Progress in Military Sciences for Resilience and Cohesion in the Face of New Forms of Disruption

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Andrade, Tamar Prouse de, Portuguese Military University institute, Hermes de Andrade Júnior, Brazilian Army, Artificial intelligence amid disruptions caused by the SARS Cov 2 pandemic: The case of the Brazilian Army virtual soldier "Max"

Artificial intelligence has been implemented in cutting edge science & technology countries as a trend. The purpose of this presentation is to show the case of the Brazilian Army in the midst of social interaction in the face of the SARS-Cov 2 pandemic (COVID - 19) with the use of a technological artifact named virtual soldier Max, with the acronym "Auxiliary Public Relations Mode" and inspired by the name of Max Wolff Filho, a brazilian army sergeant considered a hero in World War II. It makes use of the chatbot, which is a programming artifact that makes use of artificial intelligence to simulate possible conversations between users and institutions, which has been used in electronic commerce, social media and now in government institutions, as in the case that will be presented.

In 2017, the first tests with automation of services were started, as in charge of the Brazilian Army's Social Communication Center report. In 2019, the robot began to be developed. In the year 2021, given the demand of the pandemic, this resource was added by the logistical reach of the Brazilian Army in online communication applications such as Messenger and Whatsapp.

Robot Max is undergoing machine learning as the world's first artificial intelligence to be promoted within an army experiencing a virtual career, seeking entry into the armed forces in 2019 as a recruit. He follows the trajectory, trains as a corporal and plans to be a candidate for the sergeant's competition in the schools of arms. The results presented by the media about the robot Max show a creative and refined solution.

In this proposal to study a specific case of virtual technological artifact, we will explore the relationship between human-tech interaction with the use of artificial intelligence within an ethical and social perspective and raise some discussions and reflections on the ethical limits related to the consequent impacts of adoption of this new paradigm.

Ankersen, Christopher, The Army is No Place for a Warrior: Representations and Resilience in Professional Militaries

The figure of the warrior appears to be appealing to contemporary militaries. Armies use it in their recruiting campaigns and use it to frame their ethical frameworks. The notions of toughness, perseverance, aggressiveness, and a 'fighting spirit' fit well with the need to develop individuals into combat capable, resilient soldiers.

However, warriors are problematic characters. Across the Indo-European mythic and empirical landscape over millennia we consistently see warriors as: Being endogenously motivated; having a troubled relationship with authority; having a paradoxical relationship with the feminine; and being given to rage, violence, and destruction.

The kinds of atrocities that we have seen committed in Somalia and Afghanistan, for instance, are consistent with the mythical warrior tradition, but wholly inappropriate for contemporary militaries. As such, the warrior is actually corrosive to organization resilience in the profession of arms

Using examples from Australia, Canada, the UK, and the US as my focus, I will illustrate how militaries attempt to 'cherry pick' the positive traits they believe are associated with warriors, but are often of ignorant of, and therefore blind to, the negative traits. What is more disturbing, though, is that the concept of the warrior is often underspecified in these organizations, leaving a great deal of interpretation by individuals, often referring to imagery from popular culture rather than an 'approved' and institutional understanding.

Baneviciente, Agniete Zotkeviciute, The General Jonas Zemaitis Military Academy of Lithuania, Cultural Element in the Structure of NATO Military Power

The need for the cultural element in planning and implementing military actions became particularly outstanding only after the Cold War when the nature of threats started rapidly changing – conventional conflicts being replaced by asymmetric ones, insurgencies and terrorism. This determined the participation of armies of different world states in multi-national international operations, while the problems of military operations of NATO and the USA in Iraq made the significance of the cultural element in warfare still more urgent: the need for the cognition of socio-cultural elements became the most important topic among military personnel that returned from the wars in Afghanistan and Iraq.

In response to challenges raised by modern security environment, armies of many states started to conduct cultural trainings, to a larger or smaller extent, and the need for cultural competences began to be included in military doctrines. Therefore, although the cultural element is not a new item in warfare, only after the Cold War, it started to be perceived not only as an element increasing the effectiveness of military actions but also as a doctrinal element rather frequently attributed to military force multipliers. This enables the assumption that the cultural element and, namely, cultural competences of military personnel became a part of military power alongside the changing security environment.

Notwithstanding the increased attention to the cultural element in warfare, hitherto there have been no attempts in scientific research to substantiate the interaction between cultural competences of military personnel and military power. Previous researches on the need of cultural competences provide the basis for thinking that that the cultural element is an element of military power. However, these are researches at the tactical level dissociating themselves from both strategic and scientific substantiation of the interaction of these two elements. The analysis of the interaction of cultural competences with the military power reflect the attempt to expand theoretical limits of the influence of non-material resources on the military power. It is believed that the transformation of the security environment has the greatest influence on the emergence of the cultural element in the structure of the military power;

however, this influence is not direct and depends on military power conversion strategies – on the perception of threats and the development of response to them.

The object of the study is the cultural element, in a broad sense, in the structure of military power and, in a narrow sense, in the structure of military power of NATO states. The question of the study: why the cultural element, to be more exact – cultural competences of military personnel, finds its way into the military power structure? The research is split into three interrelated parts. First, cultural competences of military personnel are researched in NATO doctrinal documents. The issue of the standardization of cultural competences of military personnel is, first of all, the issue of NATO competences; therefore, it is expedient to think that the practice applied by NATO is taken over and/or adopted by member states. Still, the practice applied in NATO is of a recommendational nature; therefore, cultural competences in the military doctrines of NATO members do not necessarily reflect the perspective of NATO cultural competences. Taking into consideration these assumptions, it is expedient to analyze military doctrines of NATO members, thus disclosing what influence the structural level (NATO) exerts on unit level (NATO states). Second, doctrinal documents of the USA, the United Kingdom, the Netherlands and Lithuania are analyzed. Third, factors determining the inclusion of cultural competences in military doctrines are explored on the basis of the interaction and threat perception of military doctrine developers – the political and military elite. The analysis of the perception content of the political and military elite creates conditions to more comprehensively disclose and ground the fact why cultural competences are included in military doctrines as a military innovation.

Bardakas, Ioanna, Dimitris Doulos and George A. Zombanakis, American College of Greece, Defence Expenditure in Greece and its Impact on the Country's Sovereign Debt: Guilty until Proven Innocent

The aim of this note is to consider and evaluate the widely-used argument attributing the growth of the sovereign debt of Greece during the past decades to the defence expenditure of the country. We employ a two - equations model which focuses on the military debt determinants and how these have affected the sovereign debt of the country. To consider various endogeneity issues that are inherent both in the specification and in the empirical methodology we solve the system using a dynamic version of the Generalised Method of Moments (G.M.M.), adjusted to accommodate the dynamic nature of the relationships thus obtaining unbiased consistent and more efficient estimates. The policy implications derived point to the fact that the defence equipment purchases realized since the beginning of the eighties have had a negligible impact on the sovereign debt of Greece. We conclude that there is no economically significant relationship between defence equipment procurement and sovereign debt of Greece. A forecasting exercise supports our findings for future reference despite the extensive procurement programme undertaken by the government.

Bartolemeu, Jose Paulo Silva, Portuguese Military University Institute, A Framework for
Assessing the Impact of Potentially Disruptive Military Technology

This work aims to develop a framework for assessing the impact of military
technology potentially disruptive in all relevant dimensions. The research follows a
critical thinking methodology supported by alternative analysis techniques. The
proposed framework includes strategic, operational, tactical, technical, and
organizational dimensions. Political, economic, military, cultural, and legal factors are
the variables for the strategic dimension. The variables to assess the operational
dimension are performance, congruence, and opportunity. Secrecy and tactics,
techniques and procedures are the tactical variables. The technical dimension includes
performance, maturity, and interconnectedness. Internal support, pacing gap, and cost
are the variables within the organizational dimension. The convergence of the assessed
impact on variables and dimensions reveals the impact of a specific technology as null,
moderate, high, or revolutionary. The proposed framework for assessing the impact of
military technology potentially disruptive informs policymakers and industry leaders and
supports decisions about technology investment, defence capabilities, and strategies.

Bartoseiwicz, Adrian, Polish War Studies University, Activities of Territorial Defence Forces in
countering hybrid threats. Case study: Poland

The annexation of Crimea by Russia (2014) and the ensuing war in Ukraine
indicated that the possibility of transferring a hybrid conflict to Polish territory is a real
threat. Conducting hybrid actions against the Polish state is one of the new threats that
have emerged in the last decade. As one of NATO's eastern flank states, Poland must
have its own forces capable of countering these threats. The clandestine nature of the
operations, the creation of social attitudes by a potential adversary and the risk of
destabilization all pose a threat of negative implications for Poland. These factors
determined the development of the strategy and defence structures of the Polish state,
a measurable effect of which was the establishment of the Wojska Obrony Terytorialnej-
WOT (Territorial Defence Forces). One of the basic tasks of WOT is counteracting hybrid
threats understood as military, non-military and asymmetric actions conducted by state
and non-state actors in an overt and covert manner. Including such issues as
disinformation, cyberattacks, economic pressure, use of irregular armed groups and
regular troops. The formation of the Territorial Defence Forces began in 2016. They were
given the following tasks: conducting reconnaissance activities, supporting anti-terrorist
activities, demonstrating presence, conducting information activities, countering
disinformation and propaganda, conducting defensive, unconventional, counter-
diversion and counter-insurgency activities.
The aim of this article is to analyse in detail the activities of the WOT in terms of
countering hybrid warfare, including the hybrid threats that may cause it. The starting
point will be a discussion of the impact of hybrid threats on state security. For this
purpose, an analysis of the phenomenon of hybrid threats in Poland will be made and

actions taken by the WOT in order to level out hybrid threats will be indicated. There will be an evaluation of these actions in terms of their effectiveness.

The following research methods will be used: comparative method, process tracking and case-oriented research, qualitative data analysis, empirical data analysis, participant observation method. The theory of hybrid action, doctrine of countering hybrid threats and doctrine of Territorial Defence Forces in the DD-3.40 operation will be used to conduct the research.

The results of the research allow us to state that the Territorial Defence Forces are successful in the field of conducting reconnaissance activities, supporting local administration during crises, conducting activities in the field of military social communication aimed at shaping patriotic and civic attitudes and values, conducting demonstration and deterrence activities in SRO. A fundamental aspect of conducting operations by WOT is territoriality. Soldiers are recruited among the civilian population, which allows them to react quickly to a situation. This is a key aspect of success in countering hybrid threats.

At the same time, there is a necessity to increase the level of operational abilities in the area of conducting activities on a tactical level in cooperation with other types of armed forces and elements of the non-military subsystem. Such possibilities are given by the extended scope of training of WOT soldiers with other types of operational forces.

Beaulieu-Brossard, Philippe, Donna Dupont, and Therese Heltberg, Canadian Forces College and Royal Danish Defence College, *Anticipating the Professional Military Design Learning Experience: Mind Rifts, Mind Falls and Mind Climbs*

With this contribution, we seek to better manage the expectations of professionals, design facilitators and instructors that are about to undertake their first design learning experience in security and defence organisations. Building on the journey mapping of the daily experience of Canadian Forces College (CFC) and Royal Danish Defence College (RDDC) students taking part to design exercises between 2019 and 2021, we argue that initial design learning experiences tend to follow distinct patterns despite organizational or cultural circumstances. We rely on the metaphor of phases in a journey towards reaching Mount Everest's summit for making these patterns more intelligible. We identify three main phases: mindrift, mindfall and mindclimb. 1. First, mindrift expresses the feeling of anticipation, curiosity and engagement towards bringing to awareness the rift between the initial understanding of the situation shared by the design team and the potential design driven understandings that will aim to be more coherent with the context. 2. Second, this initial willingness to challenge taken for granted assumptions and the status quo eventually turns into a mindfall. In this phase, professionals tend to become uncertain, insecure and frustrated as a result of challenging the very foundations upon which they used to judge knowledge. 3. Third, design teams eventually experience a mindclimb leading to reach a novel understanding of the situation while becoming more aware of their own limits in thinking outside the box. As teams reach the summit, they may either experience a feeling of

accomplishment or reject the entire experience. We conclude by offering advice to upcoming PME design learners, facilitators and instructors building on these patterns.

Berkok, Ugurhan and Iona Secrieru, Royal Military College of Canada, Extended Deterrence with Incomplete Information

> In this article, we examine deterrence in an environment fraught with uncertainty. We develop a game-theoretic model with incomplete information and characterize the equilibria (separating and pooling) that can arise in this type of environment. In the model, a belligerent state may choose to challenge another state in its sphere of influence; the defender state responds by engaging in a all-out conflict or by conceding, depending on whether or not it has capability. We illustrate this setup through the current China-Taiwan and Russia-Baltics relations.

Bernardi, Eleonora, University of Bologna, Italy, and Francisco Leandro, City University of Macau, China, Contracting and Working with Interpreters in Armed Conflicts: Two Sides of the Same Coin?

> In modern armed conflicts, the existence of civilians accompanying armed forces performing language related tasks is a fact although their role has only recently begun to be studied. Despite being identified as essential, especially in peace support operations, the use of civilians as translators, interpreters, language assistants or "fixers" has posed, in the last twenty years, a series of issues for military operations, some of which have made the headlines of newspapers, like the killing of coalition interpreters and translators in Iraq and Afghanistan. This research paper has been designed to identify the challenges that civilian language support poses for modern war operations, that have become increasingly multinational and multilingual. Challenges posed for peace-support deployments will be analysed here using the macro categories of recruitment, training, employment and protection of civilians working as interpreters and cultural assistants, with a short review of the legal status of language employees and cultural advisers accompanying armed forces in armed conflicts. The paper focuses, in particular, on armed forces operating under the United Nations with peacekeeping and peace enforcement mandates and elaborates on the experience of the United Nations Missions in the former Yugoslavia and Afghanistan. The study adopts an interdisciplinary approach, bringing together interpreting and military studies, and uses qualitative data obtained from structured interviews and participated observation. This contribution envisages to shed light on the language challenges posed by international and multilingual modern peace-support operations and to contribute to establishing clear operating guidelines to be adopted as a Standard Operating Procedures.

Berzina, Leva, National Academy of Defence of the Republic of Latvia, Shaping public opinion within comprehensive national defence: the case of Latvia.
> Comprehensive national defence is a security concept based on principles such as the whole-of-government approach and whole-of-society involvement, which may be

regarded as an application of the Cold War-era total defence concept to the circumstances of the 21st century. Current security challenges stem from non-military domains to a larger extent than it was in the past; therefore, a cognitive dimension is of utmost importance for national security in general, and specifically for comprehensive national defence. The paper focuses on issues related to the formation of public opinion within the comprehensive national defence, and addresses the research question – to what extent Latvian public opinion supports comprehensive national defence? The theoretical base of the paper is the concept of strategic communication, which emphasizes communication as a function of strategic management, which is a relevant framework for the analysis of the development of such a complex system as comprehensive national defence. The empirical part of the paper is based on the case study of Latvia, which undertook to implement comprehensive national defence in 2018 to enhance self-defence capabilities after the changes in the regional security environment brought about by Crimea annexation in 2014 and following the war in south-eastern Ukraine.

Theoretical framework: For the comprehensive national defence to work effectively, it is important to achieve two strategic goals in the cognitive dimension of society: resistance and resilience. Resistance implies a willingness to fight for a country, whereas resilience means the overall culture of readiness that is a precondition for overcoming any type of crisis and restoring the functionality of society as fast and resource-efficient as possible. This is a very complicated task because a willingness to fight for a country is affected by such factors as the acquisition of basic military skills by the general public, national pride, trust in the national armed forces, political trust, and others. Likewise, the culture of readiness is a result of such factors as the acquisition of emergency preparedness skills by the general public, civil protection and crisis management system, interagency collaboration, vibrant civil society, and others.

NATO (2020: 122) defines strategic communication in the NATO military context as "the integration of communication capabilities and information staff function with other military activities, in order to understand and shape the information environment, in support of NATO strategic aims and objectives". This definition emphasizes the use of communication for the achievement of the organization's aims. Stavridis (2007: 4) mentions the importance of the influence of audiences: "the objective of strategic communication is to provide audiences with truthful and timely information that will influence them to support the objectives of the communicator". Tatham (2008: 3) propose even more detailed definition of the achievement of aims through in-depth understanding and influence of audiences: "[Strategic communication is] a systematic series of sustained and coherent activities, conducted across strategic, operational and tactical levels, that enables understanding of target audiences, identifies effective conduits, and develops and promotes ideas and opinions through those conduits to promote and sustain particular types of behaviour". These definitions and the overall idea of strategic communication imply the idea that effective communication with audiences is an important part of the effort to achieve the goals. The study will use secondary data to assess and analyze the level of resistance and resilience of Latvian society through the lens of strategic communication.

Methodological approach: The empirical data of the paper are obtained through the framework of case study research. The paper aims to gather data from previous research that allows assessing the level of resistance and resilience of Latvian society by analyzing the factors affecting these phenomena at a cognitive dimension. The study also will include national security document analysis to outline the model of Latvian comprehensive defence. The comparison of the ideal type of Latvian comprehensive national defence system with trends in the public opinion will allow identifying key priorities for strategic communication to develop a working comprehensive national defence.

Preliminary findings: Significant shift in the cognitive dimension of Latvian society is a precondition for the development of the comprehensive national defence. The gap between state and society, the underdeveloped civil society and the lack of genuine cooperation between public and private sectors, and ethnic cleavage are just some of the long-term issues that need to be addressed to make the comprehensive national defence work in practice.

Berzins, Janis, National Defence Academy of Latvia, The New Russian Security Concept and the ZAPAD-2021 Exercises

After Russia's actions in Crimea and Eastern Ukraine, it became almost a consensus among think-tankers, policymakers, and some scholars that the next Russian military action would happen in the Baltics. The underlying presupposition is that, first, the Russian President Vladimir Putin wants to recreate the Soviet Union; second, that invading and annexing the Baltic States is one of the necessary steps for achieving this objective; third, that the Russian speaking population could be easily used to support subversive operations in a Crimea like scenario. At the operational level, this was to be done by employing supposed Russian Hybrid Warfare tactics, which would be based on the alleged Gerasimov Doctrine. A serious problem with this assumption is that it projects falsified strategic objectives and military instruments to be employed by Russia which are based on a narrative created by the West. The Russian strategic considerations and military concepts differ from the Western conceptualization.

It is not the case to say that Russia has no interest in the Baltic Countries. On the contrary. The Baltic Countries are constantly under non-kinetic attack by non-military and military instruments. Among these are psychological, information, and influence operations, including by financing pseudo Non-Governmental Organizations for achieving political goals, disinformation campaigns, and strong military posturing near the Baltic Countries' borders. Nevertheless, there is no sign that Russia would engage, at least at this moment, in a Crimea-like operation to annex the Baltic States. The Russian strategy for the Baltic States is multilayered and chiefly determined by the Baltic States being considered part of the West. Therefore, as part of the Russian grand strategy towards the West.

The independence of the Baltic Countries resulted in Russia losing strategic depth as NATO's border is now just 160 km from Saint Petersburg. Third, the significant Russian-speaking population in Estonia and Latvia. Although Russia does not consider

the Baltic Countries part of the Russian World (Russkiy Mir) the same does not apply to their Russian speaking population. Russia has the obligation to protect the interests and the preservation of the Russian national cultural identity of the Russian compatriots abroad. There is also the view of possibly using the Russian-speaking population as an instrument for political pressure and as part of destabilization and influence operations.

This enters into direct conflict with the process of Westernization faced by the Russian speaking population in the Baltic Countries, which reduces Russia's leverage in the region. There is no evidence that they would support Russian activities resulting in becoming under Moscow's rule. Finally, the Baltic theater represents an operational challenge. A direct intervention would face strong resistance from the local population with great chance of transitioning into years of guerrilla warfare.

This article is primarily, but not solely, based on Russian and Latvian primary sources - leadership speeches, and professional diplomatic and military periodicals. Besides speeches and statements from Russian authorities, it predominantly relies on original articles from the journal International Affairs (Mezhdunarodnoy zhizni). [truncated long abstract]

Bratton, Patrick, US Army War College, Imagining Maritime Security in the New Asia: KM Panikkar's Maritime Thinking

In the 1940s, KM Panikkar emerged on the international stage as the "go to" Indian intellectual and commentator on maritime and security issues in Asia. He laid out an Asian perspective on the future of maritime strategy and security in post-war Asia in a series of books, articles, and conference presentations. As competition in the maritime domain intensives in the 21st century, Panikkar's work is now receiving more attention. However, most of the attention focuses on only a small part of his thinking about maritime strategy and security. A detailed examination of his works reveals a much more complicated and nuanced view. Panikkar was writing in a time of technological and political changes, as aircraft and submarines transformed naval operations, and nationalism and revolutionary movements disrupted the imperial system in Asia. As we enter a new era of disruption, it is an excellent time for a retrospective of his works to look for parallels with today's issues, and address the challenges of predicting the future of strategy and warfare.

Breitenbauch, Henrik O. & Philippe Beaulieu-Brossard, University of Copenhagen and Canadian Forces College, The Paradoxical Nature of Strategy-Making for "Subcontracting" Allies & Partners

In this paper, we examine the paradoxical nature of strategy-making for allies and partners "subcontracting" into pre-existing US led strategic approaches and operational frameworks. On the one hand, and at first sight, strategy-making for subcontracting allies and partners may seem in vain since they have little leeway to affect the overall course of action such as in the Afghan campaign. Strategic choices, for subcontracting states, are expressed in the quantity and character – such as timing and risk-sharing profile – of their contributions, not over direction. On the other hand, allies

and partners are still real countries with real interests requiring them to retain coherence between their security landscapes and priorities. Building on the testimonies of 7 senior military and civilian leaders involved in the strategy-making of subcontracting states in the last two decades, this paper examines three tensions expressing this paradoxical nature: 1. First, subcontracting allies & partners experience a tension between teleologically and deontologically driven strategy-making. In other words, who these subcontracting allies & partners believe they are in the global context is as much important, if not more important, than what they would like to achieve. 2. Second, some subcontracting allies and partners can express strategic choices indirectly by not making explicit strategic choices such as in the case of Germany. 3. Third, clearly articulated limited means can enable rather than constrain strategy-making for subcontracting allies and partners. The paper concludes by sharing how these findings may open pathways to rethink and develop new strategy-making & formulation models from the perspective of subcontracting allies & partners.

Brideau, Aaron, Royal Military College of Canada, Image Fidelity and AI: Enabling Joint Fires Automation

Enhanced Intelligence, Surveillance and Reconnaissance (ISR) capabilities are one of the areas seeing the greatest investment in the military application of Artificial Intelligence (AI) among the Canadian Armed Forces' (CAF) allies and adversaries. Combining the growing number of available CAF ISR sensors and recent advances in the AI field of computer vision may provide the ability to automatically detect and identify enemy vehicles and equipment. This integration of capabilities has the potential to minimize the cognitive load of fire support operators and coordinators, and expedite the Land Targeting Cycle. Under the auspices of the Joint Fires Automation (JFA) initiative, the Joint Algorithmic Warfighter Sensors (JAWS) project has developed one such computer vision algorithm as a proof-of-concept, capable ofnautonomously detecting, identifying and localizing several different CAF vehicles in images and full-motion video (FMV) over a variety of sensor modalities. This research project seeks to establish a method for determining the threshold and objective sensor resolution values required for sensor-algorithm compatibility. 85 images of different CAF vehicles captured using the CORAL-CR-C infrared (IR) optical device were reduced to varying degrees of resolution and submitted to the JAWS algorithm to identify these values, with the aim of validating the process to enable future procurements seeking to integrate sensors and computer vision algorithms. Results indicate that computer vision algorithms will not be the limiting factor determining required sensor resolution for future sensor procurements and that the experimental method established is also capable of estimating a computer vision algorithm's ability to detect and identify vehicles as sensor-to-target ranges increase. Incorporating this procedure during future procurements of either computer vision algorithms or ISR sensors will ensure co-compatibility; verify capability over varying sensor-target ranges; contribute to significant increases in speed, efficiency and operator capacity when executing fire support tasks; and enable the continued progress of automating fire support processes.

Brown, Andrew, Royal Military College of Canada, The Development of the Canadian Army's Non-Commissioned Officers (NCOs) During the Second World War

Long-accepted wisdom maintains that NCOs form the backbone of any decent army. While historians have done a thorough job of describing how the Canadian army raised troops and formations during the Second World War, scholars have yet to explain how the army developed its NCO corps. But a corps of experienced NCOs with up-to-date skills did not really exist in 1939 and it had to be built from almost nothing. How, then, did the Canadian army develop the NCO corps during the Second World War?

To deal with this need the Canadian Army implemented a two-track approach of conducting decentralized and centralized NCO training. This consisted on the one hand of locally-organized unit and formation-run courses, and, on the other, of more-formal schools controlled by National Defence Headquarters (NDHQ) in Canada and Canadian Military Headquarters (CMHQ) in Britain. At the same time, the senior leadership distributed growing expertise by circulating proficient NCOs through field units, schools, and the reinforcement stream. The resulting system put individual NCOs on unique paths to professional growth, yet trained a community of junior leaders who collectively possessed the necessary skills in leadership, tactics, and instruction.

Brudnicka, Jowita, Polish War Studies University, The model of premodern states as a concept for the modern war study theoretical framework

General Sir Rupert Smith in his treatise „The Utility of Force: The Art of War in the Modern World" stated, that contemporary conflicts take place among societies and announced the need to change analysis methods for those that do not refer to „industrial wars." Over the past yers of XXIst century the nature of military conflict has changed but there is still a catalogue of old and unresolved problems. During research about multiple missions in Afghanistan could be seen not only many of political and military crises, but also methodological ones concerning expert and academic community. Scientific space is full with different definitions of „cultural conflicts" and „clash of civilization" perceived as a main impediment to build a predictable international security environment. It does not seem that the efforts to create common space of international security also through military missions will be abandoned, so the question about new forms of analysis „war amongst the people" remains still open.

The aim of the article is to present the author's proposition of premodern states model as a new tool which may be helpful analyzing conflict situation before starting potential military intervention.

The main research problem can be formulated as a question: Can premodern states model be included to analyzing contemporary armed conflicts and by what means? To solve such a complex problem, you need to answer specific questions:

First, why knowledge about premodern social forms of organizations is valid to understand conflict dynamics and peace capacities? The recent accumulation of accessible data on early urban societies, coupled with the re-emergence of comparative studies, puts modern scholars in a position to make significant theoretical advances

concerning the key episode of human social organization that provided the foundations of the contemporary world: the formation of the state. Undertaken analysis made possible to find some similarities about general developments in social evolution. Also negative examples were considered: where states did not develop even in seemingly favorable ecological settings. Having knowledge about inhibitory and enhancing factors according to state building process is crucial to identify conflicted area.

Second, what factors influenced origin of premodern organizations including premodern states? Whether these conditions remain important for the contemporary area of conflict? Adopting anthropocentric approach what regards that human and his consciousness, decisions, actions are crucial for creation complex forms of social organization, key factors for the formation of social organizations can be mentioned: Environment (cities, villages, infrastructure); Social institutions and its organizations (family, authority, property, justice system, beliefs); Language and forms of communication.

The most important research methods used are: system analysis, scientific modeling, induction and deduction, historical research, semantic analysis of definitions etc. The research was done in accordance to holistic and interdisciplinary perspective with reference to the selected concepts of sociologists: Charles Horton Cooley, Martin Lipset, Gabriel Almond, Lucian Pye; anthropologiest: Ruth Benedict, Bronisław Malinowski; politologists: Stein Rokkan, Francis Fukuyama.

Caparini, Marina and David Last, SIPRI and Royal Military College of Canada, Policing Global Political Economy

How do military and policing regimes adapt their domestic and international operations to a changing world order? Patterns of colonialism, egalitarianism, and neoliberal globalization have influenced the interaction of military and policing roles. We situate peacekeeping and domestic policing in the context of the post-WW2 "great convergence" (1950-1980), decolonization, the collapse of a communist alternative to capitalism and rising inequality after 1980. These factors are relevant to the interaction of military and police, at home and abroad. Police, paramilitary, and military organizations are connected institutions that are historically embedded in evolving markets and states. In this special issue of Res Militaris we consider case studies of contemporary police and military relations in the context of the global political economy.

Carvalho, António Ramos, Portuguese Military University Institute, Joint Education in the Context of Military Intelligence

Currently, the strategic environment is characterized by presenting great Volatility, Uncertainty, Complexity and Ambiguity (VUCA), demanding complex, useful and timely informational needs from decision-makers. These can only be satisfied by obtaining detailed and complete intelligence. For this, it is crucial that Intelligence be produced by competent and experienced Human Resources, who should enroll in proper training to address the current challenges. Moreover, Military Intelligence also faces the great challenge of having Human Resources with appropriate education and training,

who can remain in their functions for long periods of time. Furthermore, increasingly, military operations carried out in theaters of operations are planned and conducted jointly. Therefore, it is essential that the education model in Military Intelligence, in the Armed Forces, follows this reality, updating to a joint training model, in order to adapt to the current strategic environment and challenges. Consequently, it is conceptualized that the Armed Forces, in a holistic perspective, may benefit with the implementation and harmonization of a joint education model in Military Intelligence, promoting interoperability, standardization of procedures and efficiency in the production of Intelligence in joint operations.

The present work aims to offer contributions for the drafting of a model of joint Military Intelligence education in the Armed Forces. For this, the research methodology followed was inductive reasoning, based on a qualitative strategy and a case study research design, implemented through documents analysis and interviews with specialists and authorities in Military Intelligence education. Through the investigation, it was possible to identify a set of functions that Human Resources perform in Military Intelligence and infer the main competences necessary for the execution of these functions. Then, the education model in Military Intelligence in the Armed Forces was analyzed, which allowed the identification of its strengths, opportunities, vulnerabilities, and threats. Subsequently, the education models in Military Intelligence of two allied nations, Spain, and France, were characterized, concluding that, although different in conception and dimension, both models promote joint education. More thoroughly, it was concluded that this education is even a requirement for the performance of functions in operations, joint and multilateral, as well as for the providing of advisory positions for strategic decision. Additionally, as a result of the investigation, some contributions were identified for the optimization of the education in Military Intelligence, which enable the bases for building a model of joint education and training in the Armed Forces. Finally, this work concludes that the effective implementation of a joint education model in the scope of Military Intelligence would be a great asset, both in terms of optimizing human, material, and financial resources, and in operational terms, allowing the standardization of techniques and procedures, and promoting synergies. Nevertheless, it is considered that tactical or specific education should remain in the responsibility of the branches, functioning as a complement to joint education and providing the necessary skills to the specificities of each branch and its mission.

Carvalho, Luís Miguel, CINAMIL - Military Academy Research Center, Júlio Gouveia-Carvalho, Wilson Antunes, Portuguese Military University Institue, Engagement of Portuguese Army in development of disaster-resilient societies:the case of project STRATEGY

Portuguese Army, through its Military Academy Research Center (CINAMIL), actively participates in several Research and Development (R&D) projects. Several of those R&D projects focus, as expected, on combat readiness and capability. However, R&D activities developed by CINAMIL researchers are also related to other areas, such as: Crisis Management, Occupational Medicine and Technologies for Security and Defence Support. Among this last one, Chemical, Biological, Radiological and Nuclear

(CBRN) Defence Technologies is one of the investigation lines in which several R&D projects fall under. Military Laboratorial Unit of Biological and Chemical Defence's (UMLDBQ) personnel is currently working in several CBRN-related projects, some of them specifically planned to improve military capability to operate in CBRN environments and others, such as STRATEGY, whose focus is to improve societies resilience to such threats. STRATEGY's goal is to develop a pan-European framework of the pre-standardisation activities in the crisis management domain. To achieve this goal STRATEGY consortium integrates standardisation bodies, policy makers, technology suppliers and first responders from several countries across the EU, being UMLDBQ/CINAMIL one of the CBRN-expert partners.

Crisis management is a complex domain with multiple scenarios in which several stakeholders are involved. Taking in account other projects' results and the EU priorities, STRATEGY focus in in eight different streams: Search and Rescue; Critical Infrastructure Protection; Response Planning; Command and Control; Early Warning and Rapid Damage Assessment; CBRN-E; Training; and Terminology. CBRN-E, along with Training and Terminology, is by definition a horizontal stream as it strongly correlates to all the first five streams. The work developed within these streams will consider available and needed solutions, tools and procedures for both technical and organisational interoperability. Selected standards - existing, reviewed or developed, will be tested with the implementation of use cases in several Table Top Exercises (TTX), at least one per stream, and a Full-Scale Exercise (FSX), which will integrate all the streams in a large-scale scenario in Italy in 2023.

UMLDBQ/CINAMIL will host CBRN-E stream's TTX, which will be held in Portugal in 2022 within the Portuguese Army annual CBRN-E exercise CELULEX. Chemical, Biological and Radiological simulated incidents will challenge practitioners to implement in realistic scenarios the pre-selected standards under different use cases to understand it's applicability, feasibility and suitability.

STRATEGY's ultimate goal is to improve first responders' operational capabilities, ensuring an effective and efficient response and promoting interoperability through validated standards on solutions, tools and procedures. Through its participation in project STRATEGY, UMLDBQ/CINAMIL is helping EU countries to be more resilient and prepared to respond to crisis. This is an example how Armed Forces can cooperate and integrate with civil society through exploitation of its knowledge and experience.

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Cesnuityte, Vida, Military Academy of Lithuania, Potential of the Civil Resistance In Lithuania: Perception Of The External Threats And Readiness To Defend The Country

In the context of unstable and unpredictable geopolitical situation, one of important aspirations of Lithuania is to be prepared for the national defence by incorporation of both armed and unarmed defence resources. Currently, the system of armed defence is functioning and is being further developed, but there are many issues to be discussed and addressed in the field of resilience and unarmed resistance by the civil society.

The research aim is to discuss how a potential of the civilian population can be integrated into a cohesive and comprehensive defence system combining both armed and unarmed defence for the country's resilience in face of external threats. The research is based on idea that positive results of the welfare state, ensure citizens' loyalty to the state, trust and readiness to defend the country, but for the efficient resilience by the civil society additional efforts are needed: education of individuals and their groups about the unarmed resistance, and country's defence ways.

Empirical data collected during the implementation of the research project "Feasibility study for the establishment of a comprehensive state defence system (integration of the unarmed defence component into armed defence)" funded by the Ministry of National Defence of Lithuania. Representative surveys of habitants (18+ years) of the country will be conducted in August 2021. Meanwhile, previous researches showed that systems such as civil resistance, strengthening societal resilience (in part, civil protection, crisis management) are not working effectively, efficiently and sustainably. For example, society's resilience to internal and external threats is insufficient, despite the state's efforts to strengthen it (as evidenced by survey data). Therefore, it is expected that an empirical data of the recent survey will prove a need for educational and other kind of measures, also, conductions of exercises for extension of the preparation of the civil society for resilience and defence of the country in face of external threats.

Cherif, Lobna & Valery Wood, Royal Military College of Canada, Character ad Resilience

The importance of both character and resilience for military members has been emphasized at the highest levels of military leadership. Initial research suggests that the presence of character strengths might be relevant in predicting success and well-being for some military populations (e.g., recruits). In this presentation, we will first review our research investigating the perceived importance of character strengths for Canadian military cadet (N = 134) success, the top strengths endorsed by cadets, and, in a subset of cadets (n = 94), the relationships among core strengths and resilience. Participants first completed a survey comprised of a resilience measure and demographic items, then one month later completed a Values in Action (VIA) character strengths profile, questions related to character strengths (their personal top-five character strengths, and strengths they believed were important for military-related stressors and leadership, academic success, resilience, and completion of military challenge). Findings indicated that military cadets consider (among others), perseverance, judgment, and teamwork to be most critical for bouncing back from stressors. However, the most frequently

endorsed strengths that characterized cadets were bravery, honesty, and perseverance. Finally, perseverance, bravery, and humor were positively correlated with cadet resilience, while endorsement of love was negatively correlated with resilience. Second, we will describe a strengths-spotting intervention aimed at helping comrades and leaders identify, demonstrate, and then express one's appreciation of one another's character strengths. We believe that strengths-based interventions could be effective in promoting member well-being, organizational relationships, and ultimately operational effectiveness. Beyond improving intrapersonal well-being, potential implications of such an intervention include improvements in perceptions of military leadership (i.e., by promoting a supportive relationship between leader and subordinates), and cohesion (through facilitating or maintaining bonding, comradery). Details for the intervention (including a discussion of in-person and online formats) will be provided and ideas for future research discussed.

Chouinard, Stéphanie and Holly Ann Garnett, Royal Military College of Canada, The role of military education on officer-cadets' political attitudes: Evidence from Canada

Young adulthood is a crucial time in one's life for political socialization. Those years are widely considered to be "the impressionable years" (Guimond, 1999: 238); that is to say, the moment in their life where sociopolitical attitudes not only change the most, but also eventually crystallize for the rest of their adult lives (Muxel, 1992; Tyler & Schuller, 1991). College enrollment, in particular, has an important effect on political attitudes, through processes of peer-based normative influence (Newcomb et al., 1967; Newcomb & Wilson, 1966).

Research has also shown that the military as an institution fosters a specific culture, leading to political attitudes among its members that are different than that of the society it is meant to serve and protect (Jennings & Markus, 1977), though in recent years, this gap has appeared to narrow (Rohall et al., 2006; Nicol et al., 2007). A review of the literature demonstrates that while this civilian-military gap has been studied to an extent in the American context, recent research on this topic is lacking in Canada.

This paper studies the political attitudes of officer-cadets at the Royal Military College of Canada (RMC). It is particularly relevant to measure this population since they will soon be in positions of authority in the military hierarchy. Not only can political attitudes, especially with regards to ethnic and cultural diversity (Nicol et al., 2007: 240), shape their leadership style and their behaviour in an increasingly diverse Canadian Armed Forces (Momani, 2018; Brown, 2012; Soeters & Meulen, 2007); they will also be responsible for soldiers who will be young adults themselves, possibly imprinting their political attitudes on their subordinate troops.

This paper therefore fills a gap in the literature on civilian-military attitudinal differences by shedding light on Canadian officer-cadets' ideological tendencies as well as the impact of military education on their political attitudes. Through surveys administered at RMC in the context of a course from the core curriculum, POE/F 205: Canadian Politics and Society, we measure Officer-cadets' attitudes towards politically salient issues such as democracy and parliamentary government, how their attitudes

compare to civilian citizens', as well as whether their experience as students at RMC, specifically their exposure to the mandatory Canadian Politics curriculum, has had any impact on their political attitudes.

This paper will first provide a summary of the survey activity. It will then present preliminary results, comparing the population of cadets to the general Canadian population and their peer group. It concludes with a discussion providing important insights into the attitudes of Canada's new generation of military officers.

Coombs, Howard, Royal Military College of Canada, Cold War Canadian Army Staff Education: A Study in Change

The post Second World War Canadian Army Staff College (CASC) located in Kingston, Ontario was an intellectually vibrant institution that not only provided senior officer professional military education, but also tested and developed new ideas for the Canadian Army. It created courses intended to meet the demands of the Cold War and prepare Canadian Army officers for complex international and national security environments in "peace and war." The CASC course had evolved over time in perspective, composition and duration in response to a changed professional world. The lessons of the Second World War, the ascendency of nuclear threats, the formation of NATO and Canada's involvement in UN operations all produced curriculum changes. The most dramatic of these changes was the lengthening of the course from one to two years between 1959 and 1965. This two-year CASC course represented a high point in Canadian Army professional military education during the Cold War.

Coombs, Howard, Royal Military College of Canada, The Royal Military College of Canada: Meeting the Educational Needs of 21st Century Defence and Security

The Royal Military College of Canada (RMC) was established in 1876 and, since then, RMC's objectives have progressed from (1) preparing its students for the exigencies of imperial forces, to (2) addressing the demands of a national military in the context of Cold War alliances, to now (3) producing bilingual leaders who posses the requisite abilities to operate in the contemporary security environment. RMC conducts an intensive research program, and its faculty produces high-quality work that supports Canada's defence establishment. RMC also operates efficaciously and economically, comparing favorably with the costs of Ontario civilian universities and American service academies. Additionally, RMC is evolving to better represent Canada's diversity and values within its student population. Although RMC has faced various challenges, it has changed with the times. Ultimately, it continues to graduate individuals who contribute positively to Canada's efforts, both domestically and internationally, to meet the needs of 21st Century defence and security activities.

Paulo Costa, Portuguese Air Force, Managing Fatigue Risk   of Air Force Weapons Systems Maintenance Personnel

Fatigue emerges as a potential cause of human error in aviation, receiving constant attention, primarily among crews and air traffic controllers, and recently among aircraft maintenance personnel. The Portuguese Air Force has followed this trend, but there is space for development of these processes in the maintenance of weapon systems, particularly in a disruptive moment like what we live in to maintain resilience. In recent years there has been an extension of responsibilities assigned to the Portuguese Air Force, as well as the integration of new weapons systems and the consequent reorganization. Also, there has been a significant reduction in the number of military personnel, which has led to an additional effort required to ensure compliance with the mission, that tended to increase the risk. Although the risk is intrinsic to military activities, its assessment in terms of potential and acceptance at different levels of responsibility, depending on the degree of risk, operational need, and inherent cost, is required.

This study aims to contribute to the optimization of fatigue risk management of the military who work in weapon systems maintenance, to maintain the required levels of performance, quality, safety, and resilience. Therefore, the objective of this work is to propose an action plan to manage the risk of fatigue of aircraft maintenance military personnel. To achieve this goal, an inductive reasoning research was developed, supported by a qualitative strategy and case study research design. It was possible to observe that the occurrence of human error caused by fatigue is recognized by the participants, and that fatigue is a visible and increasing problem, and several contributing factors were identified. A low understanding of the current fatigue management system was observed, with high importance being attributed to the existence of a system for this purpose. The current processes in place show potentials, which contribute to fatigue risk management, and vulnerabilities that need to be addressed, to ensure that the effects resulting from fatigue are mitigated to an adequate safety level.

Cwik, Bogdan, Polish Military University of Technology, Using Decision-Making Games to Assess Military Students' Competencies

[ABSTRACT]

Dahlberg, Rasmus, Royal Danish Defence College, The Pandemic in Past and Present: use of historical knowledge to respond

The Danish Defence became heavily involved in managing the effects of the covid-19 pandemic in Denmark in 2020 and 2021. Soldiers assisted civilian authorities with numerous tasks including transportation of quarantined and isolated citizens, disposal of contagious animal stock, and manning call centers for the health sector. This paper investigates the use of historical knowledge in this process and discusses if and how past experiences were incorporated into practice. Based on this analysis, some suggestions for future improvements are presented.

Dedeoglu, Cagdas, Yorkville University Toronto, A Posthuman Security Strategy for Sustainable Societies.

According to posthuman philosophers such as Rosi Braidotti, we live in a posthuman predicament which means our experience has been altered by the amalgamation of biological, technological, and ecological. The Fourth Industrial Revolution and the Sixth Mass Extinction can be seen as the two most obvious events of this predicament. We have been transforming our world for a while through a humanist, anthropocentric, and dualist vision. While doing this, we have been transformed too. This transformation brings new strategic concerns to our attention. In this sense, the posthuman predicament with a huge transformative capacity demands a new strategic vision reflecting on diverse identities, norms, and values.

The discussions about security issues rely too much on science, but not enough on ethics and religion. However, our pressing problems cannot be faced just by applying the scientific method to security issues. Because (1) the scientific research on security (as well as any social-material phenomena) always has a normative character; that means it may be undertaken from various onto-epistemological and methodological perspectives and (2) the topic of strategy is related to normative aspects of life that are mostly ignored.

With above concerns and in line with the plural definition of military sciences as the application of "all scientific knowledge to the problems of security", this study will attempt to integrate the study of ethics and religion into the understanding of strategy and security from a posthuman viewpoint. To that end, I will engage with both the post-Habermasian of interpretations of the postsecular (Braidotti et al., 2014) and Mavelli's (2011) claims about the transition from "horizontal security to vertical security," as well as the views of "secularization as an essential component of security".

Neil Dee, Azure Forum for Contemporary Security Strategy, ""Broken Arrow": Airpower, Operational Art and the Pleiku Campaign; October- November 1965

Airpower is often considered to be the most egregious and counterproductive use of firepower in counterinsurgency. Yet, western militaries continue to employ massive firepower, often delivered from the air, in spite of the perceived drawbacks in its employment against irregular opponents and more importantly in relation to civilian casualties. Force structure provides only a partial explanation, and this paper instead seeks to answer this question from an alternative perspective, asking whether airpower is effective on an operational level against irregular opponents. In so doing, it also explores a rift in airpower studies and examines whether close air support or deep strike is a more effective method of employment. Drawing on first-hand reports from the Pleiku campaign of 1965 (which culminated in the Battle of the Ia Drang and became a model for US military operations in the Vietnam War) and using qualitative within- case process tracing overlaid with the principles of Operational Art, this paper tests whether close air support or deep strike or a combination thereof is effective at the operational level. It finds that airpower, and by extension firepower, does have utility in such

conflicts as deep strike and close air support can maintain contact with and destroy irregular opponents when employed and closely coordinated together. In so doing, they can force enemy units away from population centres and allow for follow-up activities (although immediate follow-through may be more difficult to achieve and continued tempo of offensive operations may also be required). Operational success in this case was due to a potent and mutually supporting combination of effective gathering of actionable intelligence (often from the air), strong inter-service cooperation, in particular between the United States Army and Air Force (USAF) and the provision of overwatch, the last being of particular importance to the USAF in the contemporary era of Great Power competition.

Dionne, Mike, Canadian Defence Academy and Matthew Boniface, Royal Canadian Navy, the Role of Non-Commissioned Members in Strategic Leadership Teams

Led by CPO1 Gilles Gregoire, Canadian Armed Forces Chief Warrant Officer, and moderated by CPO1 Mike Dionne of the Canadian Forces Academy, this panel is an opportunity to hear the latest thinking about the development and employment of strategic leadership teams, combining Generals and Flag Officers with career-managed senior non-commissioned members. How do strategic leadership teams work? What does it take to develop them? How are senior non-commissioned members developed, selected, and prepared? Are there pitfalls and opportunities in the evolution of this leadership concept?

Dudzeviciute, Gitana, General Jonas Zemaitis military academy of Lithuania, Does military spending depend on economic determinants? Evidence from the Baltic States

The recent development in military spending of the NATO member states shows that only eleven NATO countries met the requirement to allocate 2% of GDP to defence in 2020 (NATO, 2021). Out of the new NATO member states Lithuania, Latvia, Estonia, Poland, Romania and Slovakia fulfilled this obligation. The Baltic States represent an example of NATO member states, the economies of which show increasing military expenditure in absolute value and as a share of GDP as well. In scientific research (Mylonidis, 2008; Pradhan, 2010; Feridun et al., 2011; Yang el al., 2011; Alptekin & Levine, 2012; Abbas &Wizarat, 2018; Odehnal el al., 2020; Michael & Stelios, 2020; Khan et al., 2020; Odehnal el al., 2021), both positive and negative attitudes towards relationship between military spending and economic determinants prevail. Many critics of increasing military expenditure point out that such spending does not bring any economic benefits and better to invest in other areas such as education, social protection, and health care. On the one hand, while countries increase their military expenditure, budgetary constraints often force them to cut funding in some civilian services or to increase their borrowing in international markets. On the other hand, growing military expenditure increases the internal and external security (Hartley, 2011), making the country more attractive to foreign investors. Taking into consideration the insights of Hartley (2011), that military expenditure is determined by strategic, political,

and economic factors, this investigation focuses on economic variables impact on defence expenditure in Lithuania, Latvia, and Estonia. Following the research of Nikolaidou (2008), Shahbaz et al. (2013), and Odehnal et al. (2020), economic determinants such as real GDP per capita, government expenditure on health, education and social protection, government gross debt, budget deficit/surplus, inflation rate have been chosen for this investigation. To analyse the relationships between military spending and economic determinants of the Baltic States, data from the Eurostat (2021) have been examined over the period from 1995 to 2019. The investigation is conducted using econometric methods, including Spearman's correlation and regression analysis. The research results have revealed similarities and differences among the Baltic States. With regard to economic determinants, the model results confirm the expected positive link between real GDP per capita and military expenditure in all countries under consideration, where the real GDP growth causes an increase in military spending. Moreover, government gross debt has a negative impact on military expenditure in Lithuania and Latvia while it has a positive effect in Estonia. Government expenditure on social protection demonstrates positive links with military expenditure in Latvia and Estonia. The findings of the research could be incorporated into the economic development policies of the Baltic States.

Eginli, Ali, Ersin Civan, and Huseyin Askin, Air NCO Higher Vocational School, Turkish National Defence University, *A New Approach in Technical Aviation Education: Interactive Virtual Reality Environments*

Digitalization, which is the product of the rapid and comprehensive development in information technologies, has caused our century to be called the digital age (information age). One of the areas affected by the digital transformation is education. Individuals who were born in technological environment belong the Generation Z group who prefer watching instead of reading while learning. They want to see the reflection of real life in front of a screen (virtual environment). They also prefer personal and independent learning and prefer to synchronize their motor skills. Today, thanks to Industry 4.0; many innovations, such as hologram, cloud computing, the internet of things and artificial intelligence, have made it necessary to re-evaluate the approaches in education and to renew the education in a way that will adapt to this digital transformation. With the Education 4.0 approach that emerged in this context, where innovation is considered as the key component, an understanding of education based on lifelong learning has begun to dominate. Recently, with the increase in the variety of technological devices, it has been ensured that more comprehensive training applications can be realized. Virtual reality environments are at the forefront of the methods used to develop these educational applications, which can be designed to support both individual work and group work. Virtual Reality (VR), Augmented Reality (AG) and Mixed Reality (QA) environments have recently come to the fore among the technologies that will support education within the scope of Education 4.0. VR environments pave the way for the user to feel as if they are in a computer-based virtual environment and as a result, to create a new perception of reality. With the creation of a

perception as real, the user begins to shape his behavior as if he were in that environment, mentally and physically. With various feedbacks (hearing, touching, seeing, etc.) given to the user, a realistic simulation of that environment is provided. Reality technology is frequently used in maintenance, repair, entertainment, sports, tourism, architecture, military applications, medicine and education. Nowadays, Industry 4.0 applications provide competitive advantage in aviation subjects such as aircraft design, maintenance, in-flight structural monitoring and flight management. It also offers new opportunities to ensure the long-term development of maintenance activities with the integration of innovative technologies. New technologies reveal new talent needs and make it necessary to review and restructure training activities. Virtual, Augmented and Mixed Reality has many advantages. For example, they are ideal for performing many training repetitions in a short time with little or no additional cost per session. In addition, students can be involved in the process by interacting with the environment and using their mental processes actively, and they can experience making new discoveries while learning. Moreover, one can do all trainings and education safely without taking any risk. However, instead of face-to-face communication, they can interact directly with the educational material with the help of an environment where knowledge and experiences are shared. Trainees also use VR Technologies in distance learnig especially in pandemy conditions and other problems which affects education without interruption. Within the scope aviation safety, efforts to reduce the impact of human factors on operations have very important place. It is clear that technicians work under high stress conditions, they are subjected to strict time constraints and strict rules. By using these training systems using virtual, augmented and mixed reality, high standards can be achieved in the training of maintenance technicians. With the help of these technologies, trainees can develop their skills dynamically and efficiently in a shorter training period, train as a cooperative team and have complete freedom of movement. For example, FL Technics, an aircraft maintenance and repair services company, aims to reduce aviation mechanics training from 3 months to 3 weeks by developing a virtual learning environment for the standardized training process for maintenance teams.

In this work SWOT analysis of using Virtual, Augmented and Mixed Reality in technical staff education is performed. In addition it is planned to analyze the effect of virtual reality environments on technical staff education by using a control group by using a specific task. Results will also be discussed if this scientific study is finished.

El-Baz, Karim and Ali Dizboni, Royal Military College of Canada, The Genesis of the Ballistic Rationale: An Analysis of the Ballistic Missile Proliferation Behavior in the Middle East

The decision to go ballistic does not take place in a political vacuum, but stems from the state's awareness of its operational incapacity to deliver a payload beyond its borders. Scientifically, the use of ballistic missiles to deliver conventional warheads is both ineffective (explosion value) and inefficient (high cost if compared to the cheaper alternatives) on both the short range (SRBMS) or medium range levels (MRBMs), why? Because at these ranges, it is more accurate, effective, and cheaper to deliver a

conventional payload via a reusable aircraft. Furthermore, ballistic missiles lose up to 60% of its conventional payload destructive value upon impact, as most of the destructive wave that comes out of the explosion would travel vertically rather than horizontally. If this is the case, then why would the Middle Eastern users, who are only capable of operating ballistic missiles with conventional warheads (with the exception of Israel), resort to these ineffective and inefficient means of delivery? Ballistic missile proliferation in the Middle East stems from a need to overcome specific military vulnerabilities that correlate with ineffective armed forces. This ineffectiveness could be both intentional and unintentional. Intentional, in case a political leadership deliberately decreases the effectiveness of its national military institution when it perceives it as the main threat to the regime security. Accordingly, the procurement of unmanned systems of delivery such as ballistic missiles resembles a golden ticket to compensate for the inherent military vulnerability associated with thesecoup-proofing practices. Military ineffectiveness could also be unintentional if a country has no sustainable access to efficient and effective airpower, spare parts, ammunition and training, and in this case, relying on ballistic missiles as the main means of delivery would be intended to compensate for the incapacity of the air force to traject firepower beyond the state border. This research aims to tailor a theory that fits and only fits ballistic missile proliferation in the Middle East beyond the conventional wisdom of the proliferation and non-proliferation theories. Additionally, this research will employ this theory to tactically tackle why several countries in the Middle pursued ballistic missile capabilities despite the ineffectiveness and inefficiency of these systems when it comes to delivering conventional payloads with a particular focus on Egypt, Iran, and Saudi Arabia

Enstad, Kjetil (Norwegian Defence University College/Norwegian Military Academy) "Just a game? – Wargames and exercises as constitutive of professional military knowledge and practice"

In this article I will investigate what I will be calling the fuzzy borders of games and exercise and suggest some implications of these fuzzy borders for our thinking about games and exercises. The idea behind games and exercises is that these practices have transfer value to real situations. I will show, however, that thinking of games and exercises as a separate realm with a transfer value to a real situation is a misconception. These gaming and exercise practices are not just a separate realm of practices, but rather constitutive of professional responses to any situation, real or simulated. In the military profession games and exercises are core elements in the foundations of professional knowledge and practice. In closing I will briefly also argue that the implications of this are profoundly ethical.

Evangelista, Elsa and Cristina Fachada, Portuguese Military University Institute, Warehouse Redistribution Service and Excess Stock Management in the Portuguese Air Force

Faced with an increasingly unpredictable budget climate, in which several operational restructurings are both planned and underway, the Portuguese Air Force

(PoAF) has the difficult task of managing its excess stocks, which are no longer useful to maintain the current and renewed fleets, but that nevertheless continue to take up storage space and are only generating loss of revenue. This study will analyse innovative approaches to this "crises" management, namely alternative ways to monetise these stocks by using a service provided by the U.S. Government as part of its Foreign Military Sales assistance programme, the Worldwide Warehouse Redistribution Service (WWRS).The study uses inductive reasoning, a case study research design and a qualitative research strategy based on content analysis of the answers to semi-structured interviews. The interviewee sample consists of 18 national and international experts who intervene at different phases of the stock management process. The findings revealed that it would be feasible to use the WWRS to optimise the management of the PoAF's stored inventory. Among other benefits, it would free up storage space, monetise items that are no longer useful for the Branch, providing a partial return on investment, which the organization / institution can use to finance other core capabilities.

Evensen, Per-Idar, Svein Erlend Martinussen, Marius Halsør, and Dan Helge Bentsen (Norwegian Defence Research Establishment) "Simulation-supported wargaming for assessing force structures"

When developing and assessing future force structures, wargaming is a key activity for gaining deeper insight and better understanding of the strengths and weaknesses of the force structures. For more than a decade, the Norwegian Defence Research Establishment (FFI) has supported the Norwegian Army with conducting wargames for capability planning, with varying degrees of computer-based support. Throughout this period, the wargames have evolved from what can be described as computer-assisted wargames towards more realistic simulation-supported wargames. Moreover, to get a closer understanding of the deterrent effect of the force structures, which may not be observable during the actual gameplay, our emphasis has also shifted towards replicating the planning process more properly, and especially towards monitoring the planning process of the opposing force. For example, it has been important to examine to what extent specific structure elements discourage the opposing force from taking certain actions.

This presentation will outline our evolved methodology for simulation-supported wargaming, which includes a preparation phase; an execution phase, including a joint operational planning process; and an analysis phase. In addition, it will present a set of what we have found to be best practices for how to conduct successful simulation-supported wargames.

Falk, Barbara, Canadian Forces College, Weaponizing Civil Society: From "Grey Zone" to "Grey Zone"

During the Cold War, Western powers supported independent organizations and movements of dissent in fledgling civil societies in Central and Eastern Europe—part of

an effort to hold communist governments to account to their legal obligations under the Helsinki Accords, but politically an effort to 'bore from within'. Ironically, this was the same strategy that Western governments accused communist parties of doing within democracies, supported ideologically and/or financially by the Soviet Union. In Central and Eastern Europe, the activism and support sometimes occurred in the "grey zone" and was seen positively. In liberal democracies, such action was considered dangerous and destabilizing "Fifth Column" type of activities.

More than three decades after the collapse of communism, civil society has become a battle space yet again, this time amplified through the algorithms of social media and deliberate efforts of mis/dis information on the part of state-based adversaries or through their intermediaries. Effectively, civil society has been "weaponized"—again demonstrating the porousness of borders, as well as the horizontalization and verticalization of law, politics, and conflict. Still the long history of civil society should be looked at as a strength rather than a weakness, and the protection of independent space separate from the economy and the state can serve as a bulwark against "grey zone" hybrid threats. This is essential given that the "grey zone" no longer refers to the liminal space between authoritarian state and complicit and quiescent society, but to a zone of vulnerability and style of attack. Moreover, this "grey zone" allows adversaries that operate in a space of legally opaque plausible deniability, comfortably below the standard threshold of an "attack."

This paper will explore the various meanings of "grey zones" and argue that, in an era of hybrid threats, civil society has become a battlespace. If post-9/11 and media scrutiny engendered the notion of the "strategic corporal" then the current reality suggests civil-military cooperation, resilience, and social trust are necessary responses to hybrid threats. What we need today are, in effect, "strategic citizens."

Ferreira, António Carlos dos Santos, Portuguese Military University Institute, Adaptative Leadership and the Resilience of a Military Force in Extreme Contexts: Case Study of Portuguese Military Force deployed in Central African Republic

The military forces are employed across all spectrum of the conflict, so modern military forces and their leaders must be prepared to conduct operations in environments of extreme context, with high levels of conflict intensity and where adaptive leadership is essential to increase the resilience level of the military force. That's why it is relevant to study the role that adaptive leadership plays in the resilience of a military force in extreme contexts. With this research we answered to these three questions: how extreme context, adaptive leadership and the resilience of a military force are characterized, how resilience relates to extreme contexts and adaptive leadership and how the competencies, actions and behaviours of a military leader in Central African Republic affect the resilience of the force. For that we used three theoretical framework that give the necessary understanding about the concepts of extreme context, adaptive leadership and resilience of a military force. The concept of extreme context was based on "A framework form examining leadership on extreme contexts" by Hannah, Uhl-Bien, Avolio and Cavaretta (2009) which presents five

dimensions – magnitude of consequences, form of threat, probability of consequences, location in time and physical and psychological-social proximity – that influences the leadership on extreme contexts and a set of factors that may attenuate or intensify them. For adaptative leadership we used Rosinha and Matias (2015) conceptual framework in which these authors identify, as a military leader characteristics and competencies in dangerous situations, the specialised knowledge, decision making, stress management, physical fitness, integrity, physical courage and men's physical and mental wellbeing. For the study of the resilience of a military force we adapted de concept of organizational resilience to the resilience framework of Rehak, Senovsky e Slivkova (2018) in which the variation of military force levels of resilience and performance is related to the level of intensity of a disruptive event over time. These three frameworks combined allowed us to relate the resilience cycle, in preparation, absorption, recovery and adaptation phases, with the five extreme context dimensions and with the leader competencies and analyse how the resilience of a military force is affected by the dimensions of extreme contexts and influenced by the leader's competencies, actions and behaviours. Using as a case study the leadership of a Portuguese military force deployed in Central African Republic, we concluded that, through an adaptive leadership, leaders contribute to increase the military force capability to absorb the impact of an extreme event, amortizing the decrease of the performance level due its intensity, and to increase the military force's recovery and adaptation capability and thus increase its level of resilience. We can also conclude that the leader is the central piece in the military force preparation and responsiveness phases, in physical and psychological recovery after a disruptive event and in adapting to changes that result from extreme context scenarios. So, the leader is a key element in the resilience of a military force.

Figueiredo, Augusto, Portuguese Military University Institute, Exploring Synergistic Potential of the Portuguese Space Strategy

Space is critical for societal activities and military operations. Inferring from this axiom one can state that ceasing access to space and space data will severely disrupt normality. This highlights the importance of the subject and identifies the need for coherent, thoroughly reasoned and oriented action. Portugal has done just that by constructing a National Space Strategy (NSS), known as 'Portugal Space 2030', setting in the form of governmental resolution the ambition, vision and goals for the space sector for the next ten years, leading inter-ministerial efforts towards economic development, job growth and innovation in this area. At a time characterized by the advent of the New Space industry, the very own concepts of Security and Defence evolve when confronted with boundless threats and uncertain risks, with the potential to impact every sector of society, thus requiring a well synchronized whole-of-government approach to tackle this challenge. One of the required steps to achieve this desideratum is the establishment of a more security-oriented complement to the overarching NSS, more specifically in the form of a National Defence guidance. This article intends to provide insights on what the end-state should be and how to pursue it, following the vision of a well-integrated action

from civil, commercial and security space participants, reminiscent of a truly symbiotic interaction.

The necessity to benefit society from space, where Defence activities are paramount to provide Security, is uncontested. The vision discussed demonstrates the potential to align Defence efforts to the overarching NSS and avoid excessive branching or duplication of resources. From a widerange of opportunities, it ought to be in synchrony with the overall end-state implicit on the NSS that Defence must act as a catalyst agent. This posture observes the principle of complementarity, contributing actively towards the achievement of the National global objectives, by aligning the compatible/common categories and realizing synergies from that connection. It does not mean pursuing the same outcomes: it translates into coupling technological and organizational assets when required to establish Defence Space capability to support combat operations, emergency situations and peacetime mission requirements, but seeking alternatives means when dual-use is not feasible. A critical key to success in this regard, adding up to the required financial investments, is the need for skilled human resources able to bridge across all space sector participants, creating solutions for the non-linear problems presented on this uncharted system, supported by leadership with enough organizational backpedal to accept risk and learn from failure. (Text abbreviated from 2300 word paper)

Fitzpatrick, Meghan, PhD, Dominique Laferrière, PhD, and Janani Vallikanthan, Defence Research and Development Canada, An Ounce of Prevention, a Pound of Cure: Building Resilience to Disinformation

Today's armed forces operate in a complex information environment, populated by adversarial actors willing to operate below the threshold of open conflict to achieve strategic objectives. While propaganda and disinformation have been used as weapons of influence for decades, the exponential growth of the internet and social media has further facilitated the spread of this material online. This is cause for concern for many senior decision-makers around the world, who perceive online disinformation as a significant threat to democracy.

Bringing together the results of two studies conducted by Defence Scientists from Defence Research and Development Canada, this paper examines the threat posed by disinformation to military organizations and strategies that can be used to mitigate it. More specifically, it analyzes the evolution of propaganda and disinformation over the past century and how hostile actors employ these tactics in the contemporary operating environment. In addition, it explores the risk this phenomenon poses to armed forces, both in terms of operational security and overall force protection. The latter half of the paper reviews growing evidence from across the social sciences that suggests increasing individual resilience to disinformation is the most robust way to counter it. Taking stock of the experiences and knowledge of civil society experts, the paper analyzes the strengths and weaknesses of various strategies. Finally, it concludes by looking at how militaries can best leverage this evidence-based research and offers concrete recommendations on how to build education and training responsive to operational

needs and designed to equip military members with the skills to navigate an increasingly deceptive threat environment.

Foerster, Andreas, Royal Military College of Canada, The Great Debate: Defining Hybrid Warfare

The purpose of this study is to identify, explain and analyze the current schools of thought on Hybrid Warfare amongst military theorists. This study will argue that there are three major schools, which each have competing definitions of Hybrid Warfare and opinions on its place in tackling the issues of 21st century conflict. These three schools are as follows: The Transformative School, The Historical School, and the Universalist School. Through this examination of the scholarly material, a thorough historiographical and critical analysis will be provided. This analysis will take place in the following order: First, the historical background which established the varying theoretical principles for each of the schools; Second, an explanation, then critique of the Transformative School; Third, the same for The Historical School; Fourth, the same for the Universalist School; and finally, an argument in favour of the Historical School based on a comparison of the three schools.

Fowler, Rory, Queen's University Kingston, 'Military Justice' and the Ethics of Statutory Decision-Making in the Canadian Forces

Presently, several issues regarding the governance of the Canadian Forces, including how the institution addresses allegations of sexual misconduct and racism, are the subject of heightened scrutiny and public commentary. One of the principal challenges regarding this public discourse is the poorly understood nature of the Crown-soldier relationship. One of the means for improving the quality and impact of this discourse is a more thorough and principled examination, within this unique relationship, of the ethical and legal obligations imposed upon statutory decision-makers and their legal advisors.

Building upon the recent work of Professor Andrew Martin, "Legal Ethics and Canada's Military Lawyers", (2019) 97:1 Can B Rev 100, as well as my own research on the Crown-soldier relationship, I examine the nature of ethical statutory decision-making in the Canadian Forces. This analysis necessarily requires an examination of how key decision-makers and advisors define the term of art 'military justice', as well as alternative definitions. This will include an examination of the definition offered in Bill C-77, An Act to amend the National Defence Act and to make related and consequential amendments to other Acts, SC 2019, c 15, which received Royal Assent on 21 June 2019, but for which a significant number of provisions, including the definition of 'military justice', have yet to come into force.

This will inform the broader examination of obligations within the statutory structure of the governance of the Canadian Forces. Typically, such governance is seemingly divided into the Code of Service Discipline (which conventional wisdom within the Office of the JAG equates to 'military justice') and 'administrative action'. To varying degrees, these two functions are treated as discreet and distinct. The extent to which

this distinction is warranted is debatable, and it has become increasingly blurred, particularly in the context of 'sexual misconduct response'. Bill C-77 appears to further blur the distinction with the introduction of 'summary hearings' (established by provisions that are not yet in force), which bear marked similarity to administrative tribunals.

My examination posits that, beginning even before the Supreme Court of Canada judgment in R v Généreux, [1992] 1 SCR 259, there has been a tendency to narrow the scope of examination of the means by which the 'chain of command' in the Canadian Forces maintains the discipline, efficiency, and morale of the armed forces, which artificially narrows the conceptualization of 'military justice'.

In turn, this has led to inconsistency, unfairness, and unreasonableness in what is typically characterized as administrative decision-making, distinguished from disciplinary decision-making under the Code of Service Discipline. I argue that, in part, these defects arise from insufficient superintendence of this form of 'military justice'. This leads to impunity in decision-making.

I conclude with recommendations outlining how statutory decision-making in the Canadian Forces, and the advisory role of legal officers, may be improved.

Giedraityte, Vidmante, General Jonas Zemaitis Military Academy of Lithuania, The importance of leadership in creating an innovation-friendly environment in the military: theoretical and empirical insights

Political, economic and social processes, military conflicts and the threat of terrorism in the current context forces states to look for innovative solutions to help them adapt to a rapidly changing environment (Giedraitytė, 2016;). Defense scholars and military professionals are increasingly paying attention to the changing nature of competition between state armies, new concepts of Allied cooperation, the use of new technologies, and new tools for managing military personnel and organizations (Dombrowski, 2018). In order to achieve these innovation-based goals, it is necessary to ensure an innovation-friendly environment (Bason, 2018), covering a favorable political, legal and cooperation environment, necessary funding, strategic innovation goals and objectives, risk and performance management, evaluation of innovation processes, changes in the organisational structure, creation of innovation culture and creative environment, necessary and qualified human resources guarantee, as well as effective management of information and knowledge (Badiru, 2019; Giedraityte, 2020, etc.). Defense innovation often lacks clear instructions, innovation coordination, integration and reallocation of actions and resources, as well as the rapid acquisition of new competencies, and etc. (Thal, Shahady, 2019). Thus, in this context, the role of the leaders in the innovation process is particularly important. Strong leadership helps to formulate innovation ambitious, visions and goals, to identify innovative activity directions, to provide the innovation friendly conditions, as well as to strengthen personnel motivation (Bason, 2018; Šimauskienė, et al., 2021), and to create military officers' innovation capacity and innovative behaviour (Muchiri el al., 2020). In the light of the foregoing, this paper presents theoretical insights into the role of leaders in shaping an innovation-friendly environment. Also, the results of the research analyzing

the role of leaders in shaping innovative personnel behavior in the Lithuanian Armed Forces are briefly presented. The research data are taken from the Lithuanian Armed Forces survey "The role of military leadership in shaping the innovative personnel behaviour" (2019) (V. Šimanauskienė, V. Giedraitytė, V; O. Navickienė).

Girardin, Lambert, Ali Dizboni, and Kerim Ousman, Royal Military College of Canada, Assessment of the Iranian State Power: the PMESII Model and its limits

Iran is at the forefront of political and military affairs in the Middle East. With that being said, the nature and extent of its power are still highly debated by the academic community, in a discussion where foreign policy and regional events often overshadow the delivery of a net assessment of the country's capabilities and status. By applying the PMESII method (a political, military, economic, social, infrastructural and informational analysis of a State's capacities/interests), this article aims to provide an updated and general overview of the Islamic Republic's power. It emphasizes the potential of Teheran's assets and perks and argues that the country, while defying the norms of power in the study of international relations, is a force not to be dismissed in light of current events or trends.

Godinho, Luís Manuel Madeira, Portuguese Military University Institute, Management Control Systems use in Military Organizations - an exploratory analysis

The managerialist approach to public sector management, introduced with New Public Management (NPM) approach, has been an opportunity to increase Management Control Systems (MCS) research (Chenhall, 2003; Lapsley & Miller, 2019). Public Sector extant literature found that MCS use can improve sustainable, efficient, effective, economic, and accountable decision-making processes. MCS use can enable organizational adaptation to its environment, contributing to generate and sustain resilience capacities, by reduction of uncertainty, organizational learning and providing arguments to legitimize rational decision-making (Van der Kolk et al., 2015; Bracci & Tallaki, 2021). This research responds to a research call on MCS use in public sector (Chenhall, 2003; Grabner & Moers, 2013; Otley, 2016; Van der Kolk, 2019), and fills a literature gap, studying the Military Defense Organizations (MDO) (Godinho & Gonçalves, 2020) as the organizational unit (Navarro-Galera et al., 2014). MDO has relevancy in countries central budget (Felício et al., 2021). Understanding how their managers pursue the organization's intended strategy and stimulates strategy change is relevant. In the last years MDO have pursued reforms, to become more agile organizations based on networking to achieve more flexibility and faster innovation through adaptation and learning processes (Essens et al., 2007; Eisenberg et al., 2018).
The present study builds on Simons' Levers of Control framework (Simons, 1995), using an adapted Widener's (2007) framework. The objective of the study is to explore MCS use in MDO and support empirically insights on different perceptions of inter-dependencies and complementarities within the Levers of Control framework. The author adopted a quantitative approach for a cross sectional study. An adapted

standardized questionnaire was addressed to a convenient sample of MDO Units' managers of different Services and size. Data was collected, between May and July of 2021, from Portuguese Armed Forces Services. Using responses from 374 military in management functions, this study tests a structural equation model that relates the four Simons' Levers of Control between them. Results are being analyzed and compared to public sector MCS literature. By identifying empirical associations between Levers of Control use, its inter-dependencies and complementarities, my study can provide an empirically informed starting point for analysis and interpretation of MCS use in MDO setting. The research contributes to the public sector MCS literature, being the first study that explores managers perceived MCS use in MDO setting, relevant for scholars and MDO top management seeking to stimulate resilience capability, sustainable, and efficient decision-making processes.

Gouveia, Humberto, José Borges, Portuguese Military University Institute, Current Trends and the future of Field Artillery Weapon Systems

After many years in oblivion, Field Artillery (FA) is getting a new breath. Many countries have decided to combat airpower conditions using fire support, therefore opening new possibilities for the use of ground-to-ground fires as the only way to suppress anti-air-craft defences. As a result of this need, many projects for the development of FA projectiles arose to enhance precision and range. This work aims to analyse the technological evolutions introduced in the Field Artillery projectiles and presents the contributions and challenges of the new trends for the FA's mission. We analyse the technological evolutions introduced in FA projectiles and to understand the contributions and challenges of the new trends for the FA mission. A theoretical, bibliographical and documentary research was conducted, mainly based on information available in articles published in online military journals and on information provided by weapon manufacturers. The 21st century has brought a new paradigm to military operations. The operational environment has changed significantly, and military operations are now essentially developed within urban environments, close to civilians, housing and school, critical infrastructures, such as hospitals and schools. The presence of non-combatant civilians and the need to preserve critical infrastructure became part of the new reality. This change in the operational environment imposed further constraints on military operations, namely the need to limit collateral damage to both population and infrastructures. Consequently, FA, until then a weapon essentially designed to hit area targets, was forced to raise its accuracy levels. If at the end of the First World War FA was considered the queen of battles, with the advent of aviation, it lost its preponderance, and some countries even overlooked the FA. Contrary to this trend, Russia never stopped betting on its FA, also known as the battle Czar, and pursued its development. Their developments were noteworthy in the conflict with Ukraine, where Russia proved its capacity to reach objectives at long distances using its FA. In recent years, the FA gained renewed attention, mainly in the US, Israel and France, with new sound technological development. The trigger for such development comes from the fact that adversary nations started investing heavily in combat airpower. In this

context, FA earned relevance as the element of attack against enemy air defences and has caused the Army to sweep from being a "consumer" of long-range fire from other branches into the leading "supplier" of this type of fire.

Initially we will discuss the main trends in the evolution of FA projectiles. Then we identify the technologies associated with the increase in FA projectiles' accuracy and range. At the end, we draw some conclusions and provide trends and technologies in FA weapon systems and their potential operation in the battlefield.

Green, Alexandra and Ali Dizboni, Royal Military College of Canada, The Enemy Within: A review of the prevalence of right-wing extremists within armed forces in the UK, Germany, and Canada

Recent global events have led to a growth in the literature regarding right wing extremism (RWE). Additionally, the moral integrity of police forces has also been scrutinized more thoroughly following public demonstrations against police brutality. Although the research on RWE is not new, there is very little policy relevant research about the prevalence or extent of right wing extremism within the police and more importantly the armed forces. This gap is especially valuable for study given that the military is the armed extension of the government. This paper seeks to address the presence of RWE within the military by cataloguing cases within the UK, German, and Canadian armed forces. As this issue is just publicly emerging, this paper also compares each country's unique policy approach to handling extremism within the ranks and finds that the German government appears to prefer a punitive approach, the UK has had successful prosecution of extremism cases in the armed forces, and Canada favors a rehabilitative model. Further research is required to understand what attracts right wing extremists to military and paramilitary organizations.

Grespin, Whitney and Emily Knowles, King's College London, DDR absorptive capacity in fragile militaries: the challenges of demobilizing or integrating irregular fighters

The Malian Armed Forces (FAMA) and Somali National Army (SNA) face similar dilemmas. They are by most measures critically understaffed to secure vast territories that are home to violent extremism, separatism, high rates of community violence, and porous borders. Concurrently, their capacity to absorb demobilised members from rebel groups, or to enforce the disarmament of community-based militias, is also weak despite sustained international security force assistance and significant Disarmament, Demobilisation and Reintegration (DDR) support.

Based on semi-structured interviews with military and civilian personnel involved in the DDR process, this presentation will examine the lessons learned for peacekeeping staff, security force assistance personnel, and civilian agencies. It will also contain recommendations how to better align efforts to improve the absorptive capacity in ways that could improve prospects for ailing DDR processes, and may also incorporate field research relevant to the current Mozambican context.

Grespin, Whitney, King's College London, Principal-Agent Problems: US Government Use of
Contractors

Although private contingency contracting firms can contribute to building partner
military capacity and may be a useful foreign policy tool, the impact that these non-state
actors have must be taken into consideration to avoid weakening the perception of the
sponsoring (in this case, the United States') government's legitimacy. Therefore, the
question must be asked, "Why does the USG often turn to private firms and individuals
in order to deliver training and advisory services to build the capacity of partner
militaries, rather than relying on its own military personnel, and what challenges does
this present the USG?" This question is particularly salient given the USG's use of
contractors post-9/11 to augment security force assistance efforts, first in the Central
Command Area of Responsibility (CENTCOM AOR, encompassing Afghanistan and Iraq),
and later expanding to other AORs relevant to prosecuting the Global War on Terror
(GWoT) by building the military capabilities of partner nations. This project examines the
phenomenon through case studies across the Africa Command (AFRICOM) AOR.

In order to understand the incentives that the USG has to contract out such work
that was previously under the purview of the U.S. military, this project applies Principal-
Agent (P-A) theory to its question of why U.S. policymakers use contractors to build
partner capacity. The central focus of P-A theory is the process of structuring incentives
for the agent, through which the principal can make decisions that affect the incentives
of the agent to act in one way or another. In addressing P- A's application to the use of
contractors, this project frames the use of contractors as surrogates.

Given that contingency contracting firms do not have interests that are identical
to the USG, the more that the USG relies on contracting firms to execute its policies, the
more vulnerable the USG becomes to having firms pursue their own interests when they
diverge from those of the USG. This misalignment of interests between the contracting
firm surrogate and the USG sponsor is critical, given that contractor actions can (and
have) incurred major agency loss and reputational damage that have limited their
contributions to the achievement of U.S. objectives. On balance, the USG's use of
contractors to supplant traditional approaches to building partner capacity has utility,
but it is not unbounded nor without lasting repercussions that may hamper the efficacy
of such programming in the longer term.

Gullachsen, Arthur, Royal Military College of Canada, Retaining the Moral High Ground: The
Canadian Army and the Waffen-SS Prisoners of War, Normandy, July 1944

The use of military history and more recent defence studies examples to assist in
the instruction of military ethics is currently being emphasized by the US Army University
within its professional development materials. The importance placed upon ethical
behavior by the US Army leadership is huge. Ethical behavior is viewed as part of the
foundation on which the army is built, directly influencing its level of professionalism
and trust that the US populace places in it. There is a critical need within the US Army for
leaders that can create and maintain climates of trust. A set of ethical principles have

been carefully chosen to help influence positive behavior within the army environment. These 10 Army Ethic Principles, established to define ethical conduct in a manner similar to the seven Army Values, are easily understandable and communicated.

In late 2020, I was recruited by the US Army Combined Arms Center to aid in the publication of Maintaining the High-Ground: The Profession and Ethic of Large Scale Combat Operations, Volume 10 of The US Army Large-Scale Combat Operations Series, published by the Army University Press. In Chapter 7 – Retaining the Moral High Ground: The Canadian Army and the Waffen-SS Prisoners of War, Normandy, July 1944, I talk about the US Army's Army Ethic Principle 6: "We accomplish the mission and understand it may demand courageously risking our lives and justly taking the lives of others". In this case study, I recounted how Canadian soldiers in the Normandy Campaign did not retaliate against Waffen-SS prisoners of war (POWs), even though they were well aware that German soldiers had executed Canadian POWs. Instead, they focused on carrying out their missions in a professional manner, and conclusively defeated the enemy on the battlefield. In doing so, they maintained their integrity as individuals and as a fighting organization. This humane treatment appeared to be a factor during later fighting, when large numbers of German soldiers surrendered.

By using military history and more current defence studies examples, NATO and other militaries can use positive examples of military professionalism and ethical conduct to influence today's officers and NCOs. In order to capture their interest, real world examples of "right" are needed. The examples have to be military related, compelling, and have to be effectively communicated to the intended audience. This volume, and my chapter within it, meet these criteria in order to be effective professional development tools. Hopefully my contribution in some small way can aid in reversing a challenging current situation, where loss of trust in leadership has occurred due to a perceived lack of professionalism and ethical conduct.

Habowski, Eryk, Polish War Studies University, Balance of power in the age of information wars - targets, strategies, instruments

The theory of the balance of power remains one of the most controversial concepts of international relations, and at the same time ambiguous, understood in various categories, also when distinguishing between the balance of power and the balance itself. Ernst B. Haas in the 1950s discussed the different ways in which balance of power can be understood in terms of: separation of power, balance, hegemony, stability and peace, instability and war, politics of power, universal law, or the rule of history and the system and guide after policy making. It is worth recalling that for Grotius, the balance of power became the basic axiom of diplomacy conditioning the operation of European powers, and this, in turn, was responsible for the popularization of this thinking pattern as the basis of the main doctrine of international politics over the next centuries. Kenneth Waltz argues that the relative balance of power improves the perspective of peace, but also notes the impact of the pace of technological innovation on destabilization and increasing difficulties in assessing the potential and power of the parties/countries in context of the international relations. This speech will be an attempt

to answer the question about the balance of power on "terra incognita" - in the era of information wars in the virtual space (internet), with the use of new technological tools, but above all, a question about the balance of power in the epoch of post-truth and new forms of disinformation.

Hagen, Anne Marie (Norwegian Defence University College/Norwegian Military Academy) "Learning (better) from stories: Wargames, narratives, and rhetoric in military education"

Wargames have a long history as a training method in militaries. A typical explanatory framework for their efficacy is their narrative aspect and the human pre-disposition for narrative meaning-making. However, the question remains how narrative meaning-making is formed and functions, and how it can be analysed to assess the educational value of wargaming in PME. The paper seeks to add to the empirical and theoretical foundation of wargaming pedagogy through a case study of a wargame at the Norwegian Defence University College. Guided by discourse analysis, argumentation theory, and narrative rhetoric, the paper analyses the interactions between the players. The study found that narrative elements contributed to player argumentation and to increased cadet engagement in the game. It recommends that a component on argumentation to the Hot Washup reflection to increase understanding of how the dynamics in the game scenario developed and how persuasive arguments were constructed. To learn better from wargames, players and educators need to understand how stories are told. The culture-as-method focus on analysing unfolding action adds to our understanding of the process of learning that takes place during a wargame.

Hall, Rosalie Arcala, University of the Philippines Visayas, Navigating Troubled Waters: Civil-Military Relations and US-Philippine Military Exercises under the Duterte Administration

Philippine-US military exercises are critical components to the functionality of the Mutual Defense Treaty (MDT) between the two countries. Since the 1950s, these exercises have been conducted regularly and is a staple element of the Philippine Navy's activities portfolio. Under President Rodrigo Duterte, the Philippine government restricted joint military exercises to humanitarian missions, ending an earlier focus on counterterrorism. President Duterte also created the Visiting Forces Agreement (VFA) Commission as an oversight body and issued a unilateral notice of withdrawal to said Agreement in 2018. Although said withdrawal has been suspended by the Philippine government, the withdrawal notice affected the tabling of joint military exercises and had put Philippine-US military relations on an unstable footing. Amidst the backdrop of China's increased military activities in the disputed West Philippine sea and the Duterte administration's pro-China foreign policy stance, the Philippine naval establishment's role in territorial defense became more uncertain.
The paper examines the dynamics of government decision making on Philippine-US (joint) military exercises between Philippine civilian agencies under the Duterte administration, and the military institution, specifically the Navy. Having received the

bulk of modernization resources under the previous administrations and equipment transfer from the US, the Philippine Navy is the branch most invested in territorial defense and exposed to maritime exercises with US counterparts. Using key informant interviews, the paper followed the contours of consensus and contentions on the Duterte administration's policy among key civilian leaders and naval officers. The paper also examines the results of the survey (N=135) of the pre, in-mission and post-mission experiences of the participants from the Marines, Naval Combat Engineering and Naval Force. The paper probes how cross-cultural and foreign exposure become conduits for imbibing professional norms. Navy administration and personnel ethos were improved by participation in joint military exercises and enhanced inter-military operability for territorial defense.

Hanska, Jans, Finnish Defence Forces and OECD, Deterrence or Restraint? The practice of deterrence theory from the perspective of a small state

> This article reassesses the concept of deterrence that initially evolved to prevent the Cold War era superpowers from engaging into a mutually destructive nuclear war. The world has changed and certain aspects of deterrence theory have to be added to the scrapheap of history while others stand as almost timeless tenets. Deterrence has to be rethought in our contemporary world and each state willing to put it to practice will have to develop a deterrence strategy of its own that plays on the strengths of that specific state and the weaknesses of its most likely future aggressor. Non-nuclear deterrence has to be thought out adhering to different principles than expressed in traditional theories and the greater the power imbalance between the deterrer and the deterred, the more the smaller state has to employ the entire spectrum of skills of his society. Deterrence cannot rest on the principle of punishment but has to be more nuanced. When there is no balance of terror between the two states the more deterrence assumes the role or dissuading the potential enemy from attacking of creating restraints for his aggression.

Hassan-Yari, Houchang, Royal Military College of Canada, Abraham Accords or how to rearrange the security posturing in the Persian Gulf

> Under the auspices of the Trump administration, the United Arab Emirates, Bahrain, then Sudan and Morocco normalized their relations with Israel. This rapprochement put an end to several decades of low-intensity hostilities between the states concerned. This development has occurred for the following reasons. First, the common security interest in the context of Iran's growing threat to the security of signatories to the Abraham Agreements. Then, the new inter-Arab relations since the protest movements of the Arab peoples, - "Arab Spring" -, which weakened the historically large and influential Arab countries and the emergence of small countries with great ambitions in the quest for leadership. Third, the weariness in the face of the Israeli-Palestinian conflict which continues without a prospect of resolution in sight. Our study seeks to analyze the emergence of a new security architecture and its impact on

the region and the international scene. One of the side effects of this new order could be the release of some of the American forces to deal with the growing Sino-Russian threat perceived by Washington and its allies.

Helkala, Kirsi, and Ravidra Babu Ummaneni, Norwegian Defence University College, Integration of Electronic Warfare in Engineering Education

Electronic warfare (EW) is an important subject area to discuss in future engineering education. The basic understanding of electronic warfare principles requires many general engineering courses like Mathematics, Electronics, Telecommunications, and Electromagnetism, Signal processing, Networks, and cyber operations. This paper mainly focuses on identifying the key topics in each subject area and establishes the connection among them to provide basic awareness about electronic warfare and its capabilities. The understanding of the EW is relevant in both Military and civil applications in view of dominant use of electromagnetic spectrum (EMS) for daily operations and communications. (Full paper available)

Hennessy, Michael, Royal Military College of Canada, Building a Hybrid Warfare Reference Curriculum

The author is currently engaged in a multinational effort to craft a 'hybrid warfare reference curriculum' similar to those previously created by the Partnership for Peace Consortium of Defence Colleges (PfPc). I was the chief writer of the PfPc's cybersecurity reference curriculum and was asked to help lead the effort to create a similar document regarding the concept of Hybrid Warfare. I would like to spark discussion about such endeavors based on my experience with the cybersecurity curriculum and the hybrid warfare working group so far. I will outline the framework for the new project, discuss the agreed contours of the discussion, and entertain feedback and solicit volunteers from those who may wish to join in the ongoing discussions.

Hitman, Gadi and Eyal Lewin, Ariel University, The Functioning of Three Components of National Ethos: Observations from the Palestinian Uprising 2000 to 2005

This paper analyzes the Israeli and Palestinian two negating sets of ethos in a crucial point in time: the 2000 to 2005 Palestinian uprising. We analyzed the public speeches of Israeli Prime Minister Ariel Sharon as well as those of Palestinian Authority Chairman Yasser Arafat and searched for matches to the three components of national ethos: collective victimhood, sense of victory and perception of morality. The data from the case study of the Israeli-Palestinian conflict shows how the three components of nationa l ethos form fundamental barriers for reconciliation.

This research suggests that national leaders in their ability to influence their followers towards what they define as the common goals of the group, can also alter the national ethos or, at least, moderate one or two of its three components. Thus, we

establish a theoretic corner stone for further inquiries that will eventually promote peace efforts.

Howe, Colin, University of Buckingham, Influence of Private Military Companies in Modern/Future War

The partnerships and scale of Western military is such that any direct conflict is unlikely. As seen in recent years, undermining big Western powers becomes more of a fragmented problem, where conflict will come from parties set on disrupting the Western way of life. The scale and reach of this problem, requires non-conventional means that are adaptable to the constantly changing threats faced. There is now this race by Private Military Companies (PMCs) to adapt and provide solutions to these problems. This work will consider the scale and influence of PMCs, for future conflicts, establishing the discretion of nations in the use of such tools but also highlighting the need. The aim of the work will consider these tools and needs, to establish future threats and the importance of the private sector in the support of national interests. Providing qualitative secondary research of the commercial avenues, in comparison with military structure, provides a collection of data for the gaps for future partnerships, allowing a broader look at the tools and services needed in the future. Larger PMCs have a foot hold to varying degrees, with government contracts where relevance is key in maintaining their position. These areas will likely find developments in research, intelligence, technical innovations, surveillance, cyber security and training. The nature of the privatized sector offers an almost boundless approach for cross border solutions, where political optics are less likely to limit or delay action. Western governments cannot be accused of saber-rattling but equally have less control in steering the work conducted. Without a certain level of controls driven by national policy the risk of rogue or inefficient companies will be problematic, equally the potential for international incidents will not justify the protection of a home state. In addition the opportunity for semi structured interviews in the private sector, provides context for the direction different companies are taking to stay relevant, but also demonstrates the direction of modern/future wars. The potential findings are the prerequisite for identifying what the future threats will be and how PMCs have a key role in modern/future war. Governed PMCs are a necessity, needed in the grey areas but equally the green areas in support of Western militaries. The freedom to operate as stateless tools provides deniability and functions to navigate public opinion and foreign policy it also has the potential to counter unfriendly states and their use of Mercenaries. This work lends itself to the future debate on privatized conflicts acting as the right hand of different states. Further research would need to consider how governance can be applied by home nations to control the growth and influence of PMCs.

Isaro, Mireille, University of Turku, Finland, Arto Mutanen, Naval Academy of Finland, and Antti Rissanen, Finnish National Defence Univesity, Discussion of Ethical frames for AI in military context

The overall development of technology and the growing use of artificial intelligence entails that the majority of military systems become more complex and more integrated. Moreover, the borderline between military and non-military (civilian) becomes vague. Nowadays it is no longer possible to consider military actions as discrete and independent from civilian actions. This development requires a new type of approach on research and related training where methodological skills have a central or perhaps even dominant role. Mathematical methods form the fundament of engineering sciences (or technical sciences). In addition to scientific-technological approaches, there is a need for a more holistic methodological understanding. This creates a bridge to pedagogical questions that allow us to ask, for example, questions about useability of technology, which includes both useability research and design science. However, it is not enough to know how to use technology, we also need knowledge on how to use technology in the right way. The ethical questions involved in the development of military technology are demonstrated in the example of autonomous weapon systems. The ethical discussion on this instance of military technology extends theoretical and concrete responsibility for one's own actions to a responsibility for the behaviour of the technology systems one utilizes. Here too, due to the interwovenness of military and civilian technology, both fields face similar ethical questions. These questions deal with issues of moral responsibility, transparency, privacy, and data bias. In addition, the development of technology can have broad ethical implications on societies and the environment. What separates the ethical concerns in the civilian use of technology from those of the military use, is the nature of military objectives. Here, the development of military technology ties the ethical questions of technology to the traditions of military ethics. Methodological tools are needed for combining military ethics with ethics of (military) technology and, from a broader perspective, for anchoring the field of applied ethics into the interdisciplinary pool of sciences that drive the development of military technology. The role of ethics in interdisciplinary research is multidimensional. Applied ethics can provide conceptual tools for research question formation and methodological tools for evaluating possible ethical risks to relevant parties. These tools are also needed for assessing adherence to relevant ethical norms, for example, military ethics, and for evaluating ethical and responsible conduct of research. This workout guides us from the question of 'how to use technology' to that of 'how to use it in the right way'. When combining applied ethics with other sciences in an interdisciplinary pool, broader and multidisciplinary methodological tools are needed for unifying the scientific language (key concepts and their application) and creating bridges between scientific cultures and theories. To tackle these issues, we need to unify technico-scientific and conceptual-ethical approaches. This supposes a deeper analysis on understanding the new nature of artefacts. In this presentation we will characterize interdisciplinary methodological development and literature findings from the artificial intelligence viewpoint.

Isoda, Vytautas, The Institutional Framework for International Peace Operations: The Baltic States' Return to the United Nations.

The 21st century peacekeeping landscape is defined by the multiplicity of institutional frameworks under which international peace operations are deployed. Small states with limited resources cannot meet every demand for troop contributions and face the inevitable dilemma of choosing whose 'flag' to carry. For the first decade after joining NATO and the EU, the Baltic States gave a clear priority to NATO and U.S.-led military operations in the Balkans, Afghanistan and Iraq, but since mid-2010s have gradually shifted their focus to the UN framework, primarily contributing to UNIFIL in Lebanon and MINUSMA in Mali. Having in mind the 'Atlanticist' tradition of Estonian, Latvian and Lithuanian security and defence policies, and the newly emerged threat in their own neighbourhood after the 2014 Ukrainian crisis, one would expect an even greater Baltic involvement in NATO and American-led military operations so as to score loyalty points in the eyes of their main allies. Part of this trend can be explained by NATO's 'Afghanistan fatigue' and a pre-planned reorganization of ISAF into a (formally) advisory and training mission 'Resolute Support' by January 2015. However, by summer 2016 there was an approximately 10,000 strong American-led coalition force already deployed to Syria and Iraq to fight ISIL. Even though the Baltic countries publicly supported the operation, they provided only token contributions. Does this mean a falling trust in the efficiency and (or) legitimacy of American-led interventions or a renascent support for the UN system of peace and security management? Or does this policy shift involve a completely different line of reasoning?

In order to find the underlying causes behind these troop deployment decisions, a series of interviews with the national foreign and defence policy establishment of all three Baltic countries was conducted over a course of one year (2019 to 2020). It was supplemented with the analysis of their strategic documents as well as open source data on their defence resources and domestic public opinion. The paper reviews the main theoretical assumptions about troop contributions to the UN peacekeeping operations and burden-sharing behaviour among NATO allies, and singles out three variables that potentially explain the Blatic States recent return to the UN: (1) international norms and foreign policy identity, (2) national security and power interests, and (3) domestic politics. The empirical evidence suggests that the recent troop deployment decisions of the Baltic States are best explained by a realist focus on national security concerns. The seemingly 'internationalist' context of UN peacekeeping operations simply happened to be most suitable for a bilateral exchange with their European allies, namely Germany and France, that in turn contributed troops to NATO's Baltic flank.

Ivanov, Oleh, National Academy of Sciences, Kyiv, Ukraine, Hybrid Warfare and Linguistic Context

The military confrontation in South-Eastern Ukraine is an example of "hybrid warfare," in which one of the primary aspects is "war for minds." Differences in geopolitical predispositions among Ukrainians are frequently explained by their place of residence, ethnic identity, and native language. To test the effects The results of regression modeling demonstrate that regional structure is more potent than integration intentions in explaining general attitudes toward Russia. The level of lingual-ethnic

heterogeneity was found to be partially responsible for regional variances. In general, it appears that linguistic context has a greater impact than ethnicity. Religious affiliation is still quite strong and influential.of attitude types, changing political situations, and social environments in the regions, the author used an excessive amount of data (2005-2015 period surveys with a total sample of 378,733 cases) and several combinations of dependent variables. The results of regression modeling demonstrate that regional structure is more potent than integration intentions inThe results of regression modeling demonstrate that regional structure is more potent than integration intentions in explaining general attitudes toward Russia. The level of lingual-ethnic heterogeneity was found to be partially responsible for regional variances. In general, it appears that linguistic context has a greater impact than ethnicity. Religious affiliation is still quite strong and influential. explaining general attitudes toward Russia. The level of lingual-ethnic heterogeneity was found to be partially responsible for regional variances. In general, it appears that linguistic context has a greater impact than ethnicity. Religious affiliation is still quite strong In addition to all Ukraine surveys the author analyzes regional differences among Armed Forces of Ukraine servants in terms of their religious affiliation and attitudes towards military-patriotic education in pre-war (2011-2013) period.and influential (Ivanov, 2015).

In addition to all Ukraine surveys the author analyzes regional differences among Armed Forces of Ukraine servants in terms of their religious affiliation (Іванов, 2013) and attitudes towards military-patriotic education in pre-war (2011-2013) period.

JAŚKIEWICZ, Urszula, War Studies University of Poland, EU action in the area of dispute regulation and international conflicts. Case study: Serbian-Albanian conflict

The European Union (EU) is working to regulate disputes and armed conflicts in line with the Common Security and Defense Policy (CSDP). In this aspect, the European Union is engaged as a mediator, which my by illustrated by its commitment since 2011 to resolving the conflict over Kosovo's political status. This dispute between the Belgrade authorities and the authorities in Pristina has become more important since 2008, when Kosovo unilaterally declared independence, which Serbia did not recognized to this day. The aim of this article is (i) to describe the mechanism used by EU to regulate conflicts, (ii) to conduct analysis of the European Union's activities in the period 2011-2020, during which the EU has undertaken to regulate the dispute between Serbia and Kosovo, and (iii) an analysis of the EU's successes and failures in mediation in this conflict. The research was based on theory of conflict management through mediation developed by Jackob Berecovitch. The method used to carry out the research are case study, desk research and SWOT analysis. Research shows that in the area of EU successes, the following actions can be identified in order to resolve the dispute over Kosovo's political status: (i) the signing of agreements by conflicting countries in areas of transport, communication and trade, including one of the most important ones – the Brussels Agreement, (ii) stopping violence in Kosovo and (iii) helping the parties to transition from aggressive to peaceful behavior. Failures of EU action include: (i) a low level of trust in the European Union as a mediator, (ii) absence of a formal and binding agreement to

resolve the conflict issues, and because of this absence (iii) the main aim of mediation, which is to regulate relations between Serbia and Kosovo, is also not achieved. Research indicates the need to increase the effectiveness of EU action in: the area where relations can be built free from the need to relooking at the conflict issues and to increase the motivation and involvement of the parties in mediation. Research also indicates the need to develop mechanisms in the area of capacity building to end harmful aspects of conflict and to increase trust in the mediator.

Jensen, Mikkel Storm, Royal Danish Defence College, What do small NATO-members want with offensive cyber capabilities?

From a realist perspective, small European states' acquisition of offensive cyber capabilities (OC) presents a puzzle: Due to unwillingness to share classified information on OC, such means are difficult to deploy in coalitions. Also, OC does not provide the same ability to seek influence with security providing allies such as the US through burden sharing and provision of economies of scale, as the acquisition of conventional means, e.g. the F-35, does. Hence, mainly countries that have the size and/or strategic culture to include military operations independent of allies in foreign policy should, e.g. France or UK, should, from a strict realist perspective, be expected to invest in OC. However, many small European states, e.g. Denmark, have declared their intent to acquire OC. This means that either these states either: (1)are prepared to deploy OC integrated in coalitions, e.g. NATO, by sharing information on means and methods; (2) expect major coalition partners, especially the US, to accept their deployment of cyber capabilities without full insight into their means of operation and potential effects; (3) are prepared to deploy OC in a coalition-led operation without prior accept from allies; or (4) are prepared to deploy OC independently, meaning that the nations are prepared to use military force in the cyber domain against opponents without ensuring the support of allies.

While small states may, in theory, use OC as described in the four cases above, in every outcome, such behavior would be in stark contrast to historical use of conventional military means and the general understanding of states' will to intelligence sharing. Neither the US' nor e.g. Denmark's publicly stated intents with OC provide the answers: On the contrary they are each other's mirror image. While the US is very vocal in its strategy documents that it will use OC for deterrence also below the threshold of armed conflict, the US says very little on what role in envisions for allies in this regard. This sharply contrast with the Danish public statements: These are very vague regarding use of OC below the threshold of armed conflict, but very clear on the intent of using them in support of allies, particularly within the framework of NATO.

Hermes de Andrade Junior, Brazilian Army, and Antonio Palma Rosinha, Portuguese Army, Towards an Integrative model of resilience for peacebuilding in anthropocene context

The Anthropocene has been considered a new epoch in which there is the mark of the anthropic in terms of productive activities across the planet, featuring an

acceleration of degradation at a systemic level and many disruptions. The armed forces, permanent institutions that deal with the monopoly of violence, are also propagators of socio-environmental degradation in their activities and in their very mission to ensure and defend. In view of the immense range of disruptions, the armed forces will face a new type of diffuse enemy, which are environmental threats. This proposal aims to add resilience to the peacebuilding literature and show its potential in the integrated response of the different systems or levels of analysis. This approach can find a favorable echo in the study on the levels of complexity of resilience, to mobilize and succeed in situations of unexpected pressure. Integrative modeling works as a lens through which the levels at which risk and vulnerability factors can be addressed are contemplated. This lens supports a holistic understanding of the individual, community or nation factors that can provide a more relevant and integrative perspective on resilience for peacebuilding in an "anthropocenic" context.

Kallio, Ari, Finnish National Defence University, "OVER MY DEAD BODY" Mental resilience in a group under a threat during the war, crises lower than war, and peacetime conditions

The national defense in Finland bases on a comprehensive defense concept. Resilient and brave behavior among all citizens, across all demographics, would gain the robustness of national defense in Finland. The overall objective of this work is to deepen the understanding of the nature of appropriate courage and persistence of a group member in a threatful situation. The objective is pursued by means of three research questions: Primarily this study aims to identify factors in strengthening the individual's persistence to keep on searching for a solution in a highly stressful situation? Second, it strives to understand the nature of courageous action. Finally, the work asks, if the actor's persistence could pro-actively be gained to meet the threat and to contribute coherently one's best. The thesis follows the heritage of military sociology qualitative research by applying a semi-structured interview for Finnish civilians and military persons who have experienced a common threat as a member of a group. The study leans on a theoretical approach, that concentrates on domestic and international studies in the area of military sociology, more precisely on motivation and resilience in the defense and security context. The study identifies that some of the conclusions are debatable to adopt in Finland, while the factors such as national defense solution, military structure, educational system, and cultural background play a significant role. The gap in research concerning the persistence of the individual calls for domestic contribution in the area of resilience.

Kaminskaite, Ausra, General Jonas Žemaitis Lithuania Military Academy, Sociological Perspectives on Lithuanian Security and Defense Policy

The nature of contemporary warfare has changed fundamentally. There are practitioners and analysts working in the field of military and security science (Hoffman, F., Leech J., Frankel M. etc.) who suggested that future conflict will be multi-modal or multi-variant rather than a simple black or white characterization. So, they described it

as a hybrid. A hybrid warfare is a combination of conventional and irregular methods applied simultaneously. So, the methods of the hybrid warfare are wide and mixed. Few methods to mention: cyber-attacks, „fake„ news, disinformation and propaganda, also information war, cyber-attacks, terrorism, illegal migration, organized crime, economic pressure and/or economic manipulations. The aim of those hybrid methods is "to disrupt and disable an enemy without engaging in open hostilities" and to employ all methods simultaneously. In other words, to find a vulnerability of the enemy. The target of the hybrid warfare is the all elements of state power, including critical infrastructure, business, economic systems, social welfare, individuals.

This conference paper focuses on social reflection of only one hybrid method of modern warfare- illegal mass migration. Lithuania facing this hybrid attacks from neighbor state Belarus since June, 2021. May 23, 2021 "Rayner" air company plane following from Athens to Vilnius was forced landed in to the Minsk airport instead of Vilnius; The Byelorussian journalist Roman Protasevich was arrested by the Byelorussian special forces. Lithuania initiated and EU submitted economic and political sanctions against Lukashenka regime. Belorussia started the hybrid warfare against neighbor countries (Lithuania first, then Latvia and Poland). Massive illegal migration was the Belorussian regime response to the EU economic and political sanctions and raises serious security concerns. Recent data of migrant asylum applications indicated that the number of migrant applicants increase from 35 individuals in February to the 1160 person in August. During the May to October, 2021 over the four thousand (4000) illegal migrants crossed the Lithuania border. EU parliament and EU commission declared the illegal migration as hybrid security threat to Lithuania.

Illegal migration brings a threat to the people and governments. Williams, R. (2017) stress that migration can also play a role in facilitating terrorism can became the cause of economic hardship and the increase in competition for scarce resources of various kinds, from jobs to social housing, education, healthcare and transportation and can weaken existing power structures and institutions within countries as well to be a threat for cultural identities and social cohesion. It can cause resentment and hostility. This is very true in case of the small states like Lithuania. There is sensitive data concerning children illegal migrants. The quarter of those migrants is children. About 500 of them are children under 9 years old, 150 children were traveling not accompanied by adults. Lithuania government choose deterrence policy against massive illegal migration however the questions about human rights of migrants and especially children protection there are a question those are still open and needs to be answered.

Kappis, Vassilis (Bill) and Julian Richards, University of Buckingham, Not so Private Anymore: Hybrid Warfare and Private Military Companies

The meteoric rise of private military companies (PMCs) in the 2000s was brought to the fore by the controversial U.S. contractor Blackwater and its role in the aftermath of the 2003 Iraq war. The relatively low-cost, flexible structure of PMCs, as well as the legal vacuum in which they operate, rendered them increasingly useful to governments worldwide, culminating in a proliferation of such entities deployed in high-risk areas.

Initially dedicated to limited security provision, PMCs quickly begun to offer a diverse set of "services," from counterinsurgency to reconnaissance and surveillance, leading analysts to question the continued relevance of conventional armed forces in contemporary conflicts. The advent of hybrid warfare, more recently, meant that conventional military forces would take an even more controversial next step and integrate PMCs in state security doctrines. In this manner, the full spectrum of hybrid warfare options would be made available to policymakers, who could henceforth apply different levels of coercive force seamlessly. By taking a closer look at the case studies of the Russian Wagner group in Crimea and the Turkish Sadat Consultancy in Syria and Libya, the article suggests that far from competing against conventional armies, PMCs are increasingly integrated into state security planning, constituting a core element of hybrid warfare. By lowering the financial and political cost of coercive force application, however, PMCs have an adverse effect on strategic stability, rendering escalation to conventional, full-scale warfare, more likely.

Keess, John, Royal Military College of Canada, Learning to Speak in Armageddon: The Development of a Canadian Strategic Grammar, 1945-1972

For the first half of the twentieth century, Canadian governments maintained a simple military strategy: commit forces to imperial coalitions to extract political benefit. This policy of commitments downloaded operational questions onto local field commanders, who in turn relied on British assistance for equipment, training and doctrine. Such strategic apathy made sense when Canada remained a "fire-proof house," and there was little need to coordinate the operations of geographically dispersed air, sea, and ground commitments.

By the early fifties, however, massive advancements in weapons technology threatened to bring thermonuclear fire to the North American continent. Canadian political leadership made unprecedented peacetime security pledges to alliances like NATO and NORAD – but did so largely along the old lines of commitments, and without a central strategy. Canadian military leadership from all three services struggled to coordinate these dispersed commitments in a strategically coherent manner. With no Canadian tradition of independent military strategy to draw from, uniformed and civilian advisors to government found ways to coordinate commitments using a common strategic language – a remarkable achievement, given Cabinet's reluctance to provide clear direction on strategic priorities.

Kiba, Saya, Komatsu Univeristy Japan, Incentives of the Female Reservists in the Japan Self-Defense Forces

This paper explores what defines the identities of the female reservists of Japan Self-Defense Forces(JSDF) using qualitative data analysis. Unlike other countries, Japan has no legal framework to deploy reservists abroad for peace support operations, capacity building, or humanitarian assistance. The reservists are stand-by forces to prepare for domestic operations, particularly for disaster relief dispatch. There are two

kinds of reservists- "Ready Reserve Personnel" who responds more than 30-day training call-ups a year, and others. Majority belongs to the latter and the main requirement is to attend a five-day training per year with a small monetary allowance. It is obvious that they are not incentivized by the allowance. What are their incentives to keep being reservists? This research particularly focuses on female reservists, who early retired from the service due to marriage and/or pregnancy. As a housewife, how do they negotiate the demands of military service and civilian life.

The paper hypothesize that they are motivated by 1) sympathy to their family members, and 2) sympathy to the younger female soldiers. Most female reservists have at least one family members who is in active duty. Training call-ups relive them their old memories working for the JSDF, which helps them to understand their family members. They also wish to extends their moral support to the younger female soldiers who they meet in their training barracks.

Kitler, Waldemar and Malwina Ewa Kołodziejczak, War Studies University, Poland, Legal and organizational aspects of the functioning of the state in conditions of external threat and in time of war

According to the provisions of the National Security Strategy of the Republic of Poland 2020, "the contemporary security environment is increasingly complex and uncertain. Political, military, economic and social interactions are increasing on the national, regional, and global scale. impact both on the strategy as well as on the main directions of the transformation of the national security system" (National Security Strategy 2020: p. 5). And this, in turn, along with the decomposition of the global and regional order, adversely affects the security environment of Poland. The uncertainty and unpredictability of events are accompanied by changed symptoms and a new shape (domain) of armed conflicts of different intensity, complexity, and duration. The boundaries are blurring, not only between internal and external security, but also between the normal functioning of the state and under martial law or even during the war. Polish law quite precisely regulates the issues of the functioning of the state under conditions of external threats to the state and during the war, but in this context, there are still numerous shortcomings and unexplained administrative and organizational dilemmas. Planning activity is focused on the classical understanding of the issues of the functioning of the state during a conflict in a traditional form. Meanwhile, as shown by contemporary conflicts and events of a political and military nature, the goals of the war are achieved in other ways than before. Thus, the state, its authorities (including public administration), society, economy and individual citizens must also achieve the ability to function in conditions quite different from the classic armed conflict. Those activities are defining as activities below the threshold of war, hybrid or asymmetric activities. However, these activities bring about equally severe human, material and non-material losses, disrupting the state apparatus, its economy, administration and society.

In the face of the problem situation outlined above, a question arises about the contemporary nature and scope of the necessary actions of the state and other entities. In the theory of the problem, as in the legal system, there is no unambiguous

interpretation of war and armed conflict and the mutual relationship between them. Both terms are not defined clearly enough. Due to the fact that there is no single, legal definition of war, it is often difficult to classify certain events or actions unequivocally, because it is difficult to say whether it is war or still an armed conflict. From the perspective of legal science, armed conflict differs from war. The difference is that an armed conflict does not have to be waged between subjects of public international law, and may therefore concern other actors not recognized as subjects, such as: terrorist groups, rebels, armed gangs. Therefore, the aim of the project is to describe the contemporary formal conditions of external threats to state security and armed attack, as well as to define the legal, administrative and organizational aspects of the functioning of the state, its authorities, public administration, national economy, social organizations and citizens in these conditions.

The main research problem is contained in the question: What are the contemporary conditions and nature of the activities of the state, its public authorities, administration, national economy, social organizations and citizens in conditions under the external threat to the state and in time of war? Hypothesis is contained in the supposition that the face of various types of conflicts, and not wars in the international public law meaning, are felt throughout the territory of the state. Those activities bring more or less severe effects in almost all areas of the functioning of the state, its authorities, public administration, the national economy, social organizations and citizens. What is more Preparing the state in the event of an external threat and war, and acting in these conditions cannot follow the classical rules of past wars. Both the literature on the subject and Polish defense law are still dominated by the historically conditioned principle of the priority of securing needs for the (intervention) response system in the defense sphere. This means that due care is taken to human, material and information needs, mainly of the armed forces, but also of other units related to internal security, and entrepreneurs. The above findings result from the content of defense law acts, operational plans and defense programs (programs of non-military defense preparations, improvement of civil defense and mobilization of the economy). On the other hand, less attention is paid to ensuring the survival of the state as a social institution, the survival of the population, not only its rescue on a large scale, and ensuring conditions for its survival, securing material and service needs for the civilian population, ensuring public safety and order, the functioning of local communities and local administration. Therefore, in this research it is assumed that, considering the changed nature of contemporary external threats (security) to the state and armed attack, and, consequently, the nature of the future armed conflict, it will be possible to determine the future conditions and a new nature of the actions of the state, its authorities, public administration, and the national economy, social organizations and citizens under these conditions.

Kolodjejczak, Malwina Ewa, Polish War Studies University, Is it war already? External threat on state and armed attack in terms of international public law.

It would seem that everything about the war has already been written and regulated, but also - in this case - empirically tested. Nothing could be more wrong. After World War II, the International Law Commission decided that since war was illegal, it was useless to deal with regulations that affected it. According to R. Bierzanek, "such views have largely influenced on the development of international humanitarian law of armed conflicts". Hence, it is not surprising that there are terms, which are not accompanied by legal definitions, and factual states are sometimes difficult to unambiguously qualify as legal states. In acts of international law, there are various concepts related to "threat to the state" and "war". However, they are not precise and are not always accompanied by legal definitions. International organizations, let alone states, do not always follow the same nomenclature. This creates a situation in which the lack of a legal definition results in multiple interpretations. Therefore, the author would like to draw attention to the problems arising from the use of the terms: "external threat" and "armed attack", as well as "war", "martial law", and above all "aggression" and "use of force".

Main problem: How does international law regulate (and if at all) the notions of external threat, armed attack, aggression?

Aim: The aim is to identify the norms of international law in relation to external threats, armed assault and aggression.

Hyphothesis: The hypothesis is an assumption that those concepts are not clearly defined, and are understood too broadly. The lack of precision, unanimity and clarity of the law is a problem in this issue. In addition, countries do not agree as to the understanding of individual concepts. Moreover, new threats appear - so far unidentified. Perhaps with regard to war (and armed attack and aggression) it is necessary to revise the definition to include participation as a party (ringleader) non-state actors.

Kosonen, Jarkko and Mira Stenhammar, Army Command, Finland, Social Integrations and Exclusions in Conscription and Conscript Service

Finnish society is developing the model of comprehensive security by developing harmonization of national preparedness principles and guidance preparedness in the various administrative branches as well social cohesion and national security. Armed defence is a remarkable part of National defence and security. Finnish conscription system is under development as a part of comprehensive model. One of the most recognized clashes is the gender equality in the conscription system. Every male Finnish citizen aged 18–60 is liable for conscription and conscript service, and since 1995, it has been an option for women to apply for military service on a voluntary basis. The current conscription system is perceived as discriminatory against men, even though it provides a strong generational experience for each male age cohort. At the same time, the system produces and maintains the exclusion of different target groups. There are a lot of military and security training available for women, but the role of women is still strongly gendered in national defence. Also, the acceptance and integration of different minority groups (immigrants, different ethnicities, sexual minorities, religious or cultural

backgrounds) is considered difficult in many practical cases in conscript training and service. The current social and political debates argue that there should be some type of gender-neutral national service or at least mandatory call-ups for all young people in the future. Extending call-ups to all age cohorts of young people is seen as improving social equality between the genders in the national defence and comprehensive security. The willingness of citizens to commit to national defence and the various duties in the comprehensive security as well as the social structures and societal activities strengthen social resilience and social cohesion in society.

We aim in our current study to understand the experiences of social integration and exclusion of the different minority groups in Finnish conscription and conscription service. We aim to find the solutions, how the conscription system might be experienced to be equal for all citizens and valuable to commit in national defence and its different duties. By identifying the exclusive and integrative factors of conscript service, it is possible to develop the practices, structures and values of the armed forces in a direction of integration and acceptance of different target groups.

Kuemmel, Gerhard, Bundeswehr Center of Military History and Social Sciences, Sandro's Second War: A Soldier's Trauma and its Aftermath

This paper looks on resilience and cohesion from a particular angle. It is less about cohesion and resilience among soldiers of the German Bundeswehr, but on the relationship and the 'cohesion' between the soldierly subject, the military organization and the larger society. The paper provides an analysis of an ego-document, a book, that has been written and published by the German soldier Sandro. In this book, Sandro gives a personal account of his experiences as a German soldier who has been deployed to Afghanistan. His experiences later on resulted in a severe Post-Traumatic Stress Disorder (PTSD) which drastically impacted upon his life. He then goes on to describe the reactions of the military organization, his family and friends and of members of society to his illness. The analysis of this ego-document centers on the notion of a social contract that has been violated by, in particular, the military organization, but also by politics and the larger society which should be taken seriously as Sandro's experiences are not singularized, but shared by many other German soldiers.

Kuula, Jaana, University of Jyvaskyla Finland, The role of WMDs in modern warfare and emergencies

Weapons of mass destruction (WMDs) have been a serious threat since the World Wars I and II. Chemical weapons were taken in large-scale use in the battlefield in World War I, and nuclear weapon was exploited intensively in World War II. Since then, various international agreements were signed for prohibiting the usage, production and storage of nuclear, biological and chemical weapons. This has restrained their exploitation, but not completely ended their manufacturing, testing and use. In all, WMDs cover chemical, biological, radioactive, nuclear and explosive ordnances (CBRNE), toxic industrial chemicals (TICs) and other hazardous materials that are utilized for or

become produced as a side product of industrial, medical or other legitimate processes. Since the World Wars I and II, world politics, military players, societies in general, and the technology basis for common weaponry have changed a lot. It is therefore reasoned to ask, whether the weapons of mass destruction still have a role in modern warfare? Especially, what is the situation and role of chemical, biological and nuclear weapons that were originally developed for different kind of warfare over a hundred years ago? Are WMDs and CBRNE ordnances still a threat, and is this threat going to change somehow? And, if there is a threat, what should we do about it?

This article aims at clarifying the role of WMDs and CBRNE threats in war and civilian emergencies, and identifying measures to mitigate the threat. The article also tries to re-evaluate the concept and content of WMDs, as the technological means for causing mass destruction have evolved since the international agreements for prohibiting WMDs were signed.

Methodological framework: The role of WMDs and CBRNE threats is defined in the article through their influence on and relevance for the potential key players of future wars, other large-scale crises and megatrends of the forthcoming years. Notable trends in this context are, for example, changes in the balance of global power, military and civilian rescue forces, natural resources, climate, military and civilian technologies, as well as culture and behavior of new generations.

Conclusion: The main conclusion of the article is that WMDs and CBRNE threats will remain and societies need to be prepared for them. Potentially also the number and forms of WMDs will increase, as the new electronic, robotic, laser and other high tech weapons will have a technical capability to eliminate efficiently large numbers of human targets. Disasters keep coming and civilian rescue forces along military actors need to take a bigger role in responding them in the national and international level.

Recommendations: The article suggests that international negotiations on diminishing the threat of all kinds of weapons of mass destruction and CBRNE risks would be increased. Also other kinds of mechanisms for responding such emergencies should be improved. Knowledge creation and education for prohibiting and responding to new types of large-scale crises could be started by enhancing education and training for first responders and soldiers. These should include also cross-sectoral and international exercises in responding to future risks.

Labarre, Frederic, Royal Military College of Canada, Neo-Feudalism as conflict framework: Russia vs Ukraine

Feudalism is taken by medievalists as the symptom of the collapse of state authority, but also as a coping mechanism by societies that adapt to answer basic survival needs. So it is simultaneously a feature of lack of cohesion, but also of resilience. This paper argues that stresses such as the collapse of the Soviet Union have created particular sets of relationships - particularly surrounding oligarchs and other public figures - that have shaped international relations and military activity particularly between former Soviet Socialist Republics. This paper will show how the disintegration of the Soviet Union and the eventual stresses caused on Ukraine can be understood as a

function of oligarchic relationships that take advantage of dissolving borders. The case of Russia and Ukraine should be particularly instructive in this regard.

Labutis, Gintaras, Military Academy of Lithuania, Energy Resilience as new perspective in security and defence

The research provides the analysis of the emerging concept of energy resilience that is inseparable from energy security and other closely related aspects such as energy efficiency and protection of critical energy infrastructure. The concept of societal and organizational resilience adopted by NATO's is analyzed in line with energy resilience as the complementary aspect to NATO's approach on energy security. The dilemma of balancing between the energy efficiency and energy resilience requirements provide new insights on energy security and energy assurance. The energy megatrends analysis indicates supporting requirements for energy resilience. The energy resilience assessment and valuation approaches such as the energy resilience management maturity models and scenario based energy resilience assessment is is analyzed and presented in this paper. The research is concluded by better practice cases on energy resilience and recommendations for future research and experimentation.

Labutis,Gintaras, Military Academy of Lithuania, Societal Resilience as a critical capability for enhancing security and defence capabilities

Recently, in response to the global megatrends in security and defence, the small states, including Lithuania analyze the possibilities of developing and implementing new security and defense models based on total defence concepts. The adoption of better practices from advanced total security and defence states can become the challenge as well tested models cannot be applicable small countries. Countries have many noticeable differences, such as the geopolitical situation, population size and population trends, the number of threats to national security and their potential impact (intensity) and likelihood (frequency), the governance model, cultural and religious homogeneity, and as well as the level of public confidence in government. Nevertheless, some of the better practices of the total defence approach are worth analyzing and evaluating. This research provides the results of analysis of proven total defence models with their potential applicability for comprehensive (total) defense models for small states (Lithuania, Latvia, Estonia).

Lahtinen, Samuli, University of Tampere Finland, Levels of Analysis for Military Science and Information Warfare

This study investigates different levels of analysis in military science and information warfare. Russian and Chinese information warfare is based on the reflexive control of causal doxastic logic. Influenced by structural linguistics, cybernetic theory transitioned from purely descriptive elements to assert active control on path-dependency. Lebfevre argued cybernetics could reorient cognition by applying

representations of cognition "filter" to map impulse path-dependency; likewise, RC can be employed as a methodology for understanding choice selection in a particular set of actions. Reflexive control(RC) utilizes political beliefs to develop an autonomous and self-aggravating response to polarize communities by mirroring possibilities of unwanted outcomes. In information warfare doctrine, causal analysis is a critical component in the United States and Norway. This study claims contemporary research on warfare has disregarded 'subject' based ontology of information warfare as reductionist 'object' ontology is easier to incorporate in the military curriculum. Constitutive and causal decision-making chains are mutually exclusive forms of analytical statements that operate in different modal domains. This research claims overemphasis on causal analysis on information warfare hinders the development of response measures and reinforces the feedback-loops: leveraging categorical principles and political beliefs is a key to control path-dependency and social change. This research identifies doxastic logic as an important area of research in information warfare. Scientific research must also incorporate means to investigate doxastic logic and develop scientific analysis on warfare and cyberwarfare; this includes reconciling the constitutive logic of scientific analysis between different levels of analysis. The level of analysis describes the relevant levels of scientific research and how different levels of society influence and impact scientific research.

This study claims that military science must incorporate scientific research in logic and philosophy to understand better the core principles that constitute political beliefs. This study examines how changing the levels of analysis in military science can benefit research in military science in general and clarify the analysis—concluding that research in doxastic logic must increasingly incorporate phenomenology, to understand the impact of experience in information space and visual representation on polarization.

Lampreia, Suzana, Victor Lobo, and Valter Vairinhos, Portuguese Naval Academy, Maritime Cybersecurity Risk Assessment: The Ship Maintenance Databases' Case Study

Nowadays, to decrease the crew, ships are being automated with complex systems. The objective is to minimize navigations costs, risks, and pollution. The operation of equipment and systems on board, is usually controlled and monitored by management software on board the ship itself, but sometimes it may be done also from shore installations. This may lead to an unsafe situation, from a cybersecurity point of view. A cyberattack on the control and monitoring system can put the crew and ship in danger. In this paper, cyber-attack evaluation risk matrix is defined, considering maintenance data from a diesel engine propulsion system of a navy frigate. To obtain that matrix, the occurrence probability, the impact, and the level of exposure to unsafe internal and external interventions was considered. From this matrix the impact significance is computed. (Full paper available)

Last, David, Royal Military College of Canada, Multinational Simulations for Common Security

Many new threats to security call for cooperative responses that challenge traditional thinking about military roles. How do military education organizations develop new thinking? Climate change, survival migration, food insecurity, pandemic response, and cyber-attacks are some of the threats that cannot be addressed unilaterally.

We report on a four-level process to develop and test creative solutions to common security problems through multinational simulations that engage key levels of security education. The process has been developed through iterative practitioner research in military education and is compared to other applications of gaming and simulation. To initiate, problem sets are drawn from international studies (1) and national statements in open literature (2). National staff and academic experts are then surveyed to provide expertise relevant to designing scenarios and solutions (3). The scenarios are used in a simulation at undergraduate level involving national teams from adjacent countries (4). As novice academics, students can work relatively unconstrained with their peers in other countries to pursue superordinate goals. They draw on national staff expertise to address the problems, and this helps to make both students and staff officers more aware of common problems. Scenarios are then resolved in a multinational table-top simulation. Costs and risks can be minimized using video software if infrastructure supports it. At the conclusion of the table-top simulation, student officers develop a common briefing for senior leaders. National staff or mid-career officers at staff college provide mentoring or supervision to improve the quality of the final briefing. Briefing a suitable international forum is a reward for the top participants, publicity for sponsoring organizations, and an opportunity to surface creative solutions to common problems. Multinational simulations can be difficult to mount, but wider awareness of simulation and gaming as pedagogical tools is breaking down some of the barriers. It requires only a few collaborators at each level and in each country to make a multinational simulation feasible, and online simulations are reducing costs and approval barriers.

Lepine, Pierre, James McKay, Kerim Ousman, Royal Military College of Canada, Teaching Geostrategic Analysis for Most Countries.

Geostrategic analysis is not simply a question of examining what has or might occur which is rightly the domain of international relations theory. Nor is it simply the design of public policy to be prepared for any eventuality which of course is a public administration function. Good geostrategic political analysis should seek to combine the examination of what is happening or is likely to happen with policy prescriptions to not only prepare for different eventualities but prepare in such a manner that the result is favourable. Thus, a third essential element, a disciplined and logic-based framework, should be imposed on both the examination as well as the policy development process to achieve the desired results.

To do so, we need to revisit the concepts of geopolitics and geo-strategy in an event-based theory that makes sense of states and non-state actors. Geopolitical events, in the 21stCentury, concern a variety of actors, who might not share the same moral

values and ethics. That is why, to understand the intentions of actors, who make an event to happen or to respond appropriately to their actions, one needs to deconstruct their ethics, norms and values that underpin their decisions and courses of actions. Only then, can one determine the action and such a determination is crucial for the advice to support, oppose, consult, mitigate or not at all react to the event.

The third part of the panel will focus on how this process is taught. To date, there have been two audiences, one being at the undergraduate or junior officer level, and the other at the graduate or senior officer. In the former, the emphasis is placed on how to employ theory within the framework, and in the latter, the emphasis is placed on how to provide advice on what actions should be taken in response to a situation.

Lucena, Rui, Mafalda Carvalho, Cristiano Almeida, Wilson Antunes, Nuno Almeida, Bernardino Veríssimo, Paula Simões, Portuguese Military University Institute, Monitoring risk in CBR Teams: Real-time analysis model.

The development of the physiological models in a military operational context represents a significant challenge, particularly in extreme conditions. One example is the Chemical and Biological Reconnaissance Team (CBRT) from the Portuguese Army. Those militaries are exposed to extreme working conditions, due not only to the dangerous nature of the job (uncertain, hostile environments) but also to the characteristic of their specific wearable and equipment for the accomplishment of their missions, which ultimately leads to a dangerous rise in all vital physiological parameters. In that regard, real-time physiological monitoring with long-range remote access (Mobile Access Point) and its study is extremely relevant to ensure risk analysis, assessment, and management. On our project, we pretend to achieve three concomitant goals – optimization of body sensors, development of models, and real time individual stress diagnosis. For that, this article has the main purpose to identify and apply a primary suitable combination of body sensors and data for characterized risk analysis in real-time and long-range. Herein, we describe a methodology and workflow based on available and used tools and present the preliminary evaluation of a CBRT (n=3) during a simulation exercise where Heart Rate Variability (HRV), and the Rating of Perceived Exertion (RPE; both physical and mental), were recorded simultaneously. Briefly, the results show some interesting differences in the Low-Frequency band (LF) profile, which varies according to the different roles. These changes are indicative of a shift in the sympathovagal balance (LF/HF) towards a more pronounced sympathetic activity.

The present findings are clearly indicative of the possible usage of HRV along with other physiological parameters, not only as real-time evaluation tools of physical and mental operational readiness but also as part of a dynamic model for risk assessment.

Machado, Paulo, Sofia Menezes, Joao Reis, Ana Romao, Portuguese Military University Institute, Military Gender Studies in the Portuguese Military Academy

The topic of gender integration in the Armed Forces is not a recent one, but still, it has not ceased to evoke debate and controversy. By extension, gender perspectives at

military institutions of higher education can also be a matter of contention. Our proposal stems from a Strategic Partnership Project funded by ERASMUS+, entitled Military Gender Studies (MGS Project), which is committed to the study of gender roles in the European military educational system. What motivated this project, and by extension, this presentation, was the observation of an overall lack of knowledge regarding gender topics among the cadets in the partner academies (located in Portugal, Italy, Romania, and Bulgaria). Coupled with this gender illiteracy, we intended to also address the cadets' pervasive disinterest in all matters regarding gender, either for considering gender perspectives to be irrelevant, or for considering that gender equality has already been achieved in Military Academies.

Throughout our presentation we will draw from relevant studies on the topic of gender integration in military institutions, like those helmed by Grazia Scoppio, et. al.; and Helena Carreira, et. al. We will complement these studies by presenting some of our Project's findings, which are revealing concerning the way cadets may perceive gender as part of well-established social structures. During our presentation we will provide anonymous excerpts from questionnaires and interviews with cadets from the Military Academy. Drawing on the collected replies, we will present an analysis on the relationship between cadets at the Portuguese Military Academy and society, through the lens of gender mainstreaming.

Manning, David, International Military Education International Military Education & Training Brings Cross Border Defense Unity & Diversity & Training Brings Cross Border Defense Unity & Diversity

For American security and defense policy foreign military training and cooperation with likeminded democracies is a force multiplier. This paper draws upon real-world experiences of foreign military officers and diplomates chronicled (First Person) in my global arms series which examines the strategic and tactical benefits derived from the United States government's International Military Education and Training (IMET) program and the long-lasting foreign military relationships it fosters around the world. Since the Second World War, the United States government has had, as a deliberate component of its national security policy, the cultivation and maintenance of direct military ties with foreign military establishments. These programs are notably conducted through military and diplomatic exchanges in defense education and training protocols, class seminar, and field applications. Since 1894 more than 14,500 Foreign Defense and Diplomat personal have graduated from US Defense Institutions. International Defense Education and Training builds lasting friendships with interoperability skills and influence. These links allow access to territory, infrastructure, and information sharing as Windows to the World – in a profession of Arms spread in vast networks of friendships. We learn new defense capabilities universally rooted in culture and techniques in which we rely for successful interoperability.

Our defense training institutions define a Common Bond in skill sets that apply to defense power across full geographical spectrum. Defense relationships are built on trust and understanding in the things we have in common. We cultivate these alliance

structures through tolerance and mutual understanding, in its many shades of grey and despite all the divisive politics. Because we can serge lots of things but the one thing, we cannot surge, is trust. These chronicled inputs tell us in the first person how the U.S. military builds professional networks and personal relationships as seen through the eyes of other foreign spirits. Because, as David Last says, if we learn more about where and how military leaders are educated, we are then better placed to shape transnational education to address new and changing threats based on shared evidence. What better platform is there for defense leaders, journeymen, and diplomates, of all stripes to congregate, educate and collaborate on defense tactics, stratagems, and command-and-control systems to better interoperate as a team. We learn who we are from a shared frame of reference in diversity and civil-military societies. We gather a sense of history and geography to better understand because nations views of history differ by its national roots. These historical perspectives reflect our foreign policies in the geopolitics and social & economic conditions of the time. We learn what a liberal (or illiberal) democratic society looks like from the foreign students own geopolitical and social realities. These things are not linear either but are more about learning who we are as a civilization; we learn what to think and how others think about us, culturally, defensively, geopolitically, and strategically. These officers and diplomatic alumni who advance to flag and senior leadership often exercise their long held political and strategic ideolog in governing and military leadership. President El Sisi of Egypt, a US Army War College graduate, rules his nation with a dictating iron hand of rule. Elsie's governing style ideology was outlined in his USAWC theses in 2006. Security has everything to do with economics and economics has everything to do with security. Geography and History has everything to do with both. These are the political and leadership frames of reference in the minds of foreign officer and diplomate graduates, but dependable alliances are paramount to security cooperation. Albeit for keeping dependable allies on board through nurtured flexible relationships through security challenges while balancing values and interest of all nations.

Marcoux, JF, Maxime Rondeau, Robert Osside Institute, Emotional Intelligence for Leaders

Soft skills are increasingly being recognized as key component of the leader's arsenal. Emotional intelligence and its constitutive competencies are generally understood to represent soft skills. In the context of the Canadian military, especially given the ongoing transition to a competency-based model for professional development and personnel assessment, the appeal of a concept like emotional intelligence is easy to explain. This presentation will focus on the inclusion of the concept of emotional intelligence in programs delivered by the Chief Warrant Officer Robert Osside Profession of Arms Institute, the organization responsible for common leadership development in developmental periods 3 through 5 in the NCM corps. Among other things, recent experiences are used to offer insights on the notion of self-awareness as an engine of self-development (especially as it pertains to the core values of transformational leadership) and the possibilities the EQ-i 2.0 tool may offer for NCM professional development through all developmental periods.

Marsili, Marco, Portuguese Military University Institute, Hybrid Warfare: Above or Below the Threshold of Armed Conflict?

The nature of conflict has changed dramatically over the last few decades. Hybrid warfare — also known as grey zone conflict or low-intensity conflict — is a reality and political and military leaders must be ready to confront and deter it. Hybrid warfare is the effort to achieve strategic objectives without using significant force. There is no common definition of the term and therefore it is correspondingly ambiguous. It is an amorphous definition for an amorphous strategy. While it is a blend of traditional and irregular tactics, hybrid warfare makes overt and covert use of a wide range of tools: military and civilian, conventional and unconventional. However, the term is so broad that it includes a set of tactics, techniques, technologies and methods. Hybrid warfare is an umbrella concept that can include, inter alia, information and disinformation operations, deception, troop movements, cyberattacks, sabotage and other non-military tactics or a combination of all these means. It can also include actual force. Hybrid warfare can be considered a form of comprehensive warfare, a strategy, not merely a set of tactics and techniques. This array of military activities may fall under the broad definition of hybrid warfare, that is not new, but is boosted by technological advance. Furthermore, hybrid warfare is low risk, low cost and provides an adversary the opportunity to cloud, throwing doubt on who is responsible for these "gray zone" actions. Hybrid warfare operations, for which it is difficult to attribute responsibility and which are not specifically regulated by international law, fall below the threshold of armed conflict and are convenient to be used to destabilize a government or to try to legitimize (unlawful) actions. Covert operations and support to proxies, such as independentists and secessionists, are facilitated by the nature of hybrid warfare. Hybrid warfare blurs the lines between peace and war and is therefore questioned whether it should be considered below the threshold of armed conflict. Some hybrid warfare operations are convenient because are located in a twilight zone between peace and war and below the threshold of war and therefore they should not trigger a conventional/kinetic military response. Nevertheless, at the 2014 NATO Summit in Wales, the allies recognized that international law applies in cyberspace and that the impact of cyberattacks could be as harmful as a conventional attack. As a result, cyberdefense was recognized as part of NATO's core task of collective defense. At the Warsaw Summit in 2016, the allies took further action to recognize cyberspace as a domain of operations just like the "classic" domains of air, land and sea. At the NATO summit held in Brussels in 2021, the allies reaffirmed that a cyber attack could trigger Article 5 of the Atlantic Charter: "an attack on one is an attack on all". This doctrinal position is of no small importance. The question is whether hybrid warfare should be considered an armed attack or use of force that, under treaty and customary international law, could trigger a military response or whether it falls below the threshold of damage and destruction resulting from a kinetic attack. This work addresses aims to shed light on the constistency of the emerging doctrine on hybrid warfare with current international (humanitarian) law and its possible application.

Martins, Jose and Jose Borges, Portuguese Military University Institute, Framework for Implementing Joint Operations Situational Awareness

This work aims to identify capabilities, services and functions that once applied in the different dimensions and across all operational space of joint operations, can provide to all the forces involved a common operational picture and situational awareness available across all echelons and types of forces involved. We intend to identify capabilities, services and functions and propose a common implementation approach capable of provide both operational picture and situational awareness.

Joint Operations concept, according to US doctrine, requires the employment of two or more Services, from at least two different military units in a single operation. Those operations are military actions conducted by joint forces and Services employed in specified command relationships with each other, composed of significant elements, assigned, or attached, of two or more Military Department operating under a single Joint Forces Command. The employment of Armed Forces to achieve strategic objectives requires coordination with the other dimensions of the instruments of power to advance and defend values and interests, achieve strategic objectives, and conclude operations on favourable terms. Joint operations doctrine on war fighting philosophy and theory is derived from experience and its foundation rests upon the principles of war and the associated fundamentals of joint warfare, described in JP1, Doctrine for the Armed Forces of the United States. These principles and fundamentals apply to both traditional and irregular forms of warfare. Joint doctrine recognises the utility of unity of command and the synergy created by the integration and synchronisation of military operations in time, space, and purpose. Situational awareness requires synchronised and unified actions, narratives, and communication to guide forces to objectives and mission accomplishment. Commanders and staff require not only information to make these decisions but also the knowledge and shared understanding that aid in the wisdom essential to sound decision making. Sharing understanding services and functions are started through collection of data from the original sources or data producers that can be systems, sensors or actors, and process that data to produce information. The next stage is to produce knowledge either by the learning of the individual or by the team in which process by sharing knowledge a common sharing understanding is achieved. The last stage is to extract insights from that sharing understanding using experience and achieving wisdom to support decision process.

Capabilities required for successful joint operations rely on real-time shared situational awareness, amongst all the forces in action, in all operations theatres, in provide Command and Control within a common operational picture and with the decision supporting tools to leverage decision support with timely, accurate and required information, for effective and informed decision processes

Martins, Tolentino, Miguel Pardal, José Borges, Military Academy Research Centre and INESC-ID, Vulnerabilities and risk management model for decision support in the cyber domain

[ABSTRACT]

Mattila, Juha Kai and Simon M. Parkinson, Aalto University Finland, Evaluating Defence
Capabilities – A case study with an impact of troop weapon caliber choice

Defence capabilities are hard to gain and expensive to maintain. Therefore, the decisions concerning defence investments are hard to take. Furthermore, even the best investment may become obsolete when adversary finds an asymmetric way to nullify it's feasibility in battlefield. The process of creating scenarios, assessing military situations, designing system of systems capabilities and wargaming them to see their feasibility in confrontation takes time, expertise, and effort. One wonders if modern computing power, accumulating data and deep neural networks may help in accelerating the evaluation process. Is there a way to automate the evaluation of defence capabilities impact and accelerate the decision making on defence investments? The research assumes a logical process of assessment and evaluation in sequence forming a V-process familiar from system lifecycle management. The hypothesis is defined as a process flow.

The research tests the feasibility of the above hypothesis by creating a logical sequence of assessment functions and running a case study through the logical process. In software development this is called a design and its verification. The use case revisits the recent case of NATO assessing whether they should move from 5.56 caliber troop weapons to over 6 but less than 7.62. The design was divided into sequence of functions aiming to be programmed and developed later. The research run a table-top exercise to verify the feasibility of the design. The use case shows that the defined hypothesis is one valid approach to describe the process of defence capability evaluation (analysis & assessment). The table-top exercise illustrated that design is logically feasible, chosen algorithms are programmable and user interface designs are improving the human-machine cooperation. It remains further to introduce more complex algorithms, big data, and machine learning features to the design.

McTaggart, Matt and Jennifer Scott, Royal Military College of Canada, To put matter into
context: A systems thinking approach to teaching undergraduate science at a military
college

The term "military college" invokes a tension between the seemingly closed, dogmatic nature of military training and the open, iconoclastic nature of academic education. However, when framed in terms of knowledge systems, the apparent conflict gives way to complementarity. Systems thinking explicitly considers a subject with its context intact as a way to gain a better understanding of both the subject under study and the systems of interactions in which it is embedded. As a distinct subset of the society from which they draw, a nation's military constitutes a complex system of cultural, practical, and material knowledge. The general chemistry course at the Royal Military College of Canada (RMC) introduces chemical and molecular approaches to understanding complex systems to first-year science and engineering undergraduate students. By placing chemistry within a military context through in-class examples and

laboratory experiences, we highlight how chemical and military knowledges are mutually supporting, align our educational goals to student career goals, and thereby enhance student motivation and engagement.

To paraphrase a recent editorial, chemical education should aim to map connections between knowledge systems, to situate the molecular sciences in ways relevant to the students' own priorities, and to address global challenges1. Because our first-year chemistry students have all recently volunteered for military service, we are safe to assume that military equipment and operations are relevant to our students' priorities and interests. This common touchstone among our otherwise diverse undergraduate population reduces the uncertainty around the choice of a salient contextual system and gives RMC, and military colleges in general, an advantage for implementing a systems thinking approach compared to their civilian counterparts. A pedagogy that emphasizes the relationships between academic and military systems of knowledge activates two theories of motivation: social identity theory (military-relevant discussions let students feel closer to and more valid in their desired military social identity) and expectancy theory (demonstrating the connection between course material and career goals while also increasing the valence of those goals).

In this talk, we will discuss our use of a highly generative military framework to motivate students towards a deeper understanding of chemical concepts, highlighting how our specific experiences may be generalized to centre the knowledge systems of other academic disciplines.

Meharg, Sarah, Canadian Forces College, The Hard Road to Openness: Military Educators as Co-Constitutors of the PME Learning Journey

A Professional Military Education (PME) learning environment is only partially achieved - or inhibited - by the role of the learner. An oft-overlooked aspect of the learning environment is that of the military educator in their contribution to achieving - or inhibiting - openness and curiosity. This paper examines how the attitudes of military educators can provoke or impede learning, and the roles of such educators in shaping the learning environment to encourage openness and curiosity, the pathways to critical reflection. The strategies used by military educators to equip an officer for unpredictability in future security environments will be explored, as well as the tacit knowledge, skills, and cognitive frameworks used to build the military learning environment. Post-modern pedagogical strategies, their implementation in both traditional classroom and online military education environments, and their effects on the attitude of a military learner will be investigated.

Analysis of the findings from these investigations contributes to a thorough understanding of educator strategies and techniques that compel military learners to adopt a more open and curious approach to learning and to analyze the beliefs and assumptions that educators use to navigate the PME classroom. With a specific focus on the reflective discourse challenges and opportunities unique to online PME delivery, this research presents a novel and timely approach to identifying the relevant skills and

techniques for military educators to achieve a emancipation of thinking in the military learner to best prepare them to confront their security future(s).

This paper draws upon evidence produced by three institutions within the Canadian defence university complex (CMR, RMC, CFC), in combination with data from three additional institutions from defence structures in the UK, US, and the Netherlands. Qualitative and interpretive methods, including content analysis, discourse analysis, ethnography, and 'practice tracing' (Pouliot, 2015: 239), are used to build a multifaceted understanding of the professional, organizational, normative, and practical pressures that shape military educators' understanding of their co-constitutive 'partnership' role with military learners in shaping the PME learning environment.

The identified patterns have immediate implications for the study of PME, contributing to debates about the risks and rewards of including post-modern pedagogical strategies in the PME classroom. Given the rapid transformation of PME both in delivery modes and methods due to the novel coronavirus pandemic, this research provides critical insight into the evolution of the military learning environment as shaped by instructors and their differing roles, backgrounds, and past experiences. Furthermore, the diversity of sources consulted for this study ensures that its findings are applicable beyond a national (Canadian) context, being of great relevance to military leadership, PME practitioners, and social science military educators alike when developing or participating in training programs in preparation to confront the uncertain and unpredictable future security environment.

Messervey, Deanna, Director General Military Personnel Research and Analysis Canada, Military ethics, military justice, and age differences in decision-making

Several high-profile cases of military unethical behaviour appear to have been influenced by heat-of-the-moment thinking. Heat-of-the-moment thinking can result when people feel intense, immediate, and temporary states (e.g., drive states, emotions, and pain) that motivate them to give into their impulses at the expense of acting in accordance with their long term-goals (Berns, Laibson, & Loewenstein, 2007; Loewenstein, 1996). Heat-of-the-moment thinking can be caused by anger (e.g., seeing a fellow soldier being killed in action), disgust (e.g., dehumanizing the enemy by comparing them to animals), fatigue (e.g., interrupted sleep), and sexual arousal (e.g., rape). Like other stressors, heat-of-the-moment thinking impairs people's ability to engage in deliberative effortful thought. To understand how stress impacts ethical decision making, it is important to understand two types of thinking. The first type of thinking is called Type 1 and refers to automatic processing that is intuitive, fast, effortful, does not require controlled attention, and is often below one's level of awareness. The second type of thinking is called Type 2 and refers to processing that is deliberative, generally slow and effortful, linked to a central working-memory (controlled attention), and involves awareness (Evans & Stanovich, 2013). The prefrontal cortex is heavily involved in Type 2 thinking. Of note, the prefrontal cortex does not fully develop until after adolescence. Likewise, brain regions (e.g., anterior cingulate, amygdala, insular cortex) that are essential for anger, disgust, and pain perception are

not fully developed until later adulthood. Taken together, this research may have implications for understanding the ethical behaviour and heat-of-the-moment thinking of younger military personnel. Theoretical implications for the military justice system will be discussed.

Meyer, Eystein, Stavanger University, It's Taiji: The False Dichotomy Between Operations Planning and Design

Design and planning are sometimes presented as two opposites (Zweibelson 2015, Mitchel 2017). While design is described as non-linear, creative, divergent and dynamic, providing the solution to complex, chaotic and ill-structured wicked problems; planning is explained as linear, mechanistic, reductionistic, convergent and static, being a tool to solve simple and complicated problems (ibid). In context of modern military operations environments characterised by complexity and chaos, the design theorists are bashing the US and NATO planning doctrines as outdated and based on archaic 200 years old anachronistic concepts from Clausewitz (ibid). Despite the lack of strategic success in military conflicts this century (Afghanistan, Iraq, Libya, Syria, Sahel, etc.), could the reason be as simple as wrong problem-solving method? If design had been applied instead of planning, would US and NATO have been successful?

This paper will address the question; what scientific approach is required in a military operations problem-solving method, and are parts of the design community right when they claim that planning and design are two opposites? The paper will examine US and NATO operations planning doctrines to determine them as linear or non-linear processes. The argument will be supported by rationality and complexity theory, Kahneman's theory of human psychology (2013), Snowden's Cynfin framework (Kurz 2003), and Ackoff's problem-solving methods (1978). The paper will conclude that the future operating environment for military operations has the primary characteristic of complexity and that the military operations planning method needs to be accordingly. It argues that contemporary US and NATO operations planning doctrines take complexity into account, although their headlines follow a rational choice model. The reason for this is that below the headlines there is room for non-linear processes to unfold. This combination is beneficial in that way since the rational framework is helping the planners to activate what Kahneman calls the "lazy" system 2 that provides deep understanding of the problem, as opposed to the intuitive system 1 that is the primary system that is highly biased and provides heuristics, divergent and lateral thinking. Humans have been the superior species on earth for hundreds of thousands of years due to the functioning of its' brain, coping in a complex environment. Therefore, the most important in the chosen problem-solving method is that there is a balance between the use of system 1 and 2, or yin and yang, and that the balance is based on the type of the unique problem that needs to be solved. Snowden's Cynefin framework and Ackoff's problem-solving methods can be an aid in this regard. This does not mean that the doctrines are dysfunctional, rather that the contemporary problem- solving framework should continue to evolve and offer freedom of choice for the planners in the use of concepts and tools in the process. After all, more important than the headlines and

wording in the doctrines is the competence the planners bring with them into the process.

The design community is wrong in creating a dichotomy between planning and design, they both address the same phenomenon; how to change from a current to a desired situation. Whatever the phenomenon is called, it has to allow freedom for system 1 and discipline the use of system 2, they are like yin and yang, both required for success; it's Taiji.

Michalowski, Thomas, Polish War Studies University, Immigration crisis on Eastern European border- meticulously planned hybrid warfare operation?

It became reasonable to believe today, that external actors are behind immigrational crisis caused by War in Ukraine, as well as political crisis in Belarus. Therefore, people forced to immigrate are not only doing it due to personal reasons such us better life expectancy, but also under influence of artificial process. Caused depopulation of targeted areas not only weakens central government's power on those territories, but also allows new actors to influence those areas and take them under control. On the other hand, supported migration of Belarusian population (both native and influx) to neighbor countries, presents situation unprecedented before. Therefore, this begs to question, how migration can be used as a political tool in hybrid warfare. This article provides an analysis of the origins of migration in the Ukrainian and Belarus territory and its connection to migration flows to the EU via its eastern border. Taking under consideration factors such as: migration genesis, involvement of inside and outside factors/actors as well, the article also explores the possibility of occurrence of connection of this event to hybrid warfare. For that theory proposed by Dr. Viljar Veebel, will be cross-examined with findings of this article, hence evaluation of connection between migration and hybrid warfare will be established. The correlation analysis will be based on second desk research, comparative research as well as quantitative data analysis. Finally, analysis of phenomenon will allow to provide recommendation to EU immigrational policies.

Conducted research allows us to conclude that that, there were external parties involved in migration, what not only influenced both internal situations in Belarus in Ukraine but also affected eastern members of EU. This is mainly a result of evidences upholding thesis of migration engineering and ties it not only to Russia but also regime in Belarus. Eastern European countries, with special emphasis to (i) Lithuania, (ii) Poland and (iii) Germany, will have to look more carefully and in greater detail then before to those events. Mainly it would be caused by importance in determining the true character of debated events and, respond necessary to assess, control and extinguish crisis. The preliminary research allows us to observe that certain aspects of hybrid warfare can be observed in connection discussed events, notably (i) disinformation campaign of Belarusian and Russian regime and (ii) various attempts of destabilization of border areas of EU.

Depending on the situational assessment of the EU and their respectful eastern European governments, the process should not only address immigration crisis, but also

hostile actions conducted towards EU. Taking those under consideration, new policy for EU should be established. One that will not only acknowledge artificial character of events but also emerging of emigrational engineering as a new tool to conduct hybrid warfare. Therefore, institutional unification of EU entities taking part in migration policy making is recommended as well as amplification of cooperation with international partners such us NATO or UN. This action would gain international character and create framework to address this issue with bigger impact.

Michaud, Kathy and Cindy Suurd Ralph, Military Personnel Research and Analysis Canada, Morale and relatedness: Key drivers in reducing psychological distress during COVID-19 deployment

In Spring 2020, Canadian Armed Forces (CAF) personnel was deployed under the rubric of Operation LASER (Op LASER) in response to specific Request for Assistance (RFAs) to provide support to civilian staff battling with the COVID-19 pandemic in long-term care facilities (LTCF) in Ontario and Centres d'hébergement et de soins de longue durée (CHSLD) in Québec. While this operation was rather a unique experience encompassing a variety of stressors such as being exposed to a dangerous and highly contagious virus, it also involved organizational stressors commonly experienced during deployment that can be associated with decreases in psychological well-being and which may be monitored and positively influenced by the CAF. Although many variables may mediate the impact of these potential stressors, it has been suggested that morale and relatedness (i.e., a sense of belonging within the team) may play a fundamental role in this respect. The present study showed that the impact of organizational stressors during Op Laser (e.g., issues related to logistic support, accommodation, communication, leadership) on symptoms of psychological distress were mediated by both morale and relatedness. These findings highlight that morale and relatedness as critical factors maintaining well-being and military effectiveness during deployment.

Milevski, Lucas, Leiden University, NL, Conceptual Resilience versus Social Utility in Strategic Thinking

Ever since the advent of Russian 'hybrid warfare' in Crimea in 2014, the West has been emphasizing resilience and developing concepts and research on issues such as social resilience or deterrence by resilience. Yet another potential form of resilience has not been discussed: conceptual resilience—the resilience of Western strategic thought, concepts, and theories, particularly those relating to Clausewitz's foundational understanding of war. One might conceive social utility, something which can encourage the continuous development of new concepts, to be a potential opposite to conceptual resilience. This paper will explore the dynamic between conceptual resilience and social utility in relation to the faddish strategic thinking of the past thirty years, from the revolution in military affairs to hybrid warfare. Conceptual resilience may be subject to various questions: what is it; how to understand it; why is it important; to whom should it matter? Conceptual resilience should not be misunderstood as conceptual stasis,

where our thinking does not change. Rather, conceptual resilience is instead manifested through systemic thinking, an awareness that Western strategic thought forms (or should form) a coherent system of knowledge, which is negatively affected by ad hoc conceptual fads. A systemic understanding of strategic theory does not necessarily lead to effective strategic practice, but messy strategic thinking certainly is unlikely to do so. Clarity of thought is important not only for scholars and educators, but also practitioners. Yet the social dimension of Western strategy (both in study and in practice) often finds more value in faddish, rather than systemic, thinking. Among practitioners and policy-makers, new concepts may spur action, whether disbursement of defense budgets, rallying complex military organizations, etc. Among scholars, a steady stream of new concepts prompts debates, often including vociferous pushback against novel ideas in ways which re-engage with, and may reconfirm, the Clausewitzian foundation of strategic studies. The social utility of new concepts may be disproportionate to their actual theoretical value in strategic studies as a system of knowledge, or even just for helping to inform actual strategic practice. These two different ways of judging concepts may lead to an insoluble problem: bifurcation between strategic studies (oriented more toward systemic thinking about the conduct of war) and defense (practically oriented and needing to practice defense policy and planning in a highly political, generally peacetime environment). The military is caught in-between: as the main instrument of defense it conducts its business within that sphere but, as the main instrument of strategy in practice, it also pays due attention to strategic studies. Any attempt to mitigate the disadvantages of this bifurcated strategic thinking and discourse should focus on professional military education to prepare those who will be involved in both defense and strategy—not just to speak but truly to understand both languages—including preparation to think not merely conceptually but also systemically about strategy and war and to develop resilience against the inevitable fads within defense.

Mock, Steve, University of Waterloo, National Narratives and Resilience: The ideological Conflict Project and the Body of the Nation: A Cognitive-Affective Theory of National Identity and Territorial Conflict

Identity, ideology and culture are as crucial to understanding changes to relations between states, such as the onset of conflict, as are material factors like power and resources. But so long as the ideas and emotions that compose belief systems are presumed too abstract to track or measure, the causal role of ideological change in international conflict will remain poorly understood. Cognitive-Affective Mapping (CAM) offers a means to treat symbolic attachments as measurable data, representing shared belief systems as networks of emotionally loaded concepts. Illustrating this method, this paper unpacks the significance of a concept frequently central to inter-group conflict: territory. Integrating insights from the cognitive and social sciences, CAM is used to deconstruct how the indivisibility of the "homeland" comes to symbolize the reality of the national group. Loss or partition of territory that a nation deems to be collectively theirs is thus experienced not simply as unjust, but unnatural, triggering a desperation

that can lead to violence and social breakdown otherwise difficult for outsiders to understand.

Mondelice, Mulry, Royal Military College Saint-Jean, Canada between the influence of international human rights law and the civilisation of military justice

The member states of the Council of Europe and NATO share common values, including the protection of human rights and the rule of law. However, in the area of military justice, the solutions provided by Council of Europe member states subject to the control of the European Convention on Human Rights by the Court of Human Rights differ from those of Canada. Although this is an area that requires caution because of the principle of state sovereignty, and because the state is not a party to this convention, the common values shared by the member states of the two international organisations mentioned above invite us to question the Canadian approach to military justice with respect to the standards of international law relating to the right to a fair trial, which is at the heart of the requirements of the rule of law. In light of the standards protecting the right to a judge under international law, to what extent could the principles identified by the European Court of Human Rights be used in Canada's efforts to improve the administration of military justice and inspire a more protective interpretation of rights by the competent domestic courts?

This bilingual paper is based on an article published in the Quebec Journal of International Law on 'the contribution of the European Convention on Human Rights to the management of military justice (...)'. Adopting an approach centred on the need for legal coherence, it will explore how international human rights law and the Canadian Charter of Rights and Freedoms should inspire the protection of the right to a judge in matters of military justice by ensuring a balance between the State's quest for troop effectiveness and the protection of the rights and freedoms of those subject to trial as a useful element of public confidence in the institutions of the Canadian State. On the other hand, it intends to take a critical look at the influence of international human rights law in Canada to show how Canada's position on military justice contrasts with the standards set by international law referred to by the European Court of Human Rights, which nevertheless influences Canadian human rights jurisprudence. Indeed, the member states of the Council of Europe are certainly struggling to provide a framework for military justice in the event of rights violations in the context of military operations abroad under a NATO or UN mandate. However, these States, which are subject to the control of the European Court of Human Rights, are evolving in a dual dynamic of humanisation and civilisation of military justice inspired by international law, offering guarantees of independence and impartiality that could inspire action for a better administration of military justice by Canada.

Morgado, Jose A. Passos and Joao Vieira Caetano, Portuguese Military University Institute, Facing the Carbon Neutrality and Climate changes in the Military Aeronautical Sector through Green Fuels and Experimental Testing in Portugal

Several studies identify green-house gases as the main responsible for the climate changes undergone over the last years, especially in terms of global warming and its underlying effects. In fact, some studies reiterate that the green-house gases have been the main drivers of the increase of the global temperature of about 1ºC, while forecasting an increase of the average World temperature of about 1.5 to 3ºC by 2050, and 4 to 8ºC by 2100 should the emissions not be reduced (Wilson, 2016; Laurent 2021; Figures & Rivett-Carnac, 2020). Carbon neutrality was set as a global goal to be achieved in the upcoming decades. As signed by many of the world's nations, the Paris Agreement sets the ground and main mid-term targets to be able to reach carbon neutrality. While these goals are already foreseen and planned for some sectors of the economy, the military aeronautical sector, which is heavily dependent on fossil fuels for performance, range and effectiveness, struggles to meet the ecological requirements. Among the main factors for this lack in ecological adoption are: i) fossil fuel gathers about 35 times more energy density per weight than the best electrical energy storage, e.g., battery; ii) the total mass of fuel in an aircraft ranges between 20 and 40% of the total aircraft mass, which, in the case of fossil fuel, is consumed during flight, which is in stark contrast with batteries for the known reasons (Gates, 2021). As a result, while, on the one hand military aircraft should abide by general regulation and international agreements; on the other hand, the need for fast, safe and super-performing aircraft as delayed the introduction of electro—, carbon-free— and bio-fuels, as well as, hydrogen and other innovative propulsion methods – which will be designated as green fuels in the remainder of the article.Bringing these innovative developments to aircraft requires development, ground testing and a multitude of flight tests, which, must executed on specific, certified test centres, which are almost inexistent in Europe. Hence, in a European and NATO context, it becomes strategic to create and certify test centres which provide the safety and technological requirements for the execution of such experimental testing with green fuels. At first glance this might seem as an impossible feat; nevertheless, aspects like the digitalization of aircraft, the proliferation of unmanned aircraft systems and the shift in the perception of aircraft requisites for the future of war, allow for the development and testing of the new propellant systems to be initially tested on board of such aircraft. When compared to the other European Countries, Portugal's size, geographical location, airspace configuration and relatively low air traffic are recognized as outstanding for the creation of technological test centres for the testing of military aeronautical technologies in Europe. In this article, the authors provide an essay on the strategic placement of Portugal to provide and facilitate a resilient and cohesion-ready approach towards the testing of new and disruptive technologies for military aircraft, with a particular focus on green propulsion methods

Najafov, Zafar Nuri, Military Academy of the Armed Forces, Azerbaijan, The Second Karabakh War as a Type of the 5th Generation War.

During the Second Karabakh War the Azerbaijani Armed Forces carried out military operations typical of modern wars. On that war the Azerbaijani Army based on the practice of conventional warfare enriched it with the preference for high-precision

weapons, "vertical strike" tactics (the role of drones in deciding the fate of the battle), which are considered new elements of asymmetric warfare, and the application of "indirect action strategy".

According to the analysis, the conventional features observed in the Second Karabakh War (the classic interstate Armenian-Azerbaijani conflict, the attack on legitimate military facilities by the Azerbaijani Armed Forces, as well as the maneuvering war, etc.) call it the "third generation"; "fifth generation" - for the application of modern technologies - drones and high-precision weapons; unable to withstand the classic military power of Azerbaijan, Armenia launches rockets at civilian settlements (hitting illegitimate objects) in order to create chaos and panic among civilians in Azerbaijan, expand the theater of military operations with acts of terror and unrestricted violence, as well as attempts to take advantage of the violent and provocative activities of non-state actors (involvement of terrorists) can be characterized as a "fourth generation war" (irregular war).

Azerbaijan's victory was achieved due to the professionally use of kinetic and non-kinetic capabilities and "vertical strike" tactics. İn Karabakh we saw a new type of combat in which robotics, remotely controlled equipment and precision weapons play an important role. At the same time, the impact of this war on the armaments programs and defense spending of major powers is undeniable. The Pentagon is also seriously analyzing the successful military tactics of the Azerbaijani Army in Karabakh. According to the Chief of Staff of the US Army, General James Charles McConville, "The active use of unmanned aerial vehicles (UAV) in Karabakh has highlighted the importance of improving the US Army, especially the Air Defense System. The battles in Karabakh and the battles in other places indicate that in future wars we will face deadly UAVs". Thus, the historic victory of the Azerbaijani Army in the Second Karabakh War allows us to draw a number of conclusions. Azerbaijan's military experience in the Second Karabakh War forced large states to improve their air defense systems and increase defense spending. In modern wars, drones will put an end to the air hegemony of large states, create conditions for smaller countries to master the most modern military equipment. The successful use of drones in the Second Karabakh War will open a new page in the activities of military-industrial complexes, increase the demand for Turkish and Israeli weapons in this direction. In general, the brilliant military victory of Azerbaijan in the Second Karabakh War is a testament to the military tactics and operational art and conditions, military strategies in both developing and powerful countries.

Nokipi, Ville, Finnish Defence Forces, Key logistics trends up to 2040 and their impact on Host Nation Support Logistics

The concept of host nation support (HNS) refers to the civil and military assistance rendered in peacetime, emergencies, crisis and conflict by a Host Nation (HN) to allied forces and organisations, which are located on, operating in or transiting through the HN's territory, territorial waters or airspace. Most of the HNS services are produced via arrangements provided by the civil and commercial sectors to the sending nation's units. In the 2020s, logistics support structures derive from a combination of

civilian contractors, governmental institutions and/or the HN's military component. Consequently, the maturity of the support correlates with the HN's logistics capabilities. When we look to the future, the operating environment is constantly changing, as is the surrounding society. Supply chains and logistics structures adapt to consumers' needs. Within this emerging cycle, the existing megatrends underline the ways in which situations develop. These drivers change the logistics capabilities of the HN in such a way that it impacts the actual capability of the HNS.

The aim of the study is to research the trends that will affect the operational environment in the next 20 years from the logistics point of view. This entails focusing on the logistics trends that have an interactive relationship between civilian society and the HN's military organisation. The study adopts a qualitative approach. The theoretical framework links together future studies and military sciences. The trend analysis is based on the results of a literature review. The possible trends analysis drawn from the literature review results is conducted using the PMESII framework. These results are then reviewed with a semi-structured survey. The integrated results are presented through the PMESII dimensions.

Conclusion. Emerging technologies, such as autonomous transportation vehicles or blockchain technology for payments may increase the vulnerability of supply chains. Multinational supply chains are vital links in every nation's ability to provide HNS. In this kind of environment, a great deal depends on the supply chain managers.

Recommendations: The analysis of logistics trends should be a continuous process that is constantly maintained. Artificial intelligence in combination with other automated foresight tools will help to identify the change agents more easily, but there is still room for analyses conducted by humans. Weak signals and wild cards in particular should be identified and analysed more efficiently.

Papler, Peter, Slovenian Navy, Game Theory as tool for strategy evaluation

Background: Cold old War is over and not cycles of War, Peace, War; but simultaneously War and Peace is reality today. You have to compete and cooperate in the same time. The European Union (EU) Common Security and Defence Policy (CSPD) inform Strategic Compass (SC) and as result approach to operations abroad, level of ambition as well as forces required will be described. Does contemporary EU paradigm and understanding war do pace rhythm of modern world complexity? Article will examine SC baskets; Crisis Management, Resilience, Partnership and Capabilities; through strategy layers.

Methods: Game Theory describes basic model and principle of co-opetitive structures. Co-opetition occurs both at inter-organizational (EU, NATO, USA, Russia, China) or intra-organizational (EU Member States) levels. Game theory analyzes interplay between competition and cooperation. Players, Added Values, Rules, Tactics and Scope (PARTS) are layers used for EU strategy analysis.

Results: Unlike war in cold war era and sports, wars after 2001 are less about winning and losing. Nor is it about how well you conduct war (play the game). Armies can succeed spectacularly without requiring others to fail (Azerbaijan, Armenia).

Moreover, they can fail miserably (USA and NATO in Afghanistan) no matter how well they play if they make the mistake of playing the wrong game. Successful EU SV is about shaping the game EU play, not just playing the game EU find. Changing the game is hard. Findings of research shows that EU fall in mental trap to think EU have to accept the game. Just realizing that EU can change is crucial. There is more work to be done, but it is far more rewarding for EU to be game maker than game taker. The next fining is that EU (and USA) thinks that changing the game must come at the expense of the others. Such thinking lead to an embattled mind-set that couses EU (and USA) to miss win-win opportunities. The EU (and USA) co-opetition mind-set looking for both win-win and win – lose strategies – is far more rewarding. Another EU SC related finding is that EU believes that EU have to find something to do that others cannot. When WU do come up with a way to change the game, accept that EU actions might well be imitated. Being unique is not prerequisite for success. Fourth EU SC related finding is that EU failing to think methodically about changing the game. Players as EU Member States in inter-organizational levels as well as NATO, EU, USA, Russia and China in intra-organizational levels and their Added Values, Tactics, Rules and Scope of the game. The fifth finding is failing to see the whole game. What you don't see, you can't change. From Member States cooperation on development area several advantages can be foreseen, as cost reductions, resources complementarily and technological transfer. Some difficulties also exist, as distribution of control, burden sharing and taken risks. Member states (e.g. FRA, POL) Tactics are actions (Strategic Autonomy, Three Seas Initiative) to shape other players perceptions. Recognizing links between intra and inter-organizational games is essential.

Conclusions: Using PARTS as a comprehensive game theory based set of layers helps generate/evaluate strategies.

Relevance: Findings will inform EU SC development as well as NATO 2030 Strategic Concept building process.

Parenteau, Danic, Royal Military College Saint-Jean, Between a distinct military culture and the need for openness: learning civil-military relations for officer cadets at military academies

Evolving on the margins of civilian society, the military profession tends to distinguish itself by an organizational culture and a specific professional identity that is relatively hermetic (Boëne, 1990; Bardiès, 2011; Soeters 2018). Based on identity markers that are partly conditioned by the effect of demarcation from civilian culture, or, alternatively, based on traditions forged within its own distinct institutional heritage, the military profession has its own symbols, codes and customs. This cultural distinction may vary from one country to another, marked by a more or less pronounced departure from the dominant values of civil society, but it appears relatively universal, at least in liberal democracies.

In recent times, dynamics are being observed throughout the West that tend to reduce this cultural distinction of the Armed Forces. This is expressed, among other things, in the form of pressures exerted by the civil power for the military institution to

open up more to certain social realities that affect the rest of civil society. There is a demand for the Military to be more welcoming of ethno-cultural diversity, which affects the more homogeneous culture that has dominated the majority of the Armed Forces in the West until now. Like other public institutions, the Armed Forces are called upon to combat some of the unconscious biases and prejudices that have the effect of placing certain minorities at a primary disadvantage, following the example of how other civilian organizations are now addressing these issues. The Armed Forces must become more reflective of the values of inclusiveness that are increasingly prevalent throughout Western societies, implicitly demanding that they give up some of the distinctiveness of their organizational culture and professional identity.

This reflection addresses the dialectic between the tendency for cultural distinction that generally characterizes the Armed Forces in the West from the dominant culture in civilian society and the contemporary social and political pressures that have the effect of attenuating it, from the perspective of training an officer cadet. This paper's objective is a reflection on how to familiarize officer cadets with the challenge posed by this social dialectic. This reflection will address the relationship between the civilian power and the Armed Forces, the role of military academies in the cultural changes within the Armed Forces, the role of officers in these cultural changes, the reasons for the cultural specificity of the Armed Forces with regard to the fundamental mission entrusted to them by the civilian power, as well as the necessary bond of trust that must exist between the Armed Forces and the civilian society.

Parreira, Rita, Portuguese Military University Institute, The Influence of Ideological Extremism in the Armed Forces

Throughout Europe, there has been an increase in the attempt to infiltrate extremist ideologies into various organizations and institutions, namely in the Armed Forces, as a source of recruitment of qualified, trained elements with potential access to material, weapons and explosives. Since the threat of extremist ideologies should not be underestimated, it is the Armed Forces responsibility, as a contributing actor to National Security and Defense, to understand how they are susceptible to enticement or attempted affiliation. Understand the relationships between extremism, the military element, and the Armed Forces themselves, by identifying individual and organizational vulnerabilities and susceptibilities, allows for the possibility of early intervention in recognizing indicators of radicalization and recruitment. At the same time, it is possible to highlight even more the relevance of the subject under analysis, due to the increase in extremist ideological movements, which threaten National Security and Defense and represent, in general, one of the most pressing and transversal contemporary problems of the International Community. The Armed Forces, due to the missions and responsibilities that are legally assigned to them, are important assets as instruments of the National Security and Defense, constituting one of the vectors that guarantee not only the integrity of the State, but also the guarantee of the rights and freedoms of citizens. Since the Armed Forces are a key element in the established National Security and Defense system, they must have mechanisms designed to protect the military and

the Organization from infiltration and abuse of ideological extremism. In this context, it is important to understand the risks to which they are subjected and recognize potential factors of exploitation of these extremist ideologies, as sources of susceptibility.

This study aims to propose contributions not only for the mitigation of this threat, but also for the early identification of this phenomenon. To this end, a deductive reasoning methodology was used, based on a qualitative research strategy and on a case study research design, carried out not only through document analysis, but also through interviews with experts and entities with relevance in the subject matter.

This research sought to understand the potential vulnerability factors to be exploited by extremist movements, to identify gaps in current mitigation measures, creating the necessary conditions for recommendations aimed primarily at enhancing their effectiveness in reducing the risk of grooming and radicalization. Thus, it was possible to conclude that the Portuguese Armed Forces have the necessary capabilities to mitigate these threats, and that the implementation of the recommendations could make this structure more efficient.

Patch, David, Iris Koch, Jacob Zachariah, Kela Weber, Environmental Sciences Group, Royal Military College of Canada, Comparison and Characterization of Eight in situ Chemical Methods to Synthesize Silver and Copper Treated Cotton Textiles

Metal particles, such as silver and copper, are often incorporated into commercial textiles to take advantage of their antibacterial and antiviral properties. These metal-incorporated textiles, often referred to as 'high performance' textiles, are used in a variety of applications including medical, athletic, and military. The antimicrobial nature of the metals can extend the active use duration of textiles without concerns of odor, skin irritation, or fungal infection. In this study, eight different methods were investigated to synthesize silver, copper, and silver/copper functionalized cotton textiles. Using silver and copper nitrate as precursors, the methods examined the use of different reagents to initiate/catalyze the reaction, including: (1) no additive, (2) sodium bicarbonate), (3) green tea, (4) sodium hydroxide, (5) ammonia, (6,7) sodium hydroxide/ammonia in different ratios, and (8) sodium borohydride. The use of sodium bicarbonate as a reagent to reduce silver onto cotton has not been used previously in literature and was compared to established methods. All synthesis methods were performed at 800C for one hour following textile addition. The resulting textiles were characterized by x-ray fluorescence (XRF) analysis for quantitative determination of the metal content and X-ray absorption near edge structure (XANES) analysis for silver and copper speciation on the textile. Scanning electron microscopy (SEM) with energy dispersive x-ray (EDX), size distribution inductively coupled plasma mass spectrometry (ICP-MS), and dynamic light scattering (DLS) were used to further characterize the products of the sodium bicarbonate, sodium hydroxide, and sodium borohydride synthesis methods following ashing of the textile. For the silver treatment methods (1 mM Ag+), sodium bicarbonate and sodium hydroxide resulted in the highest amounts of silver on the textile (8900 mg Ag/kg textile and 7600 mg Ag/kg textile) and for copper treatment (1 mM Cu+) the sodium hydroxide and sodium hydroxide/ammonium

hydroxide resulted in the highest amounts of copper on the textile (3800 mg Ag/kg textile and 2500 mg Ag/kg textile). The sodium bicarbonate and sodium borohydride methods were the only two methods that resulted in formation of metallic silver in both the silver and combined silver/copper treatments. Formation of copper oxide was dependent on the pH of the solution, with 4 mM ammonia and other high pH solutions resulting in the majority of the copper on the textile existing as copper oxide, with smaller amounts of ionic-bound copper. The results of this study will allow for the generation of high-performance metal-treated textiles suitable for a variety of applications.

Pay, Heather, Royal Military College of Canada, Exploring Mental Health Treatment Seeking Behaviors Among Canadian Armed Forces Personnel

The Canadian Armed Forces (CAF) pride itself on its members and the ability to sustain a fighting force that is prepared and willing to serve national interests worldwide. When members of the military are exposed to trauma or dangerous situations injuries both mental and physical can occur. The attitudes and behavior that encourage our members from coming forward for assistance demonstrate that there is a level of resilience and understanding that there is an importance in maintaining unit functionality. Gaining a greater understanding of what is preventing members of the CAF to come forward for help when needed forms the basis for this research. While members of the CAF cannot simply stop working, employment and subsequent mental health care can be improved with some directed interventions. CAF members would seek mental health care with the removal of barriers such as stigma, fear of loss of career or career limiting employment limitations, increased mental health knowledge, addition of more alternative resources and a supportive and knowledgeable chain of command.

Methods: Literature between the years of 2015 and 2020 were reviewed using the search terms: health seeking behavior, treatment seeking behavior, barriers to health seeking. The search was further refined by eliminating any research that did not deal with military and specifically mental health any PhD dissertations and/or concept papers.

Results: The resultant literature focused on the following topics; usage and state of mental health services, enablers to treatment seeking, barriers to treatment seeking, finally, factors that both contributed to and deterred treatment seeking.

Discussion: Policies governing service in concert with efforts and investments in mental health care have meant that the once inflexible system has evolved to ensure that members' are given the opportunity to remain active in the CAF. Due to these, unit commanding officers have some flexibility to maintain operational requirements while ensuring members recover from physical or mental injuries. When mental health literacy improves, the attitude of military personnel also improved with respect to mental health conditions. These attitudes towards mental health encouraged treatment seeking. An emphasis on the benefits of treatment may be more powerful in encouraging treatment seeking than attempts to reduce negative perceptions of treatment. There is

contradictory data as to whether stigma is a barrier or an enabler to treatment seeking. The review identified that while stigma may not be present before treatment seeking, when a member meets stigma after treatment seeking they are less likely to continue with treatment. Embracing a whole family (member, family, clinical staff, chain of command) approach to health care delivery is entirely dependent on leadership's ability to embrace a positive attitude to any form of medical problems. Fear surrounding disclosure remains a problem and would indicate that members and the system are not prepared to act in concert for recovery. Increasing the education and mental health knowledge of military leaders could serve to increase the attitude and open the door to disclosure between member and chain of command.

Polozzi, Cecilia and Nicholas A. Dudek, CRT Working Group, 4th Generation Warfare: An Analysis of Child Recruitment and Use as A Salafi-Jihadi Doctrine of War

It is axiomatic that armed conflict constitutes one of the primary drivers of terrorism. Fragile and conflict affected states are highly prone to it. Internal struggles, protracted violence and abysmal chaos debilitate governmental institutions, exacerbate pre-existent frailties and create a power vacuum that violent extremist organizations exploit to establish safe havens, attract pools of recruits into the orbit of global jihad and advance their agenda. The development of terrorism has been progressively characterized by the involvement of children. Terrorist organizations evolve continuously and dynamically and the recruitment and use of children is part of the very same developmental trajectory. Ultimately, in the 4th Generation Warfare, children have become a tool of a new doctrine of war. A terrorism and crime trend representing a fast-evolving component of Salafi-jihadi tactic and strategy and a core overarching pattern in the rise of extremism, globally.

As part of the ongoing effort to understand the causes, motivations and factors driving the exploitation of children in terrorism, the ambition of this Chapter is twofold: To investigate the causal complexities between the recruitment and use of children as part of Salafi-jihadist groups strategy of war and the dynamics of armed conflicts in which it manifests; To provide new theoretical insights into the drivers and patterns of terrorist´s behavior punctuating the recruitment and use of children.

By adopting a multi-layered, interdisciplinary approach and relying on a set of different methods, both qualitative and quantitative for the collection of data, this Chapter will evaluate the exploitation of children in terrorism as a tactic of modern war. It will depart from the recognition of armed conflict as one pre-existing enabler to the recruitment and use of children by terrorist actors and proceed to analyze the rationale of this phenomenon against the short and long term purposes of Salafi-jihadist groups. It will examine existing preliminary models concerning variations in terrorist groups´ behavior and seek to formulate hypothesis anticipating the otherwise seemingly impromptu, non-linear recruitment and use of children.

Quadros, Theresa, Royal Military College of Canada, Canada's Feminist Foreign Policy & the Treaty on the Prohibition of Nuclear Weapons

The Liberal Government of Canada under Justin Trudeau has claimed to be in the process of developing a feminist foreign policy (FFP) and has worked towards actions to implement frameworks that support and advance feminine experiences in foreign and defence policy. However, while officials have stated that Canada already has a feminist foreign policy, there has yet to be official documents outlining Canada's values, approaches, and commitments to a FFP doctrine. Indeed, a true FFP must address the violent capability of patriarchal policies and pose alternative forms to global security. This paper will focus on the Canadian government's opposition to the 2017 United Nations Treaty on the Prohibition of Nuclear Weapons (TPNW), which has been acknowledged as the first nuclear ban treaty to use a feminist lens in conversations about disarmament.

A genuine FFP would initiate a review and revision of foreign and defense policies, starting with Canada's complicated relationship with strategic dependence, through security alliances with NATO and with the United States, on nuclear weapons, and question whether a feminist foreign policy is compatible with NATO's traditional perspective on collective security. Nuclear structures are only maintained in the current international system due to the internalized realist rhetoric of the Permanent Members who sit on the Security Council and possess nuclear weapons under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The P5 regard the NPT not as an agreement for eventual and complete disarmament, but rather as a verification of their right to maintain their arsenals while simultaneously denying them to all other countries, thus establishing an inherent power imbalance in the security sphere. Thus, the TPNW can be regarded as a challenge of the status quo of patriarchal values, challenging the realist idea that strength is only secured through domination. Rather the TPNW provides an opportunity for collaboration, to redefine new approaches for security through peaceful politics. By opposing the Ban Treaty, the Canadian government has been insincere to its commitment towards implementing a feminist foreign policy and needs to move towards supporting the obligations found in the TPNW for humanitarian assistance and environmental stewardship through international cooperation.

Razma, Gintautas, Military Academy of Lithuania, Strategic Design for Defense Analysis: A Structural-Functionalist Interpretation

Recently defence dimension issues, especially the discipline of defence studies, has drawn great attention in political science. Deschaux-Dutard (2020), Galbreath and Deni (2018), Soeters, Shields, and Rietjens (2014) are only a few recent publications on defence studies. It could be regarded as an intellectual response to the greater need to explore and understand the ways and strategies how to deal with contemporary defence challenges in the face of the new forms of disruption. On the other hand, it can also be regarded as a call for scholars to put greater effort to bring together scientific knowledge with practical application in the field of defence. For this reason, the search for a coherent strategic design to structuralize the reality of the "defence world" is a prosperous direction for research.

Although the strategic design is widely used in business, management, and economics (Holston 2011), there is a clear need to extend this approach to defence issues as well (Kingdon 2011). Strategic design is a conceptual idea and at the same time an approach, based on the premise that design must be developed by re- engaging existing different structures coherently (Hill 2012). In other words, the strategic design seeks to cope with the "dark matter" of subject matter by establishing a reasonable structural-functional framework. In political science, the "dark matter" of defence is usually attributed to "black box" issues. And recently, scholars Henrik Breitenbauch and André Ken Jakobsson (2018), in the opening article in a special issue of "Defence Studies", has made a clear call to tackle these "black box" issues from the structural-functionalist perspective. Moreover, the authors proposed tools – the concept of "strategic facts", and a source of intellectual inspiration – the teachings of Émile Durkheim's ([1895] 1982). Thus, in this research, these suggestions are being followed to slightly open up the "black box" processes of defence.

In a recent study, it was argued that defence studies encompass the fields of political science, management and warfare as science and as military practice (Razma, n.d.). In other words, the defence issues are naturally interdisciplinary (Galbreath and Deni 2018). To address this complexity, it has been suggested to embrace the notion that "defence as politics", "defence as strategic management" and "defence as warfighting" have their own dynamics and are agglomerations of "strategic facts" in defence matters (Razma, n.d.). This second study strongly emphasizes the interpretation of the "defence as strategic management" agglomeration with the clear intent of opening up the structural-functional nature of "strategic facts" in this area. Finally, combining the results of both studies, a strategic design framework for defence analysis is proposed. In addition, it is argued that the proposed strategic design for defence analysis also can be applied to a wider range of practical applications to various defence challenges, including the new forms of disruption.

Rickberg, Merit, Mari-Liis Madisson, Sten Hansson, Andreas Vensel, University of Tartu, Building Resilience against Hostile Information Influence Activities: Lessons from developing a new media literacy learning platform for the Estonian defence forces

Modern societies are characterised by unprecedently broad and fast diffusion of various forms of false and harmful information. Military personnel's motivation to defend their country may be harmed by their exposure to disinformation. Therefore, specific education and training programmes should be devised for the military to systematically improve media literacy and build resilience against information influence activities. We present the lessons learned from developing a new media literacy learning platform tailored to the needs of the Estonian defence forces in 2021. The online learning platform covers four topics: disinformation, polarisation, discrediting opponents, and social media bots. These topics are explicitly addressed in the context of national defence. The platform combines tests, case studies, and practical tasks to support multifaceted learning experience. While general media literacy is increasingly included in school curricula, we argue that developing learning materials specifically for

the defence forces is necessary in highly mediatised societies where military personnel face the challenges posed by hostile influence activities.

Rodrigues, Sandra, and Cristina Fachada, Portuguese Military University Institute, Just Culture In The Portuguese Air Force

Historically, accidents are often preceded by incidents, and/or by "predictable/foreseeable" failures in systems and insufficiencies in safety, appearing more effective to enhance the Culture of safety, preventive and predictive systems, based on an approach of Just Culture, in detriment of purely reactive ones. Additionally, complex, technologically avant-garde systems, present in high-risk sectors, such as aviation in general, and the military in particular, have led Organizations such as the Air Force (AF) to increasingly invest in their safety policy as shown by the recent implementation of Just Culture. This investigation, with the objective of "Providing contributions to optimize the implementation of Just Culture in the AF Safety Culture", was guided by an inductive reasoning, a quantitative investigation strategy with qualitative reinforcement and a case study research design, and it was based on data: from a questionnaire to 22 officers of the intermediate leadership structures of the AF; from semi-structured interviews to five entities of the superior structure of the AF and two of national counterparts; from literature review of two international counterparts. From the results, it was concluded that the optimization of Just Culture in AF is associated by the use of four innovative approaches to this "crises" management, namely measures (normative, education/training, internal and external communication and feedback), operationalized in associated lines of action.

Roennfeldt, Carsten, Bjørn-Anders Reutz and Daniel Helgesen (Norwegian Defence University College/Norwegian Military Academy) "Matrix game MONUSCO"

This article forms part of the Norwegian Defence University College's broader research and development project to explore the utilities and potentials of a wide range of wargames and military exercises. Here, we focus on a particular matrix game and demonstrate how the Norwegian Military Academy uses it to develop the cadets' strategic mindsets in such games. Central in this effort is a strategic-bridge model, which is compatible with NATO's "ends, ways and means"-approach to planning and is informed by Daniel Kahneman's seminal work on intuitive and analytical thinking. We argue cadets gain professionally relevant experiences by repeatedly applying theoretical knowledge to solve the practical problems matrix games generate. Moreover, they familiarize cadets with chance, uncertainty, and other inherent features of the military profession. Preliminary evaluations indicate matrix games can offer a valuable educational method to achieve learning outcomes in professional military education and suggest it can be relevant in other professional studies as well.

Roennfeldt, Carsten, Norwegian Defence University College, Introducing Cadets to International Relations

How shall we introduce cadets at bachelor level to the academic field of International Relations in a manner relevant to the military profession? This is a key question we set out to answer in Sookermany (Ed.) (2022) Military Handbook of Military Sciences. Springer Cham. We suggest unfolding how concepts like states, security, and power means different things depending on which IR approach cadets used to make sense of international affairs. More specifically we explore the concepts from the perspectives of Realism, Liberalism, Social Constructivism and Poststructuralism. We put these theories and approach in context by sketching out how they emerged from different major debates during the field's 100 years history - more specifically, the debate between Idealists and Realists in the 1940; between Traditionalists and Scientists in the 1960; between three major IR-paradigms in the 1970s, and between the Rationalists and the Reflectivists in the 1980s.

Rosinha, Antonio Palma, Portuguese Army, and Hermes de Andrade Junior, Brazilian Army, Reacting to Multiple Disruptions: Reliable and Sustainable Military Leadership in the Face of the *Anthropocene*

The Anthropocene has been considered a new epoch in which there is the mark of the anthropic in terms of productive activities across the planet, featuring an acceleration of degradation at a systemic level and many disruptions. The armed forces, permanent institutions that deal with the monopoly of violence, are also propagators of socio- environmental degradation in their activities and in their very mission to ensure and defend. In view of the immense range of disruptions, the armed forces will face a new type of diffuse enemy, which are environmental threats. A sustainable leader must create a conducive environment for development in a balanced way with nature and society. In this conceptual proposal, the authors aim to (1) present sustainable leadership by relating the characteristics of a leader to sustainability; (2) consider that the role of this type of leadership is fundamental to the construction of a truly sustainable meaning, since it links government, people, and military in a sustainable meta organization dynamics. The followers of truly sustainable leadership play a decisive role in influencing other leaders, people, organisations, and results. The role of an effective sustainable leader will be discussed, understanding that collective leadership evolves to a credible standard of leadership from the micro to macro environment from the military and as beneficial multiplier performance mitigating catastrophes effects

Rosinha, Guilherme Pereira Conceição, Portuguese Military University Institute, The non-state actors in fighting the phenomenon of piracy and armed robbery at sea, in the Gulf of Guinea region

The phenomenon of piracy and armed robbery at sea represents one of the most pressing maritime security challenges affecting the Gulf of Guinea (GoG) region. In the

absence of an effective response by States, there is a multiplication of efforts and initiatives by non-state actors to fill existing gaps and provide support to counter this phenomenon. With its epicenter in the Niger Delta, this phenomenon has evolved from an activity known as "petro-piracy" to kidnapping crew members to obtain money through ransoms. In an environment of uncertainty and great pressure from different actors to improve maritime security in the GoG, it is relevant to address the role of non-state actors to the reduction of this phenomenon. To carry out this research, it was based and structured on the concept of fighting the piracy and armed robbery at sea, where the action of non-state actors was characterized applying the document analysis technique.

This research is structured in the dimensions of governance, monitoring, sustainment, deterrence, and disruption, where the discussion of the results beheld the role of non-state actors in different vectors regarding the counter piracy and armed robbery at sea in the GoG. Concerning the governance dimension, it is possible to identify the role of these actors in the constant publication of regulations as well as firm pressure with state authorities. The numerous initiatives reveal their concern and commitment, pointing out this issue as a priority in the development of maritime security in the region. The position of non-state actors in the dimensions of monitoring and support stands out for their initiative in improving maritime situational awareness and jointly combating these threats. Their action is characterized by the building of capacities for support, monitoring, and information sharing within the region's security systems architecture. On a less visible way, these actors have been working to support crew members affected by the phenomenon of maritime piracy. Examining the direct contribution of these actors in combating this phenomenon, in the dimension of deterrence and disruption, we find that the model in place in the GoG is different from other models used recently in other regions, such as Somalia. With States taking a central position, it seems to proliferate the public-private partnerships with Private Maritime Security Companies (PMSC) for the provision of security services at sea. On the one hand, we seek to reduce the risk of proliferation of weapons in maritime spaces, by private entities and the indiscriminate and unjustified use of force by the PMSCs, on the other hand, we see an increase in the risk of abuse, mismanagement, and corruption, with the danger that maritime piracy could become a business for the states of the region. Despite the separate characterization of each of these dimensions, the action of non- state actors is not isolated. In a more comprehensive approach, given their nature and interest, the role of non-state actors, even if relevant, is assumed as complementary to a statal response to this problem.

Rostoks, Thoms, National Defence University of Latvia, Non-military deterrence: lessons from deterring Russia in the Baltic states

This study addresses the importance of non-military means in deterring adversaries in the 21st century. It uses the example of NATO's deterrence in the Baltic region where the Alliance has moved heavily towards deterrence with non-military means. Although the consensus in the literature on deterrence is that the adversary

should be deterred with military means, significant costs can be imposed with non-military means as well. These, however, exclude the possibility to prevent the adversary from acquiring its military objectives. Thus, non-military measures have been deemed too weak to deter the adversary. This was the underlying assumption regarding deterrence during the Cold War.

The post-Cold War deterrence, however, works in a changed international environment. The merging great power competition is one characteristic of this environment, and other elements include changed technological landscape with emerging disruptive technologies and a greater emphasis on economic aims by political leaders and societies. Arguably, deterrence works differently in such an environment. Countries would still prefer deterring their adversaries with sufficient military means, but what happens when such means are unavailable or limited? This paper explores lessons from the Baltic region where NATO has tried to create a sufficient deterrent against Russian after the annexation of Crimea and the start of the military conflict in eastern Ukraine. NATO's aim to deter Russia in the Baltic states has been hampered by the relative military weakness of Latvia, Lithuania, and Estonia in comparison to Russia who military capabilities overwhelm those of the Baltic states. NATO member states have collectively tried to solve this problem by strengthening the militaries of the Baltic states themselves, placing a limited number of troops from other NATO member states in Estonia, Lithuania, and Latvia, and strengthening the ability of the alliance to transport troops and equipment in the Baltic region. These efforts, however, have not solved the fundamental problem that has two aspects. First, the combined military strength of NATO eFP battlegroups and the Baltic states' militaries is too small to properly deter Russia. Second, NATO's deterrence efforts have been hampered by its inability to convincingly demonstrate that it would have sufficient military capabilities and political will to re-take the Baltics after initial Russian military victory.

This makes non-military aspects of deterrence increasingly important. To a certain extent, this has been recognized early in the post-2014 era. The Baltic states themselves have placed an emphasis on building resilience and fighting Russia's disinformation. Non-military means have been primarily used to slow down and stop Russia-supported separatists in the Donbass region. Thus, this article explores the notion of non-military deterrence and conditions under which it may prevent the adversary from initiating aggression. Although this is not the preferred form of deterrence, with most states seeking a military deterrent to that would solve their security problems, non-military deterrence may provide a sufficient deterrent under conditions where the adversary's motivation is relatively weak and where costs imposed with non-military means may significantly weaken the adversary.

Savelyer, Yurih, Taras Shevchenko National University of Kyiv, Imagined Conflict, Real War, Dire Consequences: Novel Hybrid Forms of Russian Aggression against Ukraine since 2014

Local military conflicts have been an acute social problem since the end of WWII. Variety of such conflicts still emerges in 21st century causing devastation and flows of migration. Although contemporary conflicts are internationalized involving regional or

global powerful players, the third parties avoid engaging directly in them and, unlike Cold War period, often use proxies instead. While a war in Eastern Ukraine preceded by annexation of the Crimea peninsula by Russian Federation in 2014 is smaller by scale than long-term combats in Syria, Libya or Afghanistan, it is also very different in ways how it originated and was propelled.

The paper uses recent advances in the literature on state based armed conflicts and aims at differentiating internal and external causes of on-going military conflict in Ukraine. In particular, I follow Ulrich Schneckener's proposal to estimate "the role and independence of local agency" and "local conflict dynamic" (Schneckener 2021). This is a promising approach, for revealing inherent contradictions and "dissonances" in the logic of the conflict, which cannot be explained by "local agency" only, indicates an external impact in Eastern Ukraine. In addition I apply a novel concept of 'delegated interstate conflict' (Hauter 2021) to so called "the Donbas War". According to Jakob Hauter, existing concepts of interstate, internationalized internal and internal armed conflict are not sufficient to explain many cases including the Ukrainian one. Based on a broader perspective of Russian-Ukrainian relations the paper demonstrates that because of badly-managed post-socialist transformations during 1990's, deep economic crisis in 2008-2010, consequent poverty and inefficient political institutions Ukraine became very vulnerable for external aggression. On the other hand, in contrast to many other cases there were no actual ethnic, religious or mores preconditions for the internal conflict. Consequently, the multifaceted aggression of Russian against Ukraine, which began before 2014, comprised new unconventional and hybrid forms of war. The conflict was initially constructed within post-truth politics and planted via prejudiced media which succeeded in some regions of the country but failed in others. Although imagined at the beginning and based on appeals to emotion, the conflict, which was masterly facilitated by Russian proxies, led to a fierce combat and calamitous consequence for inhabitants of Eastern Ukraine. Over 1.5 million became internally displaced persons. The case of on-going military conflict in Ukraine shows that such novel and efficient hybrid warfare is a growing threat to global security.

Scavnicar, Darko, Military Schools Center of the Slovenian Armed Forces, Impact of the COVID - 19 epidemic on the implementation of E-learning in the Slovenian Armed Forces

The outbreak of the covid-19 epidemic affected all segments of our lives, including the course and implementation of educational processes. No one was truly ready for something like that, so various social (sub) systems responded and adapted at different speeds (and successfully). Educational institutions, not only in Slovenia, but also in Europe and around the world, were forced to close their doors and organize distance learning due to measures to curb the pandemic. A similar fate was shared by the Slovenian military education system, so especially during this time, the capacity of the Canter for Electronic Education (CEI) as an organizational unit of the Center for Military Schools (CVŠ) surfaced, the task of which is to implement electronic education (EI) throughout our defence system. Before CEI, that presented a challenge that no one had ever imagined, but the capacity proved to be powerful and stable enough that with

a sudden increase in the number of users and especially the number of activities in the e-classroom, it worked flawlessly.

In this article, we will focus on the positive effects of e learning. We will be mainly interested in financial aspects and effects related to saving time or its better management and utilization. The field of e learning in the USA has developed relatively early, so in extension that led to an early introduction into the armed forces, where today it is very successfully implemented and its advantages are being used. Within the Alliance, the Slovenian Army is inspired in many ways and relies on the USA, including the training of personnel for the SAF, so we will look at the experience with e-education in the US Armed Forces, specifically in the US Army. The introduction of e-learning in their developed military education system has been undertaken very systematically, especially due to the possibility of distance learning and the positive effects it brings for such a large system as is the military. In the first place, of course, are the direct financial savings due to technologically supported methods of education, followed by time savings and thus greater availability of staff in units, the possibility of faster (re) deployment according to current needs and faster and easier training of more members at the same time.

One of the goals of the research will be to find out how to overcome the problems due to staff shortages and related frequent redeployments, which also require retraining of staff, through distance learning. As armies today are constantly in the process of transforming and building new capabilities, it is virtually impossible to provide enough qualified personnel in a timely manner. The influx of fresh personnel is encountered by practically all professional armies, so it is necessary to constantly re-train the available personnel and redeploy them to areas with a deficit. The outcome is units without staff, that cannot be redeployed without proper training, and on the other hand, the share of members who are not sufficiently or adequately trained for the work they perform. By analyzing the use of the distance learning method, we want to prove by how much the cost of "retraining" can be reduced both In terms of time and money.

Seaboyer, Anthony and Pierre Jolicoeur, Royal Military College of Canada, China and Russia's Information Space Attacks on Democracy

Both China and Russia have extensively weaponized the COVID-19 crisis for political agenda. President Xi and President Putin have exploited the pandemic for consolidating power, eradicating dissent and advancing foreign and domestic security policy goals. Both leaders have clearly set their personal agenda of staying in power over the health and even the lives of their citizens and the lives of everyone around the world. Both countries show striking similarities in how their leadership has weaponized COVID-19 in the information space. This paper provides a comparison of similarities and differences in the weaponization of COVID-19 by China and Russia in the information space via social media. China and Russia – among other countries – have weaponized the crisis for propaganda campaigns domestically as well as to target democracies around the world. They also exploited the pandemic to introduce and justify a drastic increase of repressive measures against their citizens while supporting similar drastic measures in

other authoritarian or authoritarian-leaning countries. After comparing motives, methods and strategies of the two most active adversaries that are currently exploiting the information space, this paper concludes that Russian and Chinese information space exploitation is not focused on single events like elections. Instead these authoritarian leaders see the sheer existence of democracies as a threat and a challenge to their power as they show clearly how well systems work that actually serve the needs of citizens. To this effect, both China and Russia have exploited the pandemic to create chaos in democracies and weaken open societies which pose a more attractive alternative to their power. They therefore are targeting nothing less than democracy itself and its attractiveness with their information exploitation. This paper finally closes with recommendations for defending democracies against attacks in the information space.

Sederholm, Teija, Aki-Mauri Huhtinen, Miina Kaarkovski, Pekka Koistinen and Milla Alaraatikka, Finnish National Defence University, Counterforces and Detection of Disinformation as a part of Information Resilience

Global security threats have highlighted the necessity to reconsider the meaning and practices of national resilience in different countries. For example, in Finland the strategic goal of national security of supply is to ensure the continuity of production and the critical functions of society also during events of disruptions and emergencies. Material preparedness has traditionally dominated the work on resilience. However, societies are likely to face crises and disruptions that are highly complex and might threaten for example peoples' health, living conditions or way of thinking. Therefore, material perspective to resilience has become too limited and survival of states and societies require resilience also in immaterial questions. The aim of our research project is to understand the role of information resilience as a part of national preparedness and security supply in time-critical situations.

Information resilience is a relatively new but an extremely important element of the national preparedness system. Scholars from different disciplines are currently defining the theoretical meaning of the concept, but it refers to the notion that in a crisis situation, it is essential that citizens receive and understand the government's official information quickly, clearly and accurately, and then reconsider their behavior accordingly. As communication to citizens and other authorities in time-sensitive situations is typically online, the role of rationality in decision-making process and their shared situational awareness increases in a continuously changing information world. In this presentation we present our project and discuss how to study and define information resilience from the perspective of combating and detecting disinformation. We concentrate on following questions: 1) How do authorities form, share, and update their situational awareness of disinformation and incomplete information in decision-making when acting within time-sensitive situations? 2) How is it possible to revoke disinformation in a rational decision-making process, and what are the means to communicate the changes to the audience? 3) How are the manufactures of disinformation, and their communication, taken into account proactively and reactively?

Serrano, Bruno and Cristina Fachada, Portuguese Military University Institute, Financing the Portuguese Air Force Capabilities

The current macroeconomic context of strong economic constraints, growing asymmetrical warfare and worsening migratory crises that affect Europe's security and defence, compounded by the current global pandemic and the need to provide the Portuguese Armed Forces (AAFF), and the Portuguese Air Force (PrtAF) in particular, with the modern capabilities they need to carry out their mission, makes the process of financing these capabilities more challenging than ever and demands innovative approaches to this "crises" management. This study assesses if the PrtAF's procedures for applying to programmes that fund military capabilities can be optimised. The study uses inductive reasoning, a qualitative research strategy and a case study research design, supported by data collected from semi-structured interviews conducted with twenty experts in these matters from the three branches of the AAFF, the Armed Forces General Staff, the Ministry of Defence and the European Defence Agency. The findings led to the elaboration of eight measures that aim to improve the capability funding process, which consist of creating a Project Management Office, defining a strategy for the PrtAF's participation in financing programmes (identifying dual-use capabilities and exploring space for defence purposes), training Human Resources, improving networking, and placing military personnel in strategic positions outside their branch of origin.

Sharma, Bharati, Government Science College, Jabalpur, Madhya Pradesh, India, Military Science in understanding and alleviating the internal security challenge of Naxalism in rural India

Today, the Naxal movement is affecting somewhere around ninety districts spread across about eleven different states of India. The affected area is called 'red corridor'. The movement started in the 1960s and has been organizing several variably successful terror attacks occasionally. The corridor is rich in availability of natural and ecological resources, consisting primarily of tribals and poor inhabitants; its infrastructure is also far from developed. The landlords and owners of tea plantations exploited these communities resulting in violent retaliations. Its journey has phased in and out of comunist ideology depending on the various leaders that have led the movement with an aim to run a parallel government. There have been reports of the movement having well defined strategy over three stages - first stage (1967 to 1980)of ideological conflict; the second (1980 to 2004) of ground reality; and the third (2004 to present) they came up as the biggest challenge due to their involvement in child, drug and human trafficking and several other unlawful activities. This has made Naxalism emerge as one of the key internal security challenges for India. The government's ignorance and its land reform policies have only further alienated the Naxals. Now, the government has proposed and implemented many plans to rectify the problem and also has trained jungle warfare guerrillas that are deputed in the affected areas. But the red

corridor is only expanding to newer areas. An attempt to mediate between the Naxalites and the government has been initiated by military science researchers and students in the area. These steps have aided in getting cues into the motivation, strategies, and their struggles as part of the movement in the form of testimonies. However, more remains to be understood about the movement, its recruitment programs and their impact on the local communities. Here we propose how military science education and research can aid the government and the communities alike in enhancing dialogue and conflict management. Moreover, this may potentially reduce the negative impact of the Naxal movement on the rural communities while enhancing communal cohesion and resilience. This awareness also would inform the youth to defer from getting recruited and pursue more positive avenues for national and global potential.

Simonyi, Andre, Royal Military College Saint-Jean, The War Nexus: A Complexity Perspective

This chapter analyses the shift in contemporary war from a phenomenon dealt solely by military forces supported by a national effort, to an enlarged environment encompassing all domains of society, what this paper calls the war nexus. Over the course of the last century, wars and conflicts have expanded from the traditional battle space to include multiple dimensions. In the 21st century, military might is becoming another tool, rather than the choice of last resort to create the conditions of success for a national security strategy. Waging war encapsulates a larger environment, complex and multidimensional, involving many domains, or systems, acting in relation to one another. This is not « total war », understood as the mobilization of national resources to support the war effort, but rather the coordination of a complex set of assets, political (economy, information, technology, etc..) in a complex environment: the war nexus. This shift is first and foremost ontological: from a closed battle space where victory can be achieved by force, we shift our representation of war and conflict to a complex environment, multilayered and multidimensional in which victory is not defined by armistice, but by the relative positioning of the actors involved. The chapter contextualizes contemporary events using complexity thinking and systems theory as theoretical foundation for analysis. The concept of war nexus not only redefines the traditional outlook on approaches to conflict resolution and victory; It also projects a vibrant picture of our contemporary global socio-political structure.

Skrodzi, Damian, Polish War Studies University, unmanned aerial vehicles are the future of armed conflicts? Case Study - the conflict in Nagorno-Karabakh and the war in Ukraine

Modern military technology, including the use of unmanned aerial vehicles, is increasingly becoming the dominant factor in political actors' success or failure in armed conflict. Armed conflicts in Nagorno-Karabakh and Ukraine indicate that unmanned aerial vehicles can be used by parties with lower military capabilities to gain greater opportunities for them to influence the enemy and increase their own chances in the theatre of hostilities. The conflict between Azerbaijan and Armenia has revealed the effectiveness of drones in relation to anti-aircraft systems and armored vehicles.

Armenia has mostly used drones of its own production (Krunk, X-55) primarily to reconnaissance the battlefield, but also drones such as HERSZ or Orlan 10. However, Azerbaijan used its own unmanned ships Harop, Orbiter 1K, Orbiter-3, SkyStriker, etc. both with the of aim of the reconnaissance and destruction of military targets, which has fundamentally influenced the scale of success in the area of military action. Drones have practically eliminated standard aviation from the Nagorno-Karabakh conflict. Ukraine used Bayraktary TB2 unmanned vessels to reconnaissance of separatist-controlled areas, which allowed the location of Pancyr-S, TOR and S-125 anti-aircraft systems, howitzers, tanks, armored vehicles, and other military equipment.

The aim of the study is to assess the effectiveness of unmanned aerial vehicles used in the Nagorno-Karabakh conflict and the war in Ukraine. The basis of the study is the theory of the impact of technology on military capabilities developed by Andrew D. James, which draws attention to the following criteria, assessing the effectiveness of modern military technologies a. effectiveness, b. price c. multitasking. The research is based on the Case Study of the Nagorno-Karabakh conflict, the conflict in Ukraine and on the use of desk research method. Studies have shown that the multifunctionality and efficiency of drones and their relatively low price makes them increasingly used for conduct and military operations compared to standard military platforms. Swarms of drones replace standard aviation, destroying them with anti-aircraft systems is unprofitable and inefficient. Countries with low military capabilities should invest in unmanned aerial vehicles technology. With proper use, it is able to level the playing field. Investing in unmanned ship technologies can be an important solution for countries to increase their defense capabilities.

Sokri, Abderrahmane, Defence Research and Development Canada, Deterrence stability: an economic approach

Military deterrence falls under the economic theory of utility and relies on the concepts of credibility and stability. Credibility in this context means that a member of a defensive alliance has the necessary level of capabilities to deter a challenger from an offensive alliance. Stability characterizes the long-run equilibrium between the competing states. This chapter analyses deterrence credibility and stability from an economic viewpoint. It offers a comprehensive review of literature on the necessary conditions for international conflicts. A clear and conceptually based economic model is developed to determine the necessary capabilities to deter challengers from attacking and to characterize the long-run equilibrium to the deterrence game. Results indicate that deterrence depends on the credibility of alliance partners in addition to the economic and military factors. Findings also indicate that as time goes to infinity deterrence stability relies more on the technical characteristics of military capabilities such as the relative effectiveness of the forces in combat and the depreciation rate of capital.

Solmaz,Tarik, University of Exeter, UK, Non-State-Led Proxy Warfare: The Missing Link in Proxy Wars Debate

The early years of the 21st century seem to have become dominated by proxy conflicts. In parallel, over the past several years, the literature on proxy warfare has rapidly proliferated. Indeed, the use of proxy warriors is as old as the history of warfare. Nevertheless, the character of proxy warfare is still debatable. For example, how and why states engage in proxy wars has long been discussed in the existing literature. Additionally, scholars have largely been preoccupied with the principal-agent problem in proxy wars. Currently, the use of proxy warriors in contemporary conflicts is mostly understood as a state actor's reliance on violent non-state groups and/or another state. However, indeed, state-centric understanding of proxy conflicts seems outdated. Recently, few scholars have argued that non-state actors can be both principals and agents in today's proxy conflicts. Nevertheless, they have not really covered the topic systematically and a theory of non-state sponsorship of proxy forces does not exist yet. This paper will attempt to challenge state-centric views of proxy warfare and to provide a theory of non-state-led proxy warfare through a synthesis of relevant proxy-warfare-focused theories of Andrew Mumford and Amos C. Fox. Also, I add insights from Vladimir Rauta's typology of violent non-state actors concerning conflict delegation. The primary aim of this paper is to describe and modestly theorize about non-state-led proxy warfare, and thus, to make an initial contribution to the newly emergent literature on non-state sponsorship of proxy forces. Also, the secondary aim of this paper is to compare non-state-led proxy warfare with state sponsorship of militant groups. For these purposes, this paper will address the two research questions. First, why do violent non-state actors employ proxy combatants in conflicts? Second, how and in what ways non-state-led proxy warfare differs from other and much older forms of proxy warfare? In this work, the case study method will be used in order to validate the proposed theory about non-state sponsorship of proxy combatants. In this respect, this paper will provide two case studies to give some empirical insight that support conceptual analyses: al-Qaeda's sponsorship of the Caucasus Emirates and Hezbollah's sponsorship of Yemeni Houthis. In addition, desk research will be used to meet the objectives of this paper. The secondary data collection involves reviewing the existing literature regarding proxy warfare from open sources such as books, journal articles, government publications, theses, military doctrine publications, and pertinent websites. The initial finding suggests that state-centric definitions of proxy warfare are not sufficient to explain and analyse contemporary modes of proxy warfare and armed non-state actors with high capabilities can engage in existing conflicts using another non- state group as a proxy force to achieve their military-strategic goals. Finally, it is worth mentioning that because the proposed theory on non-state-led proxy warfare will be validated through very few case studies, it requires further empirical testing. Furthermore, there is a need for further research due to the existing gap regarding this problem in the literature.

Solomon, Binyam, Defence Research and Development Canada, Burden Sharing in Norad

We utilize insights from the economic theory of military alliances to quantify the burden sharing in NORAD. Since NORAD specific data on costs and benefits are not

readily available, we use macro and aggregate level data to conduct the empirical assessment. We also apply defence management concepts to provide a micro understanding of institutional, operational and tactical factors that may affect NORAD tasks and potential modernization. The macro assessment using various burden sharing measures and peer groups (NATO and Arctic Council) show that Canada receives substantially more benefits for every dollar in defence expenditures. In addition, our assessment of RCAF business plan and current defence posture show that there are considerable strategic, institutional, and operational constraints facing the fulfilment of Strong, Secure, Engaged (Canada's Defence Policy) and possible NORAD modernization. Improving these institutional issues, along with fulfilling the commitments outlined in the Defence Policy, will go a long way to assuaging the burden sharing debate.

Sosnowski, Piotr, Polish University of Warsaw, How to avoid of being a proxy agent? Lesson from history learned in the Iraqi Kurdistan

One way of telling the history of the Kurds and Kurdistan might be by enumerating and explaining episodic and long-lasting cases of strategic exploitation by its quasi-patrons (hereinafter QP). The method of using agents to achieve military goals is referred to as 'war-by-proxy' (Deutsch 1964, 102) or 'proxy war' (Bar-Siman-Tov 1984, 263). Most of the literature on proxy wars focuses on reasons and expected benefits for the QP, wherein ignores or (briefly) mentions motivations for the agents. To attempt to assess to what degree an agent was aware of its role, and to understand the QP intentions, seems challenging. Therefore, in case of Kurdistan, it can be assumed that the Kurdish Political Entities (hereinafter KPE) perceived entering a relationship with the QP as conducive to the implementation of their local political and economic interests, e.g. the Kurdish Principalities in the Ottoman and Persian Empires (Eppel 2016, 27–45; Klein 2011, 170–71); the Assyrians and Great Britain 1915-1932 (Ahram 2011, 62–65; Browne 1932); the Soviet Union and the Mahabad Republic 1946 (Vali 2014, 27–60); Kurdistan Democratic Party and Iran, USA, Israel 1962-1975 (Borghard 2014, 180–210).

The analysis will trace the proxy role of the KPE between 1823, after the signing of the Treaties of Erzurum by the Ottoman Empire and the Persian Empire, which initiated the process of ending the Kurdish vassal states, and 2005, when the Iraqi constitution legalised the functioning of the Kurdish Regional Government (hereinafter Iraqi Kurdistan) - a de facto state within the Iraqi state . That is aimed to theorise and explain the transition from the role of an object – a proxy agent exploited by external actors (QP), to the role of a subject – a de facto state that developed its own subjectivity in the field of security and is able to avoid or significantly reduce of QPs attempts to exert political operational control.

The assumption that the Iraqi Kurdistan learned from the history of the KPE exploitation as a non-state surrogate in the QP conflicts raises the following research questions: How exactly KPE were exploited? What reasons and potential benefits motivated sovereign states to enter the relations with the KPE? Hence, what reasons and what potential benefits motivated the KPE to agree to such cooperation? Why and how the concept of the 'quasi-patron' should be distinguished from the concept of the

'patron states'? To what extent does the contemporary Iraqi Kurdistan security policies implementation practice arise from the experience of the past asymmetric interactions between the KPE and the QP? These questions have not yet been resolved within a coherent theoretical and methodological framework. This paper might contribute to the literature on the de facto states, proxy wars and Kurdish Studies, by setting a new way of looking at and explaining the strategic exploitation of the KPE and its impact on the contemporary Iraqi Kurdistan security policy implementation.

Soucie, William R., United States Marine Corps, Peekaboo with Mars or: How I learned to Love Jus ad Vim and address the Ethical Implications to the Changing Character of War

In the sprawling expanse of ocean that is the Indo-Pacific region, the U.S. has adopted geographically dispersed, maritime-oriented, and host-nation-integrated methods of addressing the Chinese threat. These actions may be conducted at a significant distance from possible targets and inside the territorial boundaries of allies and partners. Young women and men in the service of the United States will be asked to make decisions about the taking of human life, increasingly at the push of a button, that will make not only the button pusher, but the innocent civilian population of the area into casualties of retaliation. What, then, constitutes just action on today's battlefield? The crux of the change is in the increased autonomy that military professionals will be asked to live and operate in, as compared to the last twenty years of counter-insurgency and set-piece battle before that. If military personnel are bound to act within a framework, then it is crucial to make certain that all members are educated on the worthiness of the framework. The character of warfare is changing, and the U.S. military must address the ethical implications of military operations short of war before blood and treasure are spent on a global scale.

This study begins with an overview of current U.S. policy guidance regarding the shift in focus to competition with a great power, specifically engaging with the rising power of China in the Indo-Pacific. This change in approach is explored to pinpoint areas that raise important ethical questions that need to be discussed in the context of the shift to a competition-continuum perspective. The reframing of the operational approach requires personnel to embrace the idea that war is not binary but occupies a spectrum. In between war and peace is a middle area that requires an ethical evaluation that corresponds to the increase in operations short of war. Next is a review of the traditional just-war thinking (JWT) framework to establish links between guidance, perspective, and ethical conduct in war. This is important because, thanks in part to Michael Walzer, JWT has reemerged as the primary lens through which strategic leaders and policymakers examine ethical issues raised by the use of military force.   The purpose here is to highlight the need for refined ethics if the standard understanding is no longer sufficient. Last, the paper explores the treatments of jus ad vim and the potential consequences of abrogating the responsibility to carefully consider the ethical facets of the use of armed force short of war. In the jus ad vim environment, which will be defined in greater detail later but can be summarized as a state between war and peace, although the battlefield is still a physical space, it is far more connected in a non-

contiguous manner, with lethal and non-lethal effects constituting a reimagined understanding of war and warfare. The desired outcome of conflict is to act with honor and to return home needing as little critical repair as can be expected, and it will be examined as such.

Taylor, Walter and Matt Boniface, Royal Military College of Canada, Military Technology Staff Education Roundtable: Comparing Approaches

Countries without a large defence industrial sector and with limited defence budgets face challenges in selecting, developing, and acquiring military technology. What are the different approaches to educating and preparing the technical staff who will be responsible for selecting, developing, and acquiring military technology? Some combination of military science and military management is usually involved. This roundtable discussion aims to compare national and service approaches to technical staff education for legacy technology, and emerging fields like cyber security, robotics, and artificial intelligence. This report summarizes the work of a roundtable on the subject.

Tikanmaki, Ilkka and Harri Ruoslahti, Finnish National Defence University, Exploring crisis management response to hybrid threats and hybrid war

In crisis management the area of responsibility (AoR) may face internal, external and hybrid threats against its information and personnel. This research looks at EU and NATO perspectives toward internal, external and global hybrid threats and warfare, and maps relevant strategies to prepare against them in a crisis management context. Strategies to fight against hybrid threats may include relevant political debate and decision making, integration of EU- and national level security into critical infrastructure, and regular preparedness exercises. Responses to hybrid threats call for relevant technical, situational awareness, problem solving and sector specific skills. This research looks at how collaboration, situation understanding and relevant e-skills aid detect and respond to cyber and hybrid threats against crisis management operations. The research question of this research is: How do crisis management responses take into account hybrid threats and hybrid warfare?

Turmel, Thomas, Royal Military College of Canada, Social Media Bias in the Israeli-Palestinian Conflict: A Case-Study of Al Jazeera and the Times of Israel

As an ever-growing proportion of the public turns to social media to gather information on conflicts and therefore form an opinion on them, the role of social media, as a vehicle for information in warfare, has to be assessed. This research is a case study focusing on two news media and their representation of the Israeli-Palestinian conflict of May 2021. In fact, all the articles published on Facebook by the news media The Times of Israel and Al Jazeera, respectively pro-Israel and pro-Arab were collected.

The intent of this paper is to examine the rhetoric deployed by each media to determine the impact news media on social platforms can have in warfare and the extent that they represent the views of their audience (and perhaps deceive to further the views of interest groups they may represent). More particularly, the corpus will be quantitatively analyzed to detect trends in the events covered and it will be qualitatively studied using Critical Discourse Analysis with focus on transitivity and lexis. We believe that this research would expose the granularity of bias propagated on social media during the conflict and how it could lead to an erroneous understanding thus creating "polarization chambers" where algorithms would reinforce political views. In addition, it would contribute to our understanding of the role social media has to play in conflicts as tools to spread narratives and sway the public opinion in one's favour.

Ulziihuyag, B., T.Soronzonbold, J,Mendee, Kh.Orkhonchimeg, Mongolian National Defence University and Defence Research Institute, The Issue Development of a New Defense Education System In Mongolia

Influenced by the development of modern military affairs, advances in science and information technology, it is important to radically change the structure of the armed forces, the system of military management, the concept of military arts, and the structure of military training. Country's external and internal security environment is also creating the conditions for reforming the defense system and the structure of the armed forces, including military defense training. Within the framework of the goal of providing quality education to the citizens of Mongolia, there is a need to create a new comprehensive education system to cultivate a patriotic and national upbringing. In a democracy is considered necessary the state must ensure the unity and security of the nation, such as the country's independence, security, national language and culture, sustainable development, and patriotic ideology, and implement policies and goals aimed at the common interests goals. The changes in the social psyche during the years of democratic development not only show the lack of education in the minds of the people on how to live safely, but also the urgent need to acquire knowledge and skills that meet their needs in the age of science. At the same time, in today's globalized world, providing people with a sense of national defense, physical education and upbringing is an important factor in ensuring the country's internal security. Therefore, the content of defense education is to provide military education and patriotic education to citizens, to teach them how to live in peace and security, to replenish the defense and armed forces with professional personnel, to train military mobilization reserve personnel. It will be a multi-level process aimed at acquiring knowledge and skills. Considering that this activity can be implemented through a unified system called "Defense Education", the system of military vocational education has been changed from 4 to 6 forms and a new defense education system is being proposed. In the framework of the project on the content and methodological issues of defense education, we conducted a survey of total 1,050 people from Ulaanbaatar, Orkhon, Dornod, Uvurkhangai and Khovd provinces to research about the development of patriotism, military and security education and its needs. The survey sent to randomly

selected from civilians was consists of open-text questions. For example, the survey (-what the level of knowledge and skills in defense?, -In a questionnaire to determine whether there is a need to establish and implement a defense education system for citizensry) etc.t. Survey responses was analyzed using for software SPSS. The results is the first issue we need to develop is to make qualitative changes in the system of military training and education, to redefine the defense education system with the main goal of cultivating a patriotic and Mongolian personality, and to develop its content and methodology. Also the results will inform design of a new curriculum aimed at (primary school and High school) students. Therefore, in this article, we have conducted a public consultation to determine the need for a new defense education system and proposed a new defense education system.

Vasankari, Lauri, Kai Virtanen and Antti Rissanen, Finnish National Defence University and Aalto University, Finland, Merging Unmanned Surface Vessels to Conventional Littoral Fleet Architectures.

As unmanned systems are widely making a steady, accelerating, and possibly disruptive entry to the military field of operations, major military powers are actively advancing the development of autonomous naval combatants and sensor platforms. As an example the United States Navy has drafted a vision of future fleet architecture combining unmanned surface vessels to their current, ship-centric architecture, driving for a distributed fleet architecture of a larger surface force with a nodal network. The aim is that a combination of manned and unmanned capabilities will help to maintain credible and enduring sea power in contested oceans worldwide. The envisioned, distributed fleet architecture, with a backbone of large and medium-sized autonomous surface platforms is supposed to increase both survivability and offensive power of the fleet while maintaining or lowering procurement and operating costs. The development and future commission of larger unmanned surface vessel (USV) combatants seems to reside mainly as a superpower interest for blue water navies, USA and China in the forefront. However, there exists a need to assess the usability of unmanned systems even in narrow and confined seas, such as the Baltic Sea theatre. As stated by Milan Vego, littoral warfare is especially challenging for large surface combatants, while it favors air operations, conventional submarines, land-based precision munition, and small attack crafts. The new distributed and more risk-tolerant fleet architectures may help counter the challenges of a multidimensional, fast-paced high threat environment. The possibilities need to be assessed and evaluated to define the benefits of USVs in littoral areas and the ways how to merge such assets into the existing fleets.

In this paper the probable positive outcomes (e.g. lower costs) are estimated against risks of deploying USVs as a part of conventional fleet configurations. Several models of fleet architectures are formulated and compared to form an analytic hypothesis space of the possible future scenarios of littoral fleets with different proportions of unmanned and autonomous vessels. The main tool is the additive value function that is a widely used method in the field of multi-criteria decision analysis (MCDA) for comparing decision alternatives with respect to multiple criteria. MCDA tool

is used in comparing advantages between different fleet architecture models from conventional, ship centric model to a nodal network of unmanned platforms. In the multi-criteria evaluation, criteria levels of alternatives are determined based on available open-source information of the current state of development in unmanned surface vessels and the available information of operating current, conventional littoral fleet architectures.

Viidalepp, Auli, University of Tartu, Estonia, What happens in a language transformer? A semiotic perspective on the reception of GPT-3 op-ed in The Guardian

The general theory of meaning has developed in parallel and in dialogue with the 20th century developments of artificial intelligence. Michael Polanyi's concept of tacit knowing (1958, 1966) or the idea that 'we can know more than we can tell' was — at least partly — a reaction to the Dartmouth 1956 conference that coined the AI concept. Polanyi's recognition of the kind of knowledge before and beyond the capacity of codification or verbal-linguistic mediation is still perplexing AI researchers. Eco (in A Theory of Semiotics, 1976) proposed the s-code as a systemic-structural elementary model for a semiotic view of signal-based 'grammar'. At the same time, Doede Nauta (in The Meaning of Information, 1972) had already drawn the signal—symbol-semiosis distinction. The early symbolic AI departs from the (rooted-in-structuralism) idea that language (in the form of externalised speech acts) can contain knowledge (or denotations and connotations). Expert systems are still concerned with expressing explicit knowledge in a way that can be processed in a computational device/manner. In connectionist AI, algorithmic systems are prompted to generate their own statistical quasi-significations within the black boxes of the neural networks. All of this, however, does not bring us any closer to capturing Polanyi's tacit knowledge, and generally, all AI systems are stuck behind the basic understanding of semiotics: the meaning is not to be found in the structure. There have been enormous advances in language-transformer models that enable statistical analysis of co-ocurring words (word prediction), and text generation. Both are useful for example in machine translation, as well as in production of complex human-like texts such as the GPT-3 op-ed published in The Guardian in September 2020. Text generators such as GPT-3 can be used as useful tools by writers or web developers, but they also produce an array of problems, making it possibly easier to generate fake news or radical manifestos. However, the reception of GPT-3-produced op-ed also demonstrates the difficulties for human readers to distinguish a machine-produced text, and the difficulties to perceive it as a synthetic text even when the reader knows of its origins.

The presentation aims to outline a number of issues that emerged in the public reception of the GPT-3 op-ed and analyse them from a semiotic perspective. That is, to separate the levels of syntax (structure) and semantics (meaning), to pinpoint the author(s) of a collaboratively edited synthetic text, and to explain how it may be too easy for humans to attribute a 'personality' to a text that uses first-person deictic vocabulary.

Vilka, Ilze, National Defence Academy of Latvia, The concept of economic security revisited in context of covid-19

Our economic security as defined by Dent (2010) "is safeguarding the structural integrity and prosperity-generating capabilities and interests of a politico-economic entity in the context of various externalized risks and threats that confront it in international economic system". The concept of economic security is two-fold – internal and external. Accordingly, factors, risks, threats, and indicators may be classified. The pandemic tested and identified the capacity of countries in the state of active internal economic security, how successfully they reduce risk factors and minimise negative impact. The internal economic security indicator data – inflation rate, unemployment, GDP per capita etc. reflects both the impact of the pandemic and directions for economic policy directions. Scholarly literature considers systems approach for strategies to increase resilience. The author summarizes, what are systemic risks and how the policy interventions are formulated based on strategic needs.

Wanner, Meike Bundeswehr Centre of Military History and Social Sciences, The concept of Innere Fuehrung (leadership development and civic education) of the German Armed Forces

Leadership development and civic education can generally be described as the organisational culture and self-image of the Bundeswehr. This concept serves as a guideline for the leader- ship and proper treatment of people. It was developed by former Wehrmacht officers. The starting point of the considerations was the issue of whether or not to rearm the military forces in democratic post-war (West) Germany. The concept of leadership development and civic education served as a clear contrast to the Reichswehr of the Weimar Republic, which was considered a state within the state, and to the Wehrmacht in the Third Reich. Soldiers were to be guided by their conscience; they were supposed to act on their own responsibility and out of conviction. They were no longer to be bound by obedience to orders that would violate human dignity or human rights. General Publication A-2600/1 para. 305 governing Innere Führung or Leadership Develop- ment and Civic Education states the following: "Respecting and protecting human dignity are obligations of the (German) state and thus of the Bundeswehr. These obligations provide the ethical justification and at the same time outline the limits of military service." This means that servicemen and women do not have to put up with everything. They have the right to lodge a complaint if they believe that they have been treated incorrectly or that their interests have been injured as a result of a breach of duty by superiors or fellow soldiers. With the establish- ment of the Bundeswehr in 1955, the right of complaint was redefined against the background of this new concept of leadership development and civic education. Soldiers were not merely to be "citizens in uniform", but the German Army itself was henceforth to be firmly grounded in democracy and parliamentarism.
Our lecture described here outlines the historical development, as well as the conceptual and legal basis of leadership development and civic education. Moreover,

the results of a repre- sentative survey within the armed forces are used to empirically examine how known and ac- cepted leadership development and civic education is within the German armed forces, whether German soldiers actually make use of their possibilities to have a say and to object, and whether they must fear negative consequences from superiors and/or fellow soldiers. Fur- thermore, current debates on the issue of leadership development and civic education are out- lined and discussed. One debate concerns future challenges facing the German armed forces and their self-perception, for example within the framework of multinational missions abroad.

Warchal, Arnold, Polish Military University of Technology, Macro and Micro Determinants of New Geostrategies

[Abstract]

Wentzel,Tyler, University of Toronto, Voluntariness in Military Call-Outs: The Reliability and Legal Liability of Citizen Soldiers in Times of Emergency

In October 1900, a labour dispute at the cotton mills in Valleyfield, Quebec, turned violent. The mayor and the city council submitted a requisition for military forces in aid of the civil power to the nearby Montreal garrison. The district commander, Lieutenant Colonel Alexandre Roy, arrived later that day by rail with two companies of kilted Black Watch militiamen. These citizen soldiers left their day jobs, assembled at the armoury, drew their rifles and ammunition, and deployed to Valleyfield by rail, arriving before the end of the day. They confronted the workers with fixed bayonets, wounding several. Several legal issues resulted from this encounter, including repayment from the municipality and/or the private corporations, claims by those injured, and debates regarding the state of labour relations. This paper focuses on a civil claim for wrongful arrest brought by one officer against another in the Quebec Court of King's Bench, a forgotten affair that forced a debate as to when part-time militiamen (at the time, the overwhelming majority of Canada's armed forces) were subject to military discipline. The basis of the claim was Lieutenant Colonel J.P. Cooke, commander of the Prince of Wales' Fusiliers (a part-time militia regiment), received permission from the district commander not to ready his unit as part of the force standing-by to assist the Black Watch. With this permission, he put the matter out of his mind—until he was arrested by Lieutenant Colonel F. Minden Cole, the brigade major, for refusing to turn-out his unit. Cooke was held in cells for weeks, temporarily relieved of his command, and suffered tremendous embarrassment from the whole affair. He was not charged, but this hardly mended his reputation when the General Officer Commanding voiced his support of Cole's decision to arrest him, and the Minister of National Defence supported this position through an order in council. As luck would have it, Cooke's civilian job was as a litigator, and he was aware of the legal options available to him outside the military. He brought a civil claim against his fellow officer, winning at both the trial and the appellate level. The court held that Cooke had not been called up (the parade was voluntary) and was functioning as a civilian at the time of the arrest- he was therefore

not subject to military discipline. The federal government subsequently compensated Cole for both his damages and legal fees.

The event led to the first, and perhaps only, appellate-level decision in Canada regarding the peacetime liability of the part-time militia. The event raises important questions about the independence of the Canadian military justice system at the time, with broader implications on the state of civil-military relations. Perhaps most importantly, it illustrates an inflection point in Canadian re-thinking about the reliability of part-time militiamen for such duties. Even as the first contingent of part-time militiamen returned home from the Boer War, and the Black Watch responded quickly to events in Valleyfield, the case of Cooke v. Cole raised questions about the part-time militia's ability to fulfill Canada's defense and internal security requirements. In the decades that followed, the part-time militia was removed from Canada's aid of the civil power regime entirely.

Wheeler, Nicholas, Royal Military College of Canada, A Tale of Two Brigadiers: Robert Moncel and James Jefferson in Operation Suitcase

It can be argued that Anglo-Canadian doctrine had a greater influence on how Brigadiers Robert Moncel and James Jefferson commanded their brigades than the experience they gained along two different career paths. The rapid expansion of the Canadian Army during the Second World War prevented Canadian infantry and armour brigade commanders from obtaining experience in both staff and command billets. Consequently, they developed two distinct skill sets before they assumed command of brigades. However, doctrine provided an institutional language that transcended the experience gained by officers as they progressed in their careers. Experience was important, but ideally it did not alter their understanding of doctrine. By examining the prewar and wartime careers of Moncel and Jefferson and how they commanded their brigades in Operation Suitcase, 4th Canadian Armoured Division's part in the operation to open the port of Antwerp, it is clear doctrine had a greater influence on how they planned and fought their formations.

Woodside-Duggins Vicki, Canadian Forces College, Culture Change: The Contribution of Professional Military Education

Malayter (2021) suggests that to be successful as a leader and organization, the ability to build strong and trusting relationships is vital. Leaders must therefore be prepared to lead the organizational community collectively towards a shared vision, that is qualitatively different from the current reality (Barnett, 2004; Satterwhite, McIntyre Miller, & Sheridan, 2015). This requires an ontological turn, where learning is not understood in terms of knowledge and skills but in human qualities and dispositions (Barnett, 2004). These human qualities and dispositions embrace the concept of openness, sharing, and using information without bias or restraint, acknowledging that "the way you think determines how you will act" (Bohm, 1992, p. 16). PME pedagogy needs to create opportunities to move beyond previous ways of thinking in order to

renew and create new perspectives and practices that are receptive of an emerging future (Satterwhite et al, 2015). This includes emerging changes to culture. Leaders need to facilitate learning (Amy, 2008). They need to challenge the status quo and guide others to create shared interpretations for a collaborative organizational culture that is more self-aware and open to change (Barnett, 2004; Guasta, 2012; Heifetz, 1994; Krawchuk, 2018; Senge, 2006). Leaders need to appreciate the importance of creating space for authentic and participatory dialogue. A collaborative organizational culture embraces the dynamic social ecology of the organization. It is receptive to emerging needs and finds ways to continually renegotiate the boundaries within the organizational culture. PME must prepare leaders for this endeavor.

Woznica, Justyna, Polish War Studies University, Public diplomacy as the communication vector in the rough waters of hybrid threats

The aim of this article is to stream the efford of public diplomacy to the category of communication vector in the filed of identifying the hybrid global threats, such as: military, economics, politics, social-cultural, historical, psychological and informative (disinformation and propaganda) factors.   The author defines the term of public diplomacy as the officialy governmentaly sponsored attempt to direct communication to the foreign publics with a target to convice the sectors of state and non state actors representing the foreign politics about supporting or tolerating the government's strategic objectiveness. Diplomacy in its category of being a public tool of action applies the methods of communiction reflected with the message in the social media (Twitter, Facebook, Ista,) as the statements delivered by the decission makers with the targeted campains to build the official policy image or the critical awarness of foreign audiences. Whereas, the hybrid war being defined as the complex instrument of conventional, but also irregular war actions of cyber, terrorism and crime threats aimed at gaining the political influence is understood here as the adversary that uses a mixed combination of aforementioned agents. In this perspective the communication vector identified in the international instutions such as EU, NATO or UN seems to be the officially mandated direction with the heading which indicates the along orientation to counteract the hybrid threats. To navigate this complexity in the global aspects the example of Canada joining the European Center of Exellence for Counteracting Hybrid Threats proves the need to build a hub of a wider and overseas expertice with competence of network and practicioners to enhance hybrid cooperation of EU- NATO- UN in counteracting hybrid threats. There shall be estimated that globaly structured awarness, resliance and responce are the key dominants that allow to work public diplomacy in the sector of strategic communication to inform and build awarness of society about the possibility to detect and understand vicious hybrid undertakings at the initial stage with the aim to rise the resistance of the indivdual. Finally, considerations rise the conclusion that dynamics of the foreign affairs may have its sourse in "globalization phenomena" that in the above spectrum could be reconized as the „honey plaster" for training the hybrid threats methods. However, diplomacy could be a hybrid answer to the plan of global distabilization of values, especialy among the young state democrasies in the field of

„hot potato issues" defined also as „the extreme emotional ideology", such as: LGBT, Rasism, Abortion, Migration, Religious issues: Catholics vs Muslims, vs Orthodox or other respected religious minorities, Women Rights, Environment – Green Peace action with eco – terrorism and climate change issue, Food Supply, Energy Supply that among the other hard tools applicated by „mosaic influencers" seem to be a set of handy instruments used for hybrid actions around the globe.

Wysocka, Monika, Polish War Studies University, The Possible Influence of Talibans' Government in Afghanistan on Afghan Women

After two decades of war in Afghanistan, now we can observe the withdrawal of the US Army and Coalition from this country. The American administration headed by Donald Trump made this decision in September 2020 which was upheld in 2021 by the Joe Biden administration. The decision was based on the arguments that all goals have been achieved and the country must stabilize its internal situation on its own, as it has been equipped with all the tools needed to become a democratic state. Unfortunately, this is a failure in the Middle East and South Asia region and an upcoming humanitarian crisis for Europe. Analysts and specialists cited by the American government made a mistake, power in Afghanistan was lost by the government that cooperated with the coalition and the Taliban took it over after a few days. Ordinary people are always the victims of such political decisions. If we could point out silent victims of this decision It would be Afghan women. Women's positions have never been easy and they had to face many difficulties such as hard living conditions, very strict laws and cultural limitations. Currently, they have to accept the Taliban government in Afghanistan which is connected with the deterioration of their position. It can be stated based on press reports, statements from the Taliban, but above all from humanitarian law specialists, it can be concluded that the greatest victims of this decision will be generations of Afghan women and girls. The question that arises in this situation is where is the greater good and humanitarianism? Everything indicates that they will remain without help and support and will be doomed to comply with new, even more, restrictive rules, and their situation will deteriorate dramatically. The article will analyze the situation of Afghan women after the takeover of Afghanistan by the Taliban and a possible scenario for the coming years.

Yasutomi, Atsushi, Eikei University of Hiroshima, blowing in JSDF – A Study of Non-Academic Books Published by Retired JSDF Officers

This paper examines the effects of non-academic publications authored by active and retired soldiers who speak out against their own military. What precipitates such publications, and why do they capture public attention? What impacts do they have on cohesion within the military? To what degree do they affect public support for missions at home and abroad? This paper assesses various exposés, essays, blogs, and other non-academic publications written by high-ranking active and retired officers in the Japan Self-Defense Force (JSDF). The pieces under review question and challenge the current

strategic and tactical feasibility of missions while reflecting often negatively on soldiers' lives and serving conditions. In doing so, they routinely disclose internal debates amongst officers and expose sensitive information to the public.

Theoretical studies of whistle-blowing in organisation have centred on cases in civilian – primarily business – organisations in which current or former members disclose illegal, immoral, or illegitimate practices sanctioned or carried out by their employers (Near and Miceli 1985). Little is known about whether these studies apply to military organisations, particularly in the non-Western context. Little, too, is known about whether, in what way, and to what degree whistle-blowing activities may contribute to changes in military behaviour.

Based on an assessment of cases in Japan, this paper suggests that theoretical studies in the field need to extend the scope of research on whistle-blowing to include military contexts and re-examine existing discourses on whistle-blowing behaviour.

Zakowska, Marzena, Polish War Studies University, The Nature of Modern War

Armed conflicts of the 21st century indicate a progressive evolution of the nature of war, especially noticeable in qualitative and quantitative changes of conflicts and technology used to wage wars. These changes have significant impact on the dynamic of national, regional and global security. Considering the circumstances, the scholars from the War Studies Group (WG1) within the International Society of Military Science started a project dedicated to the Nature of Modern War. The aiim of this research is to develop and apply a theoretical and methodological framework allowing security professionals to understand the nature of modern war. The framework will be applied to professional security challenges. The main problems to be examined are the conceptual structure for modern war, kinetic and non-kinetic operations in modern armed conflicts and non-kinetic instruments of modern armed conflicts. Preliminary research leads us to believe that modern war is more complex than the old and new wars described by Mary Kaldor. Research areas in this project include the redefinition of concepts of war and armed conflict, examination of the causes of modern wars, evaluation of the strategy and tactics of armed conflict including attacks on society, strategic threat and deterrence, application of new technologies, cyber-kinetic attack and defence, use of space, logistics support in new wars, and social resilience and cohesion as limits and enablers. The project aims to produce a collection of papers suitable for use in teaching by mid-career staff colleges.

Zielinski, Tadeusz, Polish War Studies University, Trends affecting the future of warfare

Competition is inherent in human nature. This also applies to the societies of individual states that compete with each other on the international arena, trying to ensure the vested interests of their nations. In the most negative scenario, it can lead to a war involving many countries and societies. Historical examples clearly reflect such scenarios. However, the nature of the future war remains a conundrum. Although, based on experience and analyzing changes taking place in the contemporary world in various

areas, we are able to identify with high probability the factors influencing the nature of the future conflict. Therefore, the key is to answer the question: what trends influences the nature of the future war, and thus their identification. In this context, it will be reasonable to define the phrase "future war", despite the fact that both the definitions of "war" and "future" have been used in the literature for a long time. War as a phenomenon is shaped by many factors (trends) that directly affect the shape of the battlespace. Among them, as slogans, the following can be mentioned: geopolitical, social, technological or economic. However, it should be remembered that each of the above-mentioned trends contains many factors which, to a greater or lesser extent, may directly or indirectly influence the nature of the future war. Going down, i.e. to the operational environment of the battlespace, it is possible to identify further elements that will determine the nature of the future war. Among them, military factors can be identified, including, for example, capabilities and doctrines of combat operations. The trends outlined above do not constitute a closed set, but only the main determinants influencing the nature of the future war. In order to describe the nature of the future war to some extent, it should be analyzed in a holistic way in relation to the previous experiences. Hence, the subject of the proposed chapter will be the results of the analysis of the identified trends and the description of their impact on the nature of the future war.