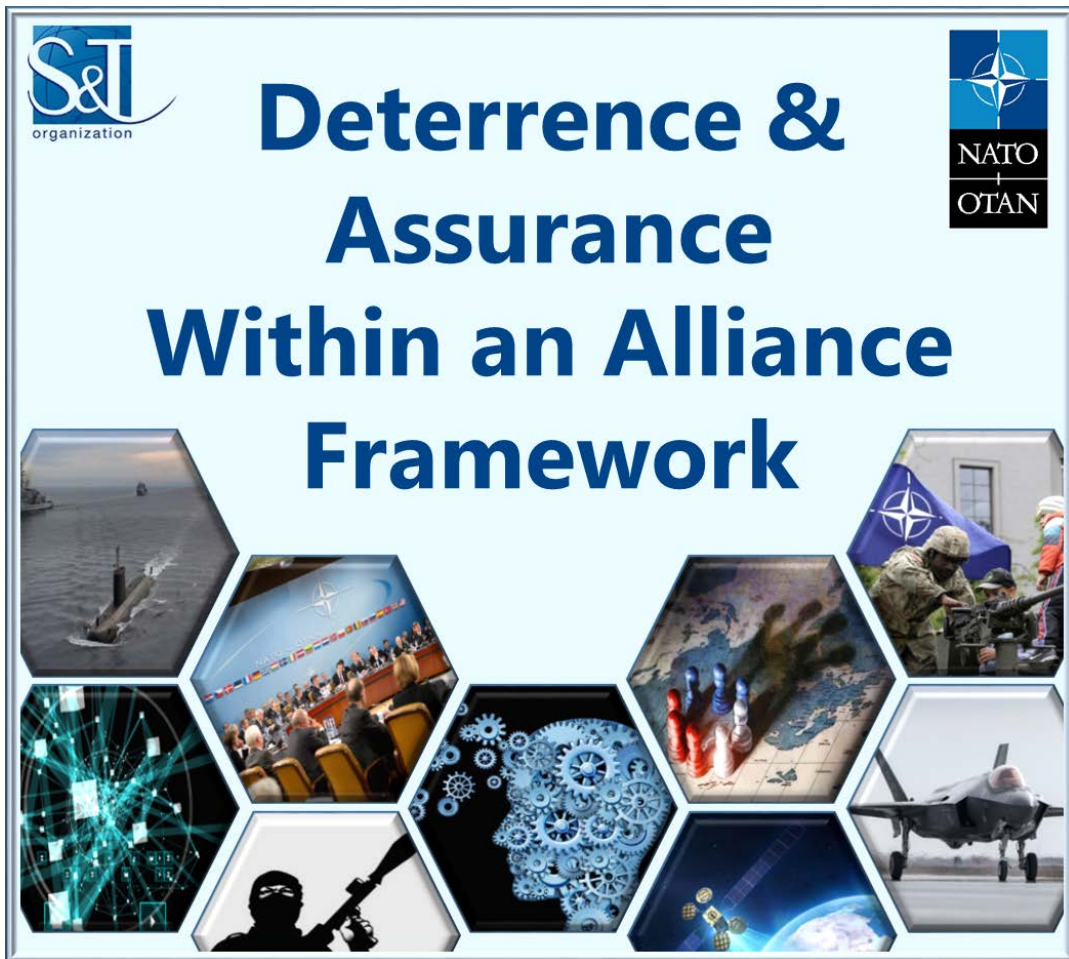


NATO SCIENCE AND TECHNOLOGY ORGANIZATION  
SYSTEM ANALYSIS AND STUDIES PANEL



# SYMPOSIUM BOOKLET



King's College London  
United Kingdom  
17-18 January 2019

# 2019 Deterrence and Assurance within an Alliance Framework

Agenda Day 1 Thursday 17<sup>th</sup> January 2019

0800-0900	<b>Registration</b>
0900-0915	<b>Welcome/administrative remarks – Prof. Wyn Bowen, King’s College London &amp; David Rudd, SAS-141 Programme Committee Chair, Department of National Defence (Canada)</b>
0915-1000	<b>Keynote Address – Success of Deterrence</b> <b>Dr. Kori Schake</b> <b>Deputy Director General</b> <b>International Institute for Strategic Studies</b>
1000-1015	<b>Break</b>
1015-1145	<b>Session 1: Deterrence/Assurance: New Theories</b> <b>Moderator: Dr Nicola Leveringhaus, King’s College London</b> <ol style="list-style-type: none"> <li>1. Leveraging Behavioral Game Theory for the Study of International Relations – Cpt William Caballero &amp; Brian Lunday, Air Force Institute of Technology</li> <li>2. Applying Soft OR to Assessing Conduct – Stuart Smith, Joint Force Command, Brunssum</li> <li>3. A New Look at First Strike Stability – Harrison Schramm, Center for Strategic and Budgetary Assessments</li> </ol>
1145-1245	<b>Lunch</b>
1245-1430	<b>Session 2: Deterrence/Assurance in Practice</b> <b>Moderator: Commander David Spinks, Deterrence Plans &amp; Policy Section, NATO Supreme Headquarters Allied Powers Europe</b> <ol style="list-style-type: none"> <li>4. National Perspectives of European Countries in Deterring Russia – Dr. Nora Vanaga, National Defense Academy of Latvia</li> <li>5. NATO and the UK’s Role as a Second Centre of Nuclear Decision-making – Prof. Andrew Dorman &amp; Prof. Matthew Uttley, King’s College London</li> <li>6. Deterrence and Assurance in Maritime Operations - Andrew Bell, Allied Maritime Command</li> <li>7. Assuring Allies by Effectively Countering Hybrid Actors: Challenges and Opportunities – Dr. Vlasta Zekulic, NATO</li> </ol>
1430-1500	<b>Break</b>
1500-1630	<b>Session 3: Deterrence/Assurance: Lessons Learned?</b> <b>Moderator: Dr Charles Kriel, Director, Kriel Agency</b> <ol style="list-style-type: none"> <li>8. Adversary Intent: A Case Study of North Korea – Heather Kearney and Dr Michelle Black, University of Nebraska at Omaha</li> <li>9. Coercion and Assurance in Practice: Understanding the outcome of western efforts to prevent chemical weapons use in Syria and drawing lessons for NATO – Prof. Wyn Bowen &amp; Dr. Matthew Moran, King’s College London; Dr. Jeffery Knopf, Middlebury Institute of International Studies</li> <li>10. Deterrence and the Use of Sanctions – Dr. Ian Bolton, King’s College London</li> </ol>
1630-1800	<b>Icebreaker</b>

# 2019 Deterrence and Assurance within an Alliance Framework

## Agenda Day 2 Friday 18<sup>th</sup> January 2019

0830-0900	<b>Registration</b>
0900–0945	<b>Keynote Address</b> <b>Brigadier Jasper de Quincey Adams OBE</b> <b>Director of the Comprehensive Crisis and Operations Management Centre at Supreme Headquarters Allied Powers Europe</b>
0945–1000	<b>Break</b>
1000–1130	<b>Session 4: New Trends and Methods 1</b> <b>Moderator: Dr. Alessio Patalano, King’s College London</b>  11. Societal Resilience as a Deterrent – Elizabeth Braw & Peter Roberts, RUSI 12. Acculturation of the Core Concepts of European Security – Dr. Andrew Corbett, King’s College London & Dr. Annamarie Bindenagel Šehovič, University of Potsdam 13. Perspectives on Deterrence and Assurance in ‘hyperbolic’ warfare – Gabriele Rizzo, Leonardo S.p.A.
1130–1230	<b>Lunch</b>
1230–1400	<b>Session 5: New Trends and Methods 2</b> <b>Moderator: Dr. Christopher Sims, King’s College London</b>  14. Artificial Intelligence and Deterrence: Science, Theory and Practice – Dr. Alex Wilner, Carleton University 15. Multi-Actor Deterrence: Defining the Concept – Dr. Michelle Black & Dr. Lana Obradovic, University of Nebraska 16. The Failing of Strategic Deterrence and Resilience: Contemporary Implications for NATO – Maj. David Stuckenberg, USAF
1400-1430	<b>Break</b>
1430-1530	<b>Session 6: Deterrence in/from Space</b> <b>Moderator: Dr Susan Martin, King’s College London</b>  17. 21st Century Deterrence in the Space Warfighting Domain: Not Your Father’s Century, Deterrence or Domain – Maj. Bryan Boyce, US Army (Retd) 18. The Increasing Importance of the Space Domain in Strengthening NATO’s Deterrence – Dr. Donald Lewis, The Aerospace Corporation
1530-1550	<b>Summary of Proceedings: Dr Matthew Tattar, SAS141 Technical Evaluator, US Naval War College</b>
1550-1600	<b>Closing Remarks, David Rudd SAS 141 Chair</b>

# 2019 Deterrence and Assurance within an Alliance Framework

## Key Note Speakers



**Kori Schake**

Deputy Director-General

International Institute for Strategic Studies

As Deputy Director-General, Dr Kori Schake oversees the Institute's world-class research programme and acts as a driving force behind initiatives to enhance the Institute's work and profile, including developing new funding opportunities and deepening links with governments, the private sector, and the expert and opinion-forming communities internationally on strategic issues.

During her illustrious career, Kori has held policy positions across government, academia and think tanks, including working with both the military and civilian staffs of the Pentagon, in the White House at the National Security Council, and at the US State Department as Deputy Head of Policy Planning.

She has authored a number of books, most recently *Safe Passage*, an account of the transition from UK to US power on the global stage, published by Harvard University Press in November 2017.

# 2019 Deterrence and Assurance within an Alliance Framework



## Brigadier General Jasper De Quincey Adams

Director Comprehensive Crisis and Operations Management Centre

Supreme Headquarters Allied Powers Europe NATO

Brigadier Jasper de Quincey Adams was commissioned into 1st The Queen's Dragoon Guards (QDG) in 1991 and spent his early years based in Germany as a Formation Reconnaissance and Challenger Main Battle Tank Troop leader. In 1995 he deployed as a Captain to BosniaHerzegovina (BiH) with the United Nations Protection Force (UNPROFOR) working as a Sector Liaison Officer between the Warring Factions. He subsequently completed two additional tours in BiH with the NATO Implementation Force (IFOR) as a Squadron Second-in-Command and as a J5 staff officer in Multinational Division Headquarters South-West. He returned to the Balkans in 1999 as the QDG Battle Group Operations Officer with the Kosovo Force (KFOR).

He completed three tours in Iraq (Op TELICs 5, 8 and 11), twice as a Squadron leader working alongside the Iraqi Security Forces in Basra, and finally as a liaison officer with the Multinational Headquarters South-East. Subsequently he was posted to the UK's Permanent Joint Force Headquarters (PJHQ) as a J3 staff officer before deploying to Afghanistan (Op HERRICK 10 and 11) as the mentor to the Helmand Provincial Chief of Police, establishing the Police Mentoring Advisory Group. In 2010 he assumed command of his Regiment, returning to Afghanistan (Op HERRICK 15) in command of the ISTAR Battle Group.

His recent staff experience includes working at the UK Ministry of Defence in Army Resources and Plans, a short spell as the Task Force Ukraine Team leader at SHAPE and two years as a Special Advisor to the Chairman of the NATO Military Committee. He has completed the Advanced Command and Staff Course as well as the Higher Command and Staff Course.

He was awarded the Queen's Commendation for Valuable Service in 2007 and was appointed Officer of the Most Excellent Order of the British Empire (OBE) in 2013. He is married to Jill and they have one daughter, Arabella, and an ever-changing collection of dogs, cats and horses. He enjoys hockey, hiking, sailing and fly-fishing.

# 2019 Deterrence and Assurance within an Alliance Framework

## SAS 141 Team



**Mr. David Rudd**  
Chair  
Department of National  
Defence  
Canada



**Dr Sigurd Glaerum**  
Member  
FFI, Norwegian Defence  
Research Establishment  
Norway



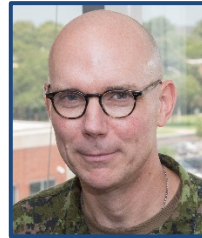
**Maj. Karl Salum**  
Member  
Estonian National Defence  
College  
Estonia



**Mr. Nik Taylor**  
Member  
Defence Science Technology  
Laboratory  
United Kingdom



**Ms Dani Fenning**  
Associated Member  
NATO HQ Supreme Allied  
Commander Transformation



**LtCol Stephen Murray**  
Associated Member  
NATO HQ Supreme Allied  
Commander Transformation



**Mr. Jeroen Groenevelt**  
Panel Assistant - System  
Analysis & Studies Panel  
NATO Science & Technology  
Organization



**Lt Col. Timothy J. Povich,  
PhD (US Army)**  
Executive - System Analysis  
& Studies Panel  
NATO Science & Technology  
Organization

**Dr Matthew Tattar**  
Technical Evaluator  
US Naval War College  
United States of America

# 2019 Deterrence and Assurance within an Alliance Framework

## Day 1 Session 1 Deterrence and Assurance New Theories

### 1. Leveraging Behavioural Game Theory for the Study of International Relations

*Cpt William Caballero & Brian Lunday, Air Force Institute of Technology*

Since Thomas Schelling published *The Strategy of Conflict* in 1960, game theory has played an important role in the development of international relations study. His ideas also proved highly influential in the development of American and NATO deterrence policies. However, in the foreword of the 1980 edition of his text, Schelling noted that game theorists of the era tended to focus on the mathematical frontier of conflict. This divide has widened over the last 40 years with game theorists increasingly focusing on mathematical models, and devoting less attention to applications.

The research herein seeks to bridge this divide by illustrating the utility of selected behavioral game theoretic techniques in international relations scenarios, and to revitalize the study of what Schelling called the theory of conflict. By re-examining classic Cold War deterrence models and other international relations games, we illustrate how modern game theoretic techniques that are based upon agent psychology, and their ability to think strategically or learn from past experience, can provide additional insights beyond what can be derived via perfect rationality analysis. The perfectly rational frameworks espoused by Cold War deterrence theorists are useful, but dated. They largely ignore the human elements of a decision-maker which are of foremost significance to the threats faced by NATO in the post-truth era. Therefore, by conjoining the tools of behavioral game theory with international relations, we demonstrate a new direction for deterrence theory and its application in the modern, emotionally-charged, and tribalistic global climate.



**Cpt William N. Caballero** is an Active Duty officer in the United States Air Force. He is an Operations Research Analyst (61A) currently assigned to the Air Force Institute of Technology (AFIT) as a PhD Candidate. His research emphasizes theoretical developments in game theory and behavioral models of choice under uncertainty with specific application to national security. Prior to his current assignment, Capt Caballero was a MS Student at AFIT, and served in various capacities at AF/A9 Studies, Analysis and Assessments coordinating personnel strategy and combat assessment policy.



**Dr. Brian J. Lunday** is an Associate Professor of Operations Research at the Air Force Institute of Technology (AFIT). Dr. Lunday's service in academia includes 11½ years of teaching, advising, and researching in both the Department of Operational Sciences at AFIT and the Department of Mathematical Sciences at the U.S. Military Academy. Prior to becoming a U.S. Air Force civilian, Brian was a uniformed, U.S. Army Operations Research/Systems Analyst and a Combat Engineer for 24 years.

## 2. Applying Soft OR to Assessing Conduct

*Stuart Smith, Joint Force Command, Brunssum*

To date the approaches taken to assess deterrence have applied hard Operations Research (OR). Hard OR is appropriate for problems where the problem is well defined; it is possible to define a representative model of the problem which, ideally, can be verified and validated, and the desired outcome is to identify an optimum or range of acceptable solutions. Soft OR is appropriate for problems where the problem is not well defined; it is not possible to define a representative model that can be verified and validated and the desired outcome is to improve our understanding of the problem. Soft OR can be a precursor to hard OR.

There are multiple definitions of 'deterrence' and even more interpretations. One thing that most definitions and interpretations of deterrence have in common is that they define it, or interpret it, in absolute terms. The fact that there are so many definitions and interpretations implies that deterrence may not be an absolute, but rather that it is more relative. There are differences of opinion as to what is acceptable conduct and what is unacceptable conduct. Some apply deterrence to nuclear and conventional conflict only, whereas others apply it to the hybrid threat as well. Unfortunately, the hybrid threat is hardly any better defined than deterrence, however, there are observed hybrid tactics.

This paper describes an analysis of observed hybrid tactics to determine if soft OR can help to define the hybrid threat and to assess if a potential adversary's conduct is becoming more confrontational or more conciliatory. This approach avoids the political pitfall of trying to establish a threshold for deterrence that is acceptable to all. If feasible, such a method could be used for comparative analysis (e.g. conduct in year 20xx was the most confrontational for the last 10 years) and trend analysis (e.g. conduct has become more confrontational for three years consecutively).

The author applied soft OR to a range of hybrid tactics in mid-2017. This paper reports on the results and analysis of a pairwise comparison of observed hybrid tactics.

The paper concludes that it is possible to rank hybrid tactics on a scale of conduct. Therefore, it is feasible to perform comparative analysis of an actor's conduct.



**Stuart Smith** has 25 years of experience as an Operational Analyst in both the UK MoD and NATO. Mr Smith has experience with simulations, systems dynamics, linear and non-linear programming in support of procurement, exercises and operations. Mr Smith has conducted operational deployments to Bosnia-Herzegovina, Kosovo and Afghanistan. Mr Smith is currently working at Joint Force Command Brunssum.



## 3. A “New Look” at First Strike Stability

*Harrison Schramm, Center for Strategic and Budgetary Assessments*

During the Cold War, analysts assessed the strategic stability of their nuclear weapons programs and postures by comparing the relative utility of attacking first against attacking second. In this mathematical construct, stable deterrence is characterized by these costs being nearly equal, and participants in a multi-player deterrence ‘game’ are indifferent to the effect of attacking first vs. second. This is in stark contrast to unstable deterrence, where a player may be incentivized to strike first, lest they lose their small number of weapons in a so-called ‘splendid first strike’. These ideas are reflected in diversity and dispersal of nuclear arsenals and “Assured Second Strike Capability”.

Since the end of the Cold War, little has been written – at least publicly – about this model. In this paper, we review the concept of First Strike Indices, exercise the model against several use cases informed by publicly available data, and propose refinements and extensions. These refinements and extensions cover different classes of weapons, levels of dispersion, and the behaviors and tensions internal to a multi-player (in this case, presumed Nations) alliances, where the levels of mutual commitment and defense probabilistic and variable. This leads to insights about how alliance behaviors may affect both the other alliance members as well as the behavior of the adversary (which itself may be an alliance).



*Harrison Schramm has been a leader in the Operations Research community for the past decade. Prior to joining the Center for Strategic and Budgetary Assessments (CSBA), he had a successful career in the US Navy, where he served as a Helicopter Pilot, Military Assistant Professor at the Naval Postgraduate School, and as a lead Operations Research Analyst on the US Navy Headquarters Staff, retiring at the rank of Commander. His areas of emphasis are large-scale simulation models, statistics, optimization, and applied probability. His current research is at the intersection of data, mathematical models, and policy.*

*Mr. Schramm enjoys professional accreditation from the Institute for Operations Research and Management Sciences (CAP, INFORMS), the American Statistical Association (PStat, ASA) and the Royal (UK) Statistical Society (CStat, RSS). His published work has appeared in INTERFACES, J. Applied Meteorology and Climatology, SIGNIFICANCE, J. Mathematical Biosciences, Proceedings of the US Naval Institute, OR/MS Today and Military Operations Research. He is the editor of Military Operations Research: The Science of a Secure Nation.*

*He is a past Vice President of the Military Operations Research Society (MORS) and is active in several Committees of INFORMS. Notably, in 2018, he served as a Judge for the prestigious Franz Edelman Award and has been appointed inaugural chair of the INFORMS Conference on Security, to be held in California in 2020.*

*He was the 2018 recipient of the Clayton Thomas Prize for distinguished service to the Profession of Operations Research. Additionally, he has received the Richard H. Barchi prize (2014) for presentations in OR. In 2003 he received an Air Medal and the Naval Helicopter Association’s Aircrew of the Year for the at-sea rescue of 27 merchant sailors in the Gulf of Oman.*

# 2019 Deterrence and Assurance within an Alliance Framework

## Day 1 Session 2 Deterrence and Assurance in Practice

### 4. National Perspectives of European Countries in Deterring Russia

*Dr Nora Vanaga, National Defense Academy of Latvia*

Since Russia's annexation of Crimea and the start of the military conflict in Ukraine's Donbass region in 2014, states in Europe's east and north have revised their assessments of Russia's policies and intentions. The approach chosen by Russia in Ukraine, however, has rendered lessons learned from the Cold War deterrence only partially applicable to the recently changing security situation in Europe. The emergence of the cyber realm, a smaller emphasis on nuclear deterrence and increasing importance of non-military threats, are among the key differences between the Cold War and the current security environment. The key focus of the paper is on the defence and military responses of northern and eastern European countries, being in some parts derived from the book project "Deterring Russia in Europe" conducted in 2017/2018 and expected to be published by Routledge in the Fall of 2018. The countries which were picked as case studies for this paper are Sweden, Finland, Norway, Estonia, Latvia, Lithuania, Poland, Germany and Romania.

The selection of the nine cases was done by following three criteria. First, their representation of the Baltic and Black Sea regions, because both regions are problematic for NATO's northern and eastern flanks and for European security generally, considering Russia's military activities and the existing military asymmetry. Second, the perception of Russia as a threat: This is a vitally important factor in explaining shifts in the defence policies or even strategies of the countries picked for the paper. Third, institutional membership: NATO and EU membership differences undermine the deterrence posture of the Baltic Sea region and complicate the building of closer cooperation on defence matters for the countries in the region.

The paper provides in-depth analysis of the changing character of deterrence and its practical application by Russia's European neighbours. Its potential contribution to the symposium would be laying out the national perceptions of deterrence concept that on the first glance only seems to be easy to understand. Additionally, it would identify particular challenges the countries are facing to balance between NATO deterrence posture and national deterrence efforts, as at the end of the day it all comes back to the human and financial resources that countries are able to allocate for numerous newly-launched policies. Lastly, it would also help to formulate national expectations when it comes to the existing NATO's deterrence posture and put forward ideas how to make it more fitting both to the national needs of northern and eastern European countries and Alliance's deterrence posture.



**Dr.sc.pol. Nora Vanaga** is a senior researcher at the Centre for Security and Strategic Research at the National Defence Academy of Latvia. She earned her Ph.D. in 2015 in the field of international relations at the University of Latvia writing thesis on small states' political will in foreign and defence policy. She is a lecturer at the National Defence Academy, University of Latvia, Baltic Defence College, the Military College of Ireland, Theresan Military Academy.

She has written number of articles on Latvia's defence policy, military cooperation of the Baltic States, security policy of the European Union, NATO and human security. Her current research is focused on small state defence strategies, defence policy of Belarus, arms control and deterrence. Her recent publication, co-edited volume "Deterring Russia in Europe: Defence Strategies for Neighbouring States" (Routledge), reflects on evolution of deterrence concept and developments after the beginning of the Ukraine crisis in the defence policies of ten countries.

### 5. NATO and the UK's Role as a Second Centre of Nuclear Decision Making

*Prof. Andrew Dorman & Prof. Matthew Uttley, King's College London*

Changes in the international environment brought about by Russia's annexation of the Crimea and potential changes to conflict with the advent of the cyber domain are challenging NATO. In the United Kingdom defence constraints and the potential ramifications of Brexit threaten to alter the United Kingdom's contribution to NATO. Historically the United Kingdom has provided the second centre for nuclear decision-making alongside the United States. This paper is divided into three parts. Part one considers how these changes in circumstance are affecting the United Kingdom and its role within NATO. Part 2 then explores how the United Kingdom and NATO are adjusting to these changing circumstances and the degree to which their strategic visions are out of alignment. Part 3 then considers what actions might be taken by both NATO and the United Kingdom to offset the current questions surrounding the nuclear deterrent provision and establish what enhancement measures are needed.



**Prof. Andrew Dorman** is a Professor of International Security. His research focuses on the interaction of policy and strategy, utilising the case studies of British defence and security policy and European Security. He has held grants with the ESRC, British Academy, Leverhulme Trust, Ministry of Defence and US Army War College.

Professor Dorman trained as a Chartered Accountant with KPMG, qualifying in 1990 before returning to academia. He has previously taught at the University of Birmingham, where he completed his masters and doctoral degrees, and the Royal Naval College Greenwich.



**Prof. Matthew Uttley** has held the Chair in Defence Studies at King's College London since 2005. He was formerly the Academic Adviser to the Commandant of the Royal College of Defence Studies (2014-2015), and Academic Director of the Policy Institute at King's (2012-2014). He was previously the Head of the King's Defence Studies Department and Dean of Academic Studies at the Joint Services Command and Staff College, Shrivenham (2006-2012). Before joining King's in 2000, he held academic posts at the Centre for Defence Economics, University of York (1992-1994) and the Department of Politics, Lancaster University (1989-1992).

Professor Uttley has published widely on the historical and contemporary dimensions of UK defence policy, defence economics, weapons acquisition and professional military education. His 2017 publications include (with Benedict Wilkinson) 'Contingent Choices: The Future of United Kingdom Defence Procurement and Defence Industries in the post-Brexit Era', *Global Affairs*, and (with Hugo Meijer, Lucie Béraud-Sundreau and Paul Holton) 'Arming China: Major Powers' Arms Transfers to the People's Republic of China', *Journal of Strategic Studies*. Other recent publications include (with Andrew Dorman and Benedict Wilkinson) 'The Curious Incident of Mr Cameron and the United Kingdom Defence Budget: A New Legacy?', *The Political Quarterly* (2016), and (with Andrew Dorman and Benedict Wilkinson) the King's Policy Institute report entitled *A Benefit, Not a Burden: The Security, Economic and Strategic Value of Britain's Defence Industry* (2015). His article (with Benedict Wilkinson) entitled 'A Spin of the Wheel? Defence Procurement and Defence Industries in the Brexit Debates' was published in the May 2016 edition of *International Affairs*.

Professor Uttley has acted as an adviser and expert reviewer for a number of bodies including the National Audit Office, European Commission, Ministry of Defence's Development, Concepts and Doctrine Centre, and the Economic and Social Research Council. He is a Fellow of the Royal Society of Arts (FRSA) and the Royal Historical Society (FRHistS), Adjunct Professor at the Baltic Defence College in Estonia, Visiting Professor at the National Defence School of the Serbian Military Academy in Belgrade, and Adjunct Senior Fellow at the Center for Intelligence & National Security, University of Oklahoma.

## 6. Deterrence and Assurance as a Daily Activity: NATO's Maritime Operations

*Andrew Bell, Allied Maritime Command*

The high seas are part of the Global Commons, the domain in which nations and organisations have relative freedom to operate. As a result it allows nations and organisations to conduct military activity, project power and influence, and interact with others on a daily and continuous basis in a way that is not possible in the land or air domains. Beyond these military operations the high seas are of course the essential line of communication in global trade. Deploying capabilities that can operate on, under and above the high seas, delivering influence and, as and when required, control, are therefore fundamental in achieving deterrence and assurance.

Over recent years the Russian Federation Navy has been pursuing an ambitious fleet modernisation and renewal programme. New maritime platforms and weapon systems are being deployed as part of a programme designed to counter NATO's defensive capabilities. Traditional practices such as long range deployments of submarines designed to attack carrier task groups are being reinvigorated. New missions are being undertaken, such as the establishment of a permanent operating base in Tartus, Syria which beyond immediate support to Russian forces deployed in that country enables operations across the Mediterranean.

The need for NATO to react to developments in the maritime domain has been recognised for some time now. The Brussels Summit Declaration from July 2018 stated:

*"We are reinforcing our maritime posture and have taken concrete steps to improve our overall maritime situational awareness. [...] Through an enhanced exercise programme, we will reinvigorate our collective maritime warfighting skills in key areas, including anti-submarine warfare, amphibious operations, and protection of sea lines of communications. The posture will also ensure support to reinforcement by and from the sea, including the transatlantic dimension with the North Atlantic being a line of communication for strategic reinforcement."*

NATO's Allied Maritime Command (MARCOM) delivers some of this maritime posture through the Standing Naval Forces, which consists of two Standing NATO Maritime Groups and two Standing NATO Mine Countermeasure Groups. Nations also contribute, with a permanent presence around the whole of NATO Area of Responsibility through both national activity and international actions such as the European Union Operation SOPHIA. MARCOM is charged with the operational level planning, delivery and assessment of the maritime contribution to NATO's Deterrence and Assurance.

This paper will provide an in-depth review and comparison of both Russian and NATO maritime capabilities and activities, review the plans and aspirations for the near future, and attempt to identify gaps and challenges ranging from strategic ambition such as the Alliance Maritime Posture, through command and control, to deployed capability and developing technologies that will impact upon the balance required to achieve a sustainable level of deterrence and assurance..

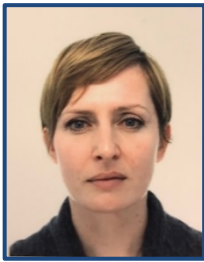


**Andrew Bell** is the Operations Analyst for NATO's Maritime Command based in Northwood, London. He has 25 years of experience in Military Operations Research, including maritime patrol and anti-submarine warfare tactics, air campaign planning and assessment, and submarine vulnerability studies. For the last 16 years he has worked for NATO on the planning and assessment of military operations, with experience covering areas including maritime security, counter-terrorism, and counter-piracy, and also with the International Security Assistance Force in Afghanistan.

## 7. Assuring Allies by Effectively Deterring Hybrid Actors: Challenges and Opportunities

*Dr Vlasta Zekulic, NATO HQ*

Hybrid threats are not new. NATO has been monitoring and responding to this concept of warfare since 2009. However, the rapid enhancement of information technologies, alongside our increased dependency on them, creates a vulnerability that hybrid actors exploit to destabilize unity and cohesion of the Alliance. A hybrid strategy is typically applied in an agile manner across all physical, social and psychological domains, blurring lines between war and peace, challenging our concepts of a 'battlefield', and using our values against us as weapons. Because of this, countering hybrid threats is a challenging and long-term endeavour. It consists of rigorous preparedness, tailored deterrence and credible defence. This paper assesses NATO's efforts in countering hybrid threats by highlighting challenges faced in timely recognition, positive attribution, and proactive response to hostile acts. Additionally, it calls for more active use of tools available in the political and communications domain, and to that end proposes an application of effects-based approach in developing response options at the strategic level of the Alliance.



**Dr Vlasta Zekulic** works for NATO's HQ, Operations Division, Operational Preparedness Section. She joined the NATO International Staff after completing her military career as a Lieutenant Colonel in 2017.

As an infantry and military police officer, she held numerous command and staff positions, including several deployments to operational theatres. Since late 2014 she served at the Allied Command Transformation, Strategic Plans and Policy Division, where she led the interoperation of high level political guidance and developed policy papers, strategies and inputs to NATO Military Authorities.

This work led to a posting as a deputy Head in the Strategic Assessment Element of the Emergency Security Challenges division. In this capacity she worked on initiating, developing and drafting strategic assessments aimed at identifying emerging crisis, enhancing situational awareness and providing early warning for use by the Secretary General and the Chairman of Military Committee. In her current role she leads development of operational policies and strategic-level assessments to bolster Alliance's deterrence and defence posture and preparedness for crisis management situations.

She holds degrees in computer science, criminalistics and criminology, as well as PhD in International Relations and National Security.

# 2019 Deterrence and Assurance within an Alliance Framework

## Day 1 Session 3 Deterrence and Assurance: Lessons Learned

### 8. Adversary Intent: A Case Study of North Korea

*Heather Kearney & Dr Michelle Black, University of Nebraska at Omaha*

The importance of understanding the adversary is gaining much-needed attention within the field of deterrence theory and practice. However, assessing adversary intent is arguably the most challenging task for a deterrence planner and relies heavily on the subject matter expert's knowledge on the target of interest. Understanding the intent of the adversary contributes significantly to the strategic planning and operations of a deterrence strategy, as a planner needs to either anticipate or respond to an adversary's move or countermove before or during interactions. Unlike capabilities, intent needs social science frameworks/models to help identify behavioral actions and responses that could help explain specific adversary's beliefs, goals and needs.

After much review of the literature, it was discovered that Schram's model on communication helped to identify these very factors. The goal of this paper is to present and test this communication model using the case of North Korea. Specifically, the authors tested the viability of this model by using Kim Jong-Un's (KJU) speeches (2013-2018), focusing on techniques that assessed the underlying facets of intent (e.g., cognitive beliefs, goals, and needs). These speeches served as viable secondary sources that identified objective markers to which the authors applied a coding scheme to extract the adversary's 'will' to use a capability. This paper argues that this model can help policy makers and planners understand if an adversary has the 'intent' to perform specific deterrence actions.



***Heather Kearney** is assigned to the J5 Plans and Policy Directorate, United States Strategic Command, Offutt Air Force Base, Nebraska. She is currently a Program Analyst for the USINDOPACOM AOR (J56) and a 2015 USSTRATCOM Fellow. The title of her capstone project is: Adversary Intent: A Case Study of North Korea.*

*Ms. Kearney enlisted into the Air Force in 1996 and attended basic training upon her high school graduation. She graduated with honors from Upper Iowa University in 2003, receiving a Bachelor of Science Degree in Public Administration. She also graduated from Troy University in 2006 receiving a Master of Science Degree in International Relations with a concentration in National Security Affairs.*

*Ms. Kearney's initial military assignment was at Shaw Air Force Base, South Carolina, 79<sup>th</sup> Fighter Squadron deploying numerous times. In 2001 she joined the Des Moines, IA Air National Guard. In 2009 she joined the 610<sup>th</sup> Information Operations Flight reserve unit on Offutt Air Force Base. In April 2011 she became a reservist at U.S. Strategic Command. In December 2013 she received her commission with the Navy reserves and retired in 2017 after 21 years of service. Ms. Kearney was also a part time dance instructor at The Dance Factory and was on the outreach committee with Ballet Des Moines, she tries to stay active within the performing arts community.*

### 9. Coercion and Assurance in Practice: Understanding the outcome of Western Efforts to prevent Chemical Weapons Use in Syria and Drawing Lessons for NATO

*Prof. Wyn Bowen & Dr Matthew Moran, King's College London; Dr Jeffery Knopf, Middlebury Institute of International Studies*

This paper examines the use of coercion by the United States and other outside powers in response to the Syrian government's use of chemical weapons in that country's civil war. External actors have applied both deterrent and compellent modes of coercion in this case. Despite a common assumption that compellence is more difficult to achieve than deterrence, in Syria compellence enjoyed considerable though incomplete success in pressuring Syria to give up its chemical weapons, but deterrence has failed multiple times across two U.S. administrations. We analyze this reversal of the expected pattern and the varying outcomes in this case more broadly as a way to explore common assumptions about how the credibility of threats relates to coercive outcomes. We conclude that credibility, while important, operates in ways that are more complex and less decisive than how it is commonly understood. Part of the problem lies in the familiarity to decision makers and outside commentators of a schema that implies credibility is established by demonstrating a willingness to impose costs using airpower – a script we call the “resolve plus bombs” formula. But seemingly credible threats can be ambiguous in the scope of what they cover, and even highly credible threats can fail. The Syria case shows the need to also take into account two additional factors. The first is the domestic political motivations of the target of coercion, in this case Syrian President Assad's overwhelming concern with regime survival. The second is the associated need to pair coercive threats with appropriate assurances.

This analysis suggests a viable path to effective coercion of the Assad regime, but the path involves intense tradeoffs that have largely prevented decision makers from embracing the requirements of effective coercion in this case. As a result, in line with the ‘resolve plus bombs’ approach, they have tended to fall back on the threat or limited use of air strikes, an approach that has mostly not been sufficient to change Syria's calculations regarding chemical arms. Based on this detailed case study of the western response to chemical use in Syria, the paper will draw pertinent lessons for NATO regarding the complex interplay of deterrence, compellence and assurance.



**Prof. Wyn Bowen** is Head of the School of Security Studies, King's College London, comprising the Defence Studies Department (DSD) and the Department of War Studies. Previously he has been Head of DSD and Dean of Academic Studies at the UK Joint Services Command and Staff College, and Director of the Centre for Science & Security Studies at King's. Wyn has authored/co-authored a number of books focusing on US security policy (1996), US non-proliferation policy (2000), Libya's nuclear programme (2006), G8 global WMD threat reduction (2011), Iran's nuclear proliferation behaviour (2016) and trust in nuclear warhead dismantlement verification (2018).



**Dr Jeffery Knopf** is a professor at the Middlebury Institute of International Studies (MIIS) in Monterey, California, where he serves as chair of the Master's degree program in Nonproliferation and Terrorism Studies. In academic year 2018-19 he is spending a sabbatical as a visiting scholar at Stanford University's Center for International Security and Cooperation (CISAC). Dr. Knopf is also a senior research associate with the James Martin Center for Nonproliferation Studies (CNS) at MIIS and is a former editor of the CNS journal, *The Nonproliferation Review*. Dr. Knopf received his Ph.D. in Political Science from Stanford University. He has published extensively on issues related to deterrence, assurance, arms control, and nonproliferation. In his most recently completed project, Dr. Knopf was the co-editor of a book of essays on *Behavioral Economics and Nuclear Weapons* (University of Georgia Press, forthcoming).

## 10. Deterrence and the Use of Sanctions

*Dr Ian Bolton, King's College London*

Over the last three decades the use of sanctions as a means of responding to various international challenges has increased significantly, from humanitarian abuses, such as in Venezuela, to countering the proliferation of weapons of mass destruction, such as in North Korea. This increasing use of sanctions has been both at the multilateral and unilateral levels; and has been driven by many of the NATO members. Sanctions are most commonly used to coerce, constrain, and signal to those who are placed under sanctions. A diplomatic option of last resort before potential armed intervention. In the academic arena at least, the effectiveness of sanctions has been questioned. Yet sanctions undeniably have effects, and there is evidence to suggest that sanctions have played a key role in deterring the occurrence or continuance of armed conflict in certain contexts. The halting of direct Russian military support for Ukrainian separatists in eastern Ukraine offers an interesting example in this regard.

This paper will therefore explore the use of sanctions as a method of deterring armed conflict and examine the relevance of this to NATO. In particular, the paper will consider whether sanctions represent a tool that the NATO alliance could use, and whether there is more NATO could be doing to support the enforcement of sanctions, especially at a time of significant change to the rules based international system.

*Dr Ian Kenneth Bolton is a former British Diplomat, of 11 years' service. During this time, as well as serving overseas, Ian focussed extensively on Counter-Proliferation policy, including the enforcement of sanctions and interdictions. His last role within the Foreign and Commonwealth Office saw him help write the UK's keynote sanctions legislation in response to Brexit, the Sanctions and Anti-Money Laundering Act (2018). This Act allows the UK to continue to implement sanctions post-Brexit. Ian has also worked for Project Alpha, at King's College London, in this time, which focusses on strategic export controls and Counter-Proliferation sanctions. Ian is currently a Sanctions Senior Manager at HSBC UK and a Visiting Research Fellow in Sanctions at King's College London.*



# 2019 Deterrence and Assurance within an Alliance Framework

## Day 2 Session 4 New Trends & Methods (1)

### 11. Societal Resilience as a Deterrent

*Elizabeth Braw & Professor Peter Roberts, RUSI*

The primary concern of every government is the well-being of its population. As the threats to western countries' national security increase and intensify it is becoming clear that governments and their armed forces alone do not have the capacity to provide sufficient protection and mitigation in every area of society. This is especially important to consider as threshold or hybrid warfare and other emerging forms of war increasingly target Western countries' soft underbelly: their civil societies and private sectors. To a large extent, such aggression is not impeded by geography: cyber-attacks and malign influence campaigns know no geographical impediments, but they can cause harm to the homeland that is as effective as military aggression. In addition, today many of the targets of potential aggression – for example companies in strategic sectors – are owned not by the government but by private shareholders, nor are they classified as critical national infrastructure that qualifies for additional protective measures.

This means that governments need to work with business to create a model of comprehensive resilience and thus deterrence. Indeed, governments need to re-evaluate their approach to societies' involvement in these challenges. That is all the more important as societal resilience can act as a deterrent. Several countries have shown that it is possible and desirable to involve citizens in some form of an organised homeland defence. Denmark's volunteer Home Guard frees up the armed forces to focus on purely military duties. The Swedish government has been updating its Cold War total defence plans, where the population play a major role. In a crisis situation, residents of Sweden are now expected to be able to support themselves for seven days. Ahead of the September 2018, Swedish national elections, the Swedish Contingencies Agency (MSB) trained civil servants and the wider public how to identify Russian interference attempts. With the population thus prepared, the cost/benefit calculus of an adversary changes.

No country, however, has comprehensive societal resilience plans. With most developed countries facing hybrid threats of a similar nature, there is opportunity - and a need - to build on current models. Philosophically this is a challenging move for governments: it shifts an underpinning belief in deterrence as a passive, dormant posture to which governments are solely responsible, to an active and dynamic state of mind that reaches across society, where everyone plays a part. With our population and private sector, however, our societies harbour enormous deterrent potential.



**Elizabeth Braw** is an Associate Fellow at RUSI and director of the Institutes Modern Deterrence programme. Previously a journalist, she frequently writes commentaries for *The Wall Street Journal*, *The Financial Times*, *Foreign Policy* and other publications. Elisabeth is especially interested in European armed forces and homeland defence issues. She has also been a visiting fellow at the University of Oxford, and frequently speaks at security conferences.



**Professor Peter Roberts** is director of Military Sciences at the Royal United Services Institute. He researches and publishes on a range of subjects from strategy and philosophy, contemporary war and warfare, military doctrine and thinking, command and control, naval warfare, ISR, professional military education and disruptive warfare techniques. He lectures, speaks and writes on these topics as well as regularly providing advice for both UK and foreign governments

## 12. Acculturation of the Core Concepts of European Security

*Dr Andrew Corbett & Dr Annamarie Bindenagel Šehovič, University of Warwick*

Deterrence is a psychological process designed to influence the decision making of a potential adversary; it works best prior to the decision being made. Current NATO definitions of deterrence and other key terms such as resilience appear very carefully constructed but deliberately ambiguous in order to accommodate differing national interpretations of how deterrence works, and what resilience means in that context. In practice, these ambiguities in policy curtail the Alliance ability to conduct a coherent deterrence strategy, and significantly inhibit the ability to integrate all deterrence elements once a crisis has been recognised. Public use of these ambiguous definitions enables development of ostensibly coherent public policy in both deterrence and resilience, while creating serious tensions in the development and implementation of strategies for either. European NATO Allies and EU members would benefit greatly from an acknowledged, if not necessarily common, understanding of the use of key terms in their own security lexicon, or at least from a more honest acculturation of the key elements of their security strategies.



**Dr. Andrew Corbett** is a teaching fellow at King's College London Defence Studies Department, currently teaching at the UK Defence Academy. His first career in the Royal Navy submarine service spanned the end of the Cold War and included Command of 2 Trident submarines, capability management in the Ministry of Defence and development of 21st century NATO deterrence and defence strategy. He holds a PhD in Defence Studies from King's College London and an MPhil in International Relations from the University of Cambridge. His main research interests concern the use of 'hard power' such as military force, and cognitive aspects of diplomacy such as nuclear deterrence as strategic tools in foreign policy in the 21st century. His current research projects concern the ethics of nuclear deterrence and the acculturation of security thinking in the NATO Alliance.



**Dr Annamarie Bindenagel Šehovič** is Research Fellow at PAIS at the University of Warwick and Associate Fellow at the Potsdam Center for Policy and Management (PCPM). In the winter term (2017/2018) she was Acting Professor, Chair of International Relations at the University of Potsdam, Germany. Her research focuses on human security and global insecurities, with particular emphases on health security, and non-citizen rights. Dr. Šehovič was previously lecturer in international relations at the University of Erfurt, Germany, and at the Willy-Brandt-School of Public Policy. She is the founder of Bindenagel Consulting, cc in South Africa.

### 13. Perspectives on Deterrence and Assurance in 'hyperbolic' warfare

*Gabriele Rizzo, Leonardo S.p.A.*

'Hyperbolic' warfare, or 'hyperwar' is a new concept in strategic studies. It has been pioneered by Gen. (r) John R. Allen, USMC, and Amir Husain in their seminal piece in the Proceedings of the US Naval Institute, July 2017, and by Prof. Julian Lindley-French in the GLOBSEC NATO Adaptation Initiative. It may be defined as a type of conflict where human decision making is almost entirely absent from the observe-orient-decide-act (OODA) loop. As a consequence, the time associated with an OODA cycle is reduced to near-instantaneous responses with implications like infinite, distributed Command & Control capacity; concurrency of action and perfect coordination; logistical simplification; and instant mission adaptation. This requires a new definition and action of Strategy, full spectrum Deterrence and mission Assurance (SD&A) to render them applicable, relevant and useful in the modern context.

The research suggests that efficient modeling and simulation can assist politicians, commanders and decision-makers to take better decisions and analyze alternatives in an increasingly fast-paced environment, thereby enhancing deterrence. By simplifying assets employed, while at the same time encoding the complexity of the environmental dynamics in a "course of action war-gaming"-like tool, and by making use of deep-reinforcement learning, starting from present-day results, the research will present some perspectives on how SD&A could be reinterpreted in the Information Age, together with a potential roadmap for the future.



**Gabriele Rizzo** is a visionary futurist and an enthusiastic innovator. Currently Lead Scientist, Strategic Innovation in Leonardo, futurist advisor in NATO, Member at Large for Strategic Foresight, and NATO expert for Cyberspace and Cyber Defence. He held multiple position over 10 years in Engineering staff before moving to Strategy, where he contributed substantially to strategic visions and long-term thinking of Italy, Europe, NATO, large industries and international organisations. He also teaches Strategy and Defence of Cyberspace at Sapienza University of Rome. He authored several capstone works on deep futures and was honoured with national and international awards.

## Day 2 Session 5 New Trends & Methods (2)

### 14. Artificial Intelligence and Deterrence: Science, Theory and Practice

*Dr Alex Wilner, Carleton University*

While a consensus is forming among military experts, policymakers, and academics that Artificial Intelligence (AI) will prove useful for national security, defence, and intelligence purposes, no academic study has explored how AI will influence the logic, conceptualization, and practice of deterrence. Debates on AI in warfare are largely centered on the tactical use and misuse of the technology within autonomous weapons systems, and the associated risks AI may pose to the ethical use of force. No concomitant debate exists, however, as to the strategic and deterrent utility of AI in times of crisis, conflict, and war or in matters of cybersecurity. Nor has any country openly published a strategic document on the nexus between AI and deterrence. The dearth of knowledge is surprising given the expectation that the future of warfare will be autonomous. This paper will provide a comprehensive conceptual map of how AI influences both deterrence in theory and in practice. It does so by exploring the science of AI and by providing a synthesis of how states are approaching AI in warfare and deterrence.



*Dr Alex Wilner is an Assistant Professor of International Affairs at the Norman Paterson School of International Affairs (NPSIA), Carleton University in Ottawa, Canada. Professor Wilner's research focuses on the application of deterrence theory to contemporary security issues, like terrorism, radicalization, organized crime, cyber threats, and proliferation. His books include [Deterring Rational Fanatics](#) (University of Pennsylvania Press, 2015) and [Deterring Terrorism: Theory and Practice](#) (eds., Stanford University Press, 2012).*

*Dr Wilner's articles have appeared in [International Security](#), [NYU Journal of International Law and Politics](#), [Security Studies](#), [Journal of Strategic Studies](#) (2017 and 2011) [Comparative Strategy](#), and [Studies in Conflict and Terrorism](#), and elsewhere. In 2016, he was awarded a SSHRC Insight Development Grant from the Government of Canada to explore state and non-state cyber deterrence. In 2018, he received an IDEaS research grant from the Department of National Defence to explore Artificial Intelligence and deterrence. Prior to joining NPSIA, Professor Wilner held a variety of positions at Policy Horizons Canada (the Government of Canada's foresight laboratory), the Munk School of Global Affairs at the University of Toronto, the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland, and the ETH Zurich in Switzerland.*

## 15. Multi-Actor Deterrence: Defining the Concept

*Dr Michelle Black & Dr Lana Obradovic, University of Nebraska at Omaha*

For much of the last century, deterrence was commonly known as a strategy where a state actor, mostly in a nuclear domain, used credible threats against another actor to persuade them not to take a specific action, either through imposition of cost or denial of benefit. What scholarship has largely ignored is the question of indirect deterrence via other state and non-state actors. More specifically, can states seek to indirectly deter non-state actors through states and vice versa? The paper examines these questions, and seeks to clearly define and operationalize 'multi-actor deterrence' by building a taxonomy, and eliminating pseudo-equivalencies.



**Dr Michelle Black** is an Assistant Professor in the Department of Political Science for the University of Nebraska Omaha, a Research Fellow for the National Strategic Research Institute (NSRI) at the University of Nebraska, and an Associate Editor for the *Space and Defense Journal*. In addition to her academic career, Dr. Black has over seventeen years of professional experience with the Department of Defense.

Prior to joining UNO, Dr. Black was a government civilian for the Department of Defense from 2009-2016. She specialized in Deterrence Analysis and Adversary Decision-making for the United Strategic Command (USSTRATCOM) Plans & Policy Directorate at Offutt Air Force Base.

During her time at USSTRATCOM, she provided analysis and recommendations to senior leaders on decision-making strategy, deterring state and non-state actors, and regional expertise. Additionally, she initiated and directed the Deterrence and Assurance Academic Alliance, recruiting over 35 academic institutions to the program. This program provides a platform for defense and academic organizations to communicate and collaborate on research issues regarding Deterrence and Assurance. Prior to her government civilian work, Dr. Black worked in Psychological Operations from 2001-2009 as U.S. Army Special Operations NCO (Airborne) for the United States Army Special Operations Command (USASOC) and later as a Defense contractor. She deployed to Iraq, Kuwait, and Qatar during Operation Iraqi Freedom and Operation Enduring Freedom.

Dr. Black earned her Ph.D. in Political Science from the University of Nebraska at Lincoln in 2016. She also earned an M.S. in Negotiation and Dispute Resolution from Creighton University (2009), a Graduate Certificate in Intelligence Studies from Mercyhurst College (2007), an M.S. in International Relations from Troy University (2005), and B.A. in Cultural Anthropology from the University of Iowa (2001).



**Dr Lana Obradovic** bio here Dr. Lana Obradovic is an Assistant Professor of Political Science at University of Nebraska at Omaha. She earned her PhD in Political Science from the Graduate Center of the City University of New York. In the past 15 years, she has taught international relations at St. John's University, Queens College and Hunter College, all in New York City, and Yonsei University in South Korea. Before moving to Nebraska, Obradovic headed the Mercy College International Relations and Diplomacy program in New York. At UNO, Obradovic serves as the Intelligence Scholars and USSTRATCOM's Deterrence and Assurance Academic Alliance program and research Director. She was also the 2015 Deterrence and Assurance Conference organizer and program co-chair.

Obradovic's 2014 book *Gender Integration in NATO Military Forces* won the 2015 Best Book in Civil-Military Relations Award by the European Research Group on Military and Society (ERGOMAS) in Tel Aviv. She is also a recipient of the 2010 Midwest Political Science Association's Sophonisba Breckinridge Award for the best paper on the topic of women and the military. Obradovic has published extensively on Eastern Europe and East Asia, and some of the most recent publications include a book chapter "The Arctic: An Emerging Area of Conflict" in *Foreign Policy Issues for America: The Trump Years*, an article in *Res Militaries* (European Journal of Military studies) titled "Comparative Analysis of Women's Military Participation in East Asia," and a chapter in *Palgrave's Handbook on Gender and the Military* on quantitative methods.

# 2019 Deterrence and Assurance within an Alliance Framework

## 16. The Failing of Strategic Deterrence and Resilience: Contemporary Implications for NATO

*Maj David Stuckenberg, USAF*

NATO alliance members are being increasingly confronted with revised and complex warfare typologies. Such typologies may manifest in accordance with our understanding of the old rules or outside of our cognitive understanding according to altogether new rules. The old rules are the fundamentals of deterrence the alliance came to know and apply during the Cold War. In large-part, these rules remain an important part of today's non-gray zone strategic deterrence framework. On the other hand, new rules are manifesting as non-linear gray zone activities that may altogether disregard allied deterrence efforts. As a result, the utility of classical deterrence seems to have been relied upon or extended beyond its theoretical limits (into the gray zone) where it appears diminished utility in preventing enemy action. Where this breakdown occurs, along the spectrum of conflict, a strategic gap (or new strategic front) has opened and presently remains nearly un-addressed by NATO doctrine or strategy. Threats that may manifest within this gap range from un-attributable intercontinental ballistic missiles launched from commercial ships to satellite weapons and the use of natural disasters and social media to achieve pretexts and strategic ends. While a focus on gray zone activities is essential, the majority of inquiry in this area, to date, has focused on tactical-level threats. This study was undertaken to understand, in particular, the nature of strategic-level gray zone threats and how they can be effectively mitigated by a diverse but engaged NATO Alliance.

This new strategic front, made potent by diffused knowledge and advanced technologies, affords aggressors, either state or non-state, with opportunities to levy strategic threats (those which span long periods of time, cover large geographies, and impact many people) without attribution. In this strategic gap, there may be little to no risk to an aggressor as they may act in novel ways to manoeuvre around or obscure traditional means through which they may be identified as the "actor". An inability to attribute strategic level actions at this level of war calls into question the fundamentals of deterrence theory in the 21st century as they apply to gray zone activities. For if NATO cannot attribute malevolent act(s), it cannot hold actor(s) accountable in the eyes of the world. If this is the case, the alliance must begin to re-think how and where deterrence is applied to maintain world order or status quo.

This PhD level presentation is based on research at The King's College London, the Joint Service Command and Staff College of the United Kingdom, and the United States Air Force Air University, and the Curtis E. Lemay Centre for Doctrine and Education Development with support from Joint Special Operations University. During this presentation, the findings of the lead researcher, Maj David Stuckenberg, are presented with recommendations for a revised heuristic framework of understanding that builds on past understanding but advances understanding in concert with new realities. More than 150 strategists and technical experts and 40 United States Department of Defense organisations have contributed to this study known as: PROJECT SPARTICUS.



**Major David Stuckenberg** is a PhD student at King's College London and a defence strategist. He presently serves as Aide-de-camp to Commander of Air Education & Training Command, a US Air Force Major Command (MAJCOM). In his current role, Maj Stuckenberg also serves as the MAJCOM's strategist and liaison on emerging doctrines and technologies. He is also a subject matter expert on asymmetrical warfare and nuclear deterrence as well as weapons of mass destruction, drones and natural resources. Major Stuckenberg frequently advises NGOS, businesses, and governments on water and food security issues.

*His research and analysis has informed decision makers from the White House to NATO and has been featured by numerous international journals, media outlets, and defence publications. Stuckenberg holds a Masters in Political Management from The George Washington University and a Bachelor in Science in Technology from the University of Central Missouri. He is Chairman of the Board at the American Leadership and Policy Foundation and CEO of a water technology company working on breakthrough technologies to solve water scarcity. As a veteran combat pilot, Maj Stuckenberg has flown missions in every major theater of war since 9/11. He is married with five children and calls Missouri home.*

# 2019 Deterrence and Assurance within an Alliance Framework

## Day 2 Session 6 Deterrence in/from Space

### 17. 21<sup>st</sup> Century Deterrence in the Space Warfighting Domain: Not Your Father's Century, Deterrence or Domain

*Maj Bryan Boyce, US Army (Retd)*

Deterrence for the 21st Century will not be the nuclear deterrence that kept superpowers from directly engaging each other, nor the ad-hoc conventional deterrence that fails to keep hundreds, perhaps thousands of smaller conflicts from erupting across the globe. Effective deterrence, particularly for the new space warfighting domain, will have to be national and multi-national, multi-discipline, and multi-domain, combining Diplomatic, Informational, Military and Economic (DIME) means to prevent terrestrial conflicts from extending to space.

The century is new. The euphoria of the triumph of deterrence, demonstrated by the fall of the Berlin Wall on November 9, 1989 and signaling the end of the Cold War, had lasted barely nine months before Iraq invaded Kuwait.

The deterrence is new. The previous generation's conception of deterrence was often seen far too narrowly as discouraging attack. Nuclear deterrence was, and remains binary; it either works 100% of the time, or it fails. Yet the result of deterrence as a concept or strategy being routinely associated with nuclear weapons is the misnomer that successful deterrence is measured by 100% lack of incidents.

The warfighting domain is new. Outer space has changed over the last generation. Space is no longer a peaceful sanctuary. In April 2011, Ambassador Gregory L. Schulte, deputy assistant secretary of defense for space policy for the U.S. Department of Defense spoke about the "three Cs" of space – Congested, Contested, Competitive – when he addressed the 27<sup>th</sup> National Space Symposium. It is not unthinkable that a fourth "C" – Combative – would be added if major space-faring nations found themselves in a terrestrial conflict.

The research proceeds in three parts: a new (DIME) model for deterrence in the 21<sup>st</sup> century; an examination of multi-domain deterrence, including new strategy doctrine, and; the uniqueness of space as an emerging warfighting domain.



**Maj Bryan Boyce** Army (Intelligence and Space operations 22 years - retired). Defense contractor 18 years specializing in: Space Operations - Space Battle Management Command and Control (BMC2); Space Defense/Space Operations Engineering - Operations assessment and solutions development; Strategic & Operational Exercises and Wargames- vignette and scenario development, master event scenario lists, and controlling and execution; Intelligence - tactical operations, strategic and operational threat analysis.

### 18. The Increasing Importance of the Space Domain in Strengthening NATO's Deterrence

*Dr Donald A. Lewis, The Aerospace Corporation*

NATO has depended upon the space domain to support its deterrence objective for decades. Although perhaps often overlooked or underestimated, NATO's asymmetric military advantages enhanced by space have contributed a major element to the Alliance's overall deterrence posture. As space becomes officially recognized within the Alliance as a domain of operations (like cyber), it will become increasingly important to both leverage its contribution to NATO's net deterrence posture as well as manage critical perceptions of its strengths and vulnerabilities to maximize its value to deterrence. Space provides enhancement of force strength through space-based intelligence, surveillance and reconnaissance; enabling command and control via satellite communications; providing position, navigation and timing services via satellite navigation systems; and global weather insights from meteorological satellites. Space also enables information dominance in the battle space, a likely key element of future conflict throughout all domains. All of which are important contributions to NATO's net deterrence strength. However, space is increasingly a contested, congested and competitive environment and the Alliance's space capabilities must be protected against environmental and adversarial degradation or denial to ensure their continued deterrence value. Managing deterrence messaging relative to the space domain must consider both the strengths that space brings to the Alliance as well as the strengths that the domain may bring to its potential adversaries. Failure to consider the implications of adversary perceptions of space as an operational domain within NATO's deterrence calculus may precipitate escalation in adversary advanced space capabilities including counterspace capabilities intended to mitigate against the critical value NATO derives from the space domain.



*Dr Donald A. Lewis is principal director of the Strategic and Global Awareness Directorate (Project West Wing) in the Defense Systems Group of The Aerospace Corporation. He is responsible for providing an international context to U.S. National security space program planning, acquisition, operations and policy communities by providing insights into current and future opportunities, threats, and risks associated with the present and future of the space domain.*

*In that role he provides senior government officials counsel and perspective on global space threats and actively participates in U.S. Government forums addressing space domain awareness, protection and related mission assurance matters. In addition, he currently serves as the U.S. member-at-large for space on the Systems Concepts and Integration Panel of the NATO Science and Technology Organization (STO) focused on NATO technical and operational space issues.*



# 2019 Deterrence and Assurance within an Alliance Framework

## Moderators

### *Session 1: Deterrence/Assurance – New Theories*



**Dr Nicola Leveringhaus** joined the Department in September 2016 as a Lecturer in War Studies. Dr Leveringhaus specialises in the International Relations of Asia, with a focus on China and the security of that region as it relates to nuclear weapons. She is affiliated to the Asian Security & Warfare Research Group and the Centre for Science and Security Studies and the Centre for Grand Strategy in the Department of War Studies. She holds degrees from the University of Aberystwyth (BScEcon (Hons) International Politics and Strategic Studies), the London School of Economics and Political Science (MSc International Relations), and the University of Oxford (MPhil Modern Chinese Studies and DPhil International Relations, both St. Antony's College).

Immediately prior to her appointment at King's, from 2015-16, she was a Lecturer in International Politics in the Department of Politics at the University of Sheffield. Before Sheffield, Dr Leveringhaus spent several years at the University of Oxford, where she completed my doctoral thesis under the supervision of Professor Rosemary Foot, and conducted early career research. Her early career research at Oxford included a Junior Research Fellowship (2012) and a British Academy Postdoctoral Research Fellowship (2012-15), both mentored by Professor Andrew Hurrell in the Department of Politics and International Relations. During this time, she was also a Stipendiary Lecturer in International Relations for Trinity College, University of Oxford (2014-15) and the specialist tutor on the International Relations of Asia for the International Politics Summer School at St. Antony's College. Dr Leveringhaus has held visiting positions abroad, at Tsinghua University in Beijing, China (mentored by Professor Li Bin, from 2010-11) and a pre-doctoral fellowship at the James Martin Center for Nonproliferation Studies in Monterey, California (Winter 2011, mentored by Professor Jing Dong Yuan). Before her studies at Oxford, she was a research fellow at King's College London, conducting research for Professor Wyn Bowen on nuclear proliferation in Northeast Asia. During this time she also published peer-reviewed articles on Jihadist terrorism in Spain in collaboration with Professor Javier Jordan of the University of Granada in Spain.

### *Session 2: Deterrence/Assurance in Practice*

**Cdr David Spinks** joined the Royal Navy in 1992. He has held appointments with HMS Dryad, HMS Leeds Castle in the Falkland Islands, HMS Exeter, HMS Manchester and HMS Illustrious as Fighter Controller. In 2002 he was appointed as an Exchange Officer for three years with the French Navy which included Anti-Air Warfare Officer in the French Guided Missile Destroyer, FAA Cassard, deploying to the Indian Ocean with the Charles de Gaulle Battle Group in support of operations in Afghanistan. In 2006 Cdr Spinks returned to HMS Exeter as Anti Air Warfare Officer and Operations Officer.

In 2008 Cdr Spinks joined NATO Joint Force Command Brunssum in the Netherlands as Senior Duty Officer in the Combined Joint Operations Centre (CJOC), his tour included a short deployment to HQ ISAF as CJOC Shift Director. In 2010 Cdr Spinks was appointed as the Royal Naval Exchange Officer at the French Fleet HQ, working in the Human Resources policy department. A further one-year appointment followed at the French Joint Force Command (EMIAFE) in J3 division.

Cdr Spinks completed an MSc in Simulation and Modeling at the UK Defence Academy. He joined NATO Supreme Headquarters Allied Powers Europe Comprehensive Crisis Operations Management Centre in 2017 within the Deterrence Group.

# 2019 Deterrence and Assurance within an Alliance Framework

## Session 3: Deterrence/Assurance Lessons Learned?



**Dr Charles Kriel** is the Specialist Advisor to the UK House of Commons Select Committee on Disinformation, currently creating global headlines on the Cambridge Analytica / Facebook scandal.

He is the Founder of Kriel.Agency, a StratComs agency, and with a broad portfolio including Iraq, Ukraine, Kosovo, Turkey, the Caucasus, Tajikistan, Mongolia, Trinidad and Tobago, and others.

A leading expert on data & ethics, and media & design for behavior change, Charles is the author of several books, both novels and non-fiction.

A lifelong broadcaster and writer, Charles works in conflict zones and fragile states promoting free press and countering violent extremism. He's an Emmy-nominated game designer, ex-BBC Radio 1 Resident Artist, novelist, and is currently directing a documentary on disinformation and data in collaboration with Bifröst Media.

Charles is an Associate Fellow at King's College Strategic Communication centre.

## Session 4: New Trends and Methods (1)

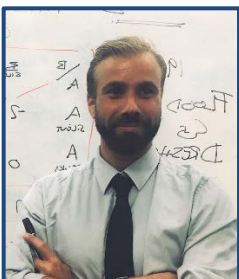


**Dr Alessio Patalano** is Reader in War Studies in the Department of War Studies, King's College London, and specialises in Japanese naval history and strategy and contemporary maritime issues in East Asia. Dr Patalano is the Director of the Asian Security & Warfare Research Group and Research Associate at the King's China Institute. He holds degrees from the University of Naples (BA) and the Ecole des Hautes Etudes en Sciences Sociales, Paris (DEA).

Since 2006, he has been Visiting Lecturer in Naval Strategy and East Asian Security at the Italian Naval War College (ISMM), Venice. In Japan, he has been a Visiting Scholar at Aoyama Gakuin University and at the National Graduate Institute for Policy Studies (GRIPS), both in Tokyo, and currently Adjunct Fellow at the Institute of Contemporary Asian Studies, Temple University Japan.

Dr Patalano was nominated for the Excellence of Teaching Award, King's College London, for two consecutive times during the academic years 2009-10, and 2010-11.

## Session 5: New Trends and Methods (2)



**Dr Christopher Sims** joined the department as a PhD candidate in 2011. He has been published in *Foreign Affairs*, *Small Wars Journal* and *Altre Modernità*. His thesis examines the evolution of the Human Terrain System and is part of broader interests in military anthropology and insurgencies. In line with King's research policy, Christopher is committed to open access journals and virtual academies on the principle that making research and teaching freely available enhances the global exchange of knowledge.

# 2019 Deterrence and Assurance within an Alliance Framework

## *Session 6: Deterrence in/from Space*



**Dr Susan Martin** is a senior lecturer in the Department and co-Deputy Director of the Centre for Science and Security Studies. Dr Martin's research focuses on the continuing relevance of structural realism, and in particular the ability of structural realism to contribute to an explanation of the role of chemical, biological and nuclear weapons in international politics. Currently she is conducting a comparative analysis of the use and non-use of chemical, biological and nuclear weapons in the Vietnam War. Other projects include an analysis of chemical weapons use in Syria as well a gender analysis of nuclear weapons and deterrence.

*Dr Martin received her BA in Political Science from Yale University and her MA and PhD in Political Science from the University of California, Berkeley. She was a Post-Doctoral Fellow at the Christopher H. Browne Center for the Study of International Politics at the University of Pennsylvania, and has taught at Wesleyan University, the University of Pennsylvania and Florida Atlantic University.*