



ESTONIAN NATIONAL  
DEFENCE COLLEGE



## INTERNATIONAL AIR FORCE CONFERENCE



# AIR POWER THEORY AND PRACTICE: Implications For Small Air Forces

## CONFERENCE GUIDE 31<sup>th</sup> May 2016

Tartu



# FOREWORD

Dear Guests,

It is with great pleasure that we welcome you to this very first Air Power Conference, hosted by the Estonian National Defence College.

In the wake of World War II, September 1939, the Estonian Chief of Defence General Johan Laidoner said, "I do not know who will prevail in this war, but it will be the party which can achieve control of the air". Indeed, since World War II, no battle has been won against adversary's air superiority. The importance of air power in modern warfare from one side and the high fiscal cost associated with air operations from the other, present small nations like Estonia with a difficult dilemma. In case of a military conflict, our potential adversary is sure to exercise its dominance of aerospace in pursuit of a quick and decisive victory. How should we use our limited resources to build defence forces that both can deter and defend Estonia against an aggressor? Is there such a thing as an asymmetric response to air dominance and how can we use it? Before our accession to NATO in 2004, Estonian defence thought largely forfeited air domain to the adversary, as pursuit of any capability to influence aerospace was deemed too costly to even try. This understanding started to shift since 2004, when our AirC2 systems were linked to NATINAMDS [NATO Integrated Air and Missile Defence System] and allied Air Forces began continuous air policing mission over the three Baltic nations.

Estonia is the smallest nation in NATO to have Air Force as an independent service branch. Limited manpower and resources have forced us to be highly efficient and shaped our focus which is set on cooperation with Allies and Partners. While lacking resources to develop indigenous combat air power, the geographical position of Estonia dictates that our nation must be able to maintain control of its airspace to preserve our security interests. Estonian Air Force is designed to cooperate with NATO and its Allies, we strive to be the enabler that makes Allied air operations over Estonia possible. We operate our national AirC2 network which together with its sophisticated sensors is an organic part of the NATO Integrated Air and Missile Defense System. Our Forward Air Controller program is combat-proven in Afghanistan and ready to work with our Allies in defence of our common values. Ämari Air Base is the home of NATO Baltic Enhanced Air Policing mission since May 2014. On September 3rd 2014, during his historical visit to Tallinn, President Barack Obama stated;

"Today, I can announce that this initiative will include additional air force units and aircraft for training exercises here in the Nordic-Baltic region. And we agree with our Estonian allies that an ideal location to host and support these exercises would be Ämari Air Base here in Estonia."

Since these words Ämari Air Base has seen several squadron-level training deployments by USAF and other Air Forces. With our flexible airspace, air to ground range, low-level flying area system and other attractive training opportunities, Ämari AB is open to host Allied and Partner nations' flying units.

Enabling Allied air operations includes indeed joint operations, whereas small air force can provide knowhow and direct air support to its land forces. Air minded thinking broadens the view of battlefield to grasp different domains into unified cohesion. Our goal is to enrich the ways to think and fight in conjunction with combined Allies and joint branches. Small air force does not exclude comprehensive thinking and the most paramount is to define those capabilities, which produce the best outcome for our national defence.

Estonian Air Force has achieved our current level of capability building it from scratch since re-establishment in 1994. The Air Force leadership at the time set out a vision that seemed delusional at the time; to build surveillance network, AirC2 capability, air policing, air defence and Search and Rescue. Now, abit more than twenty years later, all this has largely been achieved. Where should the Estonian Air Force aim to be by 2040? What are the missions that a small nation's Air Force must be able to perform in order to contribute to the national security and defence in the most efficient way?



Jaak Tarien  
Colonel  
Commander of Estonian  
Air Force



Martin Herem  
Colonel  
Commandant of Estonian  
National Defence College

## **AIR POWER CONFERENCE**

### **AIR POWER THEORY AND PRACTICE: IMPLICATIONS FOR SMALL AIR FORCES**

The purpose of this international conference is to contribute to a better understanding of air power theory and practice. It seeks to combine breadth, depth, and context with emphasis on implications for small air forces.

The first panel focuses on theory, doctrine, and strategy; past, present, and future. It suggests that air power theory must be at the core of the air power profession; theory is not an end in itself.

The second panel examines John Boyd's theorizing in general and his OODA-loop specifically; it also offers perspective and insight into strengths and limitations of technology. The overall message is that military men and women need to think conceptually, creatively, and strategically. Air power is surely about capabilities and assets, but it is also about mindset not beholden to numbers.



# PROGRAM

0900 Welcome Remarks  
Colonel Jaak Tarien, Commander of Estonian Air Force

## **Panel 1**

0915 The Evolution of Air Power Theory  
Colonel [ret.] Peter R. Faber  
  
A New Air Power Concept  
Colonel Professor John Andreas Olsen  
  
Panel Discussion

1030 Break

## **Panel 2**

1045 The Real OODA-Loop  
Air Commodore Professor Frans Osinga  
  
Air Power and Technology  
Professor Dr. phil. Holger Mey  
  
Panel Discussion

1200 Closing Remarks  
Colonel Jaak Tarien

## BIOGRAPHIES



### **Peter R. Faber**

is a researcher at the Center for Security Studies at the Swiss Institute for Technology [ETHZ] in Zurich, Switzerland. He is a former course chairman and faculty member at the U.S. National War College and also served in the Department of Defense for thirty years, where he worked on numerous policy- and planning-related issues up to the secretary of defense level. Colonel [ret.] Faber holds five advanced degrees, including two from Yale University. His areas of specialization include U.S. national security policy and planning; Western military history, theory, and strategy; European security issues; and global terrorism. Over the years he has taught at nine academic and professional schools, including the NATO Defense College in Rome, the Elliott School of International Affairs [George Washington University, Washington, D.C.], the U.S. Air Force's School of Advanced Airpower Studies, and the U.S. Air Force Academy. He has written numerous articles and studies on security-related topics and has delivered lectures in twenty-four countries.



### **Holger H. Mey**

is Vice President, Advanced Concepts, Airbus Defence and Space, Munich, Germany. Before joining – which was then EADS Defence & Security, then Cassidian, and now Airbus Defence and Space in June 2004 – Mey worked for twelve years as a security policy analyst and consultant in Bonn. He began his professional career in 1986 as a research associate at Stiftung Wissenschaft und Politik. From 1990 to 1992 he served as an analyst on the policy planning staff of the German minister of defence. He then founded the Institute for Strategic Analyses and became chair and director; for two years he was also the security policy adviser to the chair of the Defence Committee in the German parliament and directed and conducted well over thirty studies for various Ministries and Government Agencies. Professor Mey is an honorary professor at the University of Cologne and a member of many international and national foreign and security policy associations, including the International Institute for Strategic Studies in London and the German Council on Foreign Relations in Berlin. He is also honorary Ancien of the NATO Defence College in Rome. Professor Mey has published over 150 articles. He is editor, co-author and author of a number of books, including *Deutsche Sicherheitspolitik 2030 [2001]*.



### **John Andreas Olsen**

is an active-serving colonel in the Royal Norwegian Air Force, currently assigned to the Norwegian Ministry of Defence. He is also a visiting professor at the Swedish Defence University. He was the deputy commander and chief of the NATO Advisory Team at NATO Headquarters, Sarajevo, from 2009 to 2012. His previous assignments include tours as dean of the Norwegian Defence University College and head of its division for strategic studies. Colonel Olsen is a graduate of the German Command and Staff College and has served both as liaison officer to the German Operational Command in Potsdam and as military assistant to the Norwegian Embassy in Berlin. He has a doctorate in history and international relations from De Montfort University, a master's degree in contemporary literature from the University of Warwick, and a master's degree in English from the University of Trondheim. Professor Olsen is the author of *Strategic Air Power in Desert Storm [2003]* and *John Warden and the Renaissance of American Air Power [2007]*; coauthor of *Destination NATO: Defence Reform in Bosnia and Herzegovina, 2003-2013 [2013]*; editor of *On New Wars [2006]*, *A History of Air Warfare [2010]*, *Global Air Power [2011]*, *Air Commanders [2012]*, *European Air Power [2014]*, and *Airpower Reborn [2015]*; and coeditor of *The Evolution of Operational Art [2011]* and *The Practice of Strategy [2012]*.



### **Frans P. B. Osinga**

is an air commodore in the Royal Netherlands Air Force and a professor of war studies, head of the Military Operational Art and Science Section, and chair of the war studies program at the Netherlands' Defence Academy. After completing a tour at the Clingendael Institute of International Relations as the Ministry of Defence's senior research fellow, he served at NATO Allied Command Transformation as the liaison officer for the newly established Joint Air Power Competence Center, and then as assistant professor in military science at the Royal Netherlands Military Academy. Trained as an F-16 pilot, Commodore Osinga graduated from the Royal Netherlands Military Academy, the advanced staff course of the Netherlands Defence College, and the School of Advanced Airpower Studies, and he holds a PhD in political science from Leiden University. His publications and lectures cover topics such as the theory and practice of air power, European Union defense policy, military transformation, asymmetric warfare, and terrorism. He is the author of *Science, Strategy and War: The Strategic Theory of John Boyd [2006]*, and coeditor of several books including *A Transformation Gap? American Innovations and European Military Change [2010]*, *Military Adaptation in Afghanistan [2013]*, and *Targeting, the Challenges of Modern Warfare [2015]*.

# ABSTRACTS

## **The Evolution of Air Power Theory**

*Colonel [ret.] Peter R. Faber*

To illuminate the need for a unified air power theory, this presentation first critically assesses how air power theory evolved from its inception up to the 1980s. Ultimately, it is a tale of creation, loss, and recovery. Air-minded officers in the 1920s and 1930s attempted to develop unique, stand-alone theories of air warfare, but during the Cold War the “blue suiters” failed to build upon and refine their theoretical roots. Starting in the 1980s, however, airmen regained control of their long-lost intellectual destiny, thus ushering in a renaissance in aerospace thought.

While performing the above intellectual history lesson, the presentation also provides a six-step analytic framework to categorize and differentiate among various theories of air power. The framework clearly shows that those who sought to promote air power as an independent and decisive instrument of war had to struggle against a deep-rooted ground-centric tradition, and that their enthusiasm for revolutionary technology did not help their cause.

Finally, the presentation closes by linking the theorizing of the past with the security challenges of the present, particularly for small air forces. In an era of hybrid and proxy warfare, it may seem that air arms have diminished roles to play in preserving security, but that’s not necessarily the case. There are definite functions they can perform, as the presentation will show.

## **A New Air Power Concept**

*Colonel Professor John Andreas Olsen*

The real value of air power can only be fully appreciated when political decision makers and military leaders start connecting air power directly to national policy, grand strategy and statecraft, rather than view air power predominantly as a substitute for its military predecessors. Air power professionals must look beyond the land-centric and battlefield-oriented paradigm that has continued to dominate military history, theory and strategy long after air power offered new and better options. The application of air power only makes sense in its political context.

This presentation suggests that NATO members need to develop military-strategic concepts that better link the application of force in general – and air power specifically – to the endgame objective of fostering good governance as the defining legacy of any NATO-led “out of area” intervention. This requires

a conceptual approach that views the state of interest as a system of systems, a strategy that seeks systemic empowerment of the supported ally and systemic paralysis of the opponent, using both lethal and non-lethal means in pursuit of strategic effect. Systemic paralysis seeks to prevent a state, government or key forces from achieving their objectives while systemic empowerment seeks to create better conditions for friendly actors taking over. While the former sets out to degrade, disintegrate, disrupt and deny, the latter seeks to encourage, enhance, establish and educate. The concept, which links air power directly to the end-product of security sector reform, follows two lines of operations, conducted simultaneously and in parallel: one process-oriented to achieve psychological impact and the other form-oriented to achieve physical effect.

This is a system-level approach to warfare and subsequent state-building that challenges current military planning, which is overly ground-centric and battlefield-oriented. Looking to the future, European air forces – big or small – need to establish intellectual hubs for mastering air power history, theory, strategy and doctrine: we need to build outreach programs to better communicate the air power narrative to media, politicians, and fellow officers.

## **The Real OODA Loop**

*Air Commodore Professor Frans Osinga*

The lecture offers a comprehensive presentation, interpretation, and critique of John R. Boyd's work "A Discourse on Winning and Losing," with emphasis on its current and future relevance to the application of air power. It suggests that Boyd's approach to strategic through extends well beyond the well-known OODA loop, a decision-making cycle that is often misunderstood. In fact, few strategists share the depth of Boyd's focus on the cognitive domain: his sophisticated, multilayered, and multidimensional legacy provides strategists with a new set of terms and concepts to study conflict. Admittedly, Boyd's work is at times abstract, strongly biased, and cryptic, but it still offers new avenues into the understanding of warfare. One warns against reading too much into Boyd's work as a theory for air power, but suggests that Boyd's in-depth study of military history and perspective insights into how social systems learn and behave make him the first postmodern strategist.

Boyd's vision of each party to a conflict as a complex and adaptive system of systems and his characterization of war as a dynamic contest between these systems offer new insight about how to coerce an opponent. The lecture presents a coherent explanation of air power through the lens of Boyd's way of thinking, demonstrating how air power can contribute to military victory when applied in the psychological and morale domains of warfare as well as the physical, stressing the importance of chance, friction, and other intangibles

as inherent components of warfare. In Boyd's terms, language, doctrine, belief systems, experience, culture, symbols, schemata, data flows, knowledge about oneself and the opponent, perception and organizational ability to learn and change practices – all positioned in the temporal dimension – are at least as valuable as technology, weapons, and the numbers of soldiers in defining combat effectiveness. In particular, for smaller air forces this conceptualization of the opponent offers vistas on a wider array of levers that can be manipulated than mere destruction of the armed forces.

## **Air Power and Technology**

*Professor Dr. phil. Holger H. Mey*

Historically, humans have always used and developed new technologies for military purposes. New technologies have usually created new military options which, in turn, required new procedures and concepts. The latter is the key to assessing whether technological superiority can be translated into winning the war. Technological superiority as such does not win wars. Germany did not lose the Second World War because it was technologically inferior [which it was not] and the United States did not win the Vietnam War despite its technological superiority. Obviously, many other factors come into play. Actually, winning a war is less related to technology per se; it is more about the skillful exploitation of the opportunities that technology creates. And above all, technology is only as useful and relevant as the task and mission it serves.

At the end of the day, the issue at stake is less about how precisely one can destroy a target; it is all about what difference its destruction makes. Any application of military power should be in one way or another related to furthering the war objective. Technology can, and is likely to, play a significant role in accomplishing war objectives, but only if the application is done in a skillful manner and with a good understanding of what exactly it is that one wants to accomplish. Technology needs to be understood in its dynamics. The advantage of today is the standard of tomorrow. For any measure that is being taken a counter-measure will follow soon. Sometimes technology favors the defence and sometimes the offense – and this applies to the strategic, the operational, and the tactical levels of war. Hence, one needs to look at the overall context in which technology is being applied. With regard to air power, the only choice of nations today and in the future tends to be either hi-tech air forces or none – otherwise one's own aircraft represent only lucrative targets. For smaller nations, technologies offer, in particular, to be part of a bigger multinational fleet rather than a single platform.

# **ESTONIAN NATIONAL DEFENCE COLLEGE**

The Estonian National Defence College is an institution of vocational training, developing on secondary education, for applied higher education and military research related to national defence. Our mission is to train and educate senior non-commissioned officers, as well as junior and senior officers for the Estonian Defence Forces, National Defence League and other military institutions. The ENDC has established a national reputation in Estonia for expertise in military research and development.

A challenging academic program by the ENDC provides a balanced education in military and civilian subjects designed to provide a solid military foundation for officer-training, meeting the intellectual and mental requirements necessary for service as a military leader in the Army. The academic staff members of the ENDC are supported by members of the academic community from leading universities throughout Estonia.

In order to provide the Defence Forces with professional and well-trained senior NCOs and officers, the ENDC has a highly modern training environment and living conditions. The ENDC guarantees that each graduate of the ENDC should have a post in accordance with his/her training and specialty.

ENDC is also the hub for military research, coordinating through Centre for Applied Research [CAR] the research and development projects and activities for the capability development. CAR is responsible of planning, coordinating, executing and evaluating the defence R&D between the capability developers and R&D community in Estonia as well as throughout the international cooperation.

The Non-commissioned Officers' School of the Estonian National Defence College located in Võru trains senior non-commissioned officers. The Officers' School of the Estonian National Defence College in Tartu trains junior officers.

The ENDC main building is located in the city centre of Tartu, the second-largest city of Estonia. The population of Tartu is about 100,000 people. Tartu is the major city of Southern Estonia and the educational capital of Estonia. The academic environment of the city also contributes to the development of broad-minded and accomplished military leaders.

Notes



Cover photo: Andres Riisaar