels for each expenditure area to the Cabinet. The Cabinet Budget Meeting convenes at the Prime Minister's retreat. It is the venue at which to discuss and agree on any changes in budget levels.[34] Then the Government introduces its Spring Fiscal Policy Bill[35] aggregate expenditure ceilings for the upcoming fiscal year plus two additional years, as well as indicative ceilings for the allocations across each of the expenditure areas.[36] Subsequently, the Parliament approves the Bill and a draft budget for the expenditure areas is promulgated to Parliament in the Budget Bill. Following a second decision by Parliament in December the state budget for the subsequent calendar year is approved. Before the end of the year the Government then issues a Letter of Appropriations '*Regleringsbrev*' to the government agencies, including the SwAF, to implement the decision for the coming fiscal year. The Budget Law has elevated the financial ceiling to ends and not a means, while it puts an emphasis on efficiency and sound management in all public spending.[37] The budget reform has by all accounts been regarded as successful.[38]

The Swedish version of PPBS, '*Försvarets planerings- och ekonomisystem*' (FPE),[39] was introduced in the late 1960's to, among other things, improve the ability for political decision-making.[40] Ola Hedin argues that the system did not live up to the expectations of achieving a rational decision free from bias and special military interests.[41] In the US, the Pentagon was subject to similar criticism.[42] The planning has two time perspectives, one that is aligned with the requirement in the Budget Law ranging over three years (the coming year and the following two years) and an additional, and less detailed, planning that extends to another seven years to cover a 10-year outlook. The latter planning emanates from the requirement to present a 10-year investment plan on procurement in support of the budget petition. Internally, the planning is codified in the SwAF Capability Development Plan, '*Försvarsmaktens Utvecklingsplan*' , *(FMUP)*. It allocates resources and sets priorities and ambition levels for, inter alia, war-fighting units '*krigsförband*'. For a long time resource identification lacked sufficient economic metrics.[43] Following the strategic timeout the linkage to contingency planning has been significantly strengthened, including an increased fidelity on requirements.

Being a government agency, the SwAF is obligated to put forward its annual budget petition on 1 March, including a budget proposal for the coming year and tentative plans for two additional years. As a principle, if a government agency proposes activities that generate additional costs, the proposal must also include reductions in other areas that will compensate.[44] Planning is initiated annually in the spring the year prior to submission. Since 2012 all planning is preceded by a single overarching strategic guidance approved by the Supreme Commander, '*Försvarsmaktens strategiska inriktning*'(FM SI). A bottom-up approach is applied to review the programs. As in the PPBS, programs include

a cluster of war-fighting units that correlates with the responsibilities of the services, i.e. Army, Maritime Forces, Air Force, Home Guard, and joint programs. To ensure economic rigour, budget estimates are prepared for all programs at the level of war-fighting units. These are compiled during the autumn.

According to Rikard Askstedt, one of the systemic problems with the process is that the economic consequences of full implementation of these estimates render them impossible to implement.[45] As a consequence, he argues, a lot of planning efforts are put in to plan what would never be implemented and morale among the personnel will suffer accordingly.[46]

The proposals are compiled into parcels of investments and divestments and later stacked in priority. Parcels that generate needs for additional funding may emanate from new legislation, unanticipated requirements and needs that were not funded in earlier budget cycles but still regarded as important. Parcels that induce negative costs are prepared due to financial constraints or based on initiatives to increase efficiency. The method for priority has changed over time. The current system takes as a point of departure the strategic guidance that, inter alia, draws on the knowledge gained in the contingency planning. Earlier generic capabilities, based on the Universal Joint Task List (UJTL), were prioritized based on the tasks of the SwAF.[47] To arrive at an annual decision in December the Supreme Commander is presented with parcelled proposals divided according to the budget lines i.e.; 1. Training and personnel, 2. Operations, 3. Procurement, 4. Maintenance, 5. Research & Development. A parcel could, for instance, include increased salary for soldiers (line 1) or procurement of trucks (line 3) or maintenance of the IT-infrastructure (line 4). These are mapped to programs and war-fighting units but clustered along budget lines. One inherent difficulty is to make sure that the cost-to-benefit analysis is focussed on the war-fighting units as opposed to the budget lines. Following the Supreme Commander's decision on priorities the budget petition is prepared in detail and a revised Capability Development Plan is issued.

There are arguments both in Sweden and internationally that suggest that the capabilities that the PPBS process generates may not be fit for its purpose, in particular as force development, including procurement, is often a protracted process that defines capability requirements early on. Indeed, when military forces are employed they may operate in a way that was not anticipated when capabilities were specified and developed. According to the renowned military historian Martin van Creveld the US strategic bomber aircraft B-52 has never been employed in a mission for which it has been designed even though it has been operational since 1952.[48] He also makes a similar observation with regard to the contemporary Soviet built bomber aircraft Tu-95.[49] Sir Rupert Smith, a British general, goes further by observing that "[o]f all the weapons and equipment supplied to me, with the exception of the small arms and the grenade, I'm absolutely confident saying that I use them on operations in circumstances that they were never purchased for in the first place." The priorities, quantities, timing and requirements of Swedish defence capabilities during the Cold War and the early post-Cold War have been debated extensively and subjected to criticism by the now retired military leadership.[50]

Contingency Planning: How to make use of defence capabilities

Contingency planning encompasses the full range of military operations that could involve the SwAF and may be performed deliberately (advance planning) or under crisis action conditions (crisis response planning), i.e. ad hoc.[51] Based on the military strategic doctrine, the aim is to prepare and optimize the effect of the extant forces if and when they are employed. In contrast to the budget process, the parent process at the Ministry of Defence (MoD) has a low level of formalization.

The planning process emanates from the mathematicians John von Neumann's and Oskar Morgensten's classical analytical decision-making theory in 1947.[52] It stipulates that the decision maker behaves strictly rationally to maximize the results.[53] The process can be described in five phases:[54] 1. Identify the problem; 2. Generate alternative solutions; 3. Evaluate and choose between alternatives; 4. Implement the chosen solution; and 5. Maintain the solution by monitoring, reviewing, and appraising the situation. The concrete methods have varied over time but the principles have remained.

More specifically, the current contingency planning is preceded by a phase of awareness. The security situation is monitored and assessed through intelligence and other means, including bilateral consultations and discussions in the UN, the EU and/or NATO. Contingency planning is initiated by Contingency Planning Guidance by the Government or the MoD, ideally underpinned by a political assessment. The guidance may include a request to develop Military Strategic Options (MSO). The first step of the strategic planning involves identifying feasible military response options, whether it is an emerging situation or a hypothetical event. Subsequently, an Initiating Military Directive (IMD) is issued by the MoD for conducting planning on how to employ the forces, including a concept of operations (CONOPS). Planning for contributions to international crisis management operations follows the same path but has a set of unique factors to consider. This step is further subdivided. Initially, the mission is analysed and key military tasks are identified. Successful planning is predicated on a sound understanding of the strategic context of the mission.

During the consecutive block courses of action (COAs) are developed and analysed. They are compared by a set of criteria tailored for the mission and a recommendation for COA selection is prepared. Once the COA is decided the CONOPS is refined and finalized. Subsequently, the recommendations are forwarded to the MoD. Following political deliberations some operations require a Government Bill. The Parliament takes the bill into consideration and passes a resolution. The Government is then authorized to decide on the implementation. The next step is preparing an Operations Plan (OPLAN) codifying tasks and coordinating arrangements needed for execution by subordinate units. Throughout this process there are points of interaction with the political level where approval or endorsement is sought. Although the planning steps are described sequentially there are in practice several feedback loops during the process.[55]

During the planning process, critical situations are subdivided into discrete events that can be as detailed as duels between weapons systems. This is done in a wargaming setting that includes a sequence of action-reaction-counteraction between

the opposing forces. The process is educational and it helps to identify shortfalls in the planning and improve coordination. Research suggests that the SwAF should increase war-gaming in contingency planning.[56] Moreover, the force generation process takes place as a part of the planning.

During WWII the SwAF's contingency plan included two distinct branches; Branch I revolved around an attack by Germany and Branch II took an aggression from the Soviet Union as a point of departure.[57] A third Branch was soon added, including threats from the UK/US.[58] These three cases remained until the 1970's.[59] While Branch III was outlined on the most generic level, Branch II was the reference point for planning at subordinate levels, based on three sub-branches (south, central, and north).

During the Cold War contingency planning put significant emphasis on operational art as it deliberated on the allocation of forces; considered logistics options to ensure sustainability; and how to retain an offensive capability. Mindful that Sweden would only constitute a peripheral element in a regional conflict involving the Warsaw Pact and NATO, the Marginal Doctrine, suggested that a strong defence was needed based on resilience. The planning put attention on the *initial conditions*, i.e. how to allocate forces in the case of a mobilization and how to ensure a swift mobilization. Following the initial phase the ability to move forces from different part of the country to counter the main attack was central. In fact, these principles can be traced back to the nineteenth century.[60] Focussing on Branch II, the strategic setting was straightforward: to counter an invasion from the east. In retrospect, we have learned that there was another dimension to the contingency planning. Research has disclosed that the contingency planning was informed by covert contacts with Allies during the Cold War, albeit in a limited setting.[61]

Following the Cold War other low intensity tasks were added to the planning and invasion scenarios were gradually downplayed. During the 2000's, i.e. the strategic timeout, the planning to a large extent responded to the ambitions of employing forces in international crisis management operations. During the post-Cold War period the SwAF have planned and deployed in some 20 international crisis management operations that have been authorized by the Parliament.[62] In addition, several other contributions to international crisis management operations have been planned. The current planning encompasses planning for all operations, conducted in Sweden and abroad, as well as planning for mobilization and the initial mission for units in case of a mobilization. As there is no viable invasion threat, the planning assumptions have changed. Emerging threats could manifest themselves in hostile actors that want to assert their interests in the region to the extent that Swedish territory becomes a vehicle for that purpose. Controlling, or operating from, key areas in Sweden could become a rationale for a potential aggressor. It is difficult to contemplate a scenario where Sweden would become the subject of an isolated aggression. Contingency planning of this nature, i.e. advance planning, is by nature hypothetical. It predicates a future development that requires a military response. These hypotheses can, and should, always be subject to scrutiny. Despite these limitations there is no alternative to advance planning for preparing the forces.

Successful planning cannot be reduced to mechanical application of procedures and processes. There are no prescribed rules for employing military forces. The military historian Michael Howard argues that the forces that are anticipated to be used are likely to be wrong. However, what matters is the agility to adapt when a crisis emerges.[63] Three recurrent challenges are associated with contingency planning: identifying friend and foe and understanding the nature of the conflict and its timings.[64] Hence, the planning processes should stress creativity, innovation, intuition, sound judgement, and in-depth military expertise. These characteristics are often labelled as operational art. Boukhtouta et al. summarize what makes planning successful: "A good mission planning is generally characterized by quick response, decisive action and flexibility to adapt to the exogenous events and changing situations".[65]

Long-term planning: How to prepare for the future

Until 1958 defence resolutions were agreed upon by the Parliament approximately every ten years. Later, a system of five year cycles was implemented. Formally there are no fixed defence resolution periods any more but there is strategic guidance on defence policy that will be in effect until being superseded by new guidance. In order to facilitate the process a Defence Commission, comprising members of Parliament, is appointed to undertake studies on the long-term development of Swedish Security and Defence Policy. It provides an input to the Government Defence Bills with a view to achieve political consensus as far as possible for ensuring continuity. Long-term plans at the SwAF are, *inter alia*, developed to inform and provide military advice to the political decision-making process, including the work of the Defence Commission. New or revised defence concepts and structures are presented to reflect the changes in the security environment as well as the status of the SwAF.

During the latter part of the Cold War the long-term planning was as an integral part of the FPE. The guidance called for two specified reports prior to a defence resolution; the first report covered alternative structures in a 20-year perspective, while the second report covered COAs for the coming ten years.[66] A significant shift in process and output was made in the early 1990's. The long-term planning process was redesigned calling for a continuous effort with dedicated personnel. The Regional Commanders, '*Militärområdesbefälhavare*', became formally involved.[67] Moreover, the report in preparation for the defence resolution in 1995/96 was made in several reports with less depth but more width.[68] Soon a procedure of annual reporting emerged that with a few exceptions prevailed until 2009. The annual report of 2010 was only approved as a draft. For 2011 and 2012 the Government directed the SwAF only to retain the competence for long-term planning.[69]

Another trend is that the work is less labour-intensive in the SwAF than in the early 1990's when some 50 personnel were involved on a continuous basis.[70] Today, the figure is less than a handful.[71] Therefore, it is safe to conclude that the process is coming closer to other planning. Moreover, the long-term planning is not a plan per se any more, but a study.[72] Important changes have seen the light of day in this process, for instance the transformation from a conscript-based organization to a volun-

teer force with professional soldiers, sailors and airmen.

Traditionally, the long term planning has a top-down approach by starting at an analysis of the security environment and the options for national security that are translated into alternative visions of the SwAF in a 20-year timeframe, and subsequently condensed to alternative 10-year military strategic objectives, including proposals for CONOPS and force structure.[73] Force structures are calculated and assessed from an economic perspective as they must be sustainable within a realistic defence budget. Hence the balance of force elements is, among other things, underpinned by a cost-effectiveness analysis.[74]

A recurring theme is the aspiration to provide causality among these areas of analysis. One of the most sophisticated versions linked national interest with resource requirements of the SwAF.[75] In general, the reports do not stop at providing overall recommendations, but arrive at very detailed solutions; including the long-term needs for personnel in different categories.[76] In some cases the figures have a high degree of correlation with the actual outcome. In the 10-year outlook aiming for the year 2010, a structure for the Navy included, inter alia, 7-10 surface vessels and 5 submarines.[77] These figure are close to the current navy, based on the Defence Resolution of 2009. More often than not the specific quantities do not correlate. Notably, it is not the purpose of the planning to predict the outcome of the political process. Instead, it intends to shape the process by cultivating new ideas and outlines decision points. Indeed, many 'hard choices' have been forged in the long-term planning. In 1999, shortly after the decision by Parliament to increase the number of fighters to 200 JAS combat aircraft, the proposed long-term planning force structure for 2010 included 60-80 JAS aircraft, the same number that the SwAF proposed to the Government in 2012.

Long-term planning may also have short-term implications. The Supreme Commander, General Sverker Göranson, has cautioned against the longer-term implications, if the budget is maintained at current levels.[78] Key arguments are derived from the long-term planning. In addition, research suggests that the long-term planning process has been instrumental in the education of personnel and anchoring tough choices within the organization.[79]

Although the process and scope have changed over time, the long-term planning work has been committed to scenarios and gaming. Scenario-based planning was conceived by the US Air Force following World War II. It migrated into the business world in the 1960's as Herman Kahn, a former US Air Force employee, demonstrated its application in business prognostication.[80] In the early 1970's oil prices had been steady ever since the end of the Second World War, and the expectation was that they would continue to remain so. However, at Royal Dutch/Shell a planner saw how the increased oil consumption in the US could coincide with an empowered OPEC underpinned by anti-Western sentiment, in particular after the Six-Day Arab-Israeli War. To change the mindset of managers, a scenario was developed outlining the ramifications of a dramatic increase in oil prices. When the energy crisis emerged in 1973, only Shell, among the major oil companies, was prepared to tackle the challenges.[81] Unlike the PPBS, scenario-based planning is not based on deterministic quantitative models and calculations. It is rather a contextual and qualitative de-

scription that seeks to identify how the future may evolve.[82]

Notwithstanding the merits of scenario-based long-term planning, history has demonstrated its limitations. At the beginning of the 1960's, both superpowers gained second-strike nuclear capability. The Cold War logic changed but remained symmetric and predictable. It became known as mutually assured destruction (MAD), formulated in the McNamara-doctrine, the founding father of the PPBS. The symmetry was defined by the two superpowers balancing each other in important aspects of the system: societal influence and military capability. Since then the world has become significantly more complex and uncertain. The unpredictability of the international security environment has most recently been manifested in the Ukraine, the Arab Spring, the Russian-Georgian war in 2008, the 2006 Israel-Hezbollah War, the 9/11 terrorist attacks, and the Iraqi invasion of Kuwait in 1991.

These conflicts have by and large surprised the intelligence community, politicians, academia as well as media commentators. Clearly, they have not been able to establish causality chains for the actions taken by the conflicting parties to make sense of the situation. Failure to anticipate strategic shocks is the rule, not the exception. Nassim Taleb concludes that people are not configured to comprehend extreme events until they materialize.[83] The Arab Spring is a case in point. The US Secretary of Defense, Donald Rumsfeld, captured the dilemma in his famous comment on the "unknown unknowns".[84]

Observation: Planning is not entirely fit for purpose

Now we need to revisit the hypotheses formulated above. The first proposition ($H_{Question}$) claimed that current planning provides a sufficient answer to the question of *How much is enough?* Defence planning is a bottom-up effort geared towards optimizing activities within a defence resolution framework against budget lines. Mindful that the defence resolution decides the force composition the degree of freedom is limited. Resource allocation to war-fighting units is the secondary objective. Contingency planning, a top-down endeavour, also takes as a point of departure the existing organization and status within a near-time focus to maximize operational output based on the full range of tasks assigned to the SwAF. Finally, the long-term planning is not constrained by the extant policy framework. However, it makes principle assumptions on the political parameters to maximize the defence capabilities beyond the ten-year planning horizon. Clearly their respective optimization processes have other objectives. While the three planning disciplines serve different purposes and produce desired outcomes they all give incomplete answers to the question. Against this backdrop it is inferred that the hypothesis ($H_{Question}$) is falsified.

The second postulate asserted that the processes are fit for their purpose ($H_{Process}$). It is striking that all three planning disciplines were launched around the 1960's, and that their principles continue to be applied, albeit with some modifications. A common thread is the desire for a solid audit trail linking policy objectives with spending and military effects. This notion seems to have been driven by the defence planning. According to Bo Hugemark,

planners were concerned that the mechanical causality in the FPE would alter the mindset in contingency planning, making it too rigid and not allowing for the flexibility required.[85] There is no conclusive scientific evidence that suggests linear cause-and-effect relations between enhanced management of data and managing complex military organisations.[86] Another recurring theme is the method of dealing with complexity by subdividing problems at a sufficient number of iterations, distributing the tasks, and solving the subtasks. The solutions of these subtasks are subsequently aggregated a common solution to the problem.

Mindful that complexity in military organizations is unparalleled[87] the concern is how to account for second and third order effects. "We cannot do merely one thing" as everything is connected.[88] In a web of relationships, changing one aspect of the planning will have ripple effects. For instance, introducing a new torpedo in the Navy may require a revised tactical posture for the JAS squadrons that have an impact on training requirements that due to budget constraints necessitate changed priorities for a mechanized battalion. David Alberts and Richard Hayes conclude that "traditional military planning has proven adequate for dealing with a set of challenging situations […] this Industrial Age approach is inherently inadequate for coping with the genuinely *complex* situations".[89] Based on these arguments the hypothesis ($H_{Process}$) is rejected. The analysis has not demonstrated that the military planning processes are sufficiently fit for their purpose.

With reference to products, the hypothesis ($H_{Product}$) stated that the planning generates sufficient output. The products have a deterministic character. They are underpinned by a rational notion in that linear logic applies and that outcomes can, to a significant degree, be predicted. The discussion has demonstrated that we have difficulties in anticipating capability requirements – the enemy will have a vote on the contingency planning and we are most likely not able to predict the nature of future conflict. As a consequence, the outcome does not reflect the fact that all situations are unique and their conditions may dictate distinct requirements. Although general conclusions are desirable they may not be possible. Once challenged by Aristotle what he would do in a given situation, Alexander the Great responded that it would depend on the circumstances. Aristotle then provided a hypothetical scenario and repeated the question. Alexander replied, "I cannot tell until the circumstances arise".[90] Clearly, he understood that no plan could fully anticipate or capture the unique conditions and circumstances framing the decision-making. If anything, the examples elaborated above, for each of the planning disciplines, testify to the inherent limitations of the planning products.[91]

The effort and ability to quantify may incorrectly give the impression that planning can render precise and accurate outcomes. Aaron Wildavsky argues that the PPBS, and indirectly the deterministic causality, is feasible only if large margins of error are acceptable when assessing policy options.[92] In a similar vein, the result of an audit trail from national interest to resource requirements, as discussed above, has a limited value as long as the national interests have not been explicitly defined. Indeed, the discussions suggest that the planning deliverables are not completely fit for purpose. As a consequence the hypothesis ($H_{Product}$) should be rejected.

Finally, the context needs to be scrutinized. Arguably, this aspect has not yet been covered. Perhaps the changes we anticipate in future warfare are best understood by examining changes in underlying paradigms.[93] The hypothesis ($H_{Context}$) claimed that underlying principles of planning are relevant. Based on the discussions complexity and uncertainty seem to be common denominators for future planning. Indeed, both the Government and the SwAF put an emphasis on these aspects. As noted above, the conceptual framework of the planning processes emanate from the early phases of the Cold War. Its societal context is from the industrial age. Industrial age warfare assumes that the world can be understood from a mechanistic and deterministic perspective that originated in the Enlightenment and the Scientific Revolution.[94] Isaac Newton's law of motion plays a pivotal part in this regard. By defining absolute time and space and explaining the universe with a *Majestic Clockwork* metaphor Newton made people understand an orderly and predictable nature – it is a linear paradigm.[95] This was further advanced by Max Weber's bureaucracy theory and Fredrick Taylor's concept of *Scientific Management*.

Clearly the elaboration above demonstrates that planners still walk under the banner of Newton, perhaps without realizing it. By all accounts the influence of McNamara's principles remains persuasive. Some key commanders with significant experience testify that the deterministic planning system has limitations. Helmuth von Moltke the Elder argued that; "no plan of operations survives the first collision with the main enemy body."[96] According to Dwight D Eisenhower; "Plans are nothing, planning is everything".[97] General George S. Patton, Jr., once said; "A good plan violently executed now is better than a perfect plan next week."[98] More importantly, science has progressed and other paradigms are increasingly having an impact in society. According to Steven Mann and Charles Krulak, yet another senior commander, the linear approach does not meet these requirements.[99] Based on these arguments it is safe to assume that the underpinning contextual framework is insufficient. Indeed, the aforementioned illustrations suggest that the linear and deterministic context has some distinct limitations; therefore the hypothesis ($H_{Context}$) should be rejected.

The remainder of the article is dedicated to the final research question by providing some recommendations on improvements.

Embracing Complexity and uncertainty: towards a new generation of planning

Early in the twentieth century Albert Einstein's *Theory of Relativity* and Werner Heisenberg's *Uncertainty Principle* exposed flaws in the linear paradigm. Today it is conventional wisdom that Newton's laws fail to explain how nature behaves, but in planning we keep committed to the *Majestic Clockwork*. The next generation of paradigm, or scientific theory, has many names; systems of chaos, complexity, nonlinearity, and chaoplexic systems.[100] The basic premise is the acceptance of complexity and uncertainty as the norm. Nonlinear systems defy proportionality. They may exhibit erratic behaviour through disproportionately large or disproportionately small outputs, or they may involve "synergistic" interactions in which the whole is not equal to the sum of the parts."[101] In many regards it is a better reflection of human behaviour than the linear paradigm.

Clausewitz' work has been reviewed and explained with non-linear theory. His concepts of the interactive "remarkable trinity", Zweikampf ("two-struggle"), and unpredictability based on chance, friction or interaction are best explained by the next generation of paradigm.[102] Progress towards the next generation of paradigm is not a unique development within security and defence – many sectors have started to move in this direction. There is a growing debate within public management to move towards a new paradigm based on chaos and the quantum theory.[103] It is beyond the scope of this article to outline its characteristics. Instead, the contribution is to provide some recommendations based on the new paradigm.

Recommendations

Relax causality

Contrary to the linear dictums of the PPBS, redundancy may not be a waste of resources. Planning should allow for redundancy. The friction of war and the 'policy lag'[104] in peace- time may render a pathological adherence to causality unattainable or undesirable. According to Frederick Kagan, the logic of business management may have a limited application in armed forces: "Redundancy is inherently a virtue in war".[105] Leo Blanken and Jason Lepore have identified five drivers for optimizing redundancy in force structures that could assist further deliberations.[106] A first step towards accepting increased redundancy could be to expand causality. Craig Parsons argues that four distinct logics apply in the realm of political science; institutional, ideational, psychological and structural.[107] Notably, this model allows for a shift from a mechanistic causality towards a human-oriented logic. Studies indicate that the model has utility in military planning.[108] When deliberating on fine-tuning the extant war-time organization '*Insatsorganisation 14*' this should be a factor. Multirole units belong to the future.

Benefit from holism

While the three planning efforts serve different purposes they all provide crucial elements to sustain and enhance a credible force. As has been demonstrated, these efforts to act in concert based on a unifying strategic guidance. To improve this further, increased cross-fertilization should be fostered through triangulation, a method to combine methods for making conclusions more robust.[109] Notably the current planning system has only recently reached a steady state as contingency planning has matured. By a deliberate and coordinated approach a combination of defence planning, contingency planning and long-term planning the SwAF has a unique potential to prepare comprehensive assessments and recommendations in preparation for the coming Defence Resolution.

Encourage interactivity

From the discussions above, we should take as a point of departure that: we will not anticipate future threats; the enemy will have a vote in how operations are conducted; we will not be able to accurately anticipate future capability requirements. Any action will have second and third-order effects. These need more attention. War gaming, scenario modelling and balancing capability parcels should go further in their aspiration to simulate different behaviour. Instead of gaming action-reaction-counteraction the interaction should go further to allow the system to perturb in different

ways. This will assist planners to appreciate uncertainty and complexity. The ART-model developed within the long-term planning provides a good example of interactive behaviour embedded in the analysis. The model replicates the dynamic relationship between actors, themes and regions to understand the international security environment.[110]

Cultivate dynamic decision-making

Traditional decision-making is predicated on discrete and well defined decision-points. Unfortunately this is a rare condition that seldom occurs. Nor does disintegration of problems to smaller manageable problems reflect the need for postulating non-linear behaviour. Judith Orasanu and Terry Connolly posit that classical decision theory, based on von Neumann's model, does not reflect the conditions of real-life war-fighting situations; that is, complexity, uncertainty, and tempo.[111] Real-life problems tend to be ill-structured, so called 'wicked problems', and goals are not well defined. Decisions often take place in a dynamic environment without complete or accurate information. The classical concept of risk is based on the statistical explanation of uncertainty that was established by mathematicians during the Renaissance.[112] Clearly it does not factor in human behaviour or other non-linear data.[113] Clausewitz reminds us that; 'absolute, so-called mathematical, factors never find a firm basis in military calculations'.[114] Planning must support commanders by identifying non-linear factors that can induce biases.[115] In contrast to classical decision theories, the focus is not on choosing among alternatives but on finding an acceptable solution. Charles E. Lindblom introduced *The Science of Muddling Through*,[116] that allows many small incremental changes during a short time frame; "the most common and intuitively reasonable thing is to make an incremental decision based on what has happened up to that point."[117] Research suggests that there is no evidence that COA comparison will generate better CONOPS.[118] Planning should evolve to support commanders to make a series of incremental decisions.

Instil a incremental change

In his seminal work on scientific revolutions Thomas Kuhn concludes that the incremental evolution of paradigms ("normal science") sometime results in invalidation of the fundamental principles, like the *Majestic Clockwork*.[119] Scientific advances consist of the displacement of one paradigm, which has become incapable of providing a framework for new findings. Acceptance of a new paradigm requires that it is perceived better than its predecessor.[120] According to Basil Liddell Hart this may be particularly difficult in the armed forces; "The only thing harder than getting a new idea into the military mind is to get an old idea out."[121] This article argues that planning is in the midst of a transition that requires a deliberate effort for change. However, it must be an incremental change that allows gradual adoption and acceptance. A first step could be to understand the inherent limitations in current planning as discussed in this article.

Concluding remarks

The critical analysis in this article must be put in perspective. From a historical perspective the state of planning is in good condition. Notwithstanding, this article advocates a transition from the linear mechanistic approach to planning towards

a system that puts an emphasis on the human dimension underpinned by non-linearity. As a consequence, the reliance on ambitious audit trails that arrives at definitive and precise requirements should be scrutinized. Redundancy should be encouraged. Moreover, planners should appreciate uncertainty and complexity by examining second and third-order effects of decisions and actions. Rather than a quantum leap, a prudent approach calls for a gradual adjustment. The parent processes within the government administration dictates the rate of change. As a start, the limitations of the existing models need to be highlighted.

There is no 'magic silver bullet' in military strategic planning. While the existing planning disciplines satisfy different needs, it is clear that they are complementary. With 'wicked problems' and opaque questions a source of strength for the SwAF will be the ability to draw on all planning with triangulation to combine results. This is predicated on a concerted planning approach that must be maintained and further developed. The SwAF is better positioned than at any time during the post-Cold War era to inform the defence resolution process based on operational needs. Over time the emphasis on each planning discipline will fluctuate. History has taught us the importance of maintaining a harmonious balance and to avoid dramatic pendulum shifts. In the current state contingency planning is on the rise while long-term planning is descending. Soon the SwAF may want to revisit the priorities and advise the political level.

Military strategic planning needs to be recognized as both science and art. Planners, whether they assume roles as war fighters, budgeters or trend spotters, are required to demonstrate a profound understanding of the strategic environment, military operations and how capabilities are developed, including recruitment, the training of units and procuring and sustaining equipment gained by practical experience. This will equip ardent planners with an understanding on non-linear causalities and human factors that influence the outcome. Also planners must comprehend and translate political aspirations to the military vernacular. This is a particular challenge as security and defence policy is in a state of change, and the armed forces is one of the vehicles for progress.[122] Planning at the military strategic level is a trade that necessitates a distinguished set of skills.

In conclusion, we must return to address the original question; *how much is enough?* The current debate on security and defence policy breeds an unwarranted confidence in the ability to predict force requirements. From a linear mechanistic perspective, the question is trivial: codify the security policy; formulate military objectives; develop a CONOPS to attain the objectives; deduce force requirements; and define a force structure. The SwAF must not fall victim to the temptation of providing definitives that are not grounded in proper planning. We are not in the business of guessing. The desire to arrive at concrete and distinct conclusions must be tempered with credibility. Planning is, and will be, a complex endeavour. Einstein suggests that we should: "make things as simple as possible, but not simpler." The analysis has demonstrated that elusive policies, too many uncertainties, and the lack of linear causality render this endeavour unattainable.[123] The precision generated by a careful audit trail may be of limited value.

Indeed, the inability to respond to the question posed by McNamara in 1960's may be the most compelling argument for

changing the planning paradigm. According to the strategist Colin Grey a cynical view of the answers to the question only serves the purpose of providing credibility for the politicians among the population, as these decisions are both important and costly.[124] This may be a feasible response by a scholar, but not for a Government agency. Any response by the SwAF should be conditioned by the information available, the specific circumstances and how much risk we are willing to accept. Only then can the answer be of value.

With Gustavus Adolphus at the helm the SwAF once spearheaded military planning by, among other things, accepting more complexity and uncertainty.[125] While the SwAF may not aspire to vanguard the international development on military planning, we owe it to our soldiers, sailors and airmen to aim high; they should demand no more and expect no less.

The author is Major General and a fellow of the Royal Academy of War Sciences.

Notes

1. This article is based on a presentation at the Royal Swedish Academy of War Sciences on13 March 2013. The presentation was delivered in Swedish and due to time constraints it only covered some of the aspects presented in this article. The opinions expressed are the views of the author and do not necessarily reflect those of the Swedish Armed Forces.
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3. Lykke, Arthur F: "Toward an Understanding of Military Strategy" in *Military Strategy: Theory and Application*, US Army War College, Carlisle Barracks, PA 1989. For application of the model see for instance Edström, Håkan and Gyllensporre, Dennis (eds.): *Pursuing Strategy: NATO Operations from the Gulf War to Gaddafi*, Palgrave Macmillan, London 2012; and Edström, Håkan and Gyllensporre, Dennis: *Political Aspirations and Perils of Security – Unpacking the Military Strategy of the United Nations,* Palgrave Macmillan, London 2013.
4. See for instance Van Riper, Paul: *Planning for and Applying Military Force: An Examination of Terms*, U.S. Army War College, Carlisle, PA, 2006; and Åkerström, Janne: *Militär planering och beslutfattande – en översikt*, FOI-R–3224–SE, Totalförsvarets Forskningsinstitut, Stockholm 2011.
5. Reeves, Jacob: *A study of causality in military planning*, Command and General Staff College, Fort Leavenworth, Kansas 2012.
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7. De Wit, Bob and Meyer, Ron: *Strategy: Process, Content, Context: An international perspective,* West Publishing Company, St Paul 1994.
8. Quinn Patton, Michael: *Qualitative Evaluation Methods,* Sage Publications, Beverly Hills, CA 1990, p. 40.
9. Försvarsmakten *Militärstrategisk Doktrin med doktrinära grunder (MSD 12)*, Försvarsmakten, Stockholm 2011.
10. Both Sun Tzu and Clausewitz saw the military as an agent for the political leadership. However it was not until the late 1950's when the interaction between the political level and the highest military level was subjected to scientific scrutiny, see Huntington, Samuel P.: *The Soldier and the State: The Theory and Politics of Civil-Military Relations,* Harvard University Press, Cambridge, MA 1957; and Janowitz, Morris: *The professional soldier: A social and political portrait*, Free Press Glencoe, IL 1960. For an examination of the interaction in Sweden see Edström, Håkan: *Hur styrs Försvarsmakten? – Politisk och militär syn på försvarsdoktrin under 1990-talet*, Umeå Universitet, Umeå 2003.
11. McNamara argued that "You cannot make decisions simply by asking yourself whether something might be nice to have. You have to make a judgment on how much is enough." Foreword in Enthoven, Alain C. and Smith, K. Wayne: *How Much Is Enough? Shaping the Defense Program, 1961-1969*, Harper & Row, New York 1971, reprinted by the RAND Corporation in 2005.
12. Enthoven, Alain C. and Smith, K. Wayne: *How Much Is Enough? Shaping the Defense Program, 1961-1969*, Harper & Row, New York 1971, reprinted by the RAND Corporation in 2005.
13. Reeves, Jacob: *A study of causality in military planning*, Command and General Staff College, Fort Leavenworth, Kansas 2012.
14. Försvarsmakten: *Försvarsmaktens Strategiska Inriktning 2013*, skr 23 100:59776 2013-06-28, Försvarsmakten, Stockholm 2013.
15. In 1944 the Supreme Commander was tasked to prepare an assessment and recommendations in support a defence resolution. The assessment and associated work included a new strategic outlook, a renewed contingency plan, and proposals on force development, see Wallerfelt, Bengt*: Si vis pacem – para bellum, Svensk säkerhetspolitik och krigsplanering 1945-1975*, Probus Förlag, Stockholm 1999. The assessment was furher developed in "ÖB 47". It has been argued that "ÖB 47" was a unique military strategic assessment, see Agrell, Wilhelm: *Alliansfrihet och atombomber- kontinuitet och förändring*

i den svenska försvarsdoktrinen från 1945 till 1982, Liber Förlag, Stockholm 1985.
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17. Santesson, Olof: "Man lyssnade på militären när det passade" in Arteus, Gunnar and Zetterberg, Kent (eds.): *Högsta ledningen-Förhållandet mellan regeringen och överbefälhavaren under det kalla kriget*, Försvaret och det kalla kriget (FOKK) publikation 26, Kungliga Krigsvetenskapsakademin, Stockholm 2010.
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19. Pallin, Krister: *Sveriges militära satsningar: en översikt med förklaringar till perioden efter 1945,* FOA-R–98-00828-170–SE, Försvarets Forskningsanstalt, Stockholm 1998.
20. Nygren, Jan: *Budgethandbok – Styrning och budgetprocess*, Försvarsdepartetmentet, Stockholm 1989.
21 See Försvarsmakten: *Förslag till framtida struktur för Försvarsmakten,* Försvarsmakten, Stockholm 1999-05-19 and; Försvarsmakten: *Årsrapport från perspektivplaneringen 98-99 Försvarsmaktsidé 2020 Rapport 3* ", HKV 23 210:65117, Stockholm 1999.
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24. Department of Defense: *The Planning, Programming, and Budgeting System, 22 May 1984*, Department of Defense Directive (DODD) 7045.14 1984.
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29. Wehner, Joachim: "Budget reform and legislative control in Sweden", *Journal of European Public Policy*, 14(2), 2007, pp. 313-332.
30. Ibid.
31. Swedish law 1996:1059
32. Blöndal, Jón R: "Budgeting in Sweden", *OECD Journal on Budgeting*, 1(1), 2001, pp. 27-57.
33. Ibid.
34. Ibid.
35. It should be noted that the role of the Spring Fiscal Policy Bill has since been adjusted.
36. Wehner, Joachim: "Budget reform and legislative control in Sweden", *Journal of European Public Policy*, 14(2), 2007, pp. 313-332.
37. Swedish Law 2011:203
38. Op. cit. Wehner, Joachim, see note 36.
39. Försvarets planerings- och ekonomisystem (FPE). The underlying theoretical consideration can be found in "Planings- och programbudgetering inom försvaret (SOU 1969:25)".
40. It was decided in December 1970 and applied for the first time when preparing the Budget Petition for 1972/73, Op. cit. Nygren, Jan, see note 20.
41. Hedin, Ola: *Rapport till Expertgruppen för studier i offentlig ekonomi 2011:2 Försvarets förutsättningar – en Eso-rapport om erfarenheter från 20 år av försvarsreformer*, Finansdepartementet, Stockholm 2011, p.75.
42. See for instance Luttwak, Edward: *The Pentagon and the art of war: the question of military reform*. Simon and Schuster, New York 1984.
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44. This principle is outlined in a legislative regulation, see "Förordning (2000:605) om årsredovisning och budgetunderlag".
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46. Ibid.
47. Berg, Anna-Lena: *Förmågebaserad försvarsmaktsplanering,* FOI-R–2977–SE, Totalförsvarets Forskningsinstitut, Stockholm, 2010.

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50. See for instance Hugemark, Bo (ed.): *Fel sort och för mycket?- Arméns avvägningsfrågor under det kalla kriget*, Försvaret och det kalla kriget (FOKK) publikation 1, Kungliga Krigsvetenskapsakademin, Stockholm 2004; Wennerholm, Bertil (ed.): *Snabbare, högre och starkare?- Avvägningsfrågor om luftstridskrafterna under kalla kriget*, Försvaret och det kalla kriget (FOKK) publikation 3, Kungliga Krigsvetenskapsakademin, Stockholm 2004; Fältström, Herman (ed.): *Rätt sort, kom för sent och var för få- Marinens avvägningsfrågor under det kalla kriget*, Försvaret och det kalla kriget (FOKK) publikation 5, Kungliga Krigsvetenskapsakademin, Stockholm 2004.
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57. Op. cit. Wallerfelt, Bengt, see note 16.
58. Ibid.
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61. Holmström, Mikael: *Den dolda alliansen- Sveriges hemliga Nato-förbindelser*, Atlantis, Stockholm 2011.
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63. According to Howard: "I am tempted to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they got it wrong. What matter is their capacity to get it right quickly when the moment arrives". Quoted in Høiback, Harald: *Understanding Military Doctrine: A Multidisciplinary Approach*, Routledge, New York 2013.
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66. Op. cit. Nygren, Jan, see note 20.
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68. Ibid.
69. See Appropriation Letters to the SwAF for 2011 and 2012.
70. Op. cit. Stenström, Maria et al., see note 67.
71. An estimate by the author in his capacity as responsible, under the Chef of the Defence Staff, for long-term planning.
72. In 1992, in conjunction with a change in the long term process within the Defence Staff, the SwAF changed the name from 'plan' to 'study', see Op. cit. Stenström, Maria et al., see note 67. Notwithstanding, both terms are still used interchangeably.

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78. See for instance General Göranson's speech at the Sälen Conference in 2012, available at *http://www.forsvarsmakten.se/Global/Myndighetswebbplatsen/4-Om-myndigheten/Dokumentfiler/tal/2012/120115 %20 %c3 %96B %20 anf %c3 %6rande %20p %c3 %a5 %20 FoF %20i %20S %c3 %a4len.pdf*. Accessed on 1 February 2013.
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86. Based on Berteau, David: "Foreword" in Ben-Ari, Guy and Chao, Pierre (eds.): *Organizing for a complex world- Developing tomorrow's defense and net-centric systems*, The CSIS Press, Washington D.C. 2009.
87. David Packard's commission on defence management concluded that "defense is different", neither other government agencies nor in the commercial world was the complexity at the same level, see Op. cit. Berteau, David, see note 86.
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90. Op. cit. De Wit, Bob and Meyer, Ron, see note 7, pp. 7-8.
91. Notably, the examples are drawn from Cold War situations or recent but international experiences to avoid conflict of interest. For the purpose of this article the examples drawn upon are relevant as they are underpinned by the same processes.
92. Wildavsky, Aaron: "Rescuing policy analysis from PPBS", *Public Administration Review*, 1969, pp.189-202.
93. Op. cit. Gyllensporre, Dennis, see note 54.
94. Gyllensporre, Dennis: *Adding Nonlinear Tools to the Strategist's Toolbox*, Command and General Staff College, Fort Leavenworth, Kansas 2001.
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97. Op. cit. De Wit, Bob and Meyer, Ron, see note 7, p. 35.
98. Patton, George S. Jr.: *War As I Knew It*, Houghton Mifflin Company, Boston, MA 1947, p. 354.
99. While Mann posits that the international security environment demands better tools to deal with complexity and uncertainty, Krulak concludes that the analytical military decision-making does not meet the needs of modern warfigthing. For further details see

Mann, Steven: "Chaos Theory and Strategic Thought," *Parameters,* vol. 22, autumn , pp. 57-58; and Krulak, Charles: "Cultivating Intuitive Decisionmaking," *Marine Corps Gazette*, vol. 83, no. 6 1999.

100. See Bousquet, Antoine:*The scientific way of warfare: order and chaos on the battlefields of modernity*. Colombia University Press, New York, 2009; and Lawson, Sean T.: *Nonlinear Science and Warfare: Chaos, Complexity and the US Military in the Information Age*, Routledge, New York 2013.
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102 Ibid.
103. See Overman, E. Sam: "The new sciences of administration: Chaos and quantum theory", *Public Administration Review,* 1996, pp. 487-491.
104. Policies, political guidance, planning products etc. are developed ad hoc or periodically but not necessary in synchronization with other planning documents. A policy lag emerges when these documents are out of sync, a common phenomenon.
105. Kagan, Frederick: "The art of war", *The New Criterion,* vol. 22 no. 3 2003.
106. The drivers include efficient scale, probabilistic failure rates, measurement, contracting issues, and political reliability. It is beyond the scope of this article to elaborate further on the model, see Blanken, Leo J. and Jason J. Lepore: "Unpacking the various meanings of redundancy: from refining the concept to military planning", *Defense & Security Analysis,* 28.4 2012, pp. 326-342.
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121. Collins, John: *Military Strategy: principles, practices, and historical perspectives*, Potomac Books Inc., Washington D.C. 2002, p.25.
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123. The list can be made much longer, according to Payne the assessment also include "opponent decision-making processes, values, intentions, histories, levels of determination, goals, stakes, and worldviews, and the possibilities for reliable communication across a broad spectrum of current and future opponents. Are the opponents in question susceptible to … deterrence threats? If so, are punitive threats to urban/industrial or some other types of targets useful for deterrence? To whom must threats be communicated, and how? How might the credibility of … threats be established with any confidence", see Payne, Keith B.: "How Much Is Enough?: A Goal-Driven Approach to Defining Key Principles for Measuring the Adequacy of US Strategic Forces", *Comparative Strategy*, 31.1 2012, pp. 3-17.
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