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Risk Beyond Doctrine - An Empirical Study of NATO's Risk Management Integration in Planning

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This study examines NATO's integration of risk management in planning, assessing its practical application in large-scale exercises. Despite adopting ISO 31000, inconsistencies persist between doctrine and implementation, warranting further investigation. Using privileged access, the study analyzes instructional documents, 20 interviews, and observations from seven NATO headquarters this paper reveal considerable variance in risk conceptualization, doctrinal deviations, and bureaucratic obstacles, complicating unified risk integration. These inconsistencies highlight NATO's challenges in achieving coherent risk management. However, findings suggest NATO's professional practice aligns more closely with risk science principles than NATO's own doctrine.

Keywords: Doctrine, Planning, Decision-Making, Military Operations.

1. Introduction

This paper explores research from the NATO Risk Propensity Project, part of the North Atlantic Treaty Organization (NATO) Supreme Allied Commander Transformation's Professional Doctorate Program. The project examines how contemporary risk science can enhance NATO's planning and decision-making. An enhancement that is entirely plausible given the recent research demonstrating how risk science can improve intelligence analysis, a critical component of military planning and decision-making (Zarghooni-Hoffmann and Aven 2024). The paper extends prior research that assessed NATO's risk management processes as described in NATO documentation by investigating its practical application during operational planning. This study aligns with the European Safety and Reliability and Society for Risk Analysis Europe conference's goal of advancing knowledge relevant to European security and applied risk science, particularly within large complex and multinational organizations like NATO. Furthermore, it contributes to creating a comprehensive understanding of risk management in NATO's military planning and decision-making processes.

To fulfill its role as a security provider and credible deterrent, NATO must prepare for war, encapsulated in the strategic maxim Si Vis Pacem, Para Bellum ("If you want peace, prepare for war") (NATO 2022). Risk is an inherent aspect of war, and NATO's ability to manage it effectively during planning and execution directly impacts its credibility and effectiveness. This paper focuses on risk management practices within NATO by examining their practical application in four large-scale NATO exercises. The central research question is: How are risk management activities included and executed in NATO's operational planning process?

2. Theoretical and Professional Foundation

2.1. *Risk Management*

Broadly speaking the management of risk, in the form of the 'consequences of the activity and associated uncertainties' (Aven and Thekdi 2022, 11; Aven et al. 2018, 4), can be defined as 'all activities used to address risk' (Aven and Thekdi 2022, 201), or '[a]ctivities to handle risk such as prevention, mitigation adaption and sharing' (Aven et al. 2018, 8). These definitions make management a matter of balancing potential adverse consequences and potential favorable consequences. There are numerus of established approaches, frameworks and strategies for risk management. For this research we have used the model in Figure 1 adapted from Aven and Thekdi (2022). Here a management decision is the end result of a three-stage process based on stake-holder's values, goals, criteria and preferences.

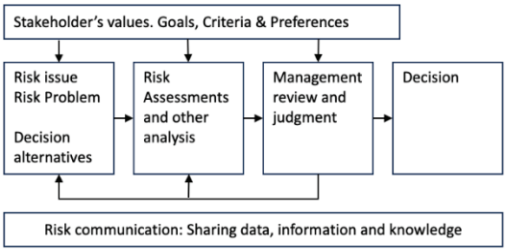

Figure 1 – Professors Aven and Thekdi (2022, 202) Risk Management Model adjusted for this paper.

Appreciation of the International Standard for Risk Management ISO 31000 is also important for this research. The ISO 31000 is the only risk management standard referred to in NATO doctrine (Solli and Borrie 2024; NATO 2019a). This standard has been both praised and criticized for its understanding of risk and its approach to risk management (Aven 2017; Purdy 2010). ISO 31000 defines risk as the 'effect of uncertainty on objectives' (International Standards Organization 2018, 1), while its framework for risk management focuses on integration of risk management through leadership and comprehensive involvement across all levels of the organizations. It articulates a multi phased approach starting with establishing the Scope and Context of activity along with Criteria for risk management. The framework contains a risk assessment process that includes Identification, Analysis and Evaluation of risk before conducting Risk Treatment (International Standards Organization 2018).

2.2. *Planning of Military Operations*

NATO's military operations planning is guided by the Allied Joint Doctrine for Planning of Operations (AJP-5) and the Comprehensive Operations Planning Directive (COPD) (NATO 2019b; 2021). Subsequent stages in the COPD planning process outlined in Figure 2 will be referred to in data analysis and discussion. Within this documentation, there is inconsistency in the placement of explicit risk analysis: the COPD confines it to mission analysis, while AJP-5 includes it in course of action development (Solli and Borrie 2024; NATO 2019b; 2021) Furthermore, NATO's planning doctrine defines risk as a negative potential measured by probability and impact (NATO 2019b), whereas the operations doctrine's definition of risk is based on ISO 31000 by stating '[t]he effect this uncertainty has on their objectives is "risk"' (NATO 2019a, D-1).

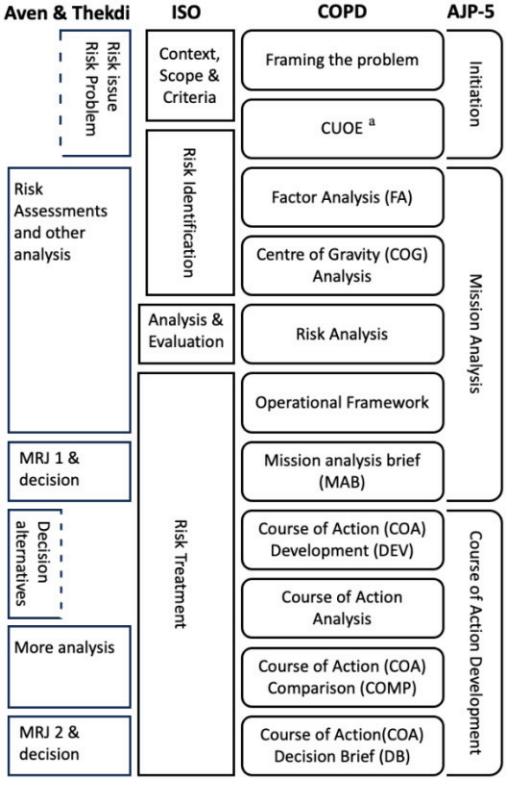

Figure 2 – NATO planning and Risk Management Alignment figure by Solli and Borrie (2024)

2.3. *Risk Management in military planning*

Risk can never fully be removed from military operations, and therefore needs to be assessed in order to be managed during military planning. Military risk analysis is often implicit, but tools and processes are available for military staff to make it deliberate. Currently risk analysis remains a cornerstone of military planning irrespective of the level of cognitive rigor applied to the analysis (Metz 1991). Figure 2 illustrates how previous research has revealed that the sequential planning activities within AJP-5 and COPD theoretically

[a] CUOE – Comprehensive Understanding of the Operational Environment

may be aligned with the aforementioned risk management model (Figure 1) and ISO 31000 framework. It should be noted that the risk management model has been adjust in Figure 2 by creating a double loop of analysis prior to decision-making. In Figure 2 Managerial Review and Judgment (MJR) 1 is an event that leads to further planning guidance and not a final decision. It should also be noted that Risk Analysis in NATO's COPD covers both Risk Analysis and Evaluation in the ISO 31000 framework.

Efforts to articulate such an alignment have not been attempted in NATO doctrine, or other authoritative NATO documents related to military planning, despite the reference to ISO 31000 as the "foundation" for risk management in NATO. Analysis of NATO documentation found conflict and tension between different authoritative NATO documents related to risk as a concept and how to incorporate its management in planning and decision-making (Solli and Borrie 2024). The inconsistency means NATO personnel may be using implicit rather than explicit understandings of risk and risk factors in risk analysis and management. This was explored in this study.

3. Method

This research draws on data collected from four exercises over a period of 14 months. The study encompassed 800 hours of ethnographic observations of seven headquarters (HQ) during exercises. Of these, 220 hours was dedicated to planning at three headquarters where there was a focus on future operations. The other four headquarters were observed but not they were engaged in conducting operations. The data presented incorporates ethnographic observations based on field notes and 20 interviews following a semi-structured interview guide.

The research used content analysis incorporating both quantitative and qualitative data (Zhang and Wildemuth 2009). Quantitative data was not subjected to statistical analysis, but is presented in descriptive comparative tables, while qualitative data was analyzed iteratively, starting with deductive coding and adding layers of inductive coding to enhance nuance (Vears and Gillam 2022; Zhang and Wildemuth 2009). This approach supports the research's exploratory goals by fully utilizing the available data. The data presented in this paper focuses on findings from the three HQs engaged in planning of future operations supported by data drawn from the remaining four HQs. Interview data focuses primarily on the eight interviews conducted at the three planning HQs whilst drawing on data from all 20 interviewees regarding their understanding of risk and the planning activities they associate with risk management.

All participants in the NATO Risk Propensity Project were anonymized and referred to by randomly selected codenames. The HQs have codenames drawn from Norse mythology, while the interviewee's codenames were generated by randomly selecting playing cards during the start of their interviews.

Table 1 – List of observed headquarters

Codename	Exercise Focus
HQ Hugin	Planning of operations
HQ Munin	Planning of operations
HQ Mjølner	Planning of operations
HQ Fenris	Conducting operations
HQ Loke	Conducting operations
HQ Gugne	Conducting operations
HQ Frøya	Conducting operations

Table 2 – List of interviewed research participants

Codename	Rank
Ten of Spades (10S)	NATO Civilian
Jack of Clubs (JC)	NATO Civilian
King of Diamonds (KD)	NATO Civilian
Five of Hearts (5H)	Major
Eight of Clubs (8C)	Major
Four of Clubs (4C)	Lieutenant Colonel
Six of Diamonds (6D)	Lieutenant Colonel
Eight of Spades (8S)	Lieutenant Colonel
Nine of Clubs (9C)	Lieutenant Colonel
Ten of Diamonds (10D)	Lieutenant Colonel
Ace of Spades (AS)	Lieutenant Colonel
King of Clubs (KC)	Lieutenant Colonel
Queen of Hearts (QH)	Lieutenant Colonel
Five of Clubs (5C)	Colonel
Seven of Clubs (7C)	Colonel
King of Spades (KS)	Colonel
Queen of Diamonds (QD)	Brigadier General
Three of Clubs (3C)	Major General
Nine of Spades (9S)	Major General
Seven of Hearts (7H)	Lieutenant General

4. Findings

4.1. Observations

The reporting of observations is based on the sequence of COPD stages shown in Figure 2. Common for all three HQs was the inclusion of a dedicated officer for risk management in the core group of officers managing the planning process. These officers served as mix of teacher, supervisor and custodian for all risk related matters such as teaching personnel how to identify, nominate and analyze risk. The role also included challenging members of staff on their risk analysis or lack there off, and creating a comprehensive risk picture for the commanders as part of their foundation for decision-making during MAB and COA DB. Most HQs used risk matrices to depict the risk picture. Observations revealed that post-mitigation, the risk was moved within the commander's defined tolerance line, despite the envisioned mitigations not justifying the shift. Only HQ Munin added a depiction of risk aligned with the operations framework, aligning risk with phases of the plan. Risk management activities prescribed by doctrine and COPD were observed, with practitioners effectively going beyond the guidance of one document due to contradictions between the two.

The risk analysis activity prescribed by the COPD is in the planning process conducted after both the FA and COG analysis. This allowed for the output of these preceding analysis to serve as vehicles to identify risk factors that subsequently could be analyzed during the risk analysis activity. Factor Analysis findings ought to be labelled 'risk for later analysis', but this was not observed to be the case in all of the HQs. Leveraging the finding from the COG analysis for risk assessment proved more challenging for the staff. However, it was observed that the commander of HQ Mjølner was very focused on the opponents' critical vulnerabilities deduced from the COG analysis in order to focus their own offensive effort. Consequently, intelligence staff were explicitly looking at their own forces critical vulnerabilities when analyzing how the opponent may act.

For the risk analysis conducted as part of NATO's Mission Analysis process, variance was observed in the analysis templates used to facilitate the individual analysis. Analysis templates were similar to the template presented in NATO doctrine and the COPD, but there were some significant deviations. The involvement in risk analysis of staff who initially identified risks was unclear beyond their initial submissions to risk managers. In all cases iterative risk analysis was only observed to be done by dedicated risk management personnel working individually or in small teams.

The MAB to the commander proved not only to be a forum for the staff to communicate their analysis to just the commander, but a vehicle for dissemination of mission analysis findings to a wider audience within the HQ. It was a forum for the commander to review the current state of the planning. Commanders gave their judgment on the findings and provided the staff with guidance on planning as the HQ transition in to the Course of Action (COA) development. Subsequent to the briefing of risk during HQ Mjølner's MAB the commander made the following statements as part of his directions to the staff. 'We exist to deal with risk, […] We need to track all the risks. […] Mitigation can result in tasks and mitigation plans.'

As part of the COA development the HQs conduct 'wargames' (WG) to stress test their preliminary courses of action. Within a strict time schedule a 'blue' team played developed potential courses of action against a 'red' and a 'green' team representing the opponent and the civil society and host nation forces respectively. The task of the red and green teams was to reveal vulnerabilities in the blue team's courses of action so that these could be addressed by making amendments to improve the courses of action. The observed wargames were noted as being elaborate, time consuming and cognitively strenuous. Common for all three HQs was the allocation of a significant amount of time to the dedicated risk managers to comment on the respective COA with regards to how they addressed risk identified in earlier planning stages. Each round of a wargame was adjudicated by a senior staff officer, who also factored in the comments from the risk manager. Repeatedly risk was addressed by the teams playing the wargame.

The final Course of Action Decision Briefs were observed to be a synthesis of the previous planning addressing uncertainties and complexities in the operational environment before the developed

courses of actions were presented. Prior to commanders were asked to make decisions, core planning groups presented their comparison of the planners' courses of action. These comparisons included how different courses of action addressed the identified risks and if there were unique risks to the respective courses of action.

Common for all HQs was inconsistency in the use and understanding of the term 'risk'. Some adhered to the doctrinal / ISO 31000 understanding, but for the most part the term was used as a synonym for single aspects of risk such as likelihood, danger and threats. One of the most evident differences between the three HQs was the extent to which the commanding officers explicitly focused on risk in their interaction with the staff during managerial review Judgement and decision events such as the MAB and the COA DB. Both observations and interviews revealed that the commander of HQ Munin was not as overtly involved in the planning processes as the other two commanders. Consequently, there was less observable engagement with HQ Munins commander. In contrast the commanders of HQ Mjølner and HQ Hugin who were more closely involved in planning both referred to risk but often in generalized ways. For example, HQ Mjølner's commander repeatedly made statements like: 'We are soldiers, we face challenges and must take and manage risk' and 'Our job is to mitigate risk, [higher headquarter] risk mitigation can imply task for us'. The commander of HQ Hugin addressed risk to a lesser extent than the commander of HQ Mjølner during observed interactions with the staff, but still made statements such as: 'Risk of escalation is our paramount concern. I need clear depiction of not only our own boundaries but also the host nation boundaries. Our presence creates both vulnerabilities and opportunities for NATO and the Host nation.' Taken as a whole, observations show variability in definitions and use of the term 'risk', subsequent planning processes and varied emphasis on risk from different commanders.

4.2. Interviews

The interviewed officers demonstrated varying understandings of risk. The primary differentiation in perspective related to Singular or Dual definition of risk. The Singular group saw risk solely as a negative construct where the Dual group recognized positive as well as negative potential. Breaking this down further showed further sub-groups within each primary group. Among those who had a Singular definition of risk, fewer than half acknowledged any potential for positive aspects to the concept. Conversely, among those with a Dual definition, approximately half still saw risk as being a primarily negative construct. Consequently, less than 30% of interviewees viewed risk as being a neutrally balanced concept. These findings are summarized in Table 3.

Table 3 – Interviewees understanding of risk

Singular definition		Dual definition	
Only negative	Positive aspects	Only negative	Positive aspects
6	3	5	6

All interviewees were asked about the contribution of various planning activities to risk management. Sixteen were given a list of COPD-related activities and asked whether each contributed to risk management (yes/no). Table 4 shows the interviewees' beliefs about the link between specific planning activities and risk management. Four participants (6D, 7C, 8S, 9C) discussed the activities' contributions without the binary prompt. Their responses are also listed in Table 4 for completeness. Overall, eight of 20 interviewees stated that all planning activities contribute to risk management. Among generals (indicated with * in Table 4), representing NATO's executive decision-making level, there was broad agreement on most activities' relevance, with disagreement on only one activity with 7H not considering COG Analysis as relevant. While consensus on all COPD activities as contributors to risk management was absent, most activities received strong support. Objections were rare, with a maximum of two out of 16 interviewees question an activity's contribution, The exception was COG Analysis, where five interviewees objected to its relevance to risk management. Wargaming, by contrast, was widely regarded as critical, with near-unanimous support (16/16 and 18/20).

In wider questioning the officers responsible for risk management who were interviewed (8S, 9C, JC, and QH) highlighted the significant challenges in securing staff contributions to risk management. They described the effort as frustrating, with remarks like 'I am fishing for risk' (8S), 'Managing risk is like pulling teeth from the staff' (9C), and 'I

had to force the staff to contribute. The risk is treated by most as a secondary problem, but we know it is really important' (QH). JC noted that NATO's understanding of risk is immature and rudimentary, a view echoed by QH, who cited a lack of formal training, limited leadership emphasis, and only general explanations of risk management provided to the staff before planning began. QH also noted specific struggles during COA development, stating, 'I am trying to get the staff to assess or look at their COA's risks.'

Officers in higher leadership roles offered distinct perspectives on risk management within HQs. According to 9S, understanding risk is paramount for commanders, emphasizing that risk is the most critical briefing topic for decision-makers. While there was general agreement among the interviewed leaders on the importance of risk, 3C noted that general officers lack the time to engage with risk data at a detailed level, while also critiquing the bureaucratic aggregation of risk analysis within the HQs. Similarly, 7C expressed concern about how NATO's hierarchy impacts the communication of analysis to senior leaders, emphasizing a persistent need to '[f]ight for the functional area analysis to not be diluted by layers of politics. Interestingly, 7H attributed their confidence in risk assessments to their relationship with subordinates rather than the planning or risk management process per se. Furthermore, 7H was adamant in stating that 'risk mitigation is not free, you have to give up something'. Highlighting the need to balance resources in planning.

5. Discussion

Variance in conceptual understanding of risk appears to be a consistent challenge across all observed HQs and interviews. This pollution of the term is undoubtably a factor challenging communication and management of risk. Similar challenges are observed by Engen et al. (2022) in other large organizations struggling to integrate modern risk science while documenting how constraining factors hinder risk science adoption, echoing NATO's struggles to operationalize ISO 31000 effectively. It is perhaps of particular interest that only a handful of personnel adhere to the ISO related definition of risk found in NATO's doctrine for conducting operations, and that these are the dedicated risk managers. The personnel adopting the doctrinal definition are the dedicated risk managers which suggest that risk managers have a knowledge beyond the planning doctrine but face challenges of having to deal with variable understanding of risk in other personnel.

It is positive that the majority of the interviewees demonstrate a dualistic understanding of risk, encompassing both its positive and negative potential. However only a minority fully align with

Table 4 – Planning activities perceived to contribute to risk management by the interviewed personnel

Person	CUOE	FA	COG	MAB	COA DEV	WG	COA COMP	COA DB
3C*	X	X	X	X	X	X	X	X
4C	X	X	X	X	X	X	X	X
5C	X	X	X	X	X	X	X	X
5H	X	X	X	X	X	X	X	X
7H*	X	X		X	X	X	X	X
8C	X	X	X		X	X	X	
9S*	X	X	X	X	X	X	X	X
10D	X	X	X	X	X	X	X	X
10S	X	X		X	X	X	X	
AS	X	X	X	X	X	X	X	X
JC	X	X	X		X	X	X	X
KC	X	X		X	X	X		X
KD	X	X	X	X		X	X	X
KS	X			X		X	X	X
QD*	X	X	X	X	X	X	X	X
QH		X		X	X	X	X	X
6D								
7C	X					X		
8S	X							
9C	X	X	X	X	X	X	X	X

the scientific definition of the term. The gap between practitioner perspectives and risk science indicates that there is room to update NATO's understanding of risk to encompass a broader risk science definition of term. This should be supported by creation of a coherent glossary of risk factors that is interoperable with military terminology across all NATO doctrines. This would be a starting point addressing the lack of maturity in conceptual understanding encountered in this research. Moves to unify doctrinal understanding of risk can assist NATO's education and training of its personnel so that there is a wider shared understanding of risk management.

The risk managers shared experience of how challenging it can be to implement risk management in planning. Even at HQ Mjølner where the commanding officer was an active proponent of risk management the risk manager found staff willingness to support challenging. This may be due to risk analysis being viewed as a single event activity on the sequential planning timeline prescribed by NATO. Additionally, it may be that making a traditionally implicit part of military planning explicit is meet by cultural resistance. This may stem from cultural tradition coupled with the belief that most planning activities implicitly contribute to risk management by creating a plan to combat operational threats. Simply put if the plan itself does not mitigate risk, understood as potential negative outcomes or threats then what will? So why engage more overtly with risk management?

With regards to senior leaders and decision-makers both observations and interviews revealed that they see risk as relevant during planning and view it as a crucial factor to include in their decision-making. However, they expressed concern with the effects bureaucracy can have on risk communication. It was also suggested that confidence in risk assessment can be contingent upon the relationship with subordinates as opposed to the faith in the procedural rigor of risk management. In addition, concern whether risk assessments may be 'diluted' on the way from the analyst to the decision-makers was raised. Key decision-makers lack the resources to investigate the details so a lack of confidence in established processes is clearly concerning. Bearing in mind the observation of unjustified depiction of mitigation in risk matrices. Potentially stemming from cognitive biases such as anchoring effect, confirmation and authority bias.

Moving from individual perspectives to planning processes there is also a need for development and further research. The theoretical alignment of NATO's planning and risk management presented earlier (Figure 2) does not align with practical realities. While there is broad agreement supported by observations, that all aspects of NATO's planning process contribute to risk management, in practice, explicit risk management often function as a parallel process leveraging the planning activities. Currently the theoretical model in Figure 2, represents the activities of most planning staff but omits the parallel efforts of the core planning groups, including the risk managers. This means that the model in Figure 2 is not capturing the full extent to which risk management activities run in parallel to NATO's prescribed planning process (with exception of the specific Risk Analysis activity). Data showed that planning activities are tacitly contributing to risk management and the majority of observed explicit risk management activities is not prescribed in either doctrine or directive. Of all the activities on the planning process the wargame was shown to offer the greatest potential to be a vehicle to address risk comprehensively by actively challenging emerging plans.

Whilst not directly addressed by the research the data did offer some insight as to how decision-makers view credibility of the current integration of risk management in planning. Commanders indicated that risk was a critical part of their decision-making. Within the planning process they continually mitigate risk by altering their planning to balance positive and negative aspects of risk, an understanding of risk management that is in concert with that of contemporary risk science. It therefore seems plausible to suggest that currently senior level leaders implicitly view the entire planning process as an activity that facilitates their ability to manage risk.

6. Conclusion

This study highlights the persistent challenges and opportunities in NATO's approach to risk management within its planning processes. A persistent challenge for large organizations when factoring the observations by Engen et al. While NATO doctrine addresses risk management, data reveal a significant gap between doctrine and practice. This divergence stems from varied

conceptual understandings of risk and professional application of risk management practices that is more nuanced than doctrinal guidance. Developing a NATO-wide taxonomy on risk terminology is required to enhance interoperability and clarity. Furthermore, Leadership perspectives underscore the importance of risk management in operational planning while expressing concerns about the dilution of analysis through bureaucratic processes. These issues highlight the need to strengthen procedural rigor and ensure that risk assessments retain their integrity throughout the planning hierarchy. The 'implicit' in risk management needs to become more explicit so that planning and practice are more clearly linked. Figure 2 needs refinement to more closely align NATO doctrine, contemporary risk science and actual practice.

In conclusion, NATO's risk management exhibit significant strengths, particularly the efforts of its risk managers and the evolving understanding of risk among its personnel. To fully realize the potential of risk science and enhance its operational planning, NATO must address doctrinal gaps, standardize its approach, and institutionalize best practices. These steps will ensure that risk management becomes a coherent, integral part of NATO's credibility to maintain security and in a complex and uncertain global landscape.

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