

ABSTRACT

Title of Dissertation: CLOUDS OF SUSPICION: AIRSPACE
ARRANGEMENTS, ESCALATION, AND
DISCORD IN U.S./NATO-RUSSIAN
RELATIONS

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How have cooperative airspace arrangements contributed to cooperation and discord in the Euro-Atlantic region? This study analyzes the role of three sets of airspace arrangements developed by Euro-Atlantic states since the end of the Cold War—(1) cooperative aerial surveillance of military activity, (2) exchange of air situational data, and (3) joint engagement of theater air and missile threats—in political-military relations among neighbors and within the region. These arrangements provide insights into the integration of Central and Eastern European states into Western security institutions, and the current discord that centers on the conflict in Ukraine and Russia’s place in regional security. The study highlights the role of airspace incidents as contributors to conflict escalation and identifies

opportunities for transparency- and confidence-building measures to improve U.S./NATO-Russian relations.

The study recommends strengthening the Open Skies Treaty in order to facilitate the resolution of conflicts and improve region-wide military transparency. It notes that political-military arrangements for engaging theater air and missile threats created by NATO and Russia over the last twenty years are currently postured in a way that divides the region and inhibits mutual security. In turn, the U.S.-led Regional Airspace Initiatives that facilitated the exchange of air situational data between NATO and then-NATO-aspirants such as Poland and the Baltic states, offer a useful precedent for improving air sovereignty and promoting information sharing to reduce the fear of war among participating states. Thus, projects like NATO's Air Situational Data Exchange and the NATO-Russia Council Cooperative Airspace Initiative—if extended to the exchange of data about military aircraft—have the potential to buttress deterrence and contribute to conflict prevention.

The study concludes that documenting the evolution of airspace arrangements since the end of the Cold War contributes to understanding of the conflicting narratives put forward by Russia, the West, and the states “in-between” with respect to reasons for the current state of regional security. The long-term project of developing a zone of stable peace in the Euro-Atlantic must begin with the difficult task of building inclusive security institutions to accommodate the concerns of all regional actors.

CLOUDS OF SUSPICION: AIRSPACE ARRANGEMENTS, ESCALATION, AND
DISCORD IN U.S./NATO-RUSSIAN RELATIONS

by

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Dedication

To Tim, whose steps call me, like music.

Acknowledgements

I'm submitting this dissertation in April 2016, a year after the untimely death of my doctoral advisor and mentor, Professor John Steinbruner. Over six years ago, John challenged me to learn more about these issues and that process of discovery has not ceased to this day. I will be forever grateful to him for his kindness, his vision, and his infectious belief in the importance of transforming relations between states.

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curiosity about the world, and encouraged my insane idea to move an ocean away from home when I was seventeen.

My husband, Tim Fink, has been the biggest champion of this dissertation project (and, obviously, its completion). His love, patience, and optimism have sustained and nurtured me during the last six years (and six moves) between Maryland, Iowa, and Virginia. I'm excited about nature hikes and adventures instead of dissertation weekends, although I think that our kittens Willow and Clementine might miss having us home.

Anya Loukianova
Alexandria, VA
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List of Abbreviations

ACCS	(NATO) Air Command and Control System
ASDE	(NATO) Air Situational Data Exchange Program
ASOC	(NATO) Air Sovereignty Operations Center
BALTNET	Baltic Air Surveillance Network
BASC	Berlin Air Safety Center
C4	Command, Control, Communications, Computers
CAI	Cooperative Airspace Initiative
CEE	Central and Eastern Europe
CFE	Conventional Forces in Europe Treaty
CIS	Commonwealth of Independent States
CSTO	Cooperative Security Treaty Organization
ELN	European Leadership Network
EUROCONTROL	European Organization for the Safety of Air Navigation
INF	Intermediate-Range Nuclear Forces Treaty
KAL	Korean Air Lines
MAP	(NATO) Membership Action Plan
MEADS	Medium Extended Air Defense System
NATINADS	NATO Air and Missile Defense (also NATINAMDS)
NATO	North Atlantic Treaty Organization
NIS	Newly Independent States
NORAD	North American Aerospace Defense Command

NRC	NATO-Russia Council
NRRC	Nuclear Risk Reduction Center
OSCC	(Open Skies Treaty) Open Skies Consultative Commission
OSCE	Organization for Security and Cooperation in Europe
OST	Open Skies Treaty
PRD	Presidential Review Directive
RAI	Regional Airspace Initiative
SAM	Surface-to-Air Missile
TCBMs	Transparency and Confidence-Building Measures
UAV	Unmanned Aerial Vehicle
VDOC	The Vienna Document

Chapter 1: Introduction of the Study

1.1. Insecurity in Euro-Atlantic Airspace

On March 3, 2014, a Russian reconnaissance plane came into close proximity with a Scandinavian Airlines passenger airliner.¹ According to reports, Swedish air traffic control notified the Boeing 737, en route from Copenhagen to Rome, of an unidentified aircraft in its flight path.² This unidentified aircraft—a Russian Il-20—was carrying out its flight with disabled transponders in international airspace near the Swedish city of Malmö.³ In the incident, which could have endangered the lives of innocent passengers, the two planes reportedly passed within just 90 meters of one another.⁴

This near miss took place in the midst of a deteriorating political-military environment in the Euro-Atlantic region that followed Russia's invasion of Ukraine.⁵ The conflict between pro-Russian separatists and Ukrainian military forces had also become dangerous to regional airspace users. Since April 2014, air traffic control in several parts of Ukraine's airspace had been in dispute, creating the potential for

¹ "SAS Flight in Russian Spy Plane Near Miss," *The Local*, May 8, 2014, <http://www.thelocal.se/20140508/sas-plane-in-russian-spy-plane-near-miss>.

² Thomas Frear, Lukasz Kulesa, Ian Kearns, "Dangerous Brinkmanship: Close Military Encounters Between Russia and the West in 2014," European Leadership Network Policy Brief, November 2014, <http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf>, pg. 2.

³ Aircraft with disabled transponders would be visible only to primary radar, appearing as an unidentified object on the civilian air traffic control operator's screen. Upon detecting the presence of an aircraft with a disabled transponder, the (ground-based) secondary radar would be unable to interrogate its transponder system, thus unable to positively confirm its identification, bearing, range.

⁴ Frear et al, op. cit.

⁵ The Euro-Atlantic region refers to the area "from Vancouver to Vladivostok" encompassing Canada, the United States, Europe, and Russia.

accidents involving passenger aircraft.⁶ In addition, air defense activity by the separatists had destroyed multiple Ukrainian military aircraft.⁷ On July 17, 2014, the separatists reportedly used a Russian-produced high-altitude air defense system to down a Malaysian passenger airliner transiting through Ukrainian airspace.⁸ The incident resulted in the deaths of nearly 300 innocent civilians—most of them citizens of The Netherlands.⁹

A November 2014 report by the London-based nongovernmental organization European Leadership Network (ELN) detailed multiple dangerous incidents in regional airspace.¹⁰ It pointed to an escalatory dynamic between NATO and Russian military aircraft in the common border areas. To reassure the Baltic states during the conflict in Ukraine, NATO had strengthened its presence by deploying additional fighter aircraft, carrying out aerial reconnaissance, and engaging in military exercises close to Russia's borders. In response to NATO military activities, Russian actions intended to "observe patterns of response and test the preparedness of specific elements of national and allied defense systems, as well as levels of cooperation between NATO Allies and partners."¹¹ They also "serve[d] as a demonstration of

⁶ See, for instance, Thomas Gibbons-Neff, "Crimean Airspace Belongs to Ukraine, Aviation Group Says," *Washington Post*, July 8, 2014, www.washingtonpost.com/news/checkpoint/wp/2014/07/08/crimean-airspace-belongs-to-ukraine-icao-says/.

⁷ Over half of Ukraine's military aircraft fleet was destroyed during 2014. David Axe, "Ukraine Has Lost Half of its Warplanes," *War is Boring*, January 25, 2015, <https://medium.com/war-is-boring/ukraine-has-lost-half-its-warplanes-f0c8fe677e79>.

⁸ See "Dutch Safety Board, "Report MH17 Crash," Investigation Report, October 13, 2015, <http://www.onderzoeksraad.nl/>

⁹ *Ibid.*

¹⁰ Frear et al, *op. cit.*, pp. 9-10.

¹¹ *Ibid.*, pp. 9-10.

Russia's capability to effectively use force for intimidation and coercion, particularly against its immediate neighbors," the ELN report noted.¹²

NATO officials repeatedly voiced concerns regarding the behavior of Russian military aircraft in close proximity to the sovereign airspaces of NATO members, especially Central and Eastern European (CEE) states.¹³ Like in the incident with the Scandinavian Airlines passenger jet, these aircraft flew in international airspace without filing an advance flight plan and with their transponders disabled. During a November 2014 visit to the Baltic states, NATO Secretary General Jens Stoltenberg noted:

"Our Baltic air police mission has conducted over 100 intercepts this year—three times more than last year. In fact, Russian air activity has increased all over Europe. As a result, NATO jets have been scrambled over 400 times close to NATO airspace—50 percent more than last year. This pattern is risky and unjustified. So NATO remains vigilant. We are here. And we are ready to defend all Allies against any threat."¹⁴

Russian officials also publicly recognized the existence of an escalation dynamic between NATO and Russian military forces.¹⁵ They, however, placed the blame with NATO. A fact sheet released by the Russian Mission to NATO in January 2015 pointed to a rise in Western reconnaissance in proximity to Russian borders.¹⁶

¹² Ibid., pg. 10.

¹³ CEE states are Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania; NIS states in this case are Georgia and Ukraine.

¹⁴ "All for One, One for All: NATO Secretary General Stresses Solidarity in Estonia," NATO Press Release, November 20, 2014, http://nato.int/cps/en/natohq/news_114965.htm?selectedLocale=en.

¹⁵ "V situatsionnom tsentre Minoborony Rossii proshel brifing glavnokomanduiyshego VVS VS RF general-polkovnika Viktora Bondaryova" (A Briefing of RF AF Chief Viktor Bondaryov Took Place in the Situation Center of Russia's Ministry of Defense), Russian Ministry of Defense, December 16, 2014, www.mil.ru.

¹⁶ "O poletakh voennoy aviatsii Rossii i stran NATO v mezhdunarodnom vozdushnom prostrantsve" (About the Flights of Military Aviation of Russia and NATO Countries in International Airspace),

“Events in Ukraine were used as a reason for a substantive increase in the number of NATO countries’ aircraft on [CEE countries’] airfields,” the fact sheet posited.¹⁷ It stated that “the total number of flights of tactical aviation of NATO countries in the border areas around Russia and Belarus in 2014 has exceeded 3,000, which is twice as much as in 2013.”¹⁸ It concluded as follows: “NATO aircraft flights near the Russian border are always conducted with disabled transponders. However, this doesn’t mean that Russian means of airspace control do not see them.”¹⁹

The Broader Political Context of Airspace Insecurity

Since the end of the Cold War, states in the Euro-Atlantic have engaged in cooperation that sought to improve security by facilitating military transparency and predictability in the airspace among neighbors and within the broader region. The list of cooperative airspace activities between former Cold War adversaries includes reciprocal photographic overflights of military bases through the Open Skies Treaty (OST). Under this treaty, U.S./NATO, Russia, and other states in the region monitored—and continue to monitor—their respective conventional and nuclear force postures. Another set of airspace arrangements, championed by the United States and NATO, created a network to exchange air situational data fused from civil and military radar. Through these arrangements, U.S./NATO, Russia, and other states in the region constructed a capability to jointly observe and react to threatening airspace activity in their common border areas. Finally, states in the region also developed

Russian Mission to NATO Release, January 29, 2015. English version available at <http://www.missiontonato.ru/en/news/657/>.

¹⁷ It also registered a concern with the rise in the number of NATO air policing aircraft from 4 to 16 as well as rotations in Poland and Romania, and exercises and training activities. Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

practical ways to cooperate on theater air and missile defense issues. Through these arrangements, U.S./NATO and Russia started to build rules of engagement to counter common aerial threats. But even before the conflict in Ukraine began in 2014, the achievements of all of these technical activities between U.S./NATO and Russia appeared undone by the fundamental disagreements among the key stakeholders about the reasons behind the deterioration of the regional security situation.

Both sides were also now faced with the danger that incidents involving civilian or military aircraft could serve as a vector for conflict escalation. At the February 2015 high-level Munich Security Conference, German diplomat Wolfgang Ischinger raised this issue when he asked Russian Foreign Minister Sergey Lavrov to comment on the provocative behavior of Russian military aircraft. Ischinger pointed out the importance of trying "to create an arrangement that would at least enable all of us—Russia, NATO, the United States, European countries—to avoid potentially dangerous close military encounters."²⁰ In response, Lavrov blamed NATO for the problem and noted the importance of now-halted NATO-Russian cooperation that promoted mutual airspace security, transparency, and predictability.²¹ With no apparent ways to bridge the gap between them, the newfound insecurity in Euro-Atlantic airspace slowly became the new normal.

1.2. A Study of Euro-Atlantic Airspace Arrangements

This study is motivated by the puzzle that—despite two decades of cooperative development of regional security institutions after the end of the Cold

²⁰ "Sergei Lavrov Responds to ELN Report," European Leadership Network, February 12, 2015, www.europeanleadershipnetwork.org/sergei-lavrov-responds-to-eln-report_2427.html.

²¹ Ibid.

War—the airspace arrangements developed by U.S./NATO and Russia are ineffective in assuring security or managing the escalatory potential of airspace incidents. It seeks to answer the following question: *How have post-Cold War cooperative airspace arrangements contributed to cooperation and discord in the Euro-Atlantic region?*

The study thus assesses the structure of airspace arrangements and ways in which their evolution has contributed to cooperation and discord among key stakeholders, including U.S./NATO, CEE states, Russia, and other Newly Independent States (NIS). In the pages that follow, this chapter introduces the purpose of this study and the analytical framework, discusses the potential significance of this project in light of concerns about conflict escalation, offers a summary of methodology, and highlights the case studies of airspace arrangements.

The Purpose of the Study

Since the end of the Cold War, a major challenge for U.S. policymakers has been the design of Euro-Atlantic security policies to accomplish sometimes conflicting goals. The first was to engage Russia while also reassuring Moscow that an expanded NATO does not present it with a military threat. The second was to integrate CEE (as well as NIS states) into Western institutions and also assure them that NATO would be able to counter Russian aggression. Despite proposals to transcend the legacy deterrence arrangements between Moscow and Washington, efforts to transform the relationship between U.S./NATO and Russia as well as

achieve indivisible regional security appear to have failed.²² Even among the U.S. expert community, there is no agreement on whether longstanding U.S.-Russian cooperation on issues such as nuclear security should trump a strong U.S./NATO response to the Ukraine crisis.²³ At present, the only area of consensus appears to be that the United States and NATO do not have a comprehensive strategy for dealing with Russia.²⁴

In turn, CEE states appear to have been successfully integrated into Western institutions, but they do not feel secure. While the West has been relatively successful in facilitating pacification in the CEE during the 1990s, some now argue that Russia's actions in Ukraine raise questions about the wisdom of the Clinton administration's decision to expand the Alliance.²⁵ Others warn of the dangers of expanding NATO further to the NIS, positing that "the West's continuing insistence that the only path to stability and security in Europe is for Russia's neighbors to be absorbed into Euro-Atlantic institutions is now begetting threats to stability and security in Europe."²⁶

²² On transformative visions, see John Steinbruner, John Steinbruner, *Principles of Global Security* (Washington, DC: Brookings Institution Press, 2000); Alexey Arbatov and Vladimir Dvorkin, *Beyond Nuclear Deterrence: Transforming the U.S.-Russian Equation* (Washington, DC: Carnegie Endowment for International Peace, 2006); and Euro-Atlantic Security Initiative, "Toward a Euro-Atlantic Security Community," Carnegie Endowment for International Peace Report, 2012, <http://carnegieendowment.org/2012/02/03/toward-euro-atlantic-security-community/9d3j>. On challenges of transformation, see John Steinbruner, "Security Policy and the Question of Fundamental Change," CISSM Working Paper, November 2010, <http://www.cissm.umd.edu/publications/security-policy-and-question-fundamental-change-0>.

²³ For a sampling, see "Standing Up to Aggression, or Ensuring Nuclear Security," *The New York Times*, November 14, 2014, www.nytimes.com/roomfordebate/2014/11/14/standing-up-to-aggression-or-ensuring-nuclear-security.

²⁴ Olga Oliker, Michael J. McNerney, and Lynn E. Davis, "NATO Needs a Comprehensive Strategy for Russia," RAND Perspective, 2015, <http://www.rand.org/pubs/perspectives/PE143.html>.

²⁵ John J. Mearsheimer, "Why the Ukraine Crisis Is the West's Fault," *Foreign Affairs* (September/October 2014), <https://www.foreignaffairs.com/articles/russia-fsu/2014-08-18/why-ukraine-crisis-west-s-fault>.

²⁶ Samuel Charap and Jeremy Shapiro, "How to Avoid a New Cold War," *Current History* (October 2014), pp. 270-271.

This study uses airspace arrangements as a lens for understanding the evolution of political-military relationships in the region since the end of the Cold War. During the 1990s, cooperation among some CEE neighbors via cooperative aerial surveillance and air situational data exchanges contributed to an overall improvement in their relationships. The U.S. and NATO engagement of CEE states in air situational data exchanges and cooperative planning against aerial threats facilitated the eventual integration of many of these states into the Alliance and its air defense and command and control architecture. At that time, CEE states and some NIS also strongly rejected Russian bilateral attempts at airspace cooperation. Russia, in turn, bristled at U.S. and NATO engagement of CEE states and other NIS on these issues, and had concerns about the potential impact of cooperative aerial surveillance with the West on its security.

Eventually, Moscow joined the Open Skies Treaty and began working with U.S./NATO to develop mechanisms for air situational data exchanges and to plan against common aerial threats. However, this cooperation proceeded at a glacial pace and, during this time, Russia also integrated its air defenses with neighbors in the Commonwealth of Independent States/Cooperative Security Treaty Organization (CIS/CSTO) to hedge its bets with regard to NATO expansion.²⁷ After the war in Georgia highlighted the broad political disagreements between U.S./NATO and Russia, it gradually became clear that instead of contributing to a transformation of their security relations, existing airspace arrangements had perpetuated suspicions and

²⁷ CIS/CSTO states include Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

discord, especially with regard to NIS states like Ukraine and Georgia—the states “in-between” Russia and the West.²⁸

This study tests the proposition that states in the Euro-Atlantic region express and institutionalize trust through cooperative political-military arrangements that buttress their airspace sovereignty, allow them to cooperatively monitor military postures and activities, and facilitate coordination of a joint response against common aerial threats. All state have unilateral capabilities to observe the activity in their own airspaces and, to varying degrees, look into the airspaces of their neighbors. In addition to these unilateral capabilities, institutionalized reciprocal exchanges of certain types of airspace activity information among them could play a role in relations between neighbors and the broader regional security environment.

While these political-military arrangements may be useful to some regional stakeholders, they may also be ineffective or harmful to others. Cooperative efforts to buttress the airspace sovereignty of one state may be perceived as diminishing the security of another, and contribute to the destabilization of the regional security environment. States may also deliberately misuse these arrangements to achieve their broader political-military goals. Further, breaches of airspace sovereignty, coercion using aerial threats, and the use of airpower in modern conflict all have the potential to fuel the escalation of conventional conflicts.

This study fills a gap in policy scholarship by tracing the developments in regional security from the perspectives of not just Russia and U.S./NATO, but also

²⁸ “States in-between” is a term used in Organization for Security and Cooperation in Europe, “Back to Diplomacy: Final Report and Recommendations of the Panel of Eminent Persons on European Security as a Common Project,” November 2015, <http://www.osce.org/networks/205846>.

CEE states like Poland and the Baltics, and the NIS like Ukraine and Georgia. To be sure, U.S. and Russian scholars focus on the potential impact of U.S. ballistic missile defense and prompt global strike technologies on U.S.-Russian security relations.²⁹ However, they largely overlook the impact of “lower altitude” airspace arrangements consisting of institutionalized cooperative aerial surveillance, exchange of military radar data, and air defense that go beyond the bilateral relationship. However, tracing the origins and implementation of these arrangements illuminates how conventional security concerns of NIS and CEE states factor into U.S./NATO-Russian security relations. Their impact—both positive and negative—on state relations can be understood by measuring the changes in five factors that comprise the analytical framework of this study.

The Analytical Framework

The airspace arrangements at the center of this study are best analyzed as a set of cooperative transparency and confidence-building measures (TCBMs).³⁰ As Chapter 2 explores in greater detail, TCBMs can facilitate military engagement, promote the exchange of military-significant information, and circumscribe potentially threatening military activities among states. Though practiced in Europe for over a century, these ad hoc approaches to managing security relations and mitigating East-West tensions became popular during the Cold War. After the 1962

²⁹ For example, see Catherine McArdle Kelleher and Peter Dombrowski, editors, *Regional Missile Defense from a Global Perspective* (Redwood City, CA: Stanford University Press, 2015); James Acton, *Silver Bullet* (Washington, DC: Carnegie Endowment for International Peace, 2013); Alexei Arbatov and Vladimir Dvorkin, editors, *Missile Defense: Confrontation and Cooperation* (Moscow: Carnegie Moscow Center, 2013).

³⁰ Some view TCBMs as rubric of arms control. See Jeffrey Larsen, editor, *Arms Control: Cooperative Security in a Changing Environment* (Boulder, CO: Lynne Rienner Publishers, 2002) and Stuart Croft, *Strategies of Arms Control: A History and Typology* (Manchester: Manchester University Press, 1996).

Cuban Missile Crisis warned U.S. and Soviet leaders about the dangers of a crisis that risked the strategic exchange of nuclear weapons, the superpowers began to develop ways to communicate and limit their nuclear force operations.³¹ In turn, countries in Europe agreed upon and implemented measures to communicate and improve mutual understanding of conventional force operations following the 1975 Helsinki Final Act.³²

During the Cold War, the successful negotiation, adoption, and implementation of TCBMs suggested a consensus on “certain shared interests transcending the competition of the moment.”³³ These mechanisms offered a way for self-interested states to buttress deterrence and avert potentially dangerous tendencies toward preemption, escalation, misperception, and miscalculation, as well as to manage and prevent crises.³⁴ They sought to minimize surprise attack potential, reduce preemptive instabilities resulting from developments in military technology, and “impose constraint on the application of military force.”³⁵ They also had the potential of serving as a building block for numerical nuclear arms control accords or even as their substitutes when treaties were “impossible to negotiate or sustain in the

³¹ See, for example, Alexander George, Philip Farley, Alexander Dallin, editors, *U.S.-Soviet Security Cooperation: Achievements, Failures, Lessons* (Oxford: Oxford University Press, 1988) and John Borawski, editor, *Avoiding War in the Nuclear Age: Confidence Measures for Crisis Stability* (Boulder, CO: Westview Press, 1986).

³² See Catherine Kelleher, "Cooperative Security in Europe: New Wine, New Bottles," CISSM Working Paper, April 2012, <http://www.ciissm.umd.edu/publications/cooperative-security-europe-new-wine-new-bottles-0>.

³³ Johan Jørgen Holst and Karen Alette Melander, "European Security and Confidence-Building Measures," *Survival*, vol.19, no. 4 (July-August 1977), pp. 146-147.

³⁴ Holst and Melander, op. cit., pg. 147. Also see Joseph S. Nye, Jr., "Nuclear Risk Reduction Measures and U.S.-Soviet Relations," in Barry Blechman, editor, *Preventing Nuclear War* (Washington, DC: Georgetown University Press, 1985), pp. 7-24.

³⁵ Holst and Melander, op. cit., pg. 147.

face of rapid technological change.”³⁶ Critics of these measures, in turn, noted that TCBMs were limited in their usefulness and dismissed them as efforts to find technical solutions to political problems. They also noted that TCBMs could be harmful since they forced states to air vulnerabilities in a environments when political solutions might not be imminent.³⁷ Moreover, the information exchanged through TCBMs could be used by some states for malevolent purposes.

After the end of the Cold War, TCBMs—much like the political-military relations they were based on—began to evolve. Nuclear and conventional arms control accords facilitated the overall reduction of offensive capabilities in the Euro-Atlantic—at least in numbers. Some scholars articulated steps toward a transformed U.S.-Russian relationship and noted the potential for peace through cooperative security in the region.³⁸ Others promoted ad hoc mechanisms among former adversaries that could facilitate regional security.³⁹ Still others called for NATO expansion and closer cooperation of the Alliance with former members of the Warsaw Pact in order to “secure the historic gains of democracy in Europe.”⁴⁰

As Chapter 2 discusses in greater detail, literature on TCBMs allows the development of a framework for understanding the impact of airspace arrangements

³⁶ Jonathan Alford, “The Future of Arms Control Part III: Confidence-Building Measures,” *The Adelphi Papers*, no. 149, 1978, pg. 1.

³⁷ Marie-France Desjardins, *Rethinking Confidence-Building Measures, The Adelphi Paper*, no. 307, 1996, pp. 34-27.

³⁸ See Janne E. Nolan and John D. Steinbruner, “A Transition Strategy for the 1990s,” in Janne E. Nolan, editor, *Global Engagement* (Washington, DC: Brookings Institution Press, 1994) and John Steinbruner, *Principles of Global Security* (Brookings, 2000).

³⁹ See, for example, Ivo Daalder, *Cooperative Arms Control: A New Agenda for the Post-Cold War Era*, CISSM Working Paper, 1992.

⁴⁰ See, for example, “The Debate Over NATO Expansion: A Critique of the Clinton Administration's Responses to Key Questions,” *Arms Control Today* (September 1997), https://www.armscontrol.org/act/1997_09/nato.

on choices made by U.S./NATO, Russia, CEE, and NIS by assessing changes in five factors.

These factors include:

- Role of *institutions*. Changes in this factor allow measurement of whether the arrangement in question reduced uncertainty in the security environment or was instead “interlocking” and made cooperation more difficult.
- Role of *norms and values*. Changes in this factor allow measurement of whether the arrangement in question signaled benign intent and facilitated a common concept of security or whether it instead distracted from or conflicted with immediate security goals.
- Role of *states’ threat perceptions*. Changes in this factor allow measurement of shifts in threat perceptions and whether states revealed information through the arrangement that was ultimately detrimental to their security as part of their participation in the arrangement.
- Role of *information technologies*. Changes in this factor allow measurement of whether their cooperative exploitation as part of the arrangement promoted security or whether technological imbalance instead pushed some stakeholders toward opacity.
- Role of *bureaucratic engagement*. Changes in this factor allow measurement of whether cooperation as part of the arrangement increased the

habit of cooperation between bureaucracies or instead facilitated a mismatch in attitudes between them.

Thus, as with other TCBMs, airspace arrangements could have a positive or negative impact on state relations due to variations in threat perceptions, institutional reasons, congruence in norms and values, depth of the information exchanges, and bureaucratic factors. Understanding this impact is also essential for finding ways to mitigate escalation dangers between Russia and the West in the current Euro-Atlantic security environment.

1.3. Assessing and Mitigating Escalation Dangers

As the introduction to this chapter suggests, there are concerns that a close military encounter between NATO and Russian forces in Euro-Atlantic airspace could escalate from a show of force to a conventional conflict. A conventional conflict between two nuclear armed adversaries could escalate further to nuclear use. It is thus important to describe the dangers of escalation and the role that airspace arrangements and other TCBMs could play in reducing them.

The Dangers of Escalation in a U.S./NATO-Russian Conflict

Even before the conflict in Ukraine, scholars were concerned about escalation dynamics in a potential conflict with Russia, especially if Moscow became politically or economically unstable.⁴¹ Russia's actions in Ukraine and "saber-rattling" vis-à-vis NATO members in the CEE have also raised the specter of a nuclear conflict in

⁴¹ Forrest E. Morgan, Karl P. Mueller, Evan S. Medeiros, Kevin L. Pollpeter, Roger Cliff, *Dangerous Thresholds: Managing Escalation in the 21st Century* (Washington, DC: RAND, 2008), <http://www.rand.org/pubs/monographs/MG614.html>.

Europe as a result of Moscow's overestimation of its ability to achieve its regional objectives, understanding of U.S./NATO escalation thresholds, or maintenance of adequate control over its forces.

As some have argued, Western analysts and policymakers have a “misplaced faith in strategic stability” insofar as the U.S.-Russian relationship is concerned.⁴² To this end, “escalation dynamics in a conflict between NATO and Russia would not hinge on the risks of a strategic nuclear exchange, at least not initially, rather, they would build from the bottom up.”⁴³ Among the chief candidates for escalatory conflicts, some analysts suggest a Russia-Baltic conflict or a conflict between Poland and Belarus, which would put similar escalatory pressures on NATO and Russia.⁴⁴

For example, if Russia were to use its conventional forces to invade the Baltic states, it would use mobile air defense systems to create a “bubble” that would cover seized territory.⁴⁵ In order to come to the defense of the Baltics, U.S./NATO forces would have to conduct a campaign to suppress and destroy these systems and any other anti-access capabilities.⁴⁶ The risk is that Russia would choose to escalate to the use of tactical nuclear weapons to get U.S./NATO forces to halt their actions if they sought to destroy Russian air defense and command and control networks.⁴⁷ Such a

⁴² Forrest E. Morgan, “Dancing with the Bear: Managing Escalation in a Conflict with Russia,” IFRI Proliferation Papers, Winter 2012, <https://www.ifri.org/en/publications/enotes/proliferation-papers/dancing-bear-managing-escalation-conflict-russia>, pg. 37.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ The scenario envisioned separatist sentiments in the Baltic states that gave Russia a pretense for potential involvement and triggered a strong NATO response which, in turn, provoked a political crisis in Russia. Eric V. Larson, Derek Eaton, Paul Elrick, Theodore Karasik, Robert Klein, Sherrill Lingel, Brian Nichiporuk, Robert Uy, John Zavadil, *Assuring Access in Key Strategic Regions: Toward a Long-Term Strategy* (Washington, DC: RAND, 2004), pp. 65-68.

⁴⁶ Ibid., pg. 81.

⁴⁷ Morgan, *Dancing with the Bear*, op. cit., pg. 38.

campaign would be escalatory because of the overwhelming conventional strike potential of the United States.⁴⁸

To be sure, deliberate escalation to nuclear use—whether it’s to tactical nuclear weapons or to an all-out strategic exchange between Russia and the United States—is a worst-case scenario. Most conflicts occur far below the nuclear threshold. In addition, it’s likely that Russia—if it made the choice to do so—would first seek to destabilize the Baltics through political and economic means and not by military force.⁴⁹ However, as discussed in greater detail in Chapter 2, conventional conflicts are also prone to escalation across several dimensions, including intensity, capabilities, and geographic scope. Further, escalation could be accidental and inadvertent—mechanisms that are much more difficult to control.

To mitigate escalation dangers, it may be useful to revisit some of the experiences of cooperation during the Cold War. At that time, nuclear armed adversaries sought to develop certain TCBMs to prevent and manage escalatory dynamics.

Close Military Encounters and TCBMs

As the introductory section of this chapter suggests, incidents involving civilian and military aircraft are uniquely positioned as a vector for conflict escalation. This was recognized in a 1972 U.S.-Soviet Agreement on Prevention of Incidents On and Over the High Seas. This agreement circumscribed certain activities

⁴⁸ Keir Lieber and Daryl Press, “The New Era of Nuclear Weapons, Deterrence, and Conflict,” *Strategic Studies Quarterly* (Spring 2013), pp. 3-14 and Morgan, op. cit., pg. 38.

⁴⁹ Olikier, et al, pp. 12-14.

of naval vessels and their aviation—most notably “buzzing” by naval aircraft.⁵⁰ Another agreement, the 1989 U.S.-Soviet Agreement on Preventing Dangerous Military Activities, was applicable to all military forces and called for “great caution and prudence” in areas where they might be in close proximity. It also placed some restrictions on interference with command and control, among other measures.⁵¹

As Chapter 2 discusses in greater detail, these “prudent practices” emerged in the U.S.-Soviet relationship, but they have largely been forgotten by both sides—at least until the recent escalation of tensions in the Euro-Atlantic.⁵² In 2015, a prominent task force comprised of Euro-Atlantic leaders called for a NATO-Russia agreement on “Rules of Behavior for the Safety of Air and Maritime Encounters.” This arrangement would seek to “prevent accidental incidents or miscalculations leading to an escalation of tension and even confrontation” between NATO and Russia.⁵³

As of this writing, this concept is yet to gain traction, especially since the NATO-Russia Council has not formally met since 2014. Indeed, TCBMs could be helpful in some cases of escalation management. However, they can also be ineffective or counterproductive since they do not address the underlying political-

⁵⁰ On Incidents at Sea, see Sean M. Lynn-Jones, “A Quiet Success for Arms Control: Preventing Incidents at Sea,” *International Security*, vol. 9, no. 4 (Spring 1985), pp. 154-184.

⁵¹ Ian Kearns and Denitsa Raynova, “Managing Dangerous Incidents: The Need for a NATO-Russia Memorandum of Understanding,” European Leadership Network, March 7, 2016, http://www.europeanleadershipnetwork.org/managing-dangerous-incidents-the-need-for-a-nato-russia-memorandum-of-understanding_3578.html.

⁵² “Prudent practices” is a term from Joseph Nye, “Nuclear Risk Reduction Measures and U.S.-Soviet Relations,” in Blechman, op. cit., pg. 8.

⁵³ Task Force on Cooperation in Greater Europe, “Avoiding War in Europe: How to Reduce the Risk of a Military Encounter Between Russia and NATO,” European Leadership Network Report, 2015, www.europeanleadershipnetwork.org/avoiding-war-in-europe-how-to-reduce-the-risk-of-a-military-encounter-between-russia-and-nato_3045.html.

military causes of potentially escalatory behaviors. As Chapter 2 highlights, even during the Cold War, activities by reconnaissance and air defense were not restricted through a TCBM between U.S./NATO-Russia—despite known dangers these activities could pose to civilian aviation.

This study posits that efforts to develop new political measures to reduce the dangers of escalation resulting from close military encounters need to incorporate existing airspace arrangements involving U.S./NATO-Russia and other regional stakeholders. These include cooperative aerial surveillance; detection, identification, and tracking; and coordination of response. The cases that follow in Chapters 3, 4, and 5 focus on each of these capabilities, assess the role of airspace arrangements, and discuss ways to reduce the dangers of escalation.

1.4. The Study's Methodology

The preceding part of this chapter placed this study within literature on TCBMs and escalation. This section describes the research design, introduces the case studies that follow in Chapters 3, 4, and 5, and highlights the sources of evidence and the study's limitations.

Research Design

This study's research design integrates approaches from political science and policy analysis. It uses qualitative case studies to understand the specific impacts of airspace arrangements on state policies and conducts a strategic evaluation of particular policies. A set of lessons and recommendations is then derived for each case study and the set of case studies as a whole. The key analytical criterion is the

involvement of major regional stakeholders, including U.S./NATO, CEE, Russia, and other NIS (such as Ukraine and Georgia).

Case studies are a traditional form of structuring inquiries in political science and international relations. A case is defined as “an instance of a class of events.”⁵⁴ As per Stephen Van Evera, case studies “can serve five main purposes: testing theories, creating theories, identifying antecedent conditions, testing the importance of these antecedent conditions, and explaining cases of intrinsic importance.”⁵⁵ The cases in this study focus on two of these purposes: identifying antecedent conditions and testing their importance. The study’s chief aim is to understand the impact of airspace arrangements on state policies, as well as the nature of that impact. Airspace arrangements are thus modeled as antecedent variables. The independent variable is the initial set of state approaches to the problem, while the dependent variable is the resulting set of state strategies to address the issue.

The methodological approach best suited to document the evolution of state policies and practices is called “process-tracing.”⁵⁶ As per Alexander George and Andrew Bennett, process tracing “attempts to identify the intervening causal process—the causal chain and causal mechanism—between an independent variable (or variables) and the outcome of the dependent variable.”⁵⁷ This approach is thus useful in assessing the impact of convergence, the interaction of variables, and identification of path-dependent processes. As discussed earlier in this chapter,

⁵⁴ Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge, MA: The MIT Press, 2005), pg. 17.

⁵⁵ Stephen Van Evera, *Guide to Methods for Students of Political Science* (Ithaca, NY: Cornell University Press, 1997), pg. 55.

⁵⁶ George and Bennett, op. cit., pp. 205-232.

⁵⁷ Ibid., pg. 206.

TCBMs can have a positive or negative impact due to variations in threat perceptions, institutional reasons, congruence in norms and values, depth of the information exchanges, and bureaucratic engagement.

This study also draws on policy analysis methodologies, especially since it seeks to understand and develop recommendations for policy makers. As per Richard Kugler, “the methods of policy analysis are designed to weigh the relationship between actions and consequences, as well as the comparative value of policy options.”⁵⁸ The study uses strategic evaluation—an approach which first defines the problem and then proceed to identify goals and compare policy options.⁵⁹

The following common elements of a strategic evaluation study are incorporated in each of the case studies:⁶⁰

- Who were the key stakeholders?
- What goals did these efforts seek to achieve, and why?
- What activities did these efforts encompass?
- What resources did these efforts require?
- What were outcomes, and consequences, intended and otherwise?
- To what degree have these efforts been effective?
- What were the contributing or hindering factors in these efforts?

⁵⁸ Richard L. Kugler, *Policy Analysis in National Security Affairs* (Washington, DC: National Defense University Press, 2006), pg. 6.

⁵⁹ *Ibid.*, pg. 21.

⁶⁰ *Ibid.*, pg. 13. Also see policy evaluation framework cited in Jennifer D.P. Moroney, Joe Hogler, Jefferson P. Marquis, Christopher Paul, John E. Peters, and Beth Grill, *Framework for U.S. Air Force Building Partnerships Programs* (Washington, DC: RAND, 2010), pg. xv.

As is common in strategic evaluation, this study uses inductive reasoning that follows from the particular to the general.⁶¹ The section that follows discusses the case studies and the sources of evidence.

Case Studies and Sources of Evidence

As per the elements of strategic evaluation, above, the three case studies vary across stakeholders, goals, and time periods. They also vary across the types of activities and data exchanges. Table 1, situated at the end of this chapter, offers a summary overview.

Case Study 1: Cooperative Aerial Surveillance through the Open Skies Treaty

The first case study is an assessment of cooperative aerial surveillance of military activity in the Euro-Atlantic region. An accord between 34 Euro-Atlantic states, the Open Skies Treaty (OST) provides for mutual reciprocal overflights without restrictions on territorial access. During the overflights, representatives of observer nations photograph and use other sensors to image military-significant objects. The sensor package may include visible-light photography, sideways-looking synthetic aperture radar, and infrared sensors—all of which are systems that are commercially available and certified in advance by all treaty participants.

Since its signing in 1992, more than 1,300 photographic overflights have been conducted under this treaty. OST flights are carried out in the presence of, and in cooperation with, representatives of the observed nation. The data downloaded from OST aircraft sensors is accessible for a notional fee to all treaty signatories, allowing

⁶¹ Kugler, op. cit., pg. 50.

them to observe the overflowed states' force posture and military infrastructure. It is available to the signatories through a common data bank, located at the Organization for Security and Cooperation in Europe (OSCE) in Vienna. The design of the data-sharing system seeks to facilitate reciprocity and a develop a common baseline of information among participating states. While the initial goal of the military-military arrangement was to facilitate post-Cold War military transparency between East and West, the relevance of the OST has increased in light of its use to mitigate the Ukraine conflict.

One of the limitations in drafting the case study was the dearth of current open source information and a lack of U.S. civil society interest in this arrangement (this is unfortunately true for other conventional security arrangements in Europe as well). In this case, a recent book by a Canadian official involved in OST negotiations, public documents from review conferences, and background conversations with officials from several governments provided a more complete picture of how the treaty is used by state participants.

Case Study 2: Exchange of Air Situational Data through Airspace Initiatives

The second case study assesses three U.S./NATO programs that have created systems to exchange airspace data among various state groupings in the Euro-Atlantic region. The programs center on the reciprocal exchange of information between neighboring states from their civil and military air traffic control radar. This process is used to generate a common airspace picture—a shared display of all activity within the common airspace that supplements the basic capability of civil and military air

traffic controllers in neighboring states to track aircraft and communicate by voice. Exchange of airspace data offers additional detection time and the potential for improved coordination among neighbors in response to threatening airspace developments in their common airspace.

The first program is bilateral U.S. cooperation with CEE countries in the 1990s through the Regional Airspace Initiative program. Conducted on a separate track from its security engagement with Russia, this program was a part of Washington's efforts to facilitate intra-CEE cooperation and bring these states closer to NATO. The outcome of this initiative were successful projects to buttress CEE airspace sovereignty and provide these states with NATO-compatible technologies that prepared them for NATO membership. The second program is NATO's Air Situational Data Exchange. This initiative has facilitated airspace transparency and access between NATO and non-NATO neighbors, including NIS, and has also been used to reassure NIS in situations where they felt threatened by Russian actions and could benefit from collaboration with NATO in a crisis. The third program is the NATO-Russia Cooperative Airspace Initiative. Aimed primarily at countering airborne terrorism, this data sharing program also includes U.S./NATO-Russian military exercises.

A successful declassification of a presidential review directive with the help of National Archives and Records Administration officials at the Clinton Library in 2012 greatly aided the understanding of the origins and rationale of the programs described in this chapter. Background information provided by a mission to NATO and a then-technical expert at the European agency EUROCONTROL were also

immensely useful in painting a more complete picture of the engagements and technologies in question.

Case Study 3: Joint Engagement of Theater Air and Missile Threats

The third case study connects the concepts of aerial observation and exchange of air situational data and extends them to assess the challenges of cooperation on the defense against air and missile threats in the Euro-Atlantic region. This case study focused on how Russia and U.S./NATO have developed air/missile defense and command and control arrangements to respond to aerial threats, including from one another.

This case also has three components. The first one is the NATO integrated air defense system and its evolution since the end of the Cold War, including its command and control and the practice of air policing. The second one is Russia's cooperation within the CIS/CSTO and bilateral cooperation with Belarus on air defense issues. The third one is the NATO/Russia cooperative framework for theater air/missile defense.

This case assesses the role of theater air and missile defense and the challenges of controlling escalation in a conflict between U.S./NATO and Russia in Europe through both deterrence and cooperation. It also more explicitly focuses on the reasons behind Russia's actions in NATO airspace and its provocative activities in close proximity to U.S. forces. This case study relies much more than others on trade literature, including publications such as *Jane's Defense*, as well as Russian-language sources.

Limitations of Sources and Findings

One of the limitations of this study is that gathering first hand data like the dynamics of implementation of airspace arrangements is difficult for an outside observer. Conversations with officials in the United States and abroad were conducted as part of the research and evidence gathering process. However, this thesis relies to a significant degree on published sources, including technical and strategy documents—an approach not uncommon for case studies or strategic evaluation—especially since the time period for assessment spans several decades.⁶² Secondary sources, such as newspaper and journal articles, were used extensively for quotations of government officials that depict their perspective at the time. Primary and secondary sources in English and Russian were also utilized.

Another limitation involves omissions of some regional dynamics for the sake of simplifying analysis. For example, this study does not incorporate the perspectives from non-NATO states in the High North (e.g. Finland and Sweden). And, as with any policy analysis effort, drawing broad conclusions that may be relevant to other cooperative activities, countries, or regions is a perilous task, which this study does not undertake.

Finally, it should be admitted that there is an inherent degree of simplification and subjectivity in the design of a backward-looking policy analysis study and in the process of developing recommendations for the future. As a text by Davis Bobrow and John S. Dryzek has noted, “[p]olicy design, like any kind of design, involves the

⁶² Kugler, op. cit., pg. 30.

pursuit of valued outcomes through activities sensitive to the context of time and place.” Because of this, the quest to improve the policy-making process needs to capture the complexity of a “messier world of multiple, unclear, and conflicting values, complex problems, dispersed control, and the surprises that human agents are capable of springing.”⁶³ Thus, as per the admonition, this study will attempt to capture complexity in its rich detail to illustrate the challenges of the policy-making process.

In the pages that follow, Chapter 2 summarizes relevant scholarship on conflict escalation and literature on TCBMs. Case studies of airspace arrangements in the Euro-Atlantic follow in Chapters 3-5. These cases are also summarized in Figure 1, below. The case in Chapter 3 is the Open Skies Treaty, a whole-of-region agreement to cooperatively image military-relevant facilities using manned aircraft. The case in Chapter 4 are airspace initiatives championed by the United States and NATO with CEE countries, Russia, and other NIS in order to strengthen airspace sovereignty and facilitate the reciprocal exchange of filtered airspace activity data. The case in Chapter 5 are regional policies and practices to facilitate theater air/missile defense. Chapter 6 offers a summary of the findings and discusses implications.

⁶³ Davis B. Bobrow and John S. Dryzek, *Policy Analysis by Design* (Pittsburg, PA: University of Pittsburgh Press, 2000), pg. 19.

CASE	STATES	GOALS OF ARRANGEMENT	ACTIVITIES AND TIMELINE
<p>OPEN SKIES TREATY</p> <p>(CASE 1)</p>	<p>A total of 34 state parties across the Euro-Atlantic region</p> <p>(Region-wide system with consultative commission anchored in the OSCE).</p>	<p>“Contribute to the further development and strengthening of peace, stability and co-operative security in [the Euro-Atlantic] by the creation of an Open Skies regime for aerial observation. Noting the possibility of employing such a regime to improve openness and transparency, to facilitate the monitoring of compliance with existing or future arms control agreements and to strengthen the capacity for conflict prevention and crisis management...”</p>	<p>Conducted in cooperation with observed state, the observing state(s) carry out periodic manned overflights that image military-relevant facilities—data that is subsequently available to all treaty members.</p> <p>Proposed in 1989; signed in 2002; entered into force in 2012.</p>
<p>AIRSPACE INITIATIVES</p> <p>(CASE 2)</p>	<p>Regional Airspace Initiatives</p> <p>(Bilateral projects between U.S. and 17 states in region).</p>	<p>“Increase civilian control of national airspace and civil-military cooperation within CEE countries; increase cooperation among CEE countries in [air traffic control] and in issues of air sovereignty, thus serving our objective of enhancing intra-regional habits of cooperation and reducing the likelihood or fear of war among participating states; improve commercial ties with the West through a more efficient air traffic infrastructure; produce cost savings for CEE defense budgets by combining civil and military systems as is done in the U.S.; support a modernized CEE regional air sovereignty system that could be integrated into NATO systems.”</p>	<p>Involves development of airspace sovereignty centers; radar upgrades, emergency communication centers, and improvements in command and control.</p> <p>Proposed in 1993; implemented through 2010s; many participant countries entered NATO.</p>
	<p>Cooperative Airspace Initiative</p> <p>(NATO-Russia; US-Russia).</p>	<p>“A joint capability for [air traffic management] interoperability to enable [the] reciprocal exchange of air traffic data.” “Discuss ways of improving cooperation in the sphere of airspace management [in order to] enhance capabilities in fighting terrorist threats to civil aviation.” Detect and notify of potential “renegade” coordination and obtaining of alerting notification on aircraft outside national airspace limits.</p>	<p>Involves reciprocal exchange of filtered airspace activity data, emergency communication channels, exercises involving fighter aircraft scramble and handoff.</p> <p>Proposed in 2002; at final testing phase in 2013; halted in 2014.</p>

<p>AIRSPACE INITIATIVES</p> <p>(CASE 2, CONTINUED)</p>	<p>Air Situation Data Exchange</p> <p>(8 NATO countries with 10 non-NATO countries).</p>	<p>“Means for a reciprocal exchange of filtered air situation information between NATO and a Partner country, “ “designed to enhance mutual situational awareness, enhance transparency and minimize possible cross-border air incidents; provides Partner countries with insight into NATO procedures and offers valuable training experience.”</p>	<p>Involves reciprocal exchange of filtered airspace activity data & emergency communication channel.</p> <p>Created in 2001; implemented through present.</p>
<p>JOINT ENGAGEMENT OF THEATER AIR AND MISSILE THREATS</p> <p>(CASE 3)</p>	<p>NATO Integrated Air Defense System</p> <p>(28 NATO countries).</p>	<p>An essential, continuous mission in peacetime, crisis and times of conflict, which safeguards and protects Alliance territory, populations and forces against any air and missile threat and attack. It contributes to deterrence and to indivisible security and freedom of action of the Alliance.</p>	<p>Involves radar for surveillance and identification, aircraft for escort and air sovereignty, air/missile defense assets for deterrence and defense.</p> <p>Created in 1961; expanded as NATO accepted new members in 1990s-2000s; Air policing initiated in 2004.</p>
	<p>Joint Commonwealth of Independent States Air Defense</p> <p>(Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan).</p>	<p>Protection of borders of states participating in the airspace arrangement; implementation of joint control of the use of participant state airspaces; notification of participant states regarding the airspace situation, warning of missile and air attack; management of coordinated activities of air defense forces of state participants in defense against airspace threats.</p>	<p>Involves radar installations for surveillance and identification, aircraft for escort and air sovereignty, air/missile defense assets for deterrence and defense.</p> <p>Created in 1995; implemented through present.</p>
	<p>NATO-Russia Theater Missile Defense cooperation</p> <p>(U.S./NATO-Russia).</p>	<p>Develop, explore and assess various options for conducting missile defense in Europe, taking into account the results of previous TMD cooperation between NATO and Russia. The exercise results will contribute to the work on the Joint Analysis of the future framework for missile defense cooperation.</p>	<p>Involves computer simulation aimed at working out concepts and procedures of cooperation on theater missile defense.</p> <p>Initiated in 2004; halted in 2013.</p>

Table 1: Case Studies at a Glance.

Chapter 2: Review of Relevant Literature

2.1. Introduction: Berlin Air Safety Center

On October 22, 1946, Russia, the United States, the United Kingdom, and France signed an accord to govern the “flight rules and safety measures for the three air corridors to [West] Berlin, and for the airspace around” the city.¹ The Berlin Air Corridor Agreement—a treaty of unspecified duration between the four powers occupying Germany after World War 2—created the Berlin Air Safety Center (BASC). The BASC was tasked with managing “all flights in the [...] Berlin Control Zone, the airspace up to 10,000 feet, and in a circle of 20 miles from the Control Council building.”²

The BASC was created to maintain the safety of air traffic and prevent airspace incidents over Berlin. Soviet air defense was responsible for maintaining the airspace sovereignty of East Germany under the terms of the occupation agreement, and its air defense forces required a warning of all incoming and outbound flights from West Berlin.³ An unidentified flight, even a civilian one, risked being downed

¹ William Lynn, “Existing U.S.-Soviet Confidence-Building Measures,” in Blechman, op. cit., pg. 31.

² Jonathan Dean, “Berlin in a Divided Germany,” in Alexander George, Philip Farley, Alexander Dallin, editors, *U.S.-Soviet Security Cooperation: Achievements, Failures, Lessons* (Oxford: Oxford University Press, 1988), pg. 85.

³ Some note that the airspace access corridors came about due to Soviet concerns about Western reconnaissance overflights of Soviet positions after the occupation began. “The British recorded Marshal Georgy K. Zhukov, commander of Soviet forces in Germany, as stating that a corridor was necessary ‘to prevent your aircraft from observing Russian armies.’” Walter J. Boyne, “The Berlin for Lunch Bunch,” *Air Force Magazine* (July 2002), <http://www.airforcemag.com/MagazineArchive/Pages/2012/July%202012/0712berlin.aspx>. Boyne and Roy Marsden give anecdotal evidence that Soviet forces in East Germany were, at a later point, relatively tolerant toward Western reconnaissance overflights, including through the Berlin airspace corridors. See Roy Marsden, “Operation ‘Schooner/Nylon’: RAF Flying in the Berlin Control Zone,” *Intelligence and National Security*, vol. 13, no. 4 (1998), pp. 178-193.

by Soviet air defense assets if it strayed into East German airspace from the narrow access corridors to West Berlin. In the first decades of Germany's occupation, an incident involving Soviet air defense and Western aircraft in the airspace above the divided city could be viewed as a deliberate denial of access to Berlin, triggering an East-West crisis.

BASC air traffic controllers had to deal with multiple incidents in the congested airspace above and on approach to Berlin. For example, in April of 1948, a Soviet air defense interceptor buzzed a British civilian aircraft. This action resulted in the crash of both planes and the deaths of all passengers and crew members—a total of 15 people.⁴ Officials from the Soviet Union and the United Kingdom had a difficult time retrieving the bodies and the wreckage because the Soviet fighter crashed in the British zone while the British aircraft crashed in the Soviet zone.⁵

The BASC worked as an information-exchange mechanism in which Western and Soviet military officers exchanged advance flight plans and cooperated in real-time.⁶ The officers at the BASC had a daily board that listed all the expected flights due in and out of West Berlin and radio equipment that allowed them to communicate with their air traffic control and air defense counterparts. The real-time flow of information began when the Western officers at the BASC radioed the nearby Berlin Air Route Traffic Control Center, where the U.S., U.K., and French air traffic control

⁴ United States Department of State, *Foreign Relations of the United States, 1948: Germany and Austria* (Washington, DC: United States Government Printing Office, 1973), pp. 890-891.

⁵ Ibid. The victims of this incident, dubbed the Gatow air disaster, were apparently the only deaths that resulted from the crisis over access to Berlin in 1948-1949. Oran R. Young, *Politics of Force: Bargaining During International Crises* (Princeton, NJ: Princeton University Press, 2015), pp. 97-99 and 269-270.

⁶ United States Department of State, *Foreign Relations of the United States, 1955-1957. Central and Southeastern Europe*, Washington, DC: United States Government Printing Office, 1992), page 422. See more in the FRUS volume on air safety issues and incidents, esp. pp. 513-518.

operators monitored airspace activity across the three air corridors leading to Berlin. The Western BASC officers then relayed flight updates to their Soviet BASC counterparts—this could be done quickly since the all officers were sitting together in the same room. The Soviet BASC officers, in turn, radioed this information to Soviet air defense forces, who would verify the identification of a flight on their radar screens.

Despite the simplicity of this design, the BASC appears to have insulated Western and Soviet forces in Germany from having to deal with the escalatory potential of airspace incidents. An occasional accident or demarche aside, the BASC successfully functioned even during the standoffs with the Soviet Union over Western access to Berlin.⁷ In a rapidly-changing security environment of mutual misperception and nuclear danger between the Soviet Union and the West, the BASC provided a degree of continuity and professionalism. Co-located in a small room of a West Berlin palace, military officers from the four nations worked together for more than four decades, until the 1990 reunification of Germany rendered their presence obsolete.

This vignette about a functional airspace arrangement in Cold War Berlin offers a useful contrast to the discussion of airspace insecurity in the preceding chapter's introduction. This chapter offers a review of literature relevant to assessing post-Cold War airspace arrangements in the Euro-Atlantic and their suitability to managing escalation challenges. It first examines relevant scholarship on the

⁷ Soviet forces apparently also did not jam Western radar during the standoff. See Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945-1963* (Princeton, NJ: Princeton University Press, 1999), pg. 87.

escalatory nature of modern conventional warfare and the challenges of escalation management. It then reviews literature on transparency and confidence-building measures (TCBMs). The chapter then focuses on arrangement to reduce crises and risks and the particular challenges of designing successful airspace arrangements like the BASC.

2.2. Airspace Sovereignty and Escalation

To understand the contribution of airspace arrangements to regional security dynamics and assess how these arrangements can help mitigate escalation dangers, a discussion of the link between airpower, information, and escalation is first in order.

A recent incident offers an instructive example. In November 2015, a Turkish F-16 fighter shot down a Russian Su-24 aircraft that was reportedly violating Turkish airspace. After the downing, which resulted in the death of a Russian pilot, Russian officials protested that the aircraft did not breach Turkish airspace and remained in Syrian airspace during its flight. Turkish officials countered by publicly releasing radar track data that confirmed the presence—albeit brief—of the Su-24 in Turkish airspace before the F-16 took action. The incident triggered a crisis in relations between Moscow and Ankara that built on already simmering tensions resulting from Russian military presence in Syria and its activities in close proximity to Turkish borders.⁸ And so, whereas its European NATO counterparts had been careful in their scrambles to identify and escort Russian aircraft, Turkey stood firm that its use of force to down the violating jet was justified.

⁸ Mark Galeotti, Samir Naser, Sean O'Connor, "Russia's Middle Eastern Adventure Evolves," *Jane's Intelligence Review*, December 30, 2015, <http://www.janes.com>.

Breaches of airspace sovereignty, like the one described above, are well positioned to serve as a vector for escalation of political-military conflicts between states. This section offers a background on airpower, information, and technologies relevant to reconnaissance, detection, and coordination of response. It then discusses the dangers of escalation in modern conflict.

Reconnaissance, Detection, and Coordination of Response

In wartime and peacetime, states can use military aircraft to penetrate other states' sovereign airspaces and overfly their territory. Euro-Atlantic states have employed aircraft, including hot air balloons and dirigibles, for reconnaissance and attack since the 18th century.⁹ Information gathered through aerial reconnaissance allows states to assess “with their own eyes” the military postures of others—information essential for planning both offensive and defensive operations. To a would-be attacker, conducting reconnaissance of the other side's defenses through overflights or flights close to the border is essential to determine targets and draw up attack plans.¹⁰ To a would-be defender, aerial reconnaissance can serve to confirm the presence of the attacker's preparations since, in order to carry out a successful aerial attack, states generally need to amass and reconfigure their forces and station them in closer proximity to the intended target.

⁹ Terrence J. Finnegan, *Shooting the Front: Allied Aerial Reconnaissance and Photographic Interpretation on the Western Front—World War I* (Washington, DC: National Defense Intelligence College Press, 2007).

¹⁰ For the Soviet Union's experience with German reconnaissance see pp. 163-169 in Chapter 10 (Aerial Spies) of Jeffrey T. Richelson, *A Century of Spies: Intelligence in the Twentieth Century* (Oxford: Oxford University Press, 1997).

During the 20th century, airpower emerged as an important tool of warfare and coercive diplomacy. In the Interwar Years, a handful of states focused on the development of bomber and fighter aircraft that would be extensively procured and employed during World War 2 (WW2).¹¹ While air power could enable the effective conduct of ground operations, aircraft and missiles also could be used for extensive aerial attacks on ground targets to destroy infrastructure and public morale.¹² In a conventional conflict, the lessons learned from application of air power pointed to the importance of early acquisition and the ability to maintain superiority over the airspace of one's adversary.

On the defense side, the development of radar technologies revolutionized the detection of aerial threats. Before the emergence of radar and its extensive use in WW2, the only reliable detection technique involved humans standing on rooftops to watch and listen for approaching adversarial aircraft.¹³ Radar detection afforded states the opportunity to see outside of their borders and into their territorial waters or their neighbors' airspaces to get an earlier warning of an airborne threat. During WW2, advance information about a threat could allow states to mount an organized defense against a perceived threat with artillery or scramble their own interceptor aircraft.¹⁴ The development of countermeasures and stealth sought to thwart the evolution of

¹¹ See, for example, Martin Van Creveld, *The Age of Airpower* (New York, NY: Public Affairs, 2011).

¹² See, for example, Tami Davis Biddle, "Air Power Theory: An Analytical Narrative from the First World War to the Present," in J. Boone Bartholomees, Jr., editor, *The U.S. Army War College Guide to National Security Issues Volume 1: Theory of War and Strategy*, 4th edition (Carlisle, PA: U.S. Army War College, 2010).

¹³ Rebecca Grant, *The Radar Game: Understanding Stealth and Aircraft Survivability* (Arlington, VA: Mitchell Institute Press, 2010).

¹⁴ On the Dowding System, see "Germany Triumphant" in Williamson Murray and Allan R. Millett, *A War to Be Won: Fighting the Second World War* (Cambridge, MA: The Belknap Press of Harvard University Press, 2001), pp. 83-89.

defensive detection and engagement technologies. In wartime, the only way to acquire air superiority over a state with an effective and coordinated system of radar, air defense, and countermeasures involved the destruction and disablement of these systems. These systems would be the first targets in an aerial attack.

To maintain sovereignty over their airspaces, states need to be able to monitor and control activity in that domain. Capabilities to continuously detect, identify, and track airspace activity is crucial in both wartime and peacetime. In wartime, it allows states to exercise command and control over defensive activities and prevent fratricide. In peacetime, it facilitates commercial aviation and prevents the inadvertent engagement of civilian aircraft by military assets. There is inherent interdependence between the technical tasks of detection, identification, and tracking activity in the airspace, and the time window for detecting potential threats, correctly identifying them, and coordinating a civilian or military response, if needed, is very small. Thus, there is some benefit in cooperating with one's neighbors in the exchange of radar data that allows an earlier warning of airborne threats.

Most activity in the airspace of states involves commercial air traffic, and there are international rules and procedures that facilitate safe passenger air travel. A civilian aircraft that intends to take off, land, or transit through a state's airspace is required to file a flight plan. This flight plan allows air traffic control to anticipate activity within the airspace of their country or flight information region as well as to ensure that all aircraft within that area are kept at a safe distance (or "separated") from one another. As an aircraft travels from one flight information region to the

next, it is handed off from one air traffic control tower to another in terms of communication and tracking.

For tracking purposes, civil air traffic control radar systems use several types of information. Ground-based primary radar is able to detect an aircraft's bearing and range while secondary radar detects the signal of an aircraft's transponder that squawks the aircraft's identifying code and altitude. All of these data points, supplemented by voice communication between the aircraft and air traffic control, enables safety and predictability of peacetime air operations.

Even in peacetime, the broad spectrum of aerial threats makes the task of crafting responses difficult. Threats can include manned or unmanned systems, including stealthy ones, operated by state or nonstate actors. From a capabilities perspective, threats can come from airborne reconnaissance systems, mobile air defense systems, cruise missiles launched from sea-based platforms, long-range aircraft carrying conventional or nuclear bombs and/or cruise missiles, tactical aircraft covering an advance by hostile ground forces, and armed unmanned aerial vehicles. Even in peacetime, the true intentions of these actors may not be fully known, but states need to have rules of engagement for each type of threat. For example, state or nonstate actors could seize a passenger aircraft for use as a "manned missile." However, their intentions and final destination may be unknown, and a state's decision time in this situation may be minimal. Thus, there is some potential advantage to neighbors working together to jointly detect and track airborne threats as well as to develop common rules of engagement.

Airpower and Escalation in Conventional Conflict

Since the end of the Cold War, the United States has led multiple conventional campaigns with an extensive use of airpower for reconnaissance and strike. Military operations, including during the Gulf War, in former Yugoslavia, Afghanistan, and Iraq showcased an increase in the effectiveness U.S. airpower due to improvements in targeting and an increase in the speed of information processing.¹⁵ While the United States performed a supporting role in the 2011 campaign in Libya, those operations were praised for U.S./NATO's ability to exercise command and control over aerial strike operations that required a high degree of coordination among allies and partners.¹⁶

In the first salvos of air operations, attacking forces seek to disable and destroy elements of the defender's networked radar and air defense systems. This allows the attacker to establish air superiority and enable effective ground operations. Since the attacker's targeting occurs with the help of sensors mounted on reconnaissance and other aircraft that are able to track electronic emissions, the chief task for the defender is to deny the attacker the acquisition of targeting data. A defender can be a "cooperative target" if the components of its integrated air defense systems are enabled, thus revealing their locations to the attacker's sensors. These sensors then communicate targeting data to the attacker's aircraft and standoff platforms launching missiles designed specifically to home in on the "cooperative"

¹⁵ The challenge lies in not overstating the effectiveness of airpower alone. See, for example, Daryl G. Press, "The Myth of Air Power in the Persian Gulf War and the Future of Warfare," *International Security*, vol. 26, no. 2 (Fall 2001), pp. 5–44.

¹⁶ Ivo H. Daalder and James G. Stavridis, "NATO's Victory in Libya," *Foreign Affairs* (March/April 2012), <https://www.foreignaffairs.com/articles/libya/2012-02-02/natos-victory-libya>.

targets. However, the defender's mobile air defense systems can also operate with their radar sensors turned off. In this "uncooperative" scenario, these targets present a challenge for the attacker to locate and suppress—especially if they are geographically dispersed and well hidden.¹⁷

In both "cooperative" and "uncooperative" scenarios, the attacker's primary goals are to deny the defender the ability to detect, track, and lock onto the attacker's strike assets, including through stealth, and to destroy the defender's integrated air defense system. Thus, networking of sensors, shooters, and command and control allows for more effective and diverse reconnaissance and strike capabilities, especially when operating with others in a coalition environment. For a defender, the networking of sensors, shooters, and command and control allows the elements of the integrated air defense system to be more survivable and less "cooperative" targets that could also deny the attacker (confidence in achieving) air superiority. However, a network can also be vulnerable since its individual elements can be disabled, thus disrupting effective operations. Electronic warfare is used by both attackers and defenders for this specific purpose. The development of offensive cyber capabilities enables further non-kinetic solutions for disabling networked systems.

On their own, certain technologies are not more inherently escalatory than others. However, military forces have a propensity to escalate and "any technology that enables a military force to fight with more speed, range, and lethality will enable

¹⁷ On experiences from Yugoslavia and Iraq, see Benjamin S. Lambeth, "Kosovo and the Continuing SEAD Challenge," *Aerospace Power Journal* (Summer 2002), www.ausairpower.net/APJ-Lambeth-Mirror.html and Barry Posen, "Command of the Commons: The Military Foundations of U.S. Hegemony," *International Security*, vol. 28, no. 1 (Summer 2003), pp. 24-30.

that force to cross escalation thresholds faster.”¹⁸ This is also in large part because both attackers and defenders seek to gain advantage by disrupting one another’s respective networks.¹⁹ The implication of these developments is a dynamic of instability in crises in which U.S./NATO forces may be faced with a conventionally-inferior adversaries with nuclear weapons.

2.3. Defining and Managing Escalation

As with all human activities, escalation dynamics are embedded into conflict. This section first discusses escalation and its types. It then focuses on the challenges of escalation management and discusses ways in which TCBMs could help in this regard.

Escalation and its Types

When Herman Kahn published *On Escalation* in 1965, he wrote that the dictionaries of the time had yet defined the word in its newfound international context. "Yet the word is now familiar and can be used without apology to describe an increase in the level of conflict in international crisis situations," he noted.²⁰ Kahn’s work identified metrics for degrees of escalation in a conflict and also put forward a concept of a so-called “escalation ladder” with 44 rungs that would help the United States to achieve escalation dominance, including in a nuclear conflict with the Soviet Union. At the time, the metaphor perpetuated the provocative notion that

¹⁸ Forrest E. Morgan, Karl P. Mueller, Evan S. Medeiros, Kevin L. Pollpeter, Roger Cliff, *Dangerous Thresholds: Managing Escalation in the 21st Century* (Washington, DC: RAND, 2008), pp. 168-169.

¹⁹ Keir Lieber and Daryl Press, “Conventional War and Escalation,” January 3, 2014, https://www.princeton.edu/politics/about/file-repository/public/Lieber_Press_Article_Esc_030114.pdf.

²⁰ Herman Kahn, *On Escalation: Metaphors and Scenarios* (New Brunswick, NJ: Transaction Publishers, 2010), pg. 3.

escalation could be controlled and managed on both sides in a rational way. However, the Soviet Union never really adopted the “escalation ladder.”²¹

Modern U.S. assessments of escalation focus on the concept of “thresholds” and incorporate the requisite degree of uncertainty in the perceptions and decision-making of both sides in the conflict.²² They also acknowledge that managing escalation is a difficult task for policy makers.²³ A 2008 RAND study notes three dimensions of escalation, including vertical (intensity or capability), horizontal (geography), and political (a combination of both vertical and horizontal).²⁴

States can and do choose to escalate political-military conflicts by violating one another’s respective thresholds for instrumental and suggestive purposes. In instrumental escalation, “the combatant deliberately increases the intensity or scope of an operation to gain advantage or avoid defeat.” In suggestive escalation, the combatant wishes to “send signals, [...] punish enemies for earlier escalatory deeds, or warn them that they are at a risk of even greater escalation if they do not comply with coercive demands.”²⁵ When states engage in coercive diplomacy, escalation dominance—including through the use of airpower—may be an effective way to achieve one’s goals.²⁶

²¹ At least until more recently... Some Russian analysts are trying to draw lessons from Kahn’s work. Sergey Petrushkin, "Razmyshleniya o nevozmozhnom" (Thoughts of the Unthinkable), *Nezavisimoye Voyennoye Obozreniye*, September 9, 2015, http://nvo.ng.ru/concepts/2015-10-09/1_thoughts.html.

²² Morgan et al., op. cit., pg. 8.

²³ Ibid., pg. xii.

²⁴ Ibid., pg. 20.

²⁵ Ibid., pg. xii.

²⁶ Daniel L. Byman, Matthew C. Waxman, and Eric Larson, *Air Power as a Coercive Instrument* (Washington, DC: RAND, 1999), pg. xiii.

Another type of escalation is preemptive or inadvertent—a dynamic in which escalation is an unexpected result of a deliberate action. As the RAND study defines, this type of escalation “engages when a combatant deliberately takes actions that it does not perceive to be escalatory but are interpreted that way by the enemy.”²⁷ In his work on inadvertent nuclear escalation, Barry Posen warned of the danger of “large-scale conventional operations that produce patterns of damage or threat to the major elements of a state’s nuclear forces.”²⁸ Inadvertent escalation could also result from the actions of third parties that are misjudged by one state as actions of another states and trigger a response.²⁹

Finally, the third escalation mechanism is accidental. In this scenario, “operators make mistakes or leaders fail to set appropriate rules of engagement or maintain adequate discipline over forces under their command.”³⁰ Accidental escalation may occur due to failures in standard operating procedures.

The three types of escalation discussed above have long been recognized as potential dangers that could contribute to conventional and nuclear conflict. The section that follows discusses the challenges of managing escalation.

Challenges of Managing Escalation

Management of deliberate escalation occurs primarily through deterrence. Scholars distinguish between two types of deterrence: by punishment and by denial.

²⁷ Morgan, et al., op. cit., pp. 23-25.

²⁸ Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1989), pg. 3.

²⁹ See Barry Blechman, “Containing the Threat of Nuclear Terrorism,” in Barry Blechman, editor, *Preventing Nuclear War* (Washington, DC: Georgetown University Press, 1985), pp. 52-65.

³⁰ Morgan et al, op. cit., pp. 26-28.

The former type of deterrence has to be credible insofar as one is willing and capable to inflict damage, but this strategy is risky since it may provoke “the very escalation one is hoping to avoid by suggesting to the adversary that greater escalation is on the way, escalation that may put it at a critical disadvantage if it does not escalate first.”³¹ Deterrence by denial, in turn, seeks to deny an adversary certain objectives and may be a better way to manage deliberate escalation.³²

In a crisis environment, there are deliberate escalatory pressures on both sides as well as opportunities for inadvertent or accidental escalation, which can translate a show of force into a limited war into a full-scale conventional war. This can happen unless care is taken to buttress deterrence and manage these escalatory pressures and opportunities through restraint, force posture, and assurances. As Michael Gerson has written, “If conventional deterrence fails, a force designed for deterrence by denial is more able to engage in conventional conflict, control escalation, and exercise a winning strategy.”³³ Morgan et al have similarly posited that, “a more reliable strategy for deterring deliberate escalation is one that buttresses threats of punishment with visible capabilities for denial.”³⁴

However, reading into intentions from force postures might be challenging.

To this end, Western analysts have foreseen the emergence of Russia’s anti-

³¹ Morgan, et al., op. cit., pg. 161-162.

³² Deterrence by “denial strategies may encompass a wide range of activities, from deploying integrated air and missile defenses around friendly cities to tightening security measures at airports. An advantage of using denial to bolster escalation management is that doing so puts defensive capabilities in place that lessen the costs of escalation, should deterrence fail.” Morgan, et al., op. cit., pg. 162.

³³ Michael Gerson, “Conventional Deterrence in the Second Nuclear Age,” *Parameters* (Autumn 2009), pg. 38.

³⁴ Morgan, et al., op. cit., pg. xiii and also pp. 20-23.

access/area denial capabilities as a response to U.S. conventional superiority.³⁵ What arguably came as a surprise is the deliberately escalatory nature of Russia's recent activities in Euro-Atlantic airspace and its demonstration of anti-access/area denial capabilities in Ukraine and Syria, and in close proximity to U.S. military forces. These actions have pointed to a growing sense of confidence in Moscow in a budding ability to challenge the U.S. military's "command of the commons."³⁶ Risky activities such as the buzzing of U.S. vessels by Russian fighter jets also raise questions about Russia's possible disregard for the constant presence of inadvertent and accidental escalation dangers in interactions involving U.S./NATO and Russian forces.

The risk of inadvertent escalation can be mitigated by understanding and managing escalation thresholds.³⁷ The way to deal with accidental escalation is to effectively exercise control over one's forces.³⁸ However, thresholds are subjective and decision-making and operating procedures also need to be able to withstand the pressures of the "fog of war."³⁹ Moreover, developing common concepts of thresholds and understanding motivations behind escalatory actions among adversaries is a time-consuming process fraught with challenges and dangers.

Table 2, below, summarizes escalation mechanisms and approaches to their management.

³⁵ See Larson et al, op. cit.

³⁶ The concept is from Barry Posen, "Command of the Commons: The Military Foundations of U.S. Hegemony," *International Security*, vol. 28, no. 1 (Summer 2003), pp. 5-46.

³⁷ Morgan, et al., op. cit., pp. 23-25.

³⁸ Ibid., pp. 26-28.

³⁹ Posen, *Inadvertent Escalation*, op. cit., pp. 19-22.

MECHANISMS	MOTIVES (ADVERSARY ESCALATES TO)	MANAGEMENT STRATEGIES
DELIBERATE	Instrumental (gain advantage or avoid defeat) or suggestive (signal, punish, or coerce compliance)	Self-restraint Deterrence by punishment and denial
INADVERTENT	Unexpected result of deliberate action	Clarifying thresholds on all sides of conflict
ACCIDENTAL	Operator error or initiative	Effective force management

Table 2: Escalation Mechanisms and Management Strategies. Source: Forrest E. Morgan, Karl P. Mueller, Evan S. Medeiros, Kevin L. Polipeter, Roger Cliff, *Dangerous Thresholds: Managing Escalation in the 21st Century* (Washington, DC: RAND, 2008).

During the Cold War, Washington and Moscow developed informal rules of behavior (or “prudent practices”) that could help them to prevent and manage escalation in crises.⁴⁰ Scholars such as Alexander George worked out principles for crisis management and crisis prevention, based on U.S.-Soviet interactions.⁴¹ One of the important concepts at the time was “crisis stability” or, in essence, “the degree to which mutual deterrence between dangerous adversaries [could] hold in a confrontation.”⁴² But, as the Cold War ended, and the political-military relations between Russia and the West improved, the importance of assuring crisis stability appears to have been forgotten.

The dangers of escalation, especially to the use of nuclear weapons, were one of the key reasons behind the development of generations of transparency and confidence building measures (TCBMs) beginning in earnest in the 1960s. While certain “prudent practices” had gradually begun to emerge in the U.S.-Soviet

⁴⁰ Joseph Nye, “Nuclear Risk Reduction Measures and U.S.-Soviet Relations,” in Blechman, op. cit., pg. 8.

⁴¹ Alexander L. George, “A Provisional Theory of Crisis Management,” in Alexander L. George, editor, *Avoiding War: Problems of Crisis Management* (Boulder, CO: Westview Press, 1991).

⁴² Forrest E. Morgan, *Crisis Stability and Long-Range Strike A Comparative Analysis of Fighters, Bombers, and Missiles* (Washington, DC: RAND, 2013), pg. 1.

relationship, the 1962 Cuban Missile Crisis resulted in the creation of a bilateral crisis management mechanism—the U.S.-Soviet Hotline.⁴³ Other bilateral TCBMs aiming to stabilize the deterrent relationship came into existence during the 1970s.⁴⁴ When the U.S.-Soviet relationship deteriorated in the early 1980s, several well-known U.S. Senators aimed to reduce the risk of nuclear war by creating Nuclear Risk Reduction Centers to facilitate information exchange between Washington and Moscow.

At the same time, neutral and non-aligned states in Europe sought ways to increase openness, reduce secrecy, and improve the predictability of military activities.⁴⁵ The conclusion of the 1975 Helsinki Final Act heralded the development of several waves of TCBMs—the 1986 Stockholm Document and 1990 Vienna Document.⁴⁶ While U.S.-Soviet measures operated largely on the strategic nuclear level and were viewed as more targeted and limited in their impact on the political-military relationship as a whole, the European view on TCBMs was that their activities would contribute “substance and precision to the process of multilateral construction of a peaceful and cooperative order in Europe.”⁴⁷ The section that follows identifies the main strands of TCBMs literature and focuses on its contribution to this study.

⁴³ See John Borawski, "U.S.-Soviet Move Toward Risk Reduction," *Bulletin of the Atomic Scientists*, July/August 1987, pp. 16-18.

⁴⁴ See Joseph S. Nye, Jr., "Nuclear Risk Reduction Measures and U.S.-Soviet Relations," in Blechman, op. cit., pp. 7-23 and William J. Lynn in Blechman, op. cit., pp. 24-51.

⁴⁵ Richard Darilek, "East-West Confidence Building: Defusing the Cold War in Europe," in Michael Krepon, editor, *Global Confidence Building* (New York, NY: St. Martin's Press, 1999), pp. 275-276.

⁴⁶ "OSCE Guide on Non-military Confidence-Building Measures (CBMs)," OSCE, 2012, pp. 12-13.

⁴⁷ Johan Jørgen Holst and Karen Alette Melander, "European Security and Confidence-Building Measures," *Survival*, vol.19, no. 4 (July-August 1977),, pg. 154.

2.4. Assessing Cooperative Arrangements as TCBMs

Referenced variously as confidence- building measures, confidence- and security- building measures, and cooperative transparency measures, TCBMs are instruments of cooperation among states, especially adversaries.⁴⁸ Scholars have different, yet complementary, explanations for emergence of TCBMs and for their contributions to cooperation and discord among states. This section brings forward insights from five perspectives and develops an analytical framework for the case studies of present-day airspace arrangements. Table 3, located at the end of this section, offers a summary.

Institutions

The focus of *institutionalist* scholars and practitioners is on the structures that states create and maintain to more effectively execute their security strategies. The Euro-Atlantic region has been a laboratory for security institutions, as Catherine Keller has argued.⁴⁹ Scholars have classified these security institutions to understand their form, function, and persistence. For example, as an exclusive military alliance, NATO is viewed as purposefully “designed to cope with [traditional state] threats” and thus needs to “mount credible deterrents and effective defenses against

⁴⁸ For origins of the term CBM, see John Borawski, “Confidence-Building Measures: Rescuing Arms Control,” *The Fletcher Forum* (Winter 1986), pg. 112.

⁴⁹ See Catherine McArdle Kelleher, “Cooperative Security in Europe,” in Janne E. Nolan, editor, Janne E. Nolan, editor, *Global Engagement* (Washington, DC: Brookings Institution Press, 1994) and Catherine Kelleher, “Cooperative Security in Europe: New Wine, New Bottles,” CISSM Working Paper, April 2012, <http://www.cissm.umd.edu/publications/cooperative-security-europe-new-wine-new-bottles-0>.

adversaries.”⁵⁰ Markedly different from an alliance, security management institutions such as the Organization for Security and Cooperation in Europe “provide for transparency, consultation, and incentives for cooperative strategies among members” in an environment of uncertainty.⁵¹ While NATO is exclusive and designed to respond to threats, institutions such as the OSCE are inclusive and designed to prevent and respond to risks.

According to a classical definition by Stephen Krasner, institutions are “sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue area.”⁵² As facilitators of credible information, institutions contribute to the reduction of uncertainty as well as explain shifts in state security strategies.⁵³ As Celeste Wallander has written, the positive impact of security institutions (like other institutions in international relations) involves the reduction of transaction costs, an increase in the shadow of the future, provision of a mechanism to resolve collective action problems and improve enforcement, as well as the promotion of path-dependence and learning.⁵⁴ On the flip side, ineffective, exclusive, or conflicting (“interblocking”) institutions frustrate multilateral solutions and contribute to misunderstandings.⁵⁵

⁵⁰ Celeste A. Wallander and Robert O. Keohane, “Risk, Threat, and Security Institutions,” in Helga Haftendorn, Robert O. Keohane, and Celeste A. Wallander, editors, *Imperfect Unions: Security Institutions Over Time and Space* (Oxford: Oxford University Press, 1999), pg. 33.

⁵¹ *Ibid.*

⁵² Stephen Krasner, “Structural Causes and Regime Consequences: Regimes as Intervening Variables,” *International Organization*, vol. 36, no. 2 (Spring 1982), pg. 186.

⁵³ Wallander and Keohane, *op. cit.*, pg. 4.

⁵⁴ For a summary, see Dan Lindley, *Promoting Peace with Information* (Princeton, NJ: Princeton University Press, 2007), pp. 6-7.

⁵⁵ Wallander and Keohane, *op. cit.*, pp. 4-6.

Another important aspect is that institutions serve as “informational and signaling mechanisms” among states and “can enhance a state’s capacity to detect changes” in intentions and strategies of others.⁵⁶ While uncertainty plays an important role in maintaining deterrent relationships, too much uncertainty can make states feel vulnerable. It is thus important to figure out how to design an institution that shares the right type and amount of information. According to Dan Lindley, the amount of information provided via a TCBMs needs to operate in a so-called Goldilocks zone.⁵⁷ While sharing too little information yields little in terms of security benefits, exchanging too much information can be damaging since it could make deception and potential preemption easier.⁵⁸

Thus, one of the ways to understand the impact of an airspace arrangement is to assess its role from an institutional perspective. Changes in this factor allow the measurement of whether the arrangement in question reduced uncertainty in the security environment or was instead interblocking and made cooperation more difficult.

Norms and Values

The widespread optimism about the power of ideas after the end of the Cold War highlighted *normative* factors in the expansion of transparency and security cooperation in the Euro-Atlantic region. To this end, “the failure to provide

⁵⁶ Celeste A. Wallander, *Mortal Friends, Best Enemies: German-Russian Cooperation After the Cold War* (Ithaca, NY: Cornell University Press, 1999), pp. 19-26.

⁵⁷ “[E]fforts to increase transparency by security regimes will work best when there is poor unilateral (intelligence) and ambient (press, trade, travel) transparency.” Lindley, *op. cit.*, pg. 181.

⁵⁸ Lindley, *op. cit.*, pp. 188-189.

information or access has come to be seen as a signal of hostile or nefarious intent.”⁵⁹

A norm-driven spread of cooperative transparency measures in the security realm began to “catch on” among states in the Euro-Atlantic beginning in the 1960s-1970s.⁶⁰ Examining interactions in Europe and between the United States and the Soviet Union since the beginning of the 20th century, Ann Florini wrote that TCBMs-facilitated cooperative transparency could work as an instrumental norm that buttressed deterrence, as a moral norm (the right thing to do), and as a standard of behavior (a proxy for intentions if a state deviated from it).⁶¹

Johan Jørgen Holst and Karen Alette Melander wrote that “an implicit objective of arms control in Europe is to reduce the impact of the military factor on the process of European politics.”⁶² Holst also noted that European TCBMs “embod[ied] and project[ed] notions of shared interest—a concept of common security—and they constitute[d] a pavement for the traffic of arms control and disarmament.”⁶³ Florini’s dissertation, in turn, even argued that the norm of cooperative transparency served as “the cause and the consequence of the events leading to the end of the Cold War.”⁶⁴

⁵⁹ Not only is the information itself significant in providing insight into a state’s capabilities, but the politics surrounding the provision and acquisition of information has acquired great importance as a signal of a state’s type. A state’s policy toward transparency now provides the basis for inferences about its intentions in a way that was not true fifty years ago. Ann Florini, “Transparency: A New Norm of International Relations” (doctoral dissertation, University of California, Los Angeles, 1995), pp. 3-4.

⁶⁰ Ibid.

⁶¹ Florini, op. cit., pp. 3-4 and pp. 47-48.

⁶² Holst and Melander, op. cit., pg. 147.

⁶³ Johan Jørgen Holst, “Confidence-Building Measures: A Conceptual Framework,” *Survival*, vol. 25, no. 1 (January-February 1983), pg. 5.

⁶⁴ Florini, op. cit., pp. 3-4.

Another important set of normative literature focused on common narratives as glue between the building blocks of a regional “security community” in the Euro-Atlantic.⁶⁵ Such a community would be in a state of stable peace. As Emanuel Adler and Michael Barnett observed, policymakers “identify the existence of common values as the wellspring for close security cooperation, and, conversely, anticipate that security cooperation will deepen those shared values and transnational linkages. Security is becoming a condition and quality of these communities; who is inside, and who is outside, matters most.”⁶⁶

On the flip side, as Kristin Lord has argued, “Mistrust is tightly linked to identity because identity provides important clues about how a state will behave in the future.”⁶⁷ Context is thus incredibly important in state interpretations of information since states might know the capabilities of the adversary, but not understand whether they pose threats.⁶⁸

A chief criticism of normative approaches is that they focus on broad and lofty future political goals, potentially at the detriment of immediate security benefits. As Marie-France Desjardins wrote, “[u]sing TCBMs to promote cooperation or dialogue between states does not necessarily improve security.”⁶⁹ In region-wide measures, states may have diverging security goals and these measures may affect

⁶⁵ See Emanuel Adler and Michael Barnett, editors, *Security Communities* (Cambridge: Cambridge University Press, 1998), pp. 55-56. Also see Vincent Pouliot, “The Logic of Practicality: A Theory of Practice of Security Communities,” *International Organization*, vol. 62, no. 2 (Spring 2008), pp. 257-288.

⁶⁶ Adler and Barnett, op. cit., pg. 4.

⁶⁷ Kristin Lord, *The Perils and Promise of Global Transparency* (Albany: State University of New York Press, 2007), pg. 39.

⁶⁸ Ibid., pp. 37-39

⁶⁹ Marie-France Desjardins, “Rethinking Confidence-Building Measures,” *The Adelphi Papers*, no. 307, 1996.

them in different ways. In some instances, these measures could instead encourage aggression, deception, and constrain domestic autonomy.⁷⁰

Thus, one of the ways to understand the impact of an airspace arrangement is to assess how and whether it has promoted certain norms and values. Changes in this factor allow the measurement of whether the arrangement in question signaled benign intent and facilitated a common concept of security or whether it instead distracted from or conflicted with immediate security goals.

Threat Perceptions

Defensive realism sought to challenge the optimism of normative scholars by arguing that the acceptance of transparency by states was no more than “a barometer of external threats rather than a solution to the problem of insecurity.”⁷¹ As James Marquardt wrote, states adopted TCBMs as a result of “the assessments states ma[d]e about external threats based on the offense-defense balance [...] and the strategies states employ[ed] to provide for their security.”⁷² TCBMs came about when all states in the Euro-Atlantic understood that defense was dominant and, even then, the military-significant information that states revealed through these measures was “quite modest.”⁷³

Desjardins argued that in some instances, even negotiating a TCBM may be detrimental to a state’s security since states are forced to air vulnerabilities in a

⁷⁰ Florini, op. cit., pp. 23-24 and Desjardins, op. cit., pp. 4-71.

⁷¹ James Joseph Marquardt, “Why Transparency is Not What it Appears to Be: Defensive Realism and the Origins of Institutionalized Openness” (doctoral dissertation, University of Chicago, 1998), pg. 3.

⁷² Ibid., pg. 3.

⁷³ Ibid., pg. 28.

environments when solutions might not be imminent.⁷⁴ Worse, it was understood that states used military exercises (and transparency of these exercises generated by TCBMs) to coerce others.⁷⁵ And, even if states were able to discuss, agree-upon, and design measures, these could carry risks of “selective compliance, bad faith, and deception.”⁷⁶

Thus, one of the ways to understand the impact of an airspace arrangement is to assess its impact on shifts in threat perceptions of relevant states. Changes in this factor allow the measurement of shifts in threat perceptions and whether states revealed too much information that was ultimately detrimental to their security as part of their participation in the arrangement.

Information Technologies

Some scholars and practitioners have argued that developments in remote sensing as well as information acquisition and processing technologies play an important role in driving state behavior.⁷⁷ Evolution of information technologies (commercial satellites, global positioning technology, three-dimensional modeling, social networks, unmanned aerial systems) has had an impact on political-military relations between states. It has allowed other states, civil society, and international organizations access to information—such as the location and nature of military facilities—that was restricted to very few states in the past. The diffusion of these technologies has gradually eroded the governments’ traditional monopoly on security

⁷⁴ Desjardins, op. cit., pp. 34-27.

⁷⁵ Ibid., pp. 13-14.

⁷⁶ Ibid., pg. 19 and pg. 51.

⁷⁷ Ann M. Florini, “The Opening Skies: Third-Party Imaging Satellites and U.S. Security,” *International Security*, vol. 13, no. 2 (Fall 1988), pp. 91-123.

information.⁷⁸ As Rose Gottemoeller has argued, "citizen-run verification and monitoring projects may have potential in arms control and nonproliferation policy."⁷⁹

The revolution in information technologies also had implications for security cooperation among adversaries. They can choose to cooperatively exploit sensors and exchange information with an understanding that that may facilitate an improvement in their mutual security.⁸⁰ For example, the United States has led the push toward new technologies in monitoring and verification with a recognition that widespread access to information technologies carries transformational potential.⁸¹ But this came at a time when it has a substantial advantage in the use of space technologies and also follows decades of concern that this advantage would be eroded by others.

States also respond differently to the widespread availability of security information. Depending on their governance arrangements, some are more comfortable with such transparency, while others will instead gravitate toward opacity and rely on deception. Moreover, the same information that can be used for monitoring can be used to learn one another's vulnerabilities and in order to improve

⁷⁸ Lord, *op. cit.*, pp. 8-14.

⁷⁹ Rose Gottemoeller, "From the Manhattan Project to the Cloud: Arms Control in the Information Age," (speech, Stanford University, CA, October 27, 2011), State Department, <http://www.state.gov/t/avc/rls/176331.htm>.

⁸⁰ For example, John Steinbruner, "The Significance of Joint Missile Surveillance," American Academy of Arts and Sciences Occasional Paper, July 2001, <https://www.amacad.org/content/publications/pubContent.aspx?d=1232>.

⁸¹ Defense Science Board, "Assessment of Nuclear Monitoring and Verification Technologies," Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, January 2014, <http://www.acq.osd.mil/dsb/reports/NuclearMonitoringAndVerificationTechnologies.pdf>, pg. 1.

weapons targeting. As Lord has argued, information is generally reported selectively and there is bias in acquisition and processing of large volumes of information.⁸²

Thus, one of the ways to understand the impact of an airspace arrangement is to assess the impact on states of relevant information technologies. Changes in this factor allow the measurement of whether their cooperative exploitation as part of the arrangement promoted security or if technological imbalance instead pushed some stakeholders toward opacity.

Bureaucratic Engagement

Human and bureaucratic factors are essential understanding cooperation among adversarial states.⁸³ TCBMs work by engaging the bureaucracies of adversarial states in the routine exchanges of “credible evidence of the absence of feared threats.”⁸⁴ This is why on-site inspections and the human element have been noted as indispensable tools in designing arms control accords.⁸⁵

As Richard Darilek has written, natural processes within security bureaucracies may lead to a loss of “confidence and give rise to tensions over the nature, purpose, status, and disposition of another state’s military forces.”⁸⁶ TCBMs aim to control these negative tendencies and counter misperception spirals as well as possibly to facilitate small and gradual changes in the bureaucracies’ “secretive

⁸² Lord, op. cit., pp. 8-14.

⁸³ This is perhaps why officials say that on-site inspections and the presence of human actors is important in verification.

⁸⁴ Holst and Melander, op. cit., pg. 147.

⁸⁵ See, for example, Lewis A. Dunn and Amy E. Gordon, editors, *Arms Control Verification and the New Role of On-site Inspection* (Lexington, MD: Lexington Books, 1990).

⁸⁶ Darilek, op. cit.

habits.”⁸⁷ In addition, a recent study by the National Academy of Sciences describes the desirable end state as a “habit of cooperation” between these bureaucracies.⁸⁸

However, security bureaucracies are generally conservative actors. They can block progress and impede deeper cooperation. There is evidence to suggest that this is the case in the relationship between Russia and the West. In a book describing the attitudes of NATO-Russian cooperation, Vincent Pouliot blamed the bureaucracies for failing to transform the relationship.⁸⁹ He argued that, “[d]espite some progress, both sides have missed a rare opportunity to genuinely pacify and finally move beyond self-fulfilling security dilemmas.”⁹⁰

In sum, one of the ways to understand the impact of an airspace arrangement is to assess its role in engaging security bureaucracies of relevant states. Changes in this factor allow the measurement of whether cooperation as part of the arrangement increased the habit of cooperation between bureaucracies or instead facilitated a mismatch in attitudes between them.

Building on the discussion in this section, Table 3 summarizes the literature on how institutions, norms, threat perception, technology, and bureaucracies can help build our understanding about the capability of airspace arrangements to contribute to cooperation and discord, respectively.

⁸⁷ Ibid.

⁸⁸ National Academy of Science, *Global Security Engagement: A New Model for Cooperative Threat Reduction* (Washington, DC: National Academies Press, 2009).

⁸⁹ Pouliot, op. cit., pg. 2.

⁹⁰ Ibid., pg. 1.

FACTORS	TCBM ORIGINS	DESIRED IMPACT	POTENTIAL NEGATIVE IMPACT
INSTITUTIONS	States create mechanism to coordinate cooperative strategies	Reduction of uncertainty in security environment	“Interblocking” and ineffective institutions promote vulnerability and frustrate cooperative solutions
NORMS AND VALUES	States are driven by norms and shared interest	Signals of benign intent and facilitates common security concept	Focus on norms and process may distract from or conflict with immediate security goals
THREAT PERCEPTION	States conduct offense-defense balance, cooperate when security environment is benign	Modest impact—at best, it is a barometer of current security environment	Information revealed by states can be used by others against them
INFORMATION TECHNOLOGIES	Technological evolution drives state behavior	Cooperative exploitation of technologies promotes security	Technological imbalance pushes states toward opacity
BUREAUCRACIES	Bureaucratic actors within states initiate cooperation	Increased habit of cooperation between bureaucracies	Mismatch of security attitudes between bureaucracies

Table 3: Summary of Relevant TCBMs Scholarship.

The section that follows connects escalation management and TCBMs literature to focus on risk reduction measures and lessons from attempts to limit the risk of escalation of airspace incidents.

2.5. Managing Dangers of Airspace Incidents Through TCBMs

Reducing the risk of inadvertent and accidental escalation became an important U.S.-Soviet policy issue during the 1980s. However, managing the risks of close encounters of military aircraft was a difficult task. This section focuses on the challenges of designing TCBMs in the airspace area.

Designing Risk Reduction Measures

Many TCBM efforts in the 1980s focused on reducing the risk of nuclear war.⁹¹ The goals for these measures varied. However, on the whole, they intended to “strengthen deterrence by reducing the danger of war by accident or inadvertence” or, in the event of a war, assure “that the conflict could be maintained on the conventional level and not escalate to the use of nuclear weapons.”⁹²

As conceptualized during the Cold War, TCBMs could encompass five types of activities: exchanges of military-significant information, preventive consultations, notification of military activities, constraints on these activities, and on-site access to military facilities.⁹³ Carefully crafted mechanisms could be successful if they incorporated many or all features of these activities to varying degrees. They also needed to work in the broader context of security institutions developed by the respective states.

Perhaps one of the most significant achievements of these risk reduction efforts, led by Senators Sam Nunn and John Warner, was the creation of the Nuclear Risk Reduction Centers (NRRC). The NRRCs were conceived as a new bilateral mechanism that would institutionalize consultation and reduce the risks of inadvertent and accidental escalation between the United States and the Soviet Union.⁹⁴ The NRRCs intended to provide a mechanism to prevent crises, avoid misperceptions

⁹¹ Joseph Nye, “Nuclear Risk Reduction Measures and U.S.-Soviet Relations,” in Blechman, *op. cit.*, pg. 16.

⁹² Sam Nunn and John Warner, “A Practical Approach to Containing Nuclear Dangers,” in Blechman, *op. cit.*, pg. 2.

⁹³ Darilek, *op. cit.*, pg. 285. Others suggest three broad categories—agreements over the provision of information regarding the size, status, and equipment levels of military forces; agreements over codes of conduct of military forces between states; and the creation of direct lines of communication to be used to clarify misunderstandings—instead of five. Stuart Croft, *Strategies of Arms Control: A History and Typology* (Manchester: Manchester University Press, 1996), pp. 115-130.

⁹⁴ Richard Betts, “A Joint Nuclear Risk Control Center,” in Blechman, *op. cit.*, pp. 65-67.

from exercises, anticipate problems, discuss rules of the road for behaviors that may result in escalation, and cooperate against third-party threats, including nuclear terrorism.⁹⁵ The potential detriment to U.S. security of the information mechanisms in NRRC were also carefully assessed.⁹⁶ The genius of the NRRCs proposal was the fact that the centers were embedded into already existing structures on military TCBMs in the Russian and the European context. While these centers were initially conceived with rather limited goals in mind, today they serve as the backbone of information exchanges on U.S.-Russian bilateral arms control accords as well as a whole set of conventional arms control accords with other countries in the Euro-Atlantic.

As noted in the introduction to this chapter, the BASC system in Cold War Berlin provides a useful example of functional risk reduction arrangements that include specific features, such as an information exchange mechanism, notification of activities, constraints on behavior, and not just on-site access, but permanent presence. The design of information exchange within the BASC was constrained by its Cold War function of protecting Western aircraft from accidental engagement by Soviet air defense forces. Less of a modern-day fusion center, in which operators could cooperatively analyze raw data from jointly-operated or co-located radar sensors, the BASC operated like an information relay in which the officers transmitted information from Western air traffic control operators to Soviet air defense—and back.⁹⁷

⁹⁵ Ibid., pp. 68-72.

⁹⁶ Ibid., pg. 82

⁹⁷ John A. Fahey and Philip S. Gillette, "Military Liaisons between NATO and the Warsaw Pact: An Agenda for the Future," Johns Hopkins University Foreign Policy Institute Paper, December 8, 1988.

A similar comprehensive airspace arrangement involving U.S./NATO and Russia was envisioned at the end of the Cold War by several Brookings Institution scholars.⁹⁸ Coupled with cooperative aerial surveillance of ground troop movements, the goal of this TCBM was to make undetected preparations for a coordinated air assault in the Euro-Atlantic impossible.⁹⁹ As part of this system, the authors envisioned a cooperative system of military air traffic management comprised for “continuous, routine inputs” from civilian and military ground-based air traffic control radar, “international inspectors established in the manner of [the OSCE],” and satellite reconnaissance systems.¹⁰⁰ In addition, there would be a need to “create an international surveillance system that maintained a current ‘order of battle’ of military aircraft on a worldwide basis.”¹⁰¹ To be sure, this system never came to pass—in part because of the disparate nature of the evolution of the security environment in Europe. However, there were efforts to tackle the dangers of airspace incidents around the margins.

Efforts to Reduce the Dangers of Airspace Incidents

The dangers of airspace incidents were recognized in a 1972 U.S.-Soviet Incidents at Sea (INCSEA) arrangement that circumscribed certain activities of sea vessels and naval aviation—most notably “buzzing.” In addition to identifying the risk of certain activities and agreeing which ones were similarly threatening to both sides, the United States and Soviet Union also created a consultative body to manage

⁹⁸ Ashton Carter, William Perry, and John D. Steinbruner, *A New Concept of Cooperative Security* (Washington, DC: Brookings Institution Press, 1992), pp. 20-24.

⁹⁹ *Ibid.*

¹⁰⁰ *Ibid.*, pp. 22.

¹⁰¹ *Ibid.*

any issues that arose in the implementation. The INCSEA was noted as a “quiet success” for U.S.-Soviet cooperation, with navies on both sides surprisingly serving as its champions.¹⁰² This agreement, in theory, limited the risk of war through reducing the likelihood of accidents. However, it did not address or limit the behavior of non-naval aircraft, thus excluding a whole set of more contentious activities carried out by both sides.

Another agreement, the 1989 U.S.-Soviet Agreement on Preventing Dangerous Military Activities, called for “great caution and prudence” of all military forces in areas where they might be in close proximity. It placed restrictions on interference with command and control, among other measures.¹⁰³ It also had a provision for creating so-called “special caution areas” where forces would have to take due care. However, with the change in the political-military environment at the end of the Cold War, and the cuts in tactical aviation across NATO and former Soviet states, this agreement was largely forgotten.

In contrast to these limited successes on the bilateral front, agreeing on what constituted threatening aerial (and naval) activities in the Warsaw Pact-NATO context, and how these activities could be circumscribed in a regional setting, was not so easy.¹⁰⁴ In bloc-bloc attempts to address these issues that began in the 1970s, a lot of effort was spent on defining what constituted “major maneuvers” and whether

¹⁰² Sean M. Lynn-Jones, “A Quiet Success for Arms Control: Preventing Incidents at Sea,” *International Security*, vol. 9, no. 4 (Spring 1985), pp. 154-184. On broader scope issues, see Alan J. Vick, “Building Confidence During Peace and War,” *Defense Analysis*, vol. 5, no. 2, 1989, pp. 4-6.

¹⁰³ Ian Kearns and Denitsa Raynova, “Managing Dangerous Incidents: The Need for a NATO-Russia Memorandum of Understanding,” European Leadership Network Report, March 7, 2016, http://www.europeanleadershipnetwork.org/managing-dangerous-incidents-the-need-for-a-nato-russia-memorandum-of-understanding_3578.html.

¹⁰⁴ See Carl C. Kriebhiel, *Confidence and Security Building Measures in Europe: The Stockholm Conference* (Westport, CT: Praeger, 1984).

“independent” aerial activities also needed to be notified.¹⁰⁵ Once some agreement on notifiable thresholds was reached, however, it could also be interpreted as the need to not notify about activities just shy of that threshold. And even then, notifications of planned activities could also be used for coercive purposes.

One challenge in working out an agreement was that any meaningful military-significant “constraint” on “threatening” activities also placed limitations on activities essential for defense, including training.¹⁰⁶ Another challenge was in the potential detriment of selective compliance with any accord that limited these activities.¹⁰⁷ Further, as Richard Betts had pointed out, the “grounding of aircraft and cancellation of training exercises” to prepare for attack is a much better indicator of preparations for a surprise attack than a notification of planned activity.¹⁰⁸

Analysts pointed to the dangers, especially to civilian aviation, from certain aerial reconnaissance practices on both sides. For instance, Alan Vick cautioned of the practice of carrying out reconnaissance flights over radar and air defense systems, noting that “although such flights yield valuable operational intelligence about system reaction times, radar locations and frequencies, they create a level of tension that leads to peacetime disasters and could lead to worse during a crisis.”¹⁰⁹

There was also recognition of the potential of linking air defense to civilian air traffic control to reduce the risk of incidents such as the Soviet air defense’s downing

¹⁰⁵ “Notification of Air and Naval Activities” in *Ibid.*, pp. 133-192. As Kriebhiel also noted, “it is not the notification of threatening activities that builds security” but “the detection of a military activity that was not notified, but should have been.” See *Ibid.*, pg. 153.

¹⁰⁶ Kriebhiel, *op. cit.*, pg. 230.

¹⁰⁷ Desjardins, *op. cit.*, pp. 51-52.

¹⁰⁸ Richard Betts, *Surprise Attack: Lessons for Defense Planning* (Washington, DC: Brookings Institution Press, 1982), pg. 192.

¹⁰⁹ Vick, *op. cit.*, pg. 100.

of Korean Air Lines flight 007 in 1983, which resulted in the deaths of 269 innocent people.¹¹⁰ In response to that incident, the Soviet Union, the United States, and Japan created a communication system between their civilian air traffic controllers to coordinate incidents with civilian air traffic transiting the Pacific.¹¹¹ While the system could potentially prevent the misidentification of a civilian aircraft as a reconnaissance or an armed military one, it was still ineffective in situations like hijackings that required closer coordination and explicit rules of engagement that were pre-agreed-upon by respective air defense and air forces of the various states. A civilian would also not be able to effectively detect stealthy aircraft or unmanned systems and have little recourse with regard to military aircraft operating with disabled transponders, as it the case in the current Euro-Atlantic situation.

The three chapters that follow put forward the case studies of airspace arrangements. Information on airspace activity can be acquired by unilateral or cooperative means. Some information is relatively static, such as the geographic location of airfields, the type and number of aircraft stationed at those airfields, and some of these aircrafts' intended flight plan. Most of this information is exchanged by Euro-Atlantic states through existing arrangements and monitored, in part, through cooperative aerial surveillance mechanisms such as the Open Skies Treaty, as discussed in Chapter 3. Here, it should be noted that this study only marginally focuses on developments in commercial satellite imagery, and treats that issue only in

¹¹⁰ Ibid.

¹¹¹ Philip Taubman, "Khabarovsk Journal: Keeping the Air Lanes Free: Lessons of a Horror," *The New York Times*, September 17, 1987, <http://www.nytimes.com/1987/09/17/world/khabarovsk-journal-keeping-the-air-lanes-free-lessons-of-a-horror.html>.

the context of the Open Skies Treaty.¹¹² Other airspace activity data is more dynamic and involves the exchange of real-time data on the detection, identification, and tracking of aircraft in flight. This is the type of air situational data collected from civilian and military radar data and fused by states into common airspace pictures through U.S. and NATO-led Airspace Initiatives, as discussed in Chapter 4. In turn, deeper cooperation between states involves efforts to jointly counter aerial threats and requires a substantial degree of consensus as well as sophisticated coordination of engagement procedures and detection and defense assets, as discussed in Chapter 5.

¹¹² For more extensive discussion on open source imagery, see Frank Pabian, “Commercial Satellite Imagery as an Evolving Open-Source Verification Technology,” European Union Joint Research Center Technical Report, 2015, <http://publications.jrc.ec.europa.eu/repository/handle/JRC97258>. Some propose the development of an International Satellite Verification Agency. See, for example, “Introduction” in Corey Hinderstein, editor, *Cultivating Confidence: Verification, Monitoring, and Enforcement for a World Free of Nuclear Weapons* (Washington, DC: Nuclear Threat Initiative, 2010), pg. xix.

Chapter 3: Cooperative Aerial Surveillance of Military Activity

3.1. Introduction

In April 2014, the U.S. government interagency was in vehement disagreement about a cooperative aerial surveillance arrangement that allowed unarmed Russian “spy” aircraft to overfly U.S. territory and image military installations. A magazine column aired the concerns of some in the interagency about the pending U.S. approval of a new set of commercially-available sensors slated for deployment on a Russian aircraft used through the Open Skies Treaty.¹ It described how the Department of Defense and the U.S. intelligence community were made “deeply uncomfortable” by the prospect of a new sensor package that would reportedly “allow Moscow to surveil American nuclear assets with a [much greater] level of precision and detail.”²

The Department of Defense and intelligence community perspectives were reportedly pitted against the opinion of the Department of State. The latter strongly supported the certification to preserve a cooperative aerial surveillance treaty mechanism that permitted reciprocal overflights of Russian military facilities by the United States and its European partners.³ As one analyst described the dilemma

¹ William Kristol, "A Secret Fight Over Russia in the Obama Administration," *The Weekly Standard*, April 13, 2014, www.weeklystandard.com/blogs/secret-fight-over-russia-obama-administration_786823.html.

² Eli Lake, “Pentagon Moves to Block Russian Spy Plane in American Skies,” *The Daily Beast*, April 18, 2014, <http://www.thedailybeast.com/articles/2014/04/18/pentagon-moves-to-block-russian-spy-plane-in-american-skies.html>.

³ Ibid.

facing the Obama administration: “the White House was confronted with the choice of either quitting the Open Skies Treaty or of certifying the Russian camera, which would only be used in Europe.”⁴ In May 2014, after a National Security Council meeting, the administration reluctantly approved the deployment of Russia’s sensor package.⁵

This chapter details the negotiation and implementation of the Open Skies Treaty (OST)—an unprecedented regime that facilitates cooperative aerial surveillance of military activities across the Euro-Atlantic. Since the signing of the agreement in 1992, more than 1,300 photographic overflights have been carried out under the agreement that currently includes 34 states and spans the territory from Vancouver to Vladivostok.⁶ During the overflights, representatives of observer nations photograph and use other sensors to image military-significant facilities.⁷ The data downloaded from OST aircraft sensors is accessible for a notional fee to all treaty signatories through common data bank at the Organization for Security and Cooperation in Europe (OSCE), allowing all states parties the opportunity to observe the overflown states’ force posture and military infrastructure.⁸ This approach, as

⁴ Hartwig Spitzer, “Open Skies: Transparency in Stormy Times,” *Trust & Verify*, no. 146 (July-September 2014), <http://www.vertic.org/media/assets/TV/TV146.pdf>.

⁵ Ibid.

⁶ “Open Skies Treaty is Important for Building Trust and Promoting Transparency,” OSCE Press Release, June 8, 2015, www.osce.org/oscc/162771.

⁷ The sensor package may include visible-light photography, sideways-looking synthetic aperture radar, and infrared sensors—all commercially available systems that have to be certified in advance by all treaty participants. The flights are carried out in presence of and in cooperation with representatives of the observed nation.

⁸ “Open Skies Treaty,” Department of State Fact Sheet, March 23, 2012, <http://www.state.gov/r/pa/prs/ps/2012/03/186738.htm>.

some argued at the time of the OST's signing, was "in stark contrast to monitoring by reconnaissance satellites owned and operated by individual states."⁹

Proposed by U.S. President George H.W. Bush in 1989, the OST was signed after the collapse and fragmentation of the Soviet Union and the Warsaw Pact's dissolution. The treaty would not have been created without the leadership by the governments of Canada and Hungary, who cajoled their counterparts in the United States, the Soviet Union, and across Europe and promoted the cooperative aerial surveillance mechanism. Today, the treaty is a keystone of the region's security architecture and its continued relevance has been highlighted by its use during the Ukraine conflict. However, resolving compliance issues, updating sensors, and facilitating cooperative analysis of information, including through the OSCE, is essential to make the OST even more relevant for Euro-Atlantic security.

3.2. Open Skies from Proposal to Accord

The OST mechanism of cooperative aerial surveillance has its roots in a concept proposed by U.S. President Dwight D. Eisenhower to facilitate U.S.-Soviet disarmament. This section first outlines the political environments around the Eisenhower and Bush proposals. It then discusses internal U.S. and Soviet views on the Bush proposal, the important role played by Canada and Central and Eastern

⁹ Ernst Britting and Hartwig Spitzer, "The Open Skies Treaty," *Verification Yearbook* 2002, http://www.vertic.org/media/Archived_Publications/Yearbooks/2002/VY02_Spitzer-Britting.pdf, pg. 224.

European (CEE) states in championing the initiative, and the contentious issues that had to be resolved prior to the treaty's signing in 1992.¹⁰

The 1955 and 1989 Open Skies Proposals

In the summer of 1955, Eisenhower's advisers were interested in finding a way to test the sincerity of the Soviet Union's new leader, Nikita Khrushchev. Khrushchev, who came to power following the death of Joseph Stalin, was pledging to be more open than his predecessor. The concept of bilateral aerial surveillance had been under development in the circles around the Eisenhower administration for several years by that point. It sought to alleviate U.S. concerns about a potential surprise attack by the newly-nuclear-armed Soviet Union.¹¹

The mechanism entailed photographic overflights by U.S. aircraft over the Soviet Union, and vice versa, to verify data supplied in advance by both nations on the locations of their respective nuclear facilities.¹² At the time, the United States possessed photographic sensors of much higher quality and resolution than the Soviet Union.¹³ Thus, the agreement would disproportionately benefit Washington unless the sides would agree to share sensors or exchange data—a seemingly impossible negotiating feat. However, Washington was also getting ready to initiate unilateral

¹⁰ CEE states are Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania; NIS states in this case are Georgia and Ukraine. CIS/CSTO states include Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

¹¹ For background and context, see W.W. Rostow, *Open Skies: Eisenhower's Proposal of July 21, 1955* (Austin, TX: University of Texas Press, 1982).

¹² At various point of discussions of the proposal in the United Nations, the overflight proposals incorporated parts of Central Europe, Canada, all of Siberia, and the Arctic. James Marquardt, "Transparency and Security Competition: Open Skies and America's Cold War Statecraft, 1948-1960," *Journal of Cold War Studies*, vol. 9, no. 1 (Winter 2007), pp. 55-87.

¹³ For a useful overview, see John Cloud, "American Cartographic Transformations during the Cold War," *Cartography and Geographic Information Science*, vol. 29, no. 3 (2002), pp. 261-282.

reconnaissance flights over Soviet territory with the use of U-2 aircraft.¹⁴ And, the United States had a unilateral reconnaissance capability that could also provide photographic intelligence—a capability that did not require negotiations or the prospect of sharing of data and technologies with friends or foes.

While there are indications that Eisenhower himself was sincere in his quest to reduce bilateral tensions, his advisers and cabinet members also understood that the bilateral aerial surveillance proposal had a propaganda p value—especially if it was rejected by Soviet Union.¹⁵ The rejection is exactly what happened. In Eisenhower’s words, Khrushchev “said the idea was nothing more than a bald espionage plot against the USSR, and to this line of argument he stubbornly adhered.”¹⁶ The Soviet Union’s Minister of Foreign Affairs Vyacheslav Molotov diplomatically articulated Moscow’s rejection by stating that, as a precursor to bilateral disarmament efforts, cooperative surveillance overflights would instead exacerbate U.S.-Soviet tensions.¹⁷ For the next several decades, the United States used satellites and reconnaissance aircraft—the latter to great consternation from Moscow—to image military facilities on Soviet territory.

With this history in mind, three decades later, several Bush National Security Council staffers resurrected the proposal of a U.S.-Soviet overflight mechanism.¹⁸ In early 1989, despite the political “winds of change” in Europe, NATO was debating

¹⁴ See Dino A. Brugioni, *Eyes in the Sky: Eisenhower, the CIA and Cold War Aerial Espionage* (Annapolis, MD: Naval Institute Press, 2010), especially pp. 126-145.

¹⁵ Marquardt, op. cit., pg. 69.

¹⁶ Quoted in W.W. Rostow, *Concept and Controversy* (Austin, TX: University of Texas Press, 2003), pg. 140.

¹⁷ Marquardt, op. cit., pp. 79-80.

¹⁸ See Jonathan B. Tucker, “Negotiating Open Skies: A Diplomatic History,” in Michael Krepon and Amy E. Smithson, editors, *Open Skies, Arms Control and Cooperative Security* (New York, NY: St. Martin's Press, 1992), pp. 5-50.

the modernization of its short-range nuclear forces. This was a challenging political environment for the Bush administration. Having spent a large part of the decade concerned about nuclear war, the European public seemed to be much more receptive to Mikhail Gorbachev's enthusiastic proposals on arms control, especially the proposal to withdraw a number of Soviet short-range forces from Europe. The Bush administration's Open Skies initiative was one among a list of ideas for Soviet-Western cooperation, and it was viewed as an easy public relations victory that could divert attention from the internal NATO debate and counter Mikhail Gorbachev's rhetoric.¹⁹

One of the reasons for the success of this cooperative aerial surveillance initiative was the intervention of the Canadian government. News of U.S. interagency discussions about the proposal reached officials in the Canadian department of foreign affairs through informal channels.²⁰ Ottawa saw an opportunity for itself and Washington to demonstrate a commitment to verification of arms control to their European NATO counterparts, and viewed the initiative as a practical symbol that would reinforce Moscow's stated commitment to openness.²¹ Canadian officials became early supporters of the concept, and focused on convincing the Bush administration for the initiative's expansion beyond the bilateral context to alliances and the Euro-Atlantic as a whole.²²

¹⁹ Ibid.

²⁰ Peter Jones, *Open Skies: Transparency, Confidence-Building and the End of the Cold War* (Redwood City, CA: Stanford University Press, 2014), pp. 19-22.

²¹ Ibid., pg. 21.

²² Ibid., pp. 21-23.

The expansion of the initiative beyond the bilateral scope, as envisioned by Ottawa, could empower small states in the Warsaw Pact and contribute to an improvement in their relationships with Western neighbors by providing all states access to inexpensive aerial intelligence. A multilateral cooperative aerial surveillance regime “would enable the smaller participants, which do not have access to sophisticated [satellites] to exercises an independent capability to monitor areas of particular concern.”²³ Canada thus argued that “Open Skies would ‘democratize’ relations both between and within states of [NATO and the Warsaw Pact] by allowing the smaller countries to ‘see for themselves what [was] going on.’”²⁴ With all of these things in mind, Canada’s Prime Minister Brian Mulroney reached out to Bush and indicated Ottawa’s full support for a multilateral aerial surveillance regime.

OST Raises Concerns and Enthusiasm

In the U.S. interagency process, the newly-multilateral OST proposal faced an uphill battle. While the Department of State supported it, the Arms Control and Disarmament Agency was concerned that OST would compete with a then-discussed intrusive aerial verification regime for the Conventional Forces in Europe (CFE) treaty.²⁵ There was a breadth of views among officials in the Department of Defense and the intelligence community. These ranged from potential benefits—if the United States were allowed to utilize its superior sensor technologies—to concerns regarding

²³ Ibid., pg. 21.

²⁴ Ibid.

²⁵ Tucker, op. cit., pp. 10-12.

the potential for Soviet espionage resulting from overflights of sensitive U.S. sites as well as a negative impact on satellite reconnaissance budgets.²⁶

Among the intelligence agencies, there were explicit concerns about the prospect of allowing small and medium powers in Europe to have “access to high-quality photoreconnaissance information.”²⁷ The effort to “democratize” this access, some argued, would erode a key U.S. strategic advantage.²⁸ To be sure, satellites (“national technical means”) had been accepted as a verification and transparency measure, but their use was restricted to a small club of states. At the time, the United States had a significant edge in the quality of its aerial and satellite photographic sensors, but satellite use was much more expensive and satellite capabilities to revisit targets were limited. While some in the U.S. interagency were concerned that OST implementation would compete in budgetary terms with an improvement of U.S. indigenous capabilities, others noted also that data from U.S. satellite and aerial reconnaissance could not be easily shared. In NATO, satellites were thus viewed as complementary—and not competitive—to aerial reconnaissance.²⁹ Eventually, OST supporters in the U.S. interagency won out, paving the way for Bush to publicly announce the proposal.

On May 12, 1989 in a speech at Texas A&M, Bush unveiled the OST, noting:

“Such surveillance flights, complementing satellites, would provide regular scrutiny for both sides. Such unprecedented territorial access would show the world the true meaning of the

²⁶ Ibid., pp. 11-12.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Robert Banks, “Interim Report of the Sub-Committee on Verification and Technology,” North Atlantic Assembly International Secretariat Report, November 1990.

concept of openness. The very Soviet willingness to embrace such a concept would reveal their commitment to change.”³⁰

The proposal was not received with great enthusiasm even in the United States. Despite a NATO endorsement, OST was perceived as a softball by an administration that was not willing to make tough deals with the Soviets on arms control.³¹ Conservatives, like assistant Secretary of Defense in the Reagan administration Richard Perle, called for a ban on short-range missiles.³² On the other side of the aisle, then-chairman of the Senate Foreign Relations subcommittee on European affairs Sen. Joe Biden dismissively remarked to the *New York Times*, "Gorbachev has stolen the march and is making unilateral proclamations and we come back and say, 'Let's fly back and forth, fellows.'"³³ However, all of these reactions did not stop serious discussions of Open Skies in NATO, with CEE countries, and with the Soviet Union.

While the United States was working out its internal negotiating positions, Canada found itself explaining OST in various capitals, including in Moscow.³⁴ Bush and Gorbachev then discussed the proposal at a September 1989 meeting in Jackson Hole. While the Soviet leader was generally receptive to the idea, an ongoing conservative reaction on part of the Soviet military to his arms control negotiations complicated Moscow's willingness to enter negotiations. Soviet negotiators suggested

³⁰ George Bush, "Remarks at the Texas A&M University Commencement Ceremony in College Station," (speech, College Station, TX, May 12, 1989), The American Presidency Project. <http://www.presidency.ucsb.edu/ws/?pid=17022>.

³¹ Michael Gordon, "2 Suitors for Europe: Bush and Gorbachev Try to Impress NATO Allies with Offerings of Peace," *New York Times*, May 13, 1989, <http://www.nytimes.com/1989/05/13/world/2-suitors-for-europe-bush-gorbachev-try-impress-nato-allies-with-offerings-peace.html>

³² Ibid.

³³ Ibid.

³⁴ Jones, op. cit., pp. 30-31.

to their Western counterparts that “it might be ‘too soon’ for the intrusive [OST] regime ... noting that [they] could not ‘sell’ this approach to conservative elements in the Soviet parliament.”³⁵ The Soviet Ministry of Foreign Affairs was faced with “intense criticism from officials in the Defense Ministry, the General Staff, and the Communist party for, in [foreign minister Eduard Schevarnadze’s] words, ‘making too many concessions in the area of disarmament without any concessions from the other side.’”³⁶

Like their U.S. counterparts, Soviet military bureaucracies had multiple reservations about the initiative. The United States had spent many years overflying the Soviet Union or conducting aerial monitoring of Russian nuclear tests and military exercises in close proximity of Soviet borders.³⁷ And, the Soviet general staff expressed concerns that “unrestricted Open Skies overflights [would improve targeting] of U.S. nuclear cruise missile aimed at Soviet targets.”³⁸ This was layered with a broader concern about airspace sovereignty coupled with a “psychological fear of [Western] aircraft overflying over Soviet territory.”³⁹ Nazi Germany’s Operation Barbarossa was enabled by extensive aerial reconnaissance of airfields, industrial

³⁵ Tucker, op. cit., pp. 19-20.

³⁶ Ibid., pg. 31.

³⁷ On U.S. aerial reconnaissance of the Soviet Union, see Walter J. Boyne, “The Early Overflights,” *Air Force Magazine* (June 2001), <http://www.airforcemag.com/magazinearchive/documents/2001/june%202001/0601overfly.pdf>; Michael L. Peterson, “Maybe You Had to Be There: the SIGINT on Thirteen Soviet Shootdowns of U.S. Reconnaissance Aircraft,” *Cryptologic Quarterly* (declassified on May 8, 2012), https://www.nsa.gov/public_info/files/cryptologic_quarterly/maybe_you_had_to_be_there.pdf; Oleg A. Bukharin, “The Cold War Atomic Intelligence Game, 1945-1970: From the Russian Perspective,” *Studies in Intelligence*, vol. 48, no. 2 (2004), <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol48no2/article01.html>.

³⁸ Tucker, op. cit., pg. 32.

³⁹ Adam B. Siegel and Thomas J. Williams, “Open Skies: Déjà vu with a New Ending?” in Thomas C. Gill, *Essays on Strategy VIII* (Washington, DC: National Defense University Press, 1991), pg. 43. This is in regard to Barbarossa, in which the German air force launched a surprise attack on targets in the Soviet Union in June 1941.

targets, and supply infrastructure in CEE and the Soviet Union.⁴⁰ Some estimates suggest that the Luftwaffe conducted nearly 500 flights in over six months, during which all of Soviet airfields were mapped.⁴¹

The scale in favor of OST tipped when states within the Warsaw Pact joined Canada in its efforts to support and lobby for a cooperative aerial surveillance regime. Many point to the important role of Hungarian Ambassador Martin Krasznai, who believed that the treaty “would be a viable tool for overcoming suspicion, because the opening of ones own airspace to the ‘eyes’ of the other side is an important gesture.”⁴² In January 1990, a Canadian C-130 aircraft conducted a demonstration overflight of military facilities in Hungary. During its three hour flight, the aircraft “crossed three air traffic control corridors, flying over several Hungarian and Soviet military installations.”⁴³ The Hungarians reportedly did not even ask their Soviet counterparts for permission to overfly Soviet installations.⁴⁴

As the treaty entered negotiations, Hungary also concluded a bilateral overflight agreement with Romania. The two countries saw this agreement as a way to resolve tensions in the border areas and promote stability in their immediate neighborhood. (This bilateral treaty successfully operated until both Hungary and

⁴⁰ German aircraft penetrated Soviet airspace from entry points in the South, North, and Center of Europe. Some apparently were able to reach as far as the Black Sea and over 750 miles inside the Soviet border. See pp. 163-169 in Chapter 10 (Aerial Spies) of Jeffrey T. Richelson, *A Century of Spies: Intelligence in the Twentieth Century* (Oxford: Oxford University Press, 1997).

⁴¹ Boyne, op. cit.

⁴² Hartwig Spitzer, “Open Skies Over Bosnia,” CENSIS Paper, undated, <http://kogs-www.informatik.uni-hamburg.de/PROJECTS/censis/bosnia.html>.

⁴³ Ann Florini, “The Open Skies Negotiations,” in Richard Dean Burns, editor, *Encyclopedia of Arms Control and Disarmament* (New York, NY: Charles Scribner’s Sons, 1993), pg. 1117.

⁴⁴ Jones, op. cit.

Romania entered NATO.)⁴⁵ Further, Hungary arranged a preparatory meeting to discuss the regime in advance of an OST conference in Canada, at which all sides began to seriously think about what a regime could look like and how it could be implemented.

Points of Contention and Compromise

The negotiations dealt with many contentious issues, including the types and quality of sensors, data sharing and analysis, and technology transfer. According to one analysis, threats to the United States and the Soviet Union from an OST regime were similar. These included “high-resolution, low-level photography (that could be useful for intelligence collection and improved cruise missile targeting), [risk of surprise viewing of exercises], multi-spectral analysis of targets, greater intelligence on Soviet forces, [signals intelligence potential, if there is cheating, [and] overflight based on satellite cuing].”⁴⁶

Moscow and Washington agreed on the impossibility of including signals intelligence equipment as a part of the sensor package. (Signals intelligence is an intelligence discipline that gathers and analyses communications and electronic intelligence from individuals and systems. It would also include data-gathering on the highly sensitive capabilities of radar and air defense systems.) In addition, Moscow also resisted the inclusion of infra-red equipment, suggesting that optical equipment would be sufficient.

⁴⁵ Their agreement featured four observational flights per year (and use of dual-negatives to ensure information sharing. See Hartwig Spitzer, “The Open Skies Treaty as a Tool for Confidence Building and Arms Control Verification,” University of Hamburg, undated, <http://censis.informatik.uni-hamburg.de/publications/iso96.pdf>, pp. 14-15.

⁴⁶ Siegel and Williams, op. cit., pg. 43.

As eventually agreed upon, the OST sensor package would include visible-light photography, sideways-looking synthetic aperture radar, and infrared sensors—all commercially available systems that had to be certified in advance by all treaty participants.

Table 4, below, highlights general capabilities of airborne remote sensors that could be employed for verification in 1990.

SENSOR	ADVANTAGES	APPLICATIONS
PHOTOGRAPHY AND ELECTRO-OPTICAL SYSTEM	Day capability; very high spatial resolution down to 10-30cm	Monitoring of buildings, vehicles, large scale troop movement
SYNTHETIC APERTURE RADAR SYSTEM	Day/night, all weather capability; stand-off imaging sensor; wide swath coverage; resolution 3-30m	Wide area coverage of borders, coastal areas; monitoring of large scale construction projects, transportation
INFRARED LINESCANNER	Day/night capability; high thermal and spatial resolution (20-100cm); real time imagery	Monitoring of heat sources from vehicular activity, buildings, human activity
FORWARD LOOKING INFRARED SYSTEM	Day/night capability; very high spatial resolution (20-100cm), but low level data acquisition	Detection and monitoring of heat sources from vehicles, humans, buildings; tracking of moving objects

Table 4: Aerial Sensor Capabilities Circa 1990. Source: F.R. Cleminson, “Aerial monitoring for verification purposes,” in John Grin and Henny Van Der Graaf, editors, *Unconventional Approaches to Conventional Arms Control Verification: An Exploratory Assessment* (St. Martin’s Press, New York, 1990), pg. 193.

Gorbachev was the first to propose a scheme to use common sensors, a pool of common aircraft, and share raw data.⁴⁷ The argument was that an effective cooperative regime needed to be outside of the bloc-bloc dynamic. But, there was some resistance on part of NATO to these proposals. As a NATO report summarized:

“The NATO nations wanted the data from Open Skies flights to be shared within each Alliance as it deemed appropriate while the Warsaw Treaty Organization wanted all the data

⁴⁷ Jones, op. cit., pp. 36-58.

to be shared by all the regime's participants. The difference arose from Western concern that pooling data would be an expensive complication which could also compromise Western data analysis techniques and technologies. The same sorts of considerations explained Western reluctance to embrace common aircraft and common sensors for all participants in an Open Skies regime. If a common aircraft and common sensors were to be used, the technologies would be open to all participants in the regime. The NATO nations, however, would prefer to use systems in which they are unwilling to see transferred to the Warsaw Treaty Organization.”⁴⁸

As NATO countries pledged to relax restrictions of Western sensor technology, the Soviet Union found itself split from its Warsaw Pact members in CEE. Ultimately, both East and West had to make concessions and compromise on several key issues. The treaty would utilize commercially-available sensors that all participants would be able to access and mount on aircraft. Through a body called the Open Skies Consultative Commission (OSCC), convened in the OSCE, the states would certify one another's aircraft and sensors in advance of their first flight to assure that countries were not cheating. All of the raw data (including imagery and negatives) would be available to participant states for a notional fee, however, its analysis would still not take place cooperatively. While treaty negotiations successfully concluded in 1992, this latter point would remain one of the hindrances for the treaty as it moved into the 21st century.

3.3. The Treaty's "Cooperative Spirit"

After the treaty's signing in 1992, participant states began to carry out trial overflights. However, Russia (together with Ukraine and Belarus) were unable to

⁴⁸ Banks, op. cit.

complete its ratification for a decade. This section focuses on the shifts in Russia's attitudes toward the treaty and its military-to-military cooperation elements.

Russia and Open Skies

The reason for Russia's inability to ratify the OST was the resistance on part of the Russian Duma. The treaty became a part of a lineup of arms control accords that the Boris Yeltsin administration had concluded with the West that faced a ratification battle. This lineup included START 2, a nuclear arms reduction treaty that would ultimately never into force.⁴⁹ Nationalist Duma deputies maintained that the OST constituted a Western espionage tool that would ultimately increase Russia's vulnerability. In this, they echoed security concerns that dated back to the years of Eisenhower and Khrushchev. With the Russian economy in turmoil, Duma deputies had additional concerns regarding the costs of treaty implementation. Due to concerns over cheating, Moscow insisted during negotiations that all overflights over its territory be carried out with Russian aircraft (a so-called "taxi option"). However, insisting on this position also raised the notional treaty implementation costs for Russia.

Despite an inability to secure Duma ratification, the Russian interagency began to organize for treaty implementation and participate in trial overflights. There were indications that Belarus would become one state party with Russia, thus ratification in Minsk would depend on ratification in Moscow. In 1995, Russia and Belarus set up an Intergovernmental Open Skies Commission to facilitate their

⁴⁹ See Anya Loukianova, "The Duma-Senate Logjam Revisited: Actions and Reactions in Russian Treaty Ratification," paper presented at 2011 CSIS PONI conference at U.S Strategic Command in Omaha, Nebraska.

cooperative implementation.⁵⁰ That year, Moscow and Minsk also began participating in trial overflights to build confidence among treaty signatories, work out implementation concerns, and ultimately facilitate ratification. These overflights, carried out by Western aircraft in the skies above NATO states, increased from just two in 1995 to 14-18 annual missions between 1997-2001.⁵¹

Russia's ratification, which finally came in 2001, was linked to multiple factors. As one analyst summarized the reasons for verification: "continuous quiet diplomacy by some states parties, in particular Germany and the [United States]; the election of Vladimir Putin and his growing influence on the Duma; the participation of Duma representatives in joint trial flights in the U.S. as well as over the Benelux countries, the UK and Germany; and the faltering performance and decline in numbers of the Russian reconnaissance satellite fleet."⁵² Moscow's ratification triggered the entry into force of the treaty in 2002. That year, Western aircraft began official treaty certification procedures. Moscow also relaxed its insistence on the taxi option, and Western aircraft began carrying out missions over Russia.⁵³ In April 2004, Russia's Tu-154 aircraft, and its sensor suite, also achieved certification and began overflights of Western states.

Figure 1 depicts current members of the OST. In the figure, dark green points correspond to countries that are original treaty signatories and light green points correspond to countries that signed the treaty after its 2002 entry into force.

⁵⁰ "Statement by the Delegation of the Republic of Belarus at the Second Review Conference on the Implementation of the Treaty on Open Skies," OSCE Document, June 7, 2010, www.osce.org/secretariat/68411?download=true.

⁵¹ Britting and Spitzer, pg. 226.

⁵² Ibid.

⁵³ Britting and Spitzer, op. cit., pg. 227.

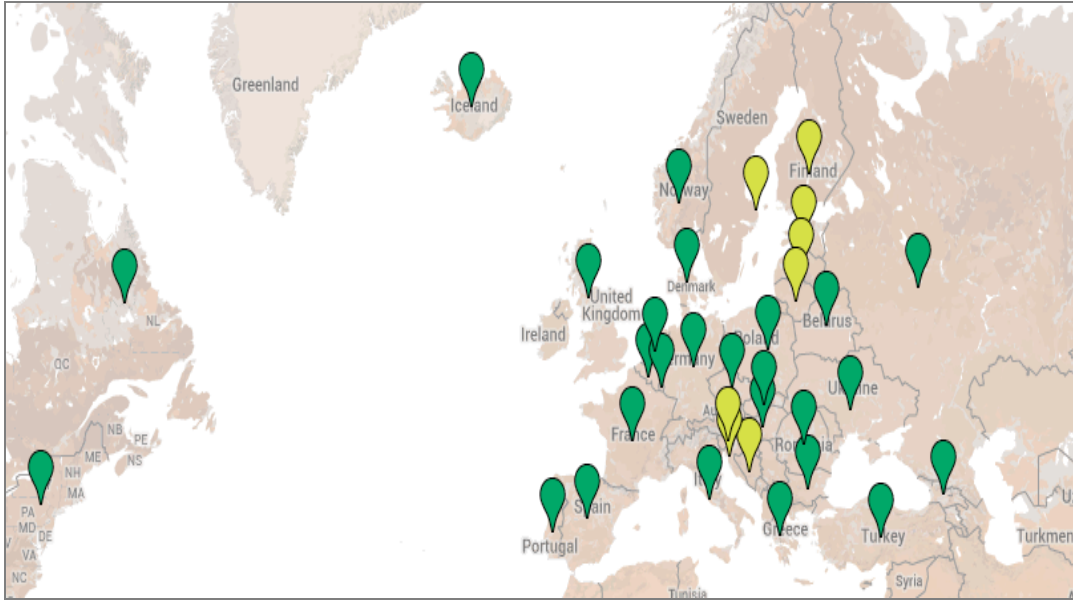


Figure 1: Open Skies Treaty States. (Map data: Google.)

Disagreements related to costs, however, continued to linger. One of the most difficult issues had to do with the number of flights—known as quotas—that states would annually carry out in one another’s skies.⁵⁴ The quotas are decided annually in the OSCC. Russia and the United States are entitled to carry out “42 observation missions annually in other states (known as the active quota) and have to accept up to 42 missions in other own country annually (passive quota). France, Germany, the UK, and Ukraine have an active and passive quota of twelve each. Other parties have a smaller quota.”⁵⁵

In treaty implementation, NATO countries agreed not to overfly one another.

When NATO expanded, the number of countries that were not overflying one another

⁵⁴ During treaty negotiations, proposals based quotas on geography, but that meant that the Soviet Union would have to accept the most overflights and, in turn, a lot of its overflights would be over North America. Jones, *op. cit.*, pp. 44-47. Active and passive quotas and these would be agreed-upon on an annual basis, and persistently challenge treaty implementation. Soviet Union also said that it wanted 15 flights per year, but then agreed in May 1990 in Budapest to the proposal of hosting two flights a month. Banks, *op. cit.*

⁵⁵ Spitzer, “Open Skies: Transparency in Stormy Times,” *op. cit.*

increased. In turn, all NATO countries wanted to overfly Russia and Belarus. Because of this, Russia hosted the most OST missions, while also ending up with insufficient information on NATO countries. Further, the United States had access to information from flights over Russia carried out by other treaty members while Russia was the only country to travel the significant distance to overfly the United States (albeit a handful of times per year). Thus, while Russia arguably ended up paying the highest of all treaty members costs for carrying out own missions as well as hosting the missions of others, it still ended up with information gaps on NATO countries.

As of 2010, Russia and Belarus accepted more than 65 percent of all OST flights.⁵⁶ Russia accepted approximately one overflight a week from March to November—more than any OST member.⁵⁷ In turn, other treaty parties used than 50 percent of their active quotas.⁵⁸ At the 2010 Review Conference, chiding its treaty counterparts, Russia posited that the conduct of observation flights is both a “right and a duty.”⁵⁹ As a Russian representative explained:

“There are manifest distortions: States Parties fly very intensively over some countries and their passive quotas are practically used up in full; over others, in spite of an interest in them and an appreciable passive quota, a sufficient number of flights is not carried out. In this way, States Parties acquire a solid mass of information on the former but are somehow “starved” of information on the latter. This is a result to a large extent of the fact that NATO Member

⁵⁶ “Statement by the Representative of the Russian Federation at Working Session 1 of the Second Review Conference on the Implementation of the Treaty on Open Skies: Analysis of the Quantitative and Qualitative Assessment of the Resources Needed to Implement the Treaty on Open Skies,” OSCE Document, 4 June 2010, <http://www.osce.org/secretariat/68382?download=true>.

⁵⁷ United States Department of State, “Adherence to and Compliance With Arms Control, Nonproliferation, and Disarmament Agreements and Commitments,” Bureau of Arms Control and Verification, July 2014, www.state.gov/t/avc/rls/rpt/2014/230047.htm.

⁵⁸ “Statement by the Representative of the Russian Federation at Working Session 1 . . .,” op. cit.

⁵⁹ Ibid.

States do not carry out flights under the Treaty on Open Skies over each others' territories. This means, for example, that the group of States Parties consisting of the Russian Federation and the Republic of Belarus has no possibility of making up for a shortage of information about NATO Member States by requesting data on observation flights over these countries, since such flights are basically not carried out. This absence of adequate information can give rise to a lack of confidence and reduce the predictability of military activities.”⁶⁰

However, Russia has prioritized its investment in and implementation of OST in order to compensate for its gaps in reconnaissance satellite capabilities. Russian representatives have repeatedly stated their interest in cooperation with others and joint missions as well as the expansion of the treaty to other member states.⁶¹ The United States and its Western partners, in turn, have raised concerns with regard to Russian treaty implementation. Most notably, Russia has consistently restricted overflights of certain parts of the Northern Caucasus and Kaliningrad, among several other issues discussed later in this chapter.⁶²

Sharing Aircraft and Sharing Costs

Today, the OST is considered to be one of the very few successful military-to-military engagement mechanisms in the Euro-Atlantic. As a representative of Denmark declared at the 2010 OST Review Conference, “it is not necessarily the information gathered that defines the success of an Open Skies mission – it is the

⁶⁰ “Statement by the Representative of the Russian Federation at Working Session 2 of the Second Review Conference on the Implementation of the Treaty on Open Skies: Impact on Balance of Information Received by the Russian Federation Given that NATO Member States do not Conduct Observation Flights over Each Other,” OSCE Document, 9 June 2010, <http://www.osce.org/secretariat/68386>.

⁶¹ “Statement by the Head of the Delegation of the Russian Federation at the Opening Session of the Second Review Conference on the Implementation of the Treaty on Open Skies,” OSCE Document, June 4, 2010, www.osce.org/secretariat/68378?download=true.

⁶² United States Department of State, op. cit. Another issue is the inability to provide first generation duplicate negative film. But this issue will go away once the treaty begins to use all digital imagery.

mission in itself!”⁶³ This is because preparations for, and implementation of, an overflight require frequent and extensive engagement between the countries conducting the overflight and the country accepting the overflight.

A hypothetical OST overflight by the United States of Russia’s facilities takes place as follows. Approximately 72 hours in advance of the mission, the United States has to announce to the Russian Federation that it wants to conduct an overflight and declares that it will enter Russia at one of the several specially-designated “points of entry” airfields. Russia then has to confirm within the following 24 hours that it will accept the mission. The U.S. Open Skies aircraft, in service since 1993 and based at Offutt Air Force Base in Nebraska, is a specially-modified OC-135B that seats up to 35 people.⁶⁴ This size makes it uniquely suited for joint overflights by several treaty members. A U.S. team of 12 people then flies to the designated airfield in Russia.⁶⁵

Joint implementation continues during the mission. Upon landing, the Russian hosts greet the visitors, and then the parties jointly inspect the sensors and the aircraft and have dinner together. In the morning of the following day, the U.S. team puts forward its proposed flight plan to the Russian hosts and the sides negotiate “to satisfy both countries that their treaty rights are upheld, and that all safety of flight factors are taken into account.”⁶⁶ The U.S. team and the Russian hosts then focus on determining the necessary flight requirements—an altitude that would maximize the

⁶³ “Statement by Denmark at 2nd Open Skies Treaty Review Conference 7-9 June 2010, Working Session 2: Exploring the Next Generation of Treaty Implementation,” OSCE Document, June 4, 2010.

⁶⁴ “OC-135B Open Skies,” U.S. Air Force Fact Sheet, April 2014.

⁶⁵ Ibid.

⁶⁶ Martin Fass, “Operation Open Skies: The Eye in the Sky,” *Flying Safety*, September 2000, <http://connection.ebscohost.com/c/articles/3615599/operation-open-skies-eye-sky>.

effectiveness of the sensors, given the weather conditions—and how they fit with Russia’s air traffic control procedures along the proposed route.

In accordance with the treaty, OST aircraft are prioritized by the host nation’s air traffic control. Representatives of the Russian team on board of the aircraft assist with any possible air traffic control issues, which may arise due to language differences between the OC-135 crew and air traffic control operators of the latter’s lack of familiarity with the need to prioritize OST flights.⁶⁷ This is important since the aircraft has to maneuver and conduct “turns” to achieve a specific imaging angle.

After the flight is complete, there are specific procedures for dealing with the resulting imagery. The images are developed by the party which conducted the overflight with supervision of the observed party. Since most of the OST overflights to-date have involved conventional panchromatic film, this film required wet chemistry processing at a lab. The photographs are then duplicated, burned on disks, and shipped to the Central Data Bank at the OSCE so that they could be shared with any treaty signatory that may request them.

While OST implementation requires extensive cooperation between treaty members, the issue of aircraft and whether countries should invest in new airframes is perhaps the most challenging aspects of the treaty. The number of states flying OST aircraft has declined overtime, with aircraft being retired and hull losses resulting from accidents. As Table 5 below suggests, out of 34 states parties, less than third now have dedicated aircraft for OST implementation.

⁶⁷ Ibid.

COUNTRY	AIRCRAFT TYPE	DIGITAL SENSOR
Bulgaria	An-30	
Hungary	An-26	
POD Group* (Canada, France, Italy)	Hercules C-130	Planned
Romania	An-30	
Russia (+Belarus)	An-30, Tu-154, Tu-214ON	Yes, in Europe
Sweden	Saab 340	Planned
United States	OC 135B	Planned
Turkey	Casa CN 235	Planned
Ukraine	DOWNED An-30	
United Kingdom	RETIRED Andover C.MK1	
Czech Republic	RETIRED An-30	
Germany	LOST/ACCIDENT Tu-154	
*POD Group is Benelux, Canada, France, Greece, Italy, Norway, Portugal, Spain		
Bosnia & Herzegovina, Croatia, Denmark, Estonia, Finland, Georgia, Iceland, Latvia, Lithuania, Netherlands, Poland, Slovakia, Slovenia -No dedicated aircraft		

Table 5: OST Countries and Dedicated Aircraft. Sources: Hartwig Spitzer, “Open Skies: Transparency in Stormy Times,” *Trust & Verify* 146, July-September 2014; Ernst Britting and Hartwig Spitzer, “The Open Skies Treaty,” *Verification Yearbook* 2002; Gabor Szucz, “Open Skies Platforms,” Second Open Skies Review Conference, June 4, 2010; U.S. Department of State, “The Treaty on Open Skies,” Fact Sheet, March 8, 2016.

Because of the costs involved in operating dedicated aircraft, countries have banded together to carry out joint overflight missions. As a Russian representative described this positive trend, “in 2002 no such flights were carried out, while there were only two in 2003, 12 in 2004 and 16 in 2005. Now the States Parties are conducting around 40 joint observation flights each year.”⁶⁸

Another element of cooperation is the dozen of participants with a common sensor pod (the so-called Pod Group). As representatives of Germany and Hungary have noted, shared missions have the following benefits: “efficient exploitation of the critical resource [passive quota] utilization of different aircraft types providing

⁶⁸ “Statement by the Representative of the Russian Federation at Working Session 1...,” op. cit.

various options for mission execution (range, variety of sensors, etc.); cost reduction by cost sharing and better standardization through exchange of experience; teamwork, cooperation, transparency, confidence building.”⁶⁹ Because of this increase in joint overflights and the widespread practice of leasing aircraft among parties for OST missions, treaty members have come closer to Gorbachev’s idea of a “common pool” of OST aircraft.

One of the challenges for cooperative surveillance mechanisms like OST is the competition in terms of resources with unilateral and allied surveillance capabilities in the respective states. For example, NATO Airborne Warning and Control System aircraft, with greater sensor capabilities, allow the allies to get a much better understanding in the NATO context of certain intelligence that the United States cannot share. Same goes for the use of national/allied unmanned aerial vehicle (UAV) and satellite capabilities that may also have missile launch detection capabilities. In turn, countries that have supported OST in the past have now entered NATO and thus have access to NATO intelligence.⁷⁰ And, the more that the United States and NATO advance in terms of reconnaissance capability, the less advantageous it becomes to share that information. Another disincentive involving investing in air frames is that (as a Turkish representative noted), OST is “a ‘mail

⁶⁹ “Shared Mission: Guiding Principles, Presentation by Konrad S. Seemann at Second Open Skies Review Conference,” OSCE Document, June 2010, <http://www.osce.org/secretariat/68319?download=true>.

⁷⁰ For example, the bilateral Hungarian-Romanian agreement, which saw the conduct of 60 flights in 14 years, ended in 2005 after both became NATO members.

order' treaty because states can simply monitor what routes are being used by other countries and then order the data without ever flying an observation mission.”⁷¹

3.4. The Shifting Political Context

A 2012 article argued that the OST was confronted with two challenges—the perception that the risk of conventional conflict in Europe had declined and the economic environment in which countries' budgets for defense were shrinking.⁷² While the crisis in and over Ukraine would ultimately disprove the first of these arguments, broader questions regarding the fit of the treaty in the region's security architecture continue to be raised. This section first focuses on the issue with expanding the OST to new members and then pivots to its broader fit in the Euro-Atlantic security architecture.

Challenges in Admitting New Members

Since its entry into force, the regime has gradually expanded as more countries have applied for admission. As of present, the treaty includes 34 out of 57 OSCE members. But, despite efforts to expand the regime to cover the whole of OSCE, this has proven to be a challenge. In Figure 2, below, orange points correspond to states that are members of the OSCE but have not acceded to the OST. The lone yellow point, Kyrgyzstan, has signed, but not ratified the treaty.

⁷¹ Eddie R. Mims, “Should the United States Scrap the Treaty on Open Skies?” ACDIS Occasional Paper, July 1993, pg. 4.

⁷² Loic Simonet, "Open Skies: Successes and Uncertainties of an Iconic post-Cold War Instrument," *OSCE Magazine*, no. 1 (2012), www.osce.org/home/88721?download=true.



Figure 2: OSCE States Not Party to Open Skies Treaty. (Map data: Google.)

After the OST's entry into force, seven states applied for accession: Finland, Sweden, Bosnia and Herzegovina, Croatia, Cyprus, Latvia, Estonia, and Lithuania.⁷³ All were admitted except for Cyprus due to the Turkish veto.⁷⁴ The (Greek) Republic of Cyprus has been prevented by Turkey from becoming a member and the issue even blocked the agenda of the OSCC between January and October 2011.⁷⁵ The Cyprus issue has apparently become unnecessarily contentious and has remained so, despite the desire of most treaty participants.

Inducing new members to join the OST has also been difficult. The accession to the treaty happens in several tiers. The first tier involves successor states of the USSR that are not original signatories to the Treaty: Armenia, Azerbaijan, Kazakhstan, Moldova, Tajikistan, Turkmenistan and Uzbekistan. Second tier includes other OSCE states that are not parties to the treaty. The third tier, in turn, consists of

⁷³ Hartwig Spitzer, "The Open Skies Treaty: Entering Full Implementation at a Low Key," *Helsinki Monitor* (March 2006), http://censis.informatik.uni-hamburg.de/openskies/OS_Artikel_Helsinki_Monitor_final_4March2006.pdf.

⁷⁴ Britting and Spitzer, op. cit., pg. 224.

⁷⁵ Hartwig Spitzer, "Open Skies in Turbulence, a Well Functioning Treaty is Endangered by Outside Developments," *Security and Human Rights*, vol. 22, no. 4 (2011), pp. 373-382.

all interested others. In 2004, states encouraged Western Balkans, Armenia, Azerbaijan, and the Central Asian republics to enter into the agreement. None of these states, however, have taken advantage of invitations. To be sure, neighbors in Central Asia may not see a need for the treaty since they don't perceive one another as threats.

Another hindrance for new members may be costs since all members of the treaty have quotas they have to exercise. According to some estimates, it costs around 200,000 Euros (230,000 U.S. dollars) to carry out 4 active missions per year, including with a leased aircraft.⁷⁶ As a Russian participant also described, "For example, just the direct expenses involved in the conduct of observation flights (taking into account the cost of the amortization of the aircraft fleet, fuel, material, meals and accommodation for personnel) amount to around 200 million roubles per year (around 7 million dollars). The cost of developing and equipping two Tu-214 Open Skies aircraft is more than 7 billion roubles (230 million dollars). The cost of fuel is a critical aspect in this expenditure."⁷⁷

To be sure, since Russia overflies the United States (and vice versa), costs for these countries (and Canada) are greater than for other participant states.⁷⁸ However, the costs of membership clearly figure prominently in the cost/benefit analysis of prospective members. Despite this, a geographic expansion of the treaty as well as

⁷⁶ A passive quota of 4 + leased aircraft (Saab), a minimum 5 people, total costs, including media processing costs 50K euros, so around 200K euros for 4 active missions, for passive missions much less. "Presentation by Canada, Pierre Linteau, on Accession to the Treaty Background and Procedure," OSCE Document, 7 June 2010, <http://www.osce.org/secretariat/68389>.

⁷⁷ "Statement by the Representative of the Russian Federation at Working Session 1 . . .," op. cit.

⁷⁸ Maximum flight distances (Hungary presentation in km) are EU from 500-2,100; US 4,900, Canada 6, 150, Russia 7,200.

resolution of the treaty issues must be achieved in order for it to become a more inclusive and effective regional security mechanism.

Fit into the Broader Security Architecture

OST is an important part of the Euro-Atlantic security architecture alongside the 1999 Vienna Document (VDOC) and the CFE.⁷⁹ While an overflight regime never became a part of CFE, the OST effectively supported monitoring of the withdrawal of Soviet forces from Germany and Eastern Europe. Because of the inability to update the CFE regime to account for NATO expansion, that treaty never included the Baltic states. However, the Baltic states are a part of the VDOC as well as OST members.⁸⁰

Due to the breakdown of the CFE treaty in 2007, the OST and the VDOC have been the key remaining military information-exchange mechanisms between Russia and the West. Since the suspension of CFE inspections by and in Russia in 2007, OST could partially make up for some of the information.⁸¹ The OST also has allowed Western countries to overfly Russian naval bases in the Black Sea area. As experts have pointed out, there are no other agreements that facilitate the transparency of naval forces.⁸²

⁷⁹ The VDOC is an agreement involving all 57 members of the OSCE that provides for periodic exchanges of military data, notifications regarding certain types of military activities, and on-site inspections at military installations.

⁸⁰ For additional information, see Zdzislaw Lachowski *Confidence and Security Building Measures in the New Europe* (Stockholm: SIPRI, 2004).

⁸¹ Hartwig Spitzer, "Open Skies in Europe, North America and East of the Urals and Hints for Missile Verification," Presentation at the Third Meeting of the Multilateral Study Group on the Establishment of a Missile Free Zone in the Middle East/Gulf Region, Berlin, June 23, 2008, http://censis.informatik.uni-hamburg.de/openskies/OS_Berlin_June_2008_Middle_East_Seminar.pdf.

⁸² Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

Despite the fact that the OSCC and the data exchange mechanism “reside” in the OSCE, the regime is not a part of the OSCE. Instead, it merely “lives in friendly coexistence with” that organization.⁸³ However, OST has become much more closely linked with the OSCE’s role in Euro-Atlantic security. Ongoing debates by OSCE members on whether the OSCE is a permanent conference or an international organization also have an impact on OST relevance.⁸⁴

Analysts have noted that OSCE has deficiencies as an institutional home for the treaty. At present, countries use the information derived from OST and analyze it on a national (or allied) level. Some have encouraged strengthening the OSCE as a way to, inter alia, strengthen the OST, arguing that “the political debate would profit from faster, integrated analysis and from sharing of findings and conclusions between parties.”⁸⁵

More broadly, OSCE observers note that U.S. officials have a preference for working through NATO as the primary security institution in the Euro-Atlantic, and also view OSCE as being in competition with NATO.⁸⁶ Some have argued that this is a mistaken view and that the United States should work more aggressively through OSCE because of its inclusivity—it is the only institution in which Russia, the United States, and European Union are all members.⁸⁷ Others have similarly called for the United States to “integrate efforts in conventional arms control with other arms

⁸³ Spitzer, “The Open Skies Treaty: Entering Full Implementation at a Low Key,” op. cit.

⁸⁴ “The Legal Framework of the OSCE,” OSCE Release, December 1, 2010, www.osce.org/mc/87192.

⁸⁵ Spitzer, “Open Skies: Transparency in Stormy Times,” op. cit.

⁸⁶ P. Terrence Hopmann, “Building Security in Post-Cold Eurasia,” United States Institute of Peace Peaceworks Paper, September 1999, <http://www.usip.org/sites/default/files/pwks31.pdf>, pp. 41-52.

⁸⁷ P. Terrence Hopmann, “OSCE Security Days Panel Presentation,” OSCE Document, September 16, 2013, <http://www.osce.org/sg/107056?download=true>.

control treaties and agreements in order to achieve the synergy of a comprehensive approach,” and include OST and the VDOC.⁸⁸

Russia’s suspension of its participation in CFE has limited the availability of its military information to others in the region, leaving OST to pick up some of these gaps. This has meant that countries are able to overfly Russian military installations and observe troop deployments as well as some military exercises. However, Russia has declined to allow Western teams to overfly some of its military exercises, citing concerns for the safety of aircraft. It has also imposed airspace restrictions in areas around Moscow and areas around the North Caucasus.⁸⁹ Moreover, OST aircraft safety has also been a challenge in the ongoing crisis in Ukraine.

3.5. OST in a Conflict Environment

In the aviation realm, sovereignty “refers to the ownership of airspace,” and, when a state’s ownership of airspace comes under dispute, so does its territorial sovereignty.⁹⁰ The Ukraine conflict has highlighted the continued relevance of the OST as well as underlined ongoing challenges of treaty implementation. This section

⁸⁸ Jeffrey D. McCausland, “Conventional Weapons, Arms Control, and Strategic Stability in Europe,” in Elbridge A. Colby and Michael Gerson, editors, *Strategic Stability: Contending Interpretations* (Carlisle, PA: U.S. Army War College, 2013), pp. 289-290.

⁸⁹ See United States Department of State, “Adherence to and Compliance With Arms Control, Nonproliferation, and Disarmament Agreements and Commitments,” Bureau of Arms Control and Verification, <http://www.state.gov/t/avc/rls/rpt/>.

⁹⁰ More precisely, it is the “exclusive competence of a state to exercise its legislative, administrative, and judicial powers within its national airspace.” Under the 1944 Chicago Convention—an international treaty that outlines states’ rights and obligations as they pertain to civilian aviation—“each state has complete and exclusive sovereignty over the airspace above its territory.” “Airspace Sovereignty,” CANSO Working Paper presented at the Worldwide Air Transport Conference Sixth Meeting in Montreal, March 18-22, 2013, <http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf.6.WP.080.1.en.pdf>.

first focuses on general OST use in conflict areas and then specifically focuses on issues related to the Ukraine conflict.

Past Experiences in Conflict

Prior to the Ukraine conflict, there have been efforts to carve out a role for OST in a conflict environment. Between 1997 and 2001, overflights were successfully used in Bosnia-Herzegovina. In 1997, U.S. and Russian military officers carried out the first ever joint “Open Skies” mission over Bosnia and Herzegovina as a part of the NATO-led Stabilization Force (SFOR).⁹¹ A total of seven flights were carried out as a part of OST before agreement in Bosnia-Herzegovina on a cooperative aerial inspections regime.⁹² In the wake of that conflict, “a member of the Hungarian delegation [...] suggested that if [OST] had been in place earlier and if former Yugoslavia was a member, open skies missions could have yielded important information about Serbian preparations for war and thus the severity of the war may have been more widely understood.”⁹³

At a 2004 workshop organized with the support of German and Swedish foreign ministries, participants noted that OST could be very useful in post-conflict stabilization. This would be the case especially in situations where you have to observe a large terrain and observe the movement or discover equipment.⁹⁴

Participants noted also that the regime had “a good [public relations] value because

⁹¹ Melinda Larson, "Open Skies Observation Flight Builds Confidence," *SFOR Informer*, no. 23, (November 1997), <http://www.nato.int/sfor/partners/osce-opski/osceopen.htm>.

⁹² Spitzer, “Open Skies in Europe, North America and East of the Urals and Hints for Missile Verification,” op. cit.

⁹³ Mims, op. cit., 1993, pg. 3.

⁹⁴ Pal Dunay, “Perspectives for Co-operative Aerial Observation and the Treaty on Open Skies,” SIRPI Seminar Report, December 2004.

the wider public can easily grasp the concept and its implementation can be made highly visible.”⁹⁵

The track record of OST in the 2008 conflict between Russia and Georgia, however, was not that great. While both sides could see the increase in troop concentrations, the treaty did appear to facilitate conflict prevention. Worse, OST has been a point of contention between Russia and Georgia since the war ended. In April 2012, Georgia prohibited Russian overflights over its territory and indicated that it would not take advantage of overflights over Russia.⁹⁶ This stemmed from Russia’s objection to Georgia’s overflights of South Ossetia and Abkhazia, which were not states parties. In principle, of course, both countries have access to intelligence from overflights of one another. In practice, however, the OST has been unable to carve out a role for itself in facilitating the resolution of this conflict.

With this experience behind it, OST faced its next test during the conflict in Ukraine. In Ukraine, OSCE members have effectively used OST to improve their common understanding of Russian military activities.⁹⁷ But, there have been challenges as Russia made it difficult to overfly Crimea without state parties essentially having to recognize that this is Russian territory.

⁹⁵ Ibid.

⁹⁶ At the 2010 OST Review Conference, Georgia described a proposed May 2010 mission in which the United States and Romania intended to “fly along the internationally recognized Georgian state border in distance of 2.5 kilometers.” In response to this, Russia indicated that the flight would not be permitted since “the projected flight path of the observation aircraft approached” too close to the Abkhazian border. “Statement Delivered by Delegation of Georgia at the I Working Session of the II OSRC,” OSCE Document, 22 June 2010, <http://www.osce.org/secretariat/68706?download=true>.

⁹⁷ Ariana Rowberry, “The Vienna Document, the Open Skies Treaty and the Ukraine Crisis,” *Brookings Institution UpFront* (blog), April 10, 2014, <http://www.brookings.edu/blogs/up-front/posts/2014/04/10-vienna-document-open-skies-ukraine-crisis-rowberry>.

Ukraine Highlights OST Relevance and Challenges

In March 2014, Russian special forces took over an air traffic control tower in Simferopol, in Ukraine's province of Crimea. The Simferopol tower was responsible for managing flights in the airspace above the disputed territory as well as in Ukraine's largest flight information region, Simferopol.⁹⁸ After the takeover, Russian authorities declared (through a so-called "notice to airmen" or NOTAM) that all air traffic in this Ukrainian flight information region would now be managed by Russian air traffic controllers through a newly-established Russian flight information region. The Ukrainian officials countered (also through a NOTAM) that Russian actions ran afoul of international law. They instead guided aircraft through the disputed airspace from air traffic control towers located in two neighboring flight information regions.

This dispute about airspace sovereignty impacted the practical implementation of OST.⁹⁹ States parties are supposed to guarantee that flights carried out under OST have priority clearance from air traffic control. This means that OST aircraft need to take off before passenger aircraft and air traffic controllers are required to guide OST aircraft through the maneuvers that are necessary to perform their imaging. But, with a conflict about whether Ukraine or Russia should be performing this task, the situation got complicated. In practice, there was a danger that Ukrainian and Russian

⁹⁸ A flight information region is "an airspace of defined dimensions within which flight information service and alerting service are provided." It is a geographical entity that may or may not extend further than national boundaries. This flight information region stretched far beyond Crimea, covering over a quarter of the total airspace controlled by Ukraine. Before Russia's annexation of Crimea, Ukraine's total territory was 603,700 square kilometers. Including airspace controlled over bodies of water, this translated into 776,443 square kilometers of total airspace managed by Ukraine through five flight information regions. The size of airspace managed by Simferopol flight information region was 209,337 square kilometers. See Oleg Kryzhanovskiy "Civil/Military Cooperation in Ukraine," Presentation at ICAO Workshop in October 2013, <http://www.icao.int>.

⁹⁹ Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

air traffic controllers could transmit conflicting instructions to aircraft on the same radio frequencies, potentially endangering the OST aircraft and civilian aircraft in that airspace. Shortly after Russia issued its NOTAM, the United Nations' International Civil Aviation Organization and the European Organization for the Safety of Air Navigation both rejected Moscow's claims.¹⁰⁰ Neither organization wanted to legitimize Russian behavior or, worse, enable a situation that could be hazardous to civilian aircraft.¹⁰¹

The Ukraine conflict has underlined the continued relevance of the OST, with the treaty mechanism allowing the aerial observation and imaging of the situation on the ground. Over 20 regular OST quota flights around the territory of the conflict in Ukraine were carried out between March and mid-August 2014 by Western aircraft.¹⁰² In addition to these quota flights, there were also several special flights, so-called Annex L flights, carried out at the request of Ukraine and the OSCE.¹⁰³ These aerial surveillance flights, conducted by the United States and Sweden, were

¹⁰⁰ Ukraine—unlike Russia—is a member of EUROCONTROL. See Olesia Safronova, "EUROCONTROL Director General: We Plan to Open Western Ukraine and Black Sea Area to European Air Carriers," UNIAN, September 10, 2015, <http://www.unian.info/economics/1120973-eurocontrol-director-general-we-plan-to-open-western-ukraine-and-black-sea-area-to-european-air-carriers.html>.

¹⁰¹ Soon, many national regulators followed suit, banning their commercial airlines from traveling in an out of as well as transiting through the airspace above Crimea and Simferopol flight information region. In its NOTAM instructions to U.S. airlines, the U.S. Federal Aviation Administration stated, "political and military tension between Ukraine and the Russian Federation remains high, and compliance with air traffic control instructions issued by the authorities of one country could result in civil aircraft being misidentified as a threat and intercepted or otherwise engaged by air defense forces of the other country." Kevin Robillard, "FAA to American Pilots: Don't Fly in Crimea," *Politico*, April 23, 2014, <http://www.politico.com/story/2014/04/faa-crimea-105962>.

¹⁰² Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

¹⁰³ "Annex L, section III of the Treaty on Open Skies reads that the Open Skies Consultative Commission (OSCC) shall consider requests from the bodies of the OSCE authorized to deal with respect to conflict prevention and crisis management and from other relevant international organizations to facilitate the organization and conduct of extraordinary observation flights over the territory of a State Party with its consent." Delegation of Sweden, "Working Session 2: Exploring the Next Generation of Treaty Implementation 7: Procedures to Request Non-Treaty Missions," OSCE Document, June 4, 2010, www.osce.org/secretariat/68316?download=true.

carried out at Ukraine's invitation.¹⁰⁴ In March, Russia also allowed Ukraine to overfly "the western border region of Russia on a bilateral voluntary basis."¹⁰⁵ Ukraine had requested another overflight of this type in late May, but Russia denied this request.¹⁰⁶ While Russia was steadfastly denying the engagement of its military forces in Ukraine, commercial satellite and other open source evidence of their involvement was beginning to mount.¹⁰⁷

However, as the tensions in Eastern Ukraine flared into the summer months, pro-Russian rebels downed multiple low-flying helicopters and fixed-wing aircraft, belonging to the Ukrainian military.¹⁰⁸ On June 6, 2014, pro-Russian separatists downed a Ukrainian An-30 surveillance aircraft—the same aircraft Ukraine had been using to fulfill its OST obligations—killing three people on board.¹⁰⁹ While the aircraft was not conducting an Open Skies mission at the time, its destruction still marked a sad milestone for the OST's declining number of airframes.

Russia indicated later that month that it could not guarantee the safety of OST flights closer than 45 km to Ukraine's border.¹¹⁰ After pro-Russian separatists downed MH17, OST flights were even further restricted. Additional safety concerns have been raised with the increased use of electronic interference technologies during the conflict. In territories controlled by pro-Russian separatists as well as territories

¹⁰⁴ Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

¹⁰⁷ Igor Sutyagin, "Russian Forces in Ukraine," Royal United Services Institute Briefing Paper, March 2015, https://rusi.org/sites/default/files/201503_bp_russian_forces_in_ukraine.pdf.

¹⁰⁸ During the year 2014, Ukraine lost half of its military aircraft fleet. See David Axe, "Ukraine Has Lost Half of its Warplanes," War is Boring, January 25, 2015, <https://medium.com/war-is-boring/ukraine-has-lost-half-its-warplanes-f0c8fe677e79>.

¹⁰⁹ Andrew E. Kramer, "Separatists Down Military Transport Jet, Killing 49 in Eastern Ukraine," *The New York Times*, June 14, 2014, <http://www.nytimes.com/2014/06/15/world/europe/ukraine.html>.

¹¹⁰ Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

controlled by the Ukrainian government, OSCE conflict monitoring drones have been subjected to jamming.¹¹¹

The OST had allowed participant states to observe the amassing of Russian troops on the border with Ukraine. However, as treaty experts have argued “the results from [OST] flights have shed little light on the debates within the [OSCE] on troop concentrations.”¹¹² An improvement in sensors and a transition to digital imagery could be instrumental in facilitating quicker analyses of the situation, and facilitating discussions in the OSCE, but this transition has been slow going.

3.5. Debating Sensors and Future Uses

This section highlights the challenges of digitizing sensors, discusses the U.S.-Russian sensor dispute, and focuses on the inability of the treaty to transition to additional uses.

The Challenge of Improving Sensors

As the introduction to this chapter has suggested, the U.S. interagency had a difficult time approving new Russian OST sensors. However, even before this 2014 dispute within the U.S. interagency, the treaty was slow in moving away from conventional film and to digital media. As per the treaty text, OST sensors are supposed to be commercially-available to all parties, and undergo a gradual process of introduction. With the improvement in the quality, resolution, and availability of

¹¹¹ Paul McLeary, “Russia’s Winning the Electronic War,” *Foreign Policy*, October 21, 2015, <http://foreignpolicy.com/2015/10/21/russia-winning-the-electronic-war/>.

¹¹² Spitzer, “Open Skies: Transparency in Stormy Times,” op. cit.

commercial satellite imagery, OST sensors have also declined in terms of their technological edge.

During initial treaty negotiations, states agreed on a “rule of thumb” with regard to imagery resolution. According to this, the resolution would be good enough to distinguish between a tank and a truck.¹¹³ Here, OST faced stiff competition from commercially-available satellite imagery, the resolution of which slowly overtook the resolution permitted under OST.¹¹⁴ Key advantages of aerial surveillance over satellite imagery is the ability to pan over a given area and the lack of cloud cover impediments since OST flights generally fly below cloud level.

Until 2006, when the treaty began to allow use of thermal infrared imaging sensors, all OST had taken place during the daytime. OST had an edge for some time in terms of supplying thermal imagery.¹¹⁵ While there were few commercial providers of infrared imagery capabilities, treaty participants worked to identify potential options. Turkey was first to get an infrared imaging device certified, and it is now used in several sensor suites during overflights.¹¹⁶

Because of the improvements in the resolution of commercially available satellite data, there have been questions with regard to continued OST relevance. In

¹¹³ The sensor set, as agreed to in the treaty as it entered into force, would involve optical panoramic and framing cameras with a ground resolution of 30cm, video cameras with real-time display and a ground resolution of 30cm, thermal infrared imaging sensors with a ground resolution of 50cm at a temperature differential of 3 degrees C, and imaging radar (SAR) with ground resolution of 300cm.

¹¹⁴ See "U.S. Satellite Resolution Restrictions-LIFTED!" Digital Globe (blog), June 11, 2014, <http://www.digitalglobelog.com/2014/06/11/resolutionrestrictionslifted/>.

¹¹⁵ Dunay, *op. cit.*

¹¹⁶ Spitzer, "The Open Skies Treaty: Entering Full Implementation at a Low Key," *op. cit.*

addition, UAVs can also give OST a run for its money in terms of capabilities (as well as likely costs).¹¹⁷

Table 6, below, highlights the competitiveness of OST sensors with commercial satellite imagery.

	SENSORS	RESOLUTION (GSD)	AREA COVERAGE
OPEN SKIES (RUSSIA)	Visible Thermal Infra-red Synthetic aperture radar	.3 meters .5 meters 3 meters	8 and 16 km at 1875 and 3830m respectively
COMMERCIAL SATELLITES	GeoEye-1 LandSat 8 TIRS TerraSar X	.41 meters (.5 effect) 100 meters (resampled at 30) 1 meter	15.3km swath

Table 6: Sensor Capabilities. Sources: Hartwig Spitzer, “Open Skies: Transparency in Stormy Times,” *Trust & Verify* 146, July-September 2014; Frank Pabian, *Commercial Satellite Imagery as an Evolving Open-Source Verification Technology*, EU JRC technical report, 2015.

The challenge with commercial satellite reconnaissance and UAVs, however, is the lack of “cooperation” involved in the process of information-gathering. Unlike OST, they are impersonal approaches that omit the kind of camaraderie described earlier in the chapter. To date, this has been the main point in favor of retaining the OST regime.

The effort to make OST competitive with commercially-available imaging technologies has consisted of the transition from black and white film to digital imagery to make the treaty “faster, better, cheaper.”¹¹⁸ Before the adoption of the decision to move toward digital imagery in 2010, countries had to use wet chemistry labs to develop pictures, which added costs in terms of development, storage, and

¹¹⁷ For example, OSCE is using Schiebel Camcopter S-100 UAV that can be equipped with EO/IR standard and SAR/ Light Detection And Ranging available.

¹¹⁸ Scott Simmons, “Report to the 2010 Review Conference of the Work of the Sensor Working Group,” OSCE Document, June 7, 2010, <http://www.osce.org/secretariat/68391?download=true>.

distribution. In an effort to shift to digital, countries had to do additional work to ensure that digital imagery would not be manipulated.¹¹⁹ Other discussions involved data storage, including the potential of creating a central database in Vienna that is managed by the OSCE and would be easily accessible by all partners through an online interface.¹²⁰

But the transition to digital has not been as quick as one might have imagined. And, as the introduction to this chapter noted, there has also been no interagency consensus in the United States with regard to Russia's overflights of U.S. territory with its new digital sensor package.

The U.S.-Russian Sensor Package Issue

At the 2010 OST Review Conference, Russia announced its intent to procure a new aircraft and a digital sensor package.¹²¹ Like other OST members, the United States needed to certify that Russia could use the sensor package during its overflights, initially in Europe and then in the United States. Russia's transition to digital, using commercially-available sensors, appeared to be going as expected.

However, in July 2013, during a ceremony to certify the Russian aircraft, the United States publicly refused to sign the paperwork. Later, it tabled certain conditions related to data storage media on board the aircraft.¹²² As longtime OST observer Hartwig Spitzer detailed, the U.S. position resulted from "a deep mistrust in

¹¹⁹ Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

¹²⁰ "Presentation on Digital Data Distribution by Ms. Darin Liston, United States Department of State," OSCE Document, June 2, 2010, www.osce.org/secretariat/68250.

¹²¹ Spitzer, "Open Skies: Transparency in Stormy Times," op. cit.

¹²² Ibid.

parts of the Department of Defense and intelligence agencies about the ‘integrity’ of data accessible to Russia as well as fears that Russia could extract images at better than treaty resolution.”¹²³

The U.S. internal dispute came to a head nearly a year later, in April 2014, after Russia invaded Ukraine and annexed Crimea. An added dimension in the interagency dispute was that the Department of Defense and the intelligence community were communicating their concerns regarding Russian sensors to Congress. Several U.S. lawmakers balked at the notion that Washington would seek to resolve the dispute in Moscow’s favor at a time of a broader political rift between the two countries over Russia’s actions in Ukraine.¹²⁴

According to reports, State strongly supported the certification in order to preserve the treaty mechanism. As one official posited, OST was important because U.S. “allies and partners depend on this treaty for insight into Russia because they don’t have the same capabilities as the United States.”¹²⁵ In May 2014, after a National Security Council meeting, the United States certified the Russian sensor package, but with a reservation. As Spitzer described, “In the end, the White House was confronted with the choice of either quitting the Open Skies Treaty or of certifying the Russian camera, which would only be used in Europe. The largely unimpeded continuation of Open Skies flights over Russia by the U.S. and other parties during the Ukraine crisis had underlined the relevance of the treaty.”¹²⁶

¹²³ Ibid.

¹²⁴ Kristol, *op. cit.*

¹²⁵ Lake, *op. cit.*

¹²⁶ Hartwig Spitzer, “Open Skies: Transparency in Stormy Times,” *op. cit.*

Even after the certification took place, U.S. intelligence officials testified to Congress regarding their concerns. In a February 2015 testimony, the head of the U.S. Defense Intelligence Agency noted that “the Open Skies construct was designed for a different era.” “I am very concerned about how it is applied today. And I would love to talk about that in closed hearing,” he posited.¹²⁷

In February 2016, Russia requested to use its new sensor system in overflights above the United States. This was met with resistance from the Department of Defense, where officials expressed concern that Russia was overflying U.S. critical infrastructure and would use this new sensor suite to improve the targeting of its long-range cruise missiles.¹²⁸ The United States, in turn, acquired comparable information about Russia through national technical means—and not a cooperative arrangement intended for peaceful purposes. That said, analysts have consistently noted that the United States probably carries out concealment activities for Russian satellites imaging the United States—an occurrence much more frequent than the handful of Russian annual overflights over the United States.¹²⁹ As of this writing, this issue lay unresolved with the U.S. interagency, adding to broader questions in the United States with regard to the future of the treaty.

¹²⁷ Steven Aftergood, "Russia's Open Skies Flights Prompt DIA 'Concern'," *FAS Secrecy News* (blog), October 14, 2015, <https://fas.org/blogs/secrecy/2015/10/open-skies-dia/>.

¹²⁸ Eric Schmitt and Michael R. Gordon, “Russia Wants Closer Look From Above the U.S.,” *New York Times*, February 2016, http://www.nytimes.com/2016/02/23/world/europe/russia-wants-closer-look-from-above-the-us.html?_r=0.

¹²⁹ David Gabriele, *The Treaty on Open Skies and its Practical Applications and Implications for the United States* (Washington, DC: RAND, 1998), pp. 53-75.

Thinking About the Future

Ahead of the 2010 OST Review Conference, there was a push in the United States to “realize the full potential of the treaty” and apply OST for detection of illicit activities in a world at low numbers of nuclear weapons. This effort included proposals for increasing imagery resolution and augmenting OST aircraft with the capability to collect atmospheric gas and particulate samples.¹³⁰ It also called for an active U.S. engagement in the treaty regime aimed at expanding treaty membership.

These efforts resulted in a 2010 presidential decision directive that facilitated the shift to the digital OST sensor suite. (The text of this document is classified as of this writing.) However, despite this document, a 2014 Defense Science Board report also levied the following U.S. reservations regarding the treaty:

“An example that was considered in detail was the upgrading of the capabilities of the United States Open Skies Treaty aircraft. Based on the quality of the sensors allowed by the treaty, the Task Force would not recommend such a course of action at this time. The sensor specifications permitted by the treaty are outdated when compared with the need. In fact, the existing treaty requirements can be fulfilled by sensor information readily available from commercial imagery without the expense of flight missions or sensor upgrades. Therefore the costs of such an upgrade of the aircraft, which would be significant, are not justified at this time. The Task Force believes, however, that the original principles of the treaty remain valuable and could serve as a template for expansion to other bilateral agreements, but the

¹³⁰ Sidney D. Drell and Christopher W. Stubbs, “Realizing the Full Potential of the Open Skies Treaty,” *Arms Control Today* (July/August 2011) https://www.armscontrol.org/act/2011_%2007-08/%20Realizing_Full_Potential_Open_Skies_Treaty.

compliance protocols should be updated before any new aircraft upgrades are considered—in spite of the fact that the Russians are upgrading their system.”¹³¹

A U.S. transition to digital sensors is expected only toward 2017. In light of the recent issue with Russian sensors, one U.S. analyst has argued that the Pentagon needed to speed up the acquisition of the digital sensors suite, which was not requested until 2015.¹³² At present, the future appears cloudy for U.S. engagement in the OST regime. While the State Department has been its ardent champion, fighting interagency battles may become increasingly difficult in an environment where the Defense Department, the intelligence community, and Congress are concerned about Russian overflights of the United States.

Another challenge has been finding other uses for the treaty mechanism. Many of these have been periodically discussed, but consensus has not materialized. One use has been environmental monitoring. The United States, for example, has used its OST aircraft and sensors to image changes after Hurricanes Katrina and Rita, as well as in its operations in Haiti. Some have also proposed OST monitoring for relationships in which environmental degradation may contribute to conflict, such as India and Pakistan.¹³³

¹³¹ Defense Science Board, “Assessment of Nuclear Monitoring and Verification Technologies,” Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, January 2014, <http://www.acq.osd.mil/dsb/reports/NuclearMonitoringAndVerificationTechnologies.pdf>, pg. 29.

¹³² Michael Krepon, “Let Russia’s Planes Keep Flying Over U.S., Just Like Ike Wanted,” *Defense One*, March 7, 2016, <http://www.defenseone.com/ideas/2016/03/russia-us-overflight-open-skies-treaty/126485/>.

¹³³ Dan Lindley, “Cooperative Airborne Monitoring: Opening the Skies to Promote Peace, Protect the Environment, and Cope with Natural Disasters,” *Contemporary Security Policy*, vol. 27, no. 2 (August 2006), pp. 325-342.

There were opportunities for OST to buttress the Chemical Weapons Convention and the Comprehensive Test Ban Treaty. However, OST missed some of these since it was not used during the most recent Comprehensive Test Ban Treaty exercises in Jordan in 2014 and it was also not called upon to verify the removal of chemical weapons from Syria in 2013. But, beyond exploring individual opportunities to apply their own aircraft and sensors, countries have been unable to agree on treaty use in any of these cases. To be sure, OST states have national assets that may be better suited for some of these tasks. Also, cheaper unmanned systems are becoming much more widely adopted for some of these uses, thus in principle conflicting with OST.

3.7. Conclusion

When it was signed in 1992, the OST had an ambitious mandate of “contribut[ing] to the further development and strengthening of peace, stability and co-operative security” in the Euro-Atlantic.¹³⁴ More than twenty years later, a handful of state parties operate aircraft with imagery sensors that include photographic and infra-red and all imagery is shared among participant states. The treaty is thus a region-wide mechanism of cooperative aerial surveillance consisting of 34 state parties, with a consultative commission, and a data exchange center anchored in the OSCE.

¹³⁴ Open Skies Treaty text available at <http://www.state.gov/t/avc/trty/102337.htm#preamble>.

Summary and Analysis

A key reason for the success of Bush's OST proposal was the leadership of Canada and Hungary. Canadian officials were responsible for transforming Bush's initial bilateral overflight concept into a multilateral proposal and, jointly with Hungary, took the lead in promoting the aerial surveillance mechanism and carrying out demonstration overflights. Interagency in both the United States and the Soviet Union had concerns regarding the imaging capabilities that could be permitted under OST and whether they would be overly intrusive. However, Canada and CEE states were interested in access to inexpensive aerial surveillance information since major powers had a monopoly on this type of intelligence data at the time.

There are a variety of institutional dimensions that challenge treaty implementation and evolution. While it is positive that the consultative commission and data exchange mechanism are located in the OSCE, the OST has to deal with challenges resulting from questions on OSCE relevance and its role in a region dominated by NATO. The actions of NATO countries, especially as NATO has expanded to many more countries, can be understood as a challenge to the OST regime issue. NATO acts as a bloc and does not overfly one another, which makes it difficult to assess equality of implementation—and whether Russia's access to imagery is equal. Because the treaty mechanism is based in the OSCE, it has managed to operate even while other U.S. and NATO military-military activities with Russia have been suspended. But OSCE needs to be a stronger security institution if it is to benefit OST implementation and expansion.

OST was signed as the Cold War was ending and thus carried some optimism on possibilities of military-military cooperation for regional transparency. Since then, OST has worked to both buttress deterrence and become a standard of behavior. That said, reaffirming its importance for, and fit into, the regional security architecture is essential if the treaty is to survive. For Russia, the ability to overfly U.S. and NATO military facilities eventually trumped Moscow's initial concerns about the treaty. CEE states once championed this agreement for its ability to improve neighborly relations, however, their integration into NATO (and the West) has largely quieted their constructive activism. With NATO's expansion to the CEE, these states don't overfly one another anymore and jointly analyze the data gathered, which feeds Russia's concerns about being starved of data and left out of the loop. With regard to the NIS, the biggest challenge for OST was and remains the seeming inability of regional institutions to prevent or resolve conflict, especially with Georgia and Ukraine. On a final institutional note, because the OST was embedded into the Organization for Security and Cooperation in Europe (OSCE) and not NATO, it is the only airspace arrangement out of those assessed that has not been halted.

States' threat perceptions played an important role in the evolution of the arrangement. Russia was unable to finalize its participation in OST until 2002 due to concerns that overflights above its territory may reveal too much. The current U.S. debate with regard to Russia's potential use of the arrangement to improve its targeting capabilities is somewhat similar in nature. In turn, Russia and Georgia were unable to use the treaty constructively to resolve their differences after the 2008 war, instead choosing to suspend overflights. And, while the treaty faced questions with

regard to future relevance before the Ukraine crisis, it appears that the United States and NATO use OST to reassure allies and partners in the region.

OST negotiations were driven by the desire of CEE states to access inexpensive aerial intelligence. At the end of the Cold War, the United States had (and still has) the dominance in terms of unilateral aerial and satellite reconnaissance capabilities. Even during the initial negotiations of the OST, U.S./NATO resisted pooling data with their Warsaw Pact counterparts. The cooperative certification and exploitation of technologies has, on the whole, been a productive feature of the treaty. However the improvements in resolution of commercial satellite imagery and the deployment of UAVs will continue to challenge treaty participants to innovate.

Finally, all OST participants have pointed to the importance of the “cooperative spirit” for treaty success. The military-to-military cooperation element is perhaps the most durable feature of the arrangement. Treaty implementation has built relatively professional relationships among implementing bureaucracies, and this is likely only to grow with the rise in multi-country OST flights. However, the potential spillover effect of this to the broader relationships in the region appears to have been limited—likely since the bureaucracies involved are relatively small.

Chapter 4: Airspace Initiatives & Exchange of Air Situational Data

4.1. Introduction

In August and September 2013, the Air Force of the Russian Federation participated in cooperative counterterrorism exercises with the United States and NATO. Exercises Vigilant Eagle and Vigilant Skies tested the ability of the national military and civilian organizations to cooperatively detect, track, and respond to the hijacking of a passenger aircraft. In Vigilant Eagle, U.S., Russian, and Canadian pilots practiced “tactics, techniques, and procedures to effectively notify, coordinate, and conduct positive handoff of a terrorist hijacked aircraft flying between Russian, Canadian, and American airspace.”¹ In Vigilant Skies, military flyers and civilian air traffic controllers from Russia, Poland, and Turkey similarly cooperated to “identify, intercept, and escort” the so-called “renegade” aircraft.²

The cooperative exercises between U.S./NATO-Russian militaries had taken place several times since 2010. They offered one of the very few practical avenues for constructive engagement between Russian and NATO country militaries. In the exercises, the Russians shared a picture of their common airspace with the Poles, Turks, and Americans through a specially-designed data exchange mechanism. Called the Cooperative Airspace Initiative, this mechanism built on the U.S./NATO

¹ Michael Kucharek, “Vigilant Eagle 2013 Called ‘Unprecedented’ Success,” NORAD and U.S. Northern Command Public Affairs, August 29, 2013, <http://www.norad.mil/Newsroom/tabid/3170/Article/578663/vigilant-eagle-2013-called-unprecedented-success.aspx>.

² “Live Exercises Set to Test Response to Hijacked Planes,” NATO-Russia Council Press Release, September 6, 2013, <http://www.nato.int/nrc-website/EN/articles/20130904-nrc-cai-vigilant-skies/index.html>.

experience with similar air situational data exchange mechanisms in Central and Eastern Europe (CEE) created as part of the Regional Airspace Initiative during the 1990s.³

As this chapter will detail, exchange of air situational data between NATO and non-NATO nations has become a relatively common practice in the Euro-Atlantic region.⁴ This reciprocal exchange of information between neighboring states involves the fusion of data from national ground-based civil air traffic control radar. This process is used to generate a common airspace picture—a shared display of all activity within the common airspace that supplements the basic capability of civil and military air traffic controllers in neighboring states to track aircraft and communicate by voice.⁵ More than just a way to mitigate the risks of accidental or inadvertent escalation, the exchange of airspace data is a powerful transparency measure that has the potential to promote confidence, predictability, and security cooperation among neighbors and within a broader region. It offers additional detection time and the potential for improved coordination among neighbors in response to threatening airspace developments in their common airspace.⁶

³ CEE states are Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania; NIS states in this case are Georgia and Ukraine. CIS/CSTO states include Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

⁴ This chapter draws on Anya Loukianova, “Cooperative Airspace Security in the Euro-Atlantic region,” CISSM Working Paper, May 2011, http://drum.lib.umd.edu/bitstream/1903/15617/1/cooperative_airspace_security_in_the_euro_525.pdf.

⁵ States have a range of detection, tracking, and communication capabilities that enable them to safeguard their sovereign airspace, to monitor and control civil and military air traffic within that airspace, and to observe the common airspace they share with their neighbors. Flight plan information provided by an aircraft that intends to take off, land, or transit through a state’s airspace and that aircraft’s transponder signals are supplemented with the data derived through national detection and tracking sensors—ground-based civil air traffic control radar systems that may or may not be integrated with their multi-platform military sensor counterparts.

⁶ For a discussion of technologies involved in such exchanges, see Thomas Thomas and Russell Benel, “Improving Coalition Interoperability Through Networking Military/Civil Air Traffic Control

This case study assesses three U.S./NATO programs that have created systems to exchange airspace data among various state groupings in the Euro-Atlantic region. The first one is bilateral U.S. cooperation with CEE countries in the 1990s through the Regional Airspace Initiative program. Conducted on a separate track from its security engagement with Russia, this program was part of Washington's efforts to facilitate intra-CEE cooperation and bring these states closer to NATO. The outcome of this initiative were successful projects to buttress CEE airspace sovereignty and provide these states with NATO-compatible technologies that prepared them for NATO membership. The second program is NATO's air situational data exchange. This initiative has facilitated airspace transparency and access between NATO and non-NATO neighbors and has also been used to reassure non-NATO nations in situations where they felt threatened by Russian actions and could benefit from collaboration with NATO in a crisis. The third program is the NATO-Russia Cooperative Airspace Initiative. Aimed primarily at countering airborne terrorism, this data sharing program also included U.S./NATO-Russian exercises discussed above. This latter air situational data exchange mechanism took nearly a decade to design and test before U.S./NATO suspended its operation in the wake of Russia's invasion of Ukraine. With this suspension, both Russia and NATO countries lost an important opportunity to test the potential usefulness of air situational data exchanges during conflict.

Systems,” Presentation at the 9th International Command and Control Research and Technology Symposia (ICCRTS) in Copenhagen, Denmark, September 14-16, 2004, http://www.dodccrp.org/events/9th_ICCRTS/CD/papers/072.pdf.

4.2. Airspace Initiatives in U.S. Policy Toward CEE

Concerns regarding the potential for increase in ethnic tensions in CEE following the end of the Cold War led to a 1993 interagency review of U.S. policy toward these states. Cooperation among neighbors and, indeed, integration into Western institutions were seen by Clinton administration officials as a way to counteract flare-ups of potential instability the region. CEE countries, in turn, sought to cooperate with the United States and NATO because “they worried that the Russian bear might not remain gentle for long.”⁷ This set the stage for a presidential review directive that, among other achievements, launched projects focused on the exchange of air situational data in the Euro-Atlantic region.

Presidential Review Directive-36

Released on December 6, 1993, after an extensive interagency assessment, Presidential Review Directive 36 (PRD-36) was a key document that guided the Clinton administration’s policy in CEE states.⁸ The PRD laid out the structure of U.S. engagement with Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania. The document posited that the successful democratic transition of CEE states was a “key test of the [Clinton] administration’s concept of enlarging the world’s free community of market democracies.”⁹ The policy stated that, in its relations with this group of states, Washington would seek to counter political and economic stresses as well as intra-

⁷ Madeleine Albright, *Madam Secretary* (New York, NY: Hyperion, 2003), pg. 169.

⁸ Presidential Review Directive-36, U.S. Policy Toward Central and Eastern Europe, July 5, 1993. A copy of PRD-36 was released in 2012 following a declassification review request submitted by the author of this thesis to the Clinton Presidential Library/National Archives in 2009.

⁹ PRD-36, pg. 1.

CEE tensions through the “*normalization* of ... relations with [these] countries and their *integration* into the Western community”(emphasis in original).¹⁰

In order to achieve the two goals of normalization and integration, the PRD proposed a “three-part agenda.” This agenda included “support for democracy; support for market economic transformation; and support for stable, NATO-compatible security policies to underpin reforms.”¹¹ Expanding from the CEE out to the broader Euro-Atlantic region, the successful implementation of this “three-part agenda” was seen as a model for engaging Russia and the other Newly Independent States (NIS).¹² In fact, the PRD posited that “[w]ithout the successful expansion of the democratic community to the CEE region, we will likely have insurmountably great difficulty in projecting our values and model of civil society successfully into Russia and the NIS.”¹³ At the same time, however, the PRD recognized the possibility of negative consequences in the proposed structure of this engagement.

While the document contemplated the possibility of regional divisions, it argued that that U.S. policy would not be faulted for this as much as the countries’ own choices. “If we are consistent, we will not draw new lines between the NIS and CEE (or among CEE countries) that may not be valid for the longer term, since our goals of normalization and integration apply equally to Russia and the NIS as well as to [CEE],” the PRD stated.¹⁴ “We will neither seek to use CEE against Russia nor give Russia a veto power over our CEE policy. Rather, against our democratic and

¹⁰ PRD-36, pg. 6.

¹¹ PRD-36, pg. 8.

¹² NIS are Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

¹³ PRD-36, pg. 5.

¹⁴ PRD-36, pg. 7.

market standards, we should apply policies based on each country's performance in living up to these standards. Differentiation should be a function of self-selection—i.e. based on the success or lack thereof of the countries' own efforts—and evolve over time.”¹⁵

Reflecting the ambivalence within the Clinton administration team on ways to balance Russia engagement with NATO expansion, the directive did not outline NATO membership of the CEE countries as an explicit end goal.¹⁶ Instead, it sought to “promote intra-CEE cooperation as a complement to, not a substitute for, CEE cooperation with the West.”¹⁷ NATO membership was viewed as a positive incentive for CEE countries. At the time of the PRD's release, there was an ongoing conversation within the administration regarding NATO expansion to the CEE. A month after the PRD's release, however, the question regarding NATO expansion “was no longer ‘whether’ but ‘when’” to many in the administration.¹⁸ President Bill Clinton's speech in January 2014 marked this change in U.S. policy in the same speech that unveiled the Regional Airspace Initiative program.¹⁹

Regional Airspace Initiative and its Implementation

After the Warsaw Pact's dissolution, CEE states actively initiated the restructuring of their previously-military-controlled airspaces to reaffirm their

¹⁵ PRD-36, pg. 7.

¹⁶ On the challenges of balancing Russia policy and CEE/NATO enlargement policy, see “NATO is a Four Letter Word,” in James M. Goldgeier and Michael McFaul, *Power and Purpose: U.S. Policy Toward Russia After the Cold War* (Washington, DC: Brookings Institution Press, 2003), pp. 183-210.

¹⁷ PRD-36, pp. 26-27.

¹⁸ For an authoritative timeline, see James M. Goldgeier, “NATO Expansion: The Anatomy of a Decision,” *The Washington Quarterly*, vol. 21, no. 1 (1998) pp. 83-102.

¹⁹ Neil Planzer, “Regional Airspace Initiatives in Europe,” *The DISAM Journal* (Summer 2001), pp. 34-41, http://www.disam.dsca.mil/pubs/v.23_4/planzer.pdf.

newfound sovereignty and to accommodate a greater number of civil airspace users. They also began to modernize their civil air traffic control infrastructures to accept Western (NATO and EUROCONTROL)-compatible radar inputs and comply with European and international aviation safety standards, policies, and procedures.²⁰ CEE states that were interested in eventual NATO membership were told that converting airspace to civilian control was a necessary first step.²¹ These states also planned to procure new national air defense; command, control, communication, and computer systems; as well as their military air traffic control infrastructures—or upgrade existing systems.

In these disjointed national efforts, Washington recognized the opportunity to “promote more open [airspace] access,” reaffirm the airspace sovereignty of these new nations, and strengthen regional stability.²² The CEE country neighbors were in a unique position to leverage one another’s civil and military airspace monitoring assets, thus enabling reciprocal transparency through the exchange of air situational data. The proximity of flight information regions could allow these countries to monitor the common airspace deep into one another’s borders.²³ Further, neighbors with wobbly transitional economies could also pool financial resources and jointly manage projects, thereby strengthening their strategic ties.

²⁰ Commercial air travel in Europe boomed during the 1990s, prompting efforts to restructure European airspace and facilitate integration of airspace instead of civil-military divisions. See Leif Klette, “The European Air Traffic Crisis: NATO’s Search for Civil and Military cooperation,” *NATO Review*, vol. 39, no. 1 (February 1991), <http://www.nato.int/docu/review/1991/9101-05.htm> and, for a broader picture, see Clinton Oster and John Strong, *Managing the Skies: Public Policy, Organization and Financing of Air Traffic Management* (Farnham: Ashgate Publishing, 2007).

²¹ “Baltic Nations to Upgrade Airspace Control,” *Jane’s Defense Weekly*, June 5, 1996.

²² Thomas and Benel, op. cit.

²³ Ibid. A flight information region, according to an ICAO definition, is “an airspace of defined dimensions within which flight information service and alerting service are provided.” A flight information region is a geographical entity that may or may not extend further than national boundaries.

An annex to PRD-36 suggested a Regional Airspace Initiative (RAI) as a possible project to be conducted in CEE countries. The program would seek the accomplishment of five goals: “(1) increase civilian control of national airspace and civil-military cooperation within CEE countries; (2) *increase cooperation among CEE countries in air traffic control and in issues of air sovereignty, thus serving our objective of enhancing intra-regional habits of cooperation and reducing the likelihood or fear of war among participating states*; (3) improve commercial ties with the West through a more efficient air traffic infrastructure; (4) produce cost savings for CEE defense budgets by combining civil and military systems as is done in the U.S.; (5) *support a modernized CEE regional air sovereignty system that could be integrated into NATO systems, if desired in the future.*”²⁴ (emphasis mine)

In addition to the development of systems through the RAI program, there would be a range of joint exercises, including “a transnational hijacking scenario, civil emergency, or natural disaster relief, and a massive peacekeeping exercise. [The exercises] would also be designed to test a regionally coordinated system with militaries of various CEE countries working together.”²⁵ (As the introduction to this chapter suggests, the transnational hijacking exercise was eventually the basis for joint engagement between NATO and Russia.)

President Clinton personally unveiled the RAI at a January 1994 summit of the Visegrád Four—Czech Republic, Hungary, Poland, and Slovakia—in Prague.²⁶ A year later, the Four formally accepted Washington’s \$25 million (over two years)

²⁴ PRD-36, Annex 5, pg. 1.

²⁵ PRD-36, Annex 5, pg. 3.

²⁶ Planzer, op. cit.

offer to interlink their air defense and civilian air traffic control systems.²⁷ The PRD kicked off five sets of country studies starting in June 1994:²⁸

- The first study analyzed the creation of Air Sovereignty Operations Centers (ASOC) that could provide the CEE countries with a cost-effective capability to generate a comprehensive airspace picture—“display all actions within their [civil and military] airspace [individually and within a region] in a single display format compatible with Western standards.”²⁹
- The second set of analyses, radar interoperability and life cycle upgrade studies, put forth the “requirements of modernizing a nation’s older surveillance radars to ASOC standards.”³⁰
- Third, assessments of navigation aids upgrades—a “systematic incremental set of agreed-upon modifications required to modernize a nation’s military navigational systems and landing aids to meet [International Civil Aviation Organization] and NATO standards” were carried out.³¹
- Fourth, the country studies explored the creation of National Military Command Centers that would “fuse the display of air, ground and sea assets

²⁷ “Eastern Europeans Move Closer to NATO,” *Flight International*, January 25, 1995.

²⁸ These studies were overseen by the Office of the Assistant Secretary of Defense for International Security Affairs (OSD/ISA) and carried out by the Massachusetts-based Electronic System Center at Hanscom Air Force Base and the MITRE Corporation.

²⁹ Planzer, *op. cit.*

³⁰ Leslie F. Kenne, “International Operations at the Electronic Systems Center,” *The DISAM Journal* (Summer 2001), pp. 1-3, <http://www.disam.dsca.mil/pubs/Archives/Journal23-4.pdf>.

³¹ *Ibid.*

of both military and civilian organizations in real time to provide a[n emergency] response package.”³²

- Finally, broader command, control, communication, and computer (C4) integration studies that intended to “develop systematic incremental recommendations for a country to modernize and regionalize its command and control functions and processes” were completed.³³

One of the challenges envisioned in the PRD was the ability to secure funding for project implementation. While some NATO states chose to be engaged in specific RAI projects, there was a sense that a lack of NATO consensus with regard to CEE engagement would hinder the program’s implementation. Thus, Washington did not seek to offset costs through NATO.³⁴

In their travels across the region, U.S. officials also had to soothe some NATO allies. The projects were “not intended to advocate a regional alliance” among any of the neighboring state groupings nor were they “intended to distract [potential NATO aspirants’] attention [away] from NATO membership,” they stressed.³⁵ Instead, “by jointly developing a modernization strategy for regional [air traffic management, the CEE countries involved in the RAI demonstrated] their resolve to achieve stability through clearly defined cooperative relationships with their neighbors.”³⁶ That said,

³² Ibid.

³³ Ibid.

³⁴ PRD-36, pg. 34.

³⁵ U.S. Assistant Secretary of Defense Emmett Paige quoted at 1995 Visegrád Four meeting in “Eastern Europeans Move Closer to NATO,” *Flight International*, January 25, 1995.

³⁶ “Eastern Europeans Move Closer to NATO,” *Flight International*, January 25, 1995.

there was an expectation of eventual handoff of the RAI projects to NATO, and discussions between the U.S. and NATO on this had been ongoing as of 1996.³⁷

Under the RAI program, CEE states received ample Western technical and financial assistance that was later helpful to their NATO integration. This assistance included refits of Soviet-made military aircraft with NATO-compatible transponders, refurbishment of airfields, upgrades to and procurement of C4 and radar systems.³⁸ The majority of RAI studies were funded by the United States through the Warsaw Initiative as well as the U.S. Defense Department's Foreign Military Sales program.³⁹ Thus, RAI studies also provided opportunities for U.S. commercial vendors of both civilian and military radar and airspace management systems to expand their market reach to the CEE and beyond.⁴⁰

Complete data on implementation of the RAI program was not available to the author as of this writing. According to a 2007 briefing, the RAI resulted in 17 regional airspace studies, 10 ASOCs, 13 assessments of navigation aids upgrades, 15 C4 studies, and 2 National Military Command Center studies.⁴¹

³⁷ "Baltic Nations to Upgrade Airspace Control," *Jane's Defense Weekly*, June 5, 1996.

³⁸ Elizabeth Book, "NATO Aspirants Prepare for Prague," *National Defense Magazine*, August 2002.

³⁹ Announced in the summer of 1994, the Warsaw Initiative was a bilateral U.S. program that sought to "facilitate the participation of partner states in exercises and interoperability programs, promote interoperability with NATO, support efforts to increase defense and military cooperation with Partnership for Peace partners, and develop strong candidates for NATO membership."

⁴⁰ Greg Schneider, "Foes Turned Friends: U.S. Technology Firms That Made Devices to Track Communist Countries are Trying to Break into the Fastest-Growing Market for Radar Sales: the Former Soviet Union," *Baltimore Sun*, October 11, 1996, http://articles.baltimoresun.com/1996-10-11/business/1996285005_1_northrop-grumman-air-management-defense-radars.

⁴¹ Chris Robinson, "International Civil-Military Airspace Initiatives and Programs," U.S. Department of Defense Policy Board on Federal Aviation presentation, September 20, 2007.

Figure 3 below, depicts NATO member countries (blue dots) and countries in which RAI studies were eventually conducted (yellow points). (Note that the United States and Canada are omitted.)

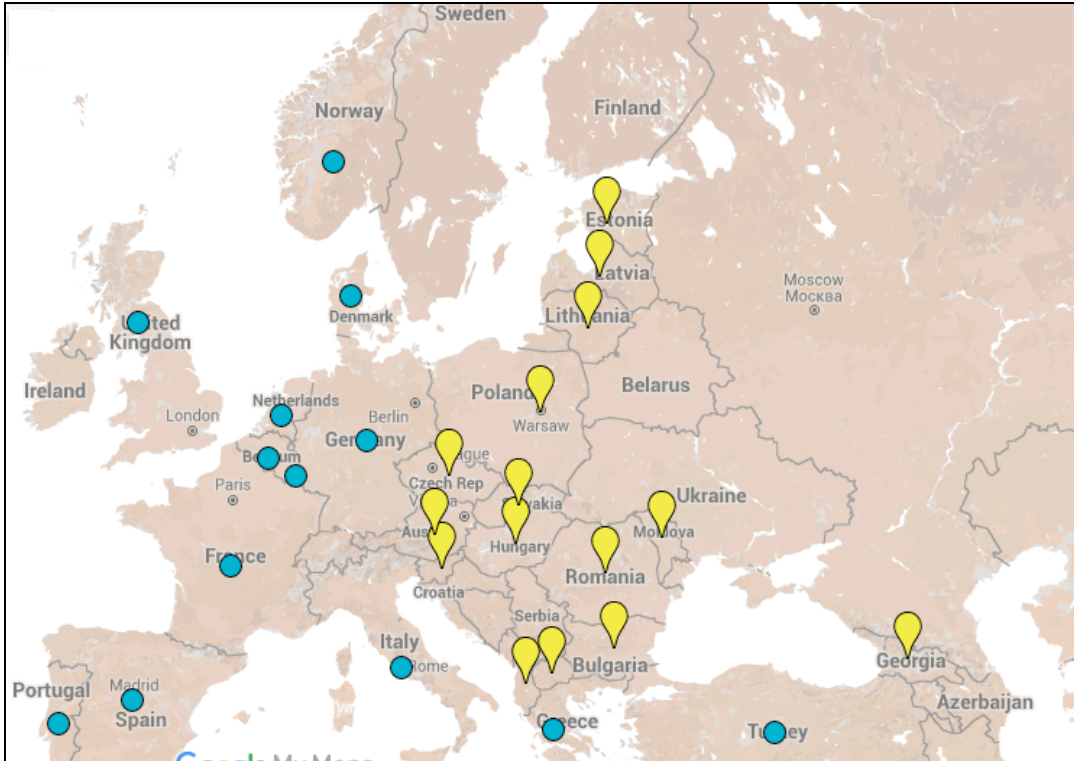


Figure 3: NATO Members in 1993 and RAI Studies in CEE and NIS. (Map data: Google.)

Table 7, in turn, highlights the countries that participated, the date of the studies in these countries, whether they chose to create an ASOC, as well as their NATO membership action plan (MAP) and NATO membership dates, where applicable.⁴²

⁴² MAP is date of the NATO membership action plan activation for that country.

COUNTRY	RAI DATE	ASOC	NATO MEMBER
CZECH REPUBLIC	1994-1995	Yes	1999
HUNGARY	1994-1995	Yes	1999
POLAND	1994-1995	Yes	1999
SLOVAKIA	1994-1995	Yes	(1999 MAP) 2004
ALBANIA	1995		(1999 MAP) 2009
ROMANIA	1995	Yes	(1999 MAP) 2004
SLOVENIA	1995	Yes	(1999 MAP) 2004
AUSTRIA	1996	Yes	Neutral
ESTONIA	1996	Yes-BALTNET	(1999 MAP) 2004
LATVIA	1996	Yes-BALTNET	(1999 MAP) 2004
LITHUANIA	1996	Yes-BALTNET	(1999 MAP) 2004
BULGARIA	1997	Yes	(1999 MAP) 2004
MACEDONIA	1997		(1999 MAP)
GEORGIA	after 2000		N/A
MOLDOVA	after 2000		N/A
UKRAINE	initial offers declined		N/A
BELARUS	initial offers declined		N/A
RUSSIA	did not advance past initial discussions		N/A

Table 7: Selected Elements of RAI Implementation. Sources: Neil Planzer, “Regional Airspace Initiatives in Europe,” *The DISAM Journal*, Summer 2001; “Airspace Plan Paves Way for Safer Skies,” *Jane’s Defence Weekly*, October 8, 1997, and “USAF puts safety first in Eastern Europe,” *Jane’s Defence Weekly*, September 25, 1996.

As the data presented above suggests, the RAI program was expanded beyond the CEE states that were listed in PRD-36.⁴³ After CEE states showed some enthusiasm for the program, there was interest in inviting NIS states to participate as well. At the same time, U.S./NATO was faced with wariness, if not opposition, from Russia toward these projects.

4.3. RAI Projects and Russia's Attitudes

As the United States and individual NATO allies implemented projects that reinforced the airspace sovereignty of CEE states, their engagement of Russia in this area proved difficult. This section discusses what we know regarding CEE and Russian attitudes toward the RAI programs. In this regard, it may be useful to examine the CEE excitement about the ASOCs and Russia's concerns about their development.

Air Sovereignty Operations Centers

An ASOC is a peacetime data fusion system that facilitates the safe and secure management of a country's airspace. "The primary command and control center in [a] country, [an] ASOC collects radar and flight plan data and develops a recognized air picture. [This air picture] allows each of the ASOC nations to track aircraft operating in their airspace and take defensive actions when and if appropriate."⁴⁴ Upon the ASOC nations' membership in NATO, the center is integrated into NATO's Air

⁴³ The initial scope of that directive included Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania. The participation status of Bosnia and Herzegovina, Croatia, and Montenegro in the RAI is unknown. However, these countries participated in NATO's air situational data exchange, discussed later in this chapter.

⁴⁴ Daryl Mayer, "ASOC Working Group Explores Next Decade," ESC Public Affairs, undated.

Command And Control System.⁴⁵ ASOCs are important in “ensuring an integrated command and control structure throughout the nation and continued interoperability with [NATO air defense].”⁴⁶

The RAI studies resulted in the development of ten ASOCs, eventually constructed in all but two CEE NATO aspirants.⁴⁷ These are depicted in Figure 4 that shows country participants in RAI studies (yellow points) and those that decided to create an ASOC (red dots). (Note that BALTNET is shown only in Lithuania.)



Figure 4: RAI Studies and ASOCs in CEE. (Map data: Google.)

⁴⁵ For more information on NATO ACCS, see Chapter 5.

⁴⁶ Mayer, op. cit.

⁴⁷ The two were Macedonia and Albania. Joseph W. Ralston, “Successfully Managing NATO Enlargement,” *U.S. Foreign Policy Agenda* vol. 7, no. 1 (March 2002), pg. 20.

Countries participating in the ASOC project understood the potential relationship between the ASOCs and NATO membership. For instance, a Czech officer described his country's development of the ASOC as follows:

“The Czech Republic assumes that the implementation of the program at this stage will enable the regional exchange of information on the airspace situation with adjacent states equipped with the ASOC technology and the exchange of information with a component NATO operational center (ICAOC or CRC). We also assume the ASOC program will be only first stage. In the future (after the year 2000), it will be surely possible to extend it by the exchange of information on the airspace situation received from airborne means used for warning and control (AWACS), as well as the ability to control weapon systems (aircraft and anti-aircraft missiles) from a land-based ASOC center. The extension of these ASOC capabilities will be connected with the process of taking other members into the NATO structure.”⁴⁸

However, the prospect of NATO membership was not the only reason for CEE states' interest in developing an ASOC system. Participation in the project was seen as a way to facilitate an increase in the amount of civilian air traffic, including transit flights, that the CEE states were able to handle individually and in cooperation with their neighbors. As reports noted at the time, CEE states were reportedly “motivated by an awareness of the economic benefit of having a well-managed national air sovereignty and [air traffic control] center” and saw their “air sovereignty” as a “wealth generating asset.”⁴⁹

The United States extensively facilitated the development of ASOCs, but also sought to work with the respective industries of the participant states. For example, in

⁴⁸ Pavel Strubl, “The Role of Airpower in Promoting Regional Airspace Cooperation,” (March 1998), <http://handle.dtic.mil/100.2/ADA339327>, pg. 3.

⁴⁹ “USAF Puts Safety First in Eastern Europe,” *Jane's Defense Weekly*, September 25, 1996.

the case of the Czech Republic, Washington supplied a Lockheed Martin commercial off-the-shelf interoperability starter kit, while Prague provided the facilities, communication system, and a digitizer information source for both radar and flight plan data. Czech companies were contracted for development and integration of software and hardware require for ASOC implementation.⁵⁰

To be sure, the ASOC projects provided an opportunity for U.S. defense companies to sell CEE states relevant aerospace systems. For instance, while it was implementing the ASOC projects, Lockheed Martin successfully sold long-range air surveillance radar systems to Hungary, Romania, and several Baltic states. With a green light on NATO expansion, the CEE region emerged as a battleground for long-term business between Lockheed Martin and its rival aerospace giant Boeing, with the latter even purchasing a Czech aerospace company to facilitate the eventual sale of fighter aircraft to these NATO aspirants.⁵¹ Some CEE states were all too happy to benefit from these competitive urges from U.S. firms, especially if this brought them closer to the United States and pushed them away from Russia.

*A “Baby NORAD” in the Baltics*⁵²

For over two decades, Baltic states have expressed concerns over what they perceived as a disregard of their airspace sovereignty by the Russian Federation. Since none of the Baltic states had their own air forces, they couldn’t scramble fighter

⁵⁰ Bela Szekely, “COTS in our Air Control System,” Paper at RTO SCI Symposium on “Strategies to Mitigate Obsolescence in Defense Systems Using Commercial Components,” Budapest, Hungary, October 23-25, 2000.

⁵¹ “Central European Air Requirements Central Focus,” *Jane’s Defence Weekly*, May 13, 1998.

⁵² Some have referred to BALTNET as a “Super ASOC” or a “baby NORAD.” See “New Space Control for East Europe States,” *Jane’s Defence Weekly*, May 1, 1996.

jets to intercept Russian aircraft violating Baltic airspaces. So, to alleviate their concerns about airspace sovereignty, U.S. and other NATO members initiated projects to strengthen the airspace awareness of all three Baltic states.

As part of the RAI ASOC effort, the United States, Germany, the United Kingdom, and several Nordic states developed the Baltic Air Surveillance Network (BALTNET). Proposed in 1996, this “super ASOC” system was conceived by the United States as a vehicle for building cooperation among Latvia, Lithuania, and Estonia.⁵³ BALTNET allowed the three states to detect and track the activity in and around their common airspace. The system included several radar sensors in Latvia, Lithuania, and Estonia, a national air surveillance center in each state, a regional airspace surveillance coordination center in Estonia, and a regional data and communications network.⁵⁴ BALTNET was designed and implemented as a joint effort among the three—the states share the equipment, equally contribute staff, and, crucially, have identical access and distributional privileges to the data derived from the network’s sensors.⁵⁵

U.S. officials have credited BALTNET with “improving Baltic sovereignty and air safety [and] increasing Baltic interoperability with NATO.”⁵⁶ They testified that the program’s benefits included “closer cooperation between military and civilian

⁵³ “USAF Puts Safety First in Eastern Europe,” *Jane’s Defense Weekly*, September 25, 1996.

⁵⁴ Lockheed Martin developed systems for BALTNET, which was funded by the United States and other NATO allies “for all three Baltics.” Washington helped to stand up the regional airspace surveillance coordination center at a cost of \$10.4 million. See *Hearings Before a Subcommittee of the Committee on Appropriations House of Representatives on the Foreign Operations, Export Financing, and Related Programs Appropriations for 1998*, 105 Congress, February 12, 1997 and Richard J. Anderson, “U.S. Security Assistance for Estonia,” *The DISAM Journal* (Spring 1998), pg. 13.

⁵⁵ “BALTNET-Baltic Air Surveillance Network and Control System,” *The Ramstein Sword*, December 2009.

⁵⁶ Hearings Before a Subcommittee..., op. cit.

air traffic control and cross-border sharing of radar data with confidence building that accompanies that sharing.”⁵⁷ In Latvia, there was also an understanding that BALTNET “would be part of an analogue system which covers Poland, the Czech Republic, Slovakia, Romania and Bulgaria, and it could be merged with the NATO air surveillance system.”⁵⁸ Indeed, BALTNET’s data formats were designed to be compatible with Western data formats. And the system was easily plugged into the NATO air defense architecture when the three states had acceded to NATO in 2002.⁵⁹

BALTNET also was touted as “creating significant opportunities for an expanded strategic U.S. commercial presence.”⁶⁰ While Western defense companies were excited about participating in the set up of BALTNET, they saw the CEE as only a small “foothold” for expansion into “even bigger long-term markets, such as Ukraine and Russia.”⁶¹ These countries, along with Belarus, eyed Western entreaties with some wariness.

Russia’s Attitudes toward RAI and ASOCs

The Clinton administration prioritized Washington’s relationship with Moscow, with some critics even initially faulting them for pursuing a “Russia first” policy.⁶² There was a sense inside the administration that NATO enlargement—though important for incentivizing CEE integration into the West—should not undercut Russian President Boris Yeltsin’s prospects in the 1996 Presidential

⁵⁷ Ibid.

⁵⁸ Aivars Stranga, “Baltic-Russian Relations: 1997,” in Viktors Ivbulis, *The First Round Enlargements – Implications for Baltic Security* (Riga: University of Latvia, 1998), pg. 190.

⁵⁹ Stranga, op. cit.

⁶⁰ Hearings Before a Subcommittee., op. cit.

⁶¹ “Central European air requirements central focus,” *Jane’s Defence Weekly*, May 13, 1998.

⁶² See, for example, Paul Wolfowitz, “Clinton’s First Year,” *Foreign Affairs* (January/February 1994), <https://www.foreignaffairs.com/articles/1994-01-01/clinton-s-first-year>.

election.⁶³ A consensus gradually emerged within the Clinton team that—after Yeltsin’s reelection in July 1996—the U.S. should actively seek to enlarge NATO to CEE while facilitating NATO’s engagement with Russia.⁶⁴ NATO enlargement, especially to the Baltic states, continued to trouble relations between Washington and Moscow at the highest levels through the rest of the decade.

With the collapse of the Soviet Union and the Warsaw Pact, Russia was unable to hold on to the vast airspace control and defense network previously deployed by the Soviet Union.⁶⁵ This meant that it would have much less advance warning time if NATO launched an attack. Moscow tried to remedy this situation by concluding agreements with the NIS that would allow it to retain some elements of its radar and air defense systems network on their territories. Eventually, however, only Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan remained as participants in the multilateral Commonwealth of Independent States.⁶⁶ Ukraine and Uzbekistan cooperated with Russia on air defense in a bilateral format. While some states appeared to be open to the prospect of cooperation that would involve the

⁶³ See Strobe Talbott, *The Russia Hand: A Memoir of Presidential Diplomacy* (New York, NY: Random House, 2002), pp. 151-165.

⁶⁴ See Goldgeier and McFaul, *op. cit.*, pp. 188-189.

⁶⁵ According to one Air Defense forces’ assessment made in 1992, “if the Baltics, Moldova, Ukraine, Belarus, and Georgia were to completely withdraw from a unified air defense system, Russia would lose 1,000-1,500 km of extended air surveillance coverage.” See Dennis J. Marshall-Hasdell, “The Defense of Russian Aerospace,” in Robin D. S. Higham, John T. Greenwood, Von Hardesty, editors, *Russian Aviation and Air Power in the Twentieth Century* (London: Frank Cass Publishers, 1998), pg. 202.

⁶⁶ See Chapter 5 for discussion of the effectiveness of these arrangements.

exchange of air situational data, CEE (and the Baltic states especially) rejected this possibility outright.⁶⁷

In September 1996, Russian officials were invited to participate in a meeting in Bled, Slovenia, that focused on RAI implementation and rolled out the BALTNET concept, but they did not attend.⁶⁸ A 1996 article quoted a Danish official explaining the Russian absence as follows: "The Russians do not come to this conference because they do not like what it means. RAI has obvious strategic repercussions. It is laying down the ground work for NATO's expansion."⁶⁹

While PRD-36 was focused on a specific group of CEE states, during this time, some U.S. dignitaries also promoted the inclusion of Ukraine and Moldova into the RAI studies.⁷⁰ Ukraine attended the Bled meeting in 1996, but would not participate in U.S./NATO airspace initiatives until some years later.

As Russia unsuccessfully courted the Baltic states in attempts to cooperate on airspace issues, it had concerns about the nature of the BALTNET project.⁷¹ Moscow expressed reservations with regard to the C4 studies carried out under RAI in

⁶⁷ "Latvian Foreign Minister Birkavs has said that some of Russia's offers, e.g., on joint control of air space, involve "untenable impositions on Latvian sovereignty" at a conference in December 1997. Stranga, op. cit., pg. 190.

⁶⁸ Martin Walker, "NATO Insists Its Intentions Are Honorable," *The Moscow Times*, September 20, 1996, www.themoscowtimes.com/sitemap/free/1996/9/article/nato-insists-its-intentions-are-honorable/318203.html.

⁶⁹ Walker, op. cit.

⁷⁰ In 1995, the American-Ukrainian Advisory Committee (formed by the Center for Strategic and International Studies with a roster of notables such as Zbigniew Brzezinski (chair), Richard Burt, Henry Kissinger, and George Soros) recommended to "encourage strong support for the closest possible Ukrainian participation and integration in European multilateral institutions [...] and the inclusion of Ukraine and Moldova [...] in the Clinton administration's Regional Airspace Initiative." "Communiqué of American-Ukrainian Advisory Committee," *Ukrainian Weekly*, no. 50, December 10, 1995, http://ukrweekly.com/archive/pdf3/1995/The_Ukrainian_Weekly_1995-50.pdf.

⁷¹ "In late May of 1997, the Russian Foreign Ministry announced that it was following the technological nature of [BALTNET] very closely." Quoted in Stranga, op. cit., pg. 190.

Hungary, Romania, and Slovenia.⁷² Russian officials argued, as one analyst summarized, that ASOCs “formed a defensive belt against [Russia] that could also be used [by NATO] for missile guidance or tracking purposes.”⁷³

Figure 5 depicts RAI studies and NATO’s eventual expansion to the CEE, showing country participants in RAI studies (yellow points) and those that eventually joined NATO (blue squares).

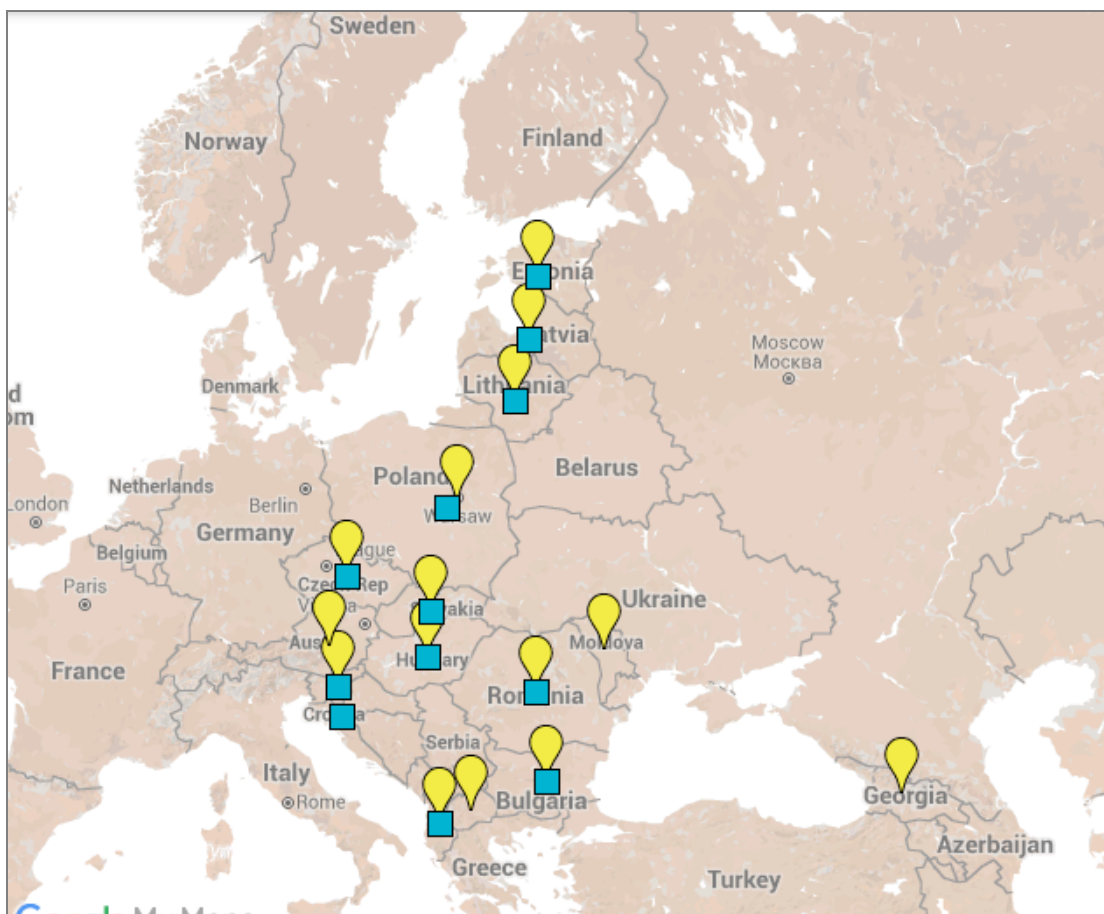


Figure 5: RAI Studies and CEE States’ Membership in NATO. (Map data: Google.)

⁷² “Central European Air Requirements Central Focus,” *Jane’s Defence Weekly*, May 13, 1998.

⁷³ Brooks Tigner, “NATO and Russia Near Air Traffic Information Exchange,” *Jane’s International Defence Review*, April 29, 2009.

However, as noted earlier, the same U.S. firms seeking to expand to the CEE market also sought to expand to the Russian defense market. In 1996, several Russian firms reportedly assessed the prospects of a joint venture with the U.S. defense and aerospace company Raytheon. This project would “push for what could be a \$150 million radar system in the far eastern portion of Russia.”⁷⁴ That joint venture didn’t come to fruition.

As reports from 1997 suggested, U.S. Department of Defense officials indicated to their Russian counterparts an interest in a bilateral cooperation program along the lines of RAI projects.⁷⁵ A Department of Defense official responsible for RAI stressed that he “made a concerted effort to keep the Russians informed,” including traveling to Moscow to conduct briefings, and noted that that Russia’s lack of participation in the RAI was “inconvenient.”⁷⁶ He was quoted as saying, “our goal would be to create transparency throughout the entire region in the interests of aviation safety. In our view, without close military/civil coordination and cooperation, you introduce artificial constraints into the airspace and those constraints reduce our ability to grow capacity and in some ways may affect air safety.”⁷⁷

It appears that at least some of the U.S. interest in airspace cooperation was reciprocated by Russia in May 1997. In the NATO-Russia Founding Act, NATO and Russia declared their interest to cooperate on “enhanced regional air traffic safety,

⁷⁴ Schneider, op. cit.

⁷⁵ “Airspace Plan Paves Way for Safer Skies,” *Jane’s Defence Weekly*, October 8, 1997.

⁷⁶ The official was Frank Colson, Executive Director of the U.S. Department of Defense’s Policy Board on Federal Aviation. See “USAF Puts Safety First in Eastern Europe,” *Jane’s Defence Weekly*, September 25, 1996 and “Airspace Plan Paves Way for Safer Skies,” *Jane’s Defence Weekly*, October 8, 1997.

⁷⁷ “Airspace Plan Paves Way for Safer Skies,” *Jane’s Defence Weekly*, October 8, 1997.

increased air traffic capacity and reciprocal exchanges, as appropriate, to promote confidence through increased measures of transparency and exchanges of information in relation to air defense and related aspects of airspace management-control.”⁷⁸ The statement even noted that Brussels and Moscow would “include exploring possible cooperation on appropriate air defense related matters.”⁷⁹

As of this writing, it is unknown whether there were substantive discussions in the Russian military and interagency about the possibility of an exchange air situational data with the United States and NATO during the 1990s.⁸⁰ Such exchanges could have been technically possible between Russia and Norway, Russia and Turkey, and Russia and the United States (in the Bering Strait area) since these countries shared a common border area. Given the extensive nature of U.S.-Russian cooperation on other more pressing nuclear-related matters, this issue was probably substantially below the radar of bilateral cooperation at the time. Due to the turmoil caused by the Russian economic crisis in 1998, and the breakdown in the NATO-Russian relationship following NATO’s bombing of Kosovo in March 1999, hope for practical cooperation on many issues under the Clinton administration dimmed.⁸¹

The issue would not be revived until much NATO and Russia’s threat perceptions converged around airborne terrorism. In the meantime, NATO also built

⁷⁸ “Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation,” Press Release, May 27, 1997, http://www.nato.int/cps/en/natohq/official_texts_25468.htm.

⁷⁹ Ibid.

⁸⁰ It’s also unknown whether cooperation would have to have been linked to reducing Russia’s reliance on royalties or overflight fees levied on carries transiting through its airspace, a contentious issue still today.

⁸¹ See Goldgeier and McFaul, op. cit., pp. 211-267.

on the RAI studies to unveil its own program to exchange air situational data with NATO Partnership for Peace states.

4.4. NATO Airspace Initiatives with Other States

Based on the efforts initiated by the United States in the 1990s in the CEE, NATO developed mechanisms to exchange unclassified air situation data with non-NATO nations in the Euro-Atlantic region. Initiated in 2001, these projects were analogous to the RAI studies. Participating countries included neutral states like Austria and Finland, NATO aspirants and RAI participants like Georgia, and countries previously opposed to RAI like Ukraine.

Air Situation Data Exchange Program

In 2001, NATO complemented the U.S. patchwork RAI efforts by unveiling the Air Situation Data Exchange (ASDE) program.⁸² The project was important to the Alliance because “NATO peacetime and crisis response operations could result in an operational requirement to use [that state’s] airspace.”⁸³ The program was “a means for a reciprocal exchange of filtered air situation information between NATO and a Partner country.” It was “designed to enhance mutual situational awareness, enhance transparency and minimize possible cross-border air incidents [and] provide Partner

⁸² NATO Programming Center, *NPC Insight*, 2/2009, pg. 14.

⁸³ See detailed discussion of ASDE filtering in Wim Hoekstra and Peter Rehäußer, “Outbound Downgrade Filter of ASDELink-1 Forward Filter Version 1.5,” NC3A, February 6, 2007, <http://www.commoncriteriaportal.org/files/epfiles/0342b.pdf>.

countries with insight into NATO procedures and offers valuable training experience.”⁸⁴

As Table 8 summarizes, ASDE agreements have been signed and data exchange has been activated between several NATO and non-NATO flight information region neighbor groups.⁸⁵ NATO has also engaged with Albania and Macedonia.⁸⁶

NATO NATION	ASDE PARTNERS	STATUS (AS OF 2014)
Germany	Austria	Implemented
Turkey	Georgia Ukraine	Implemented Implemented
Hungary	Ukraine Austria	Implemented Planned
Lithuania, Estonia, Latvia	Finland	Implemented
Greece	Macedonia	Planned
Norway	Sweden Finland	Implemented Planned
Croatia	Bosnia and Herzegovina Montenegro	Planned Planned
Romania	Moldova	Planned

Table 8: Collaboration Under the ASDE Program. Source: Air and Missile Defence Committee Permanent Session in EAPC Form, Summary of the Meeting of the Ad Hoc Working Group held on February 14, 2014, March 12, 2014.

As Figure 6 depicts, the ASDE structure engages NATO state (blue squares) and non-NATO state (green squares) neighbors. In some cases, these states exchange

⁸⁴ "Air Situation Data Exchange with Ukraine," NATO Press Release, June 16, 2009, www.nato.int/cps/en/natolive/news_7498.htm?selectedLocale=en.

⁸⁵ See "Air Situation Data Exchange'- Important Coordination between NATO and Partner Nations," NATO Allied Command Operations Press Release, November 19, 2010.

⁸⁶ Ministry of Defense of Georgia Public Affairs Department, "Georgia to Join ASDE System," *Today Defence*, August 2007. NATO Programming Center, op. cit.

information about airspace activity with up to as much as 200 nautical miles (370 kilometers) from their common border area.

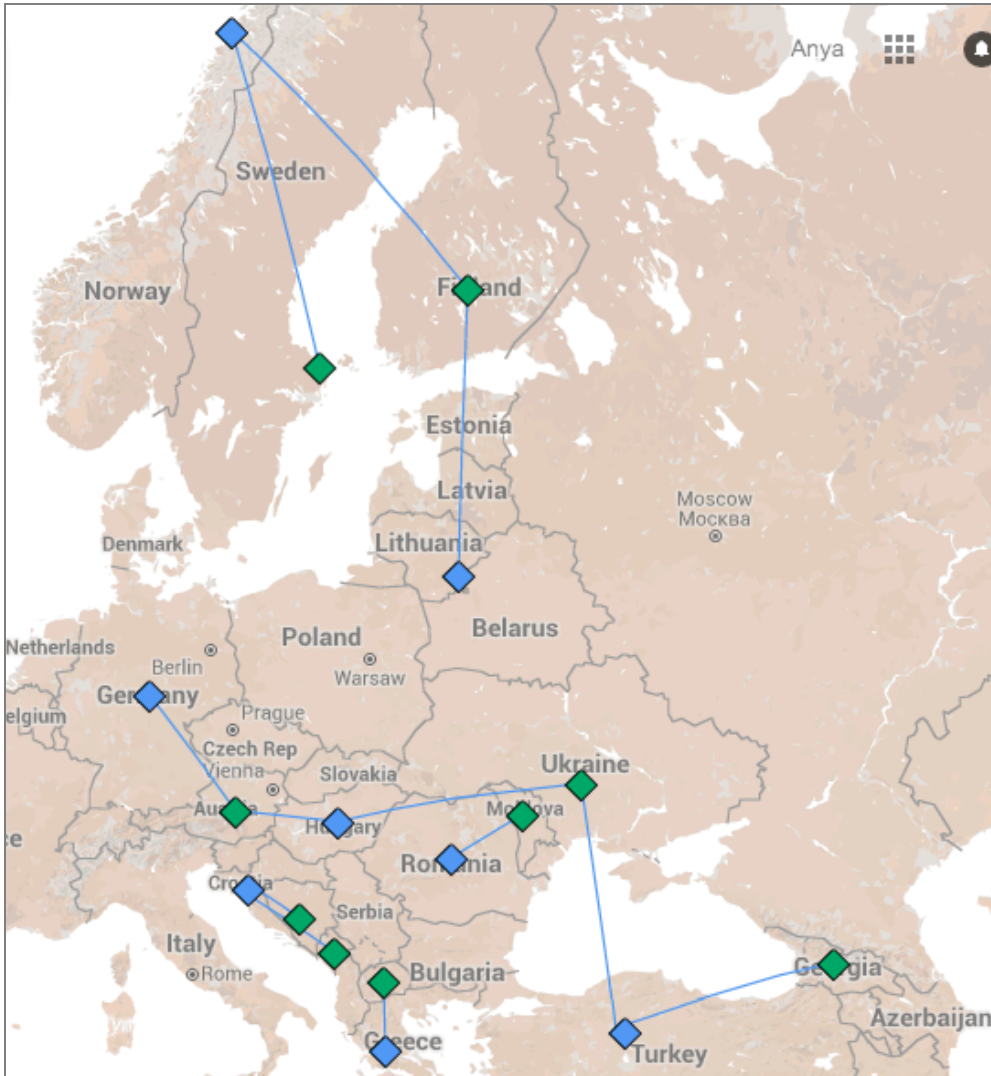


Figure 6: NATO ASDE Network. (Map data: Google.)

States have cited a variety of reasons for participating in ASDE. Ukraine, which began discussions with NATO about ASDE in 2006, saw its participation in the program as an opportunity to, among other goals, “improve national procedures for civil-military coordination[,] provide support to NATO in case of aviation

emergencies or terrorist acts,” as well as use it to eventually “introduce a NATO-compatible air [search and rescue] system.”⁸⁷

As the May 2010 NATO agreement with the Ukraine articulated, the ASDE:

- Facilitated a “controlled exchange of air picture data by filtering the NATO air picture in such a manner that it [was] releasable” to non-NATO states that were NATO flight information region neighbors.
- Allowed the “air pictures of a defined airspace along the common border [to be] exchanged, confirming and, where necessary, supplementing the respective air pictures” of the NATO and non-NATO state.
- “[A]im[ed] to reduce the airspace conflicts in two ways: by minimizing potential cross-border incidents and optimizing responses to ‘renegade’ situations with civil airplanes.”⁸⁸

ASDE was relatively easy to implement. In practice, it involved a connection between a NATO control and reporting center through a data link with a declassification filter to a comparable center already in place in the participant state. It was also inexpensive as each participant in the ASDE program covered its own costs.⁸⁹

⁸⁷ "NATO-Ukraine Annual Target Plan for the Year 2007 in the Framework of NATO-Ukraine Action Plan," NATO Release, undated, <http://www.nato.int/docu/basicxt/b070618atp-e.pdf>.

⁸⁸ “Ukraine and NATO Sign ‘Air Situation Data Exchange’ Agreement,” NATO IMS News Release Press Release, May 5, 2010, http://www.nato.int/cps/en/SID-0C8BD350-64350090/natolive/news_63170.htm.

⁸⁹ Publicly available text of NATO ASDE MOUs with Ukraine and Moldova.

As of 2013, Ukraine had valued its participation in the ASDE program as a way to deepen its cooperation with NATO. In turn, NATO's cooperation with Ukraine through ASDE has played a quiet, yet important role during the ongoing conflict with Russia. The Ukrainian center connected to NATO is located in Odessa, a city which has not been as impacted by the ongoing conflict. NATO indicated that, “[f]ollowing the Russia-Ukraine crisis, and at the request of Ukraine, air data information provided by NATO has been extended to cover a larger area.”⁹⁰ According to a Ukrainian report, ASDE “made it possible to put the 2nd operational (Southern) district into operation, to launch the planned interaction between the [Air Force] of Ukraine and respective entities of the Alliance in the Western and Southern districts, as well as to conduct negotiations on the basis of [NATO] Strategic Command Operations Headquarters with the delegation of the Air Forces of Ukraine regarding the possible use of the ASDE program ... in the mode up to 200 nautical miles on the permanent basis.”⁹¹

In addition to expanding the data-sharing capabilities under ASDE, NATO countries have initiated a RAI-like feasibility study to enhance Ukraine's C4. Its aim is to “help Ukraine modernize its C4 structures and capabilities, and facilitate their

⁹⁰ “NATO's Practical Support to Ukraine,” NATO Fact Sheet, May 2015, http://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2015_05/20150508_1505-Factsheet_PracticalSupportUkraine_en.pdf.

⁹¹ Oleksandr Sushko, Volodymyr Horbach, and Igor Koziy, “History and the Present of Ukraine-NATO Relations: Implementation of the ‘Non-Bloc Status’ and Its Consequences,” Report of EIP Roundtable, undated, http://www.ier.com.ua/files/Projects/2013/Ukraine-NATO%20relations_en.pdf.

interoperability with NATO to enhance Ukraine's ability to provide for its own security and contribute to NATO-led exercises and operations."⁹²

While pro-Russian separatists have extensively used air defense systems to destroy Ukrainian air force aircraft, Russia has not used traditional airpower in this conflict. It is hard to even speculate whether ASDE played a deterrent role against its use. Instead, pro-Russian separatists have relied on Russian-supplied unmanned aerial vehicles (UAVs), which are more difficult to detect, for reconnaissance of targets.⁹³ However, if airpower had been used against Ukraine, ASDE would have allowed greater visibility and coordinated understanding of these activities.

A more contentious issue is whether ASDE provides partner countries with a NATO security guarantee. After all, for countries wishing to join NATO, one of ASDE objectives was to prepare them for integration into NATO air defense.⁹⁴ In this regard, Georgia's experience with ASDE during that country's conflict with Russia in 2008 is instructive.

⁹² "Based upon availability of funds and the priority areas for assistance to be identified through the Feasibility Study, practical assistance could include: assessment, introduction, and implementation of modern C4 architectural network; procurement of C4 equipment; acquisition of modern Communications and Information Services (CIS) and technologies; and the provision of associated CIS training." "NATO's Practical Support to Ukraine," *op. cit.*

⁹³ See chapter 5 for a more extensive discussion of the conflict in Ukraine.

⁹⁴ "ASDE Memorandum signed on NAC margins in Brussels," Ministry of Defense of the Republic of Croatia, February 28, 2014, www.morh.hr/en/news/press-releases/9170-asde-memorandum-signed-on-nac-margins-in-brussels.html.

Georgia and ASDE

For Tbilisi, cooperation with NATO has been particularly valuable given an absence of a national air defense system.⁹⁵ Georgia's command center was created in 2006, when Georgia's air defense radar was fused with 4 civilian [air traffic control] radars and the radar systems were upgraded and supplied by, among others, Ukraine.⁹⁶ However, Georgia's participation in ASDE has proven to be an exceptionally prickly issue as it unsuccessfully sought to use its cooperation with NATO as a way to deter Russia ahead of their 2008 conflict.

In the run up to the conflict, Russia and Georgia engaged in provocative behavior in the airspace above the disputed territories. An August 2007 Georgian Ministry of Defense publication posited that Russian aircraft incursions into Georgian airspace had "prompted discussions at NATO [headquarters] in Brussels to speed up [ASDE participation] procedures so that Georgia becomes incorporated into [NATO air defense] as soon as possible."⁹⁷ Further, a Georgian official was quoted as saying, "[t]he integration of Georgia's radar into the NATO system will give NATO controllers real-time information about any incursions into Georgian airspace ... Everything will be displayed at NATO [head quarters], at the central command point."⁹⁸

⁹⁵ Tamara Pataraiia, "Georgia and the CIS Security System," Conflict Studies Research Centre Report G81, undated, <http://www.da.mod.uk/Research-Publications/category/68/rethinking-the-nordic-baltic-security-agenda-a-proposalg88-3563>.

⁹⁶ Said Aminov, "Georgia's Air Defense with South Ossetia," *Moscow Defense Brief*, vol. 3, no. 17 (2009), <http://pvo.guns.ru/book/cast/georgia.htm>.

⁹⁷ "Georgia to Join ASDE System," op. cit.

⁹⁸ Ibid.

Airspace incidents continued to serve as an escalation vector for the conflict. Moscow argued that Georgia's UAVs incessantly flew over Abkhazia and South Ossetia.⁹⁹ Tbilisi, in turn, posited that Russian interceptors had repeatedly intruded on its sovereign airspace.¹⁰⁰ These incidents culminated in the April 2008 downing of a Georgian UAV from Abkhazia's sky. Tbilisi insisted that a Russian aircraft shot down its drone, whereas Moscow stood firm in pinning the incident on Abkhazia's own air defense and noted that the presence of the UAV in the airspace above the territory contradicted Georgia's international obligations.¹⁰¹

Georgian officials argued that an active ASDE could have remedied the situation.¹⁰² Presumably, it would have allowed Georgia's NATO neighbors to observe incursions by the Russian aircraft. Instead, both sides were free to question the sources and the interpretation of the radar track data that was used to support the other's allegations.

Tbilisi's ASDE agreement was finalized several weeks after the conclusion of the August 2008 conflict with Russia.¹⁰³ Even after the war, Georgian officials vocally sought to emphasize that the agreement implied a NATO security guarantee through claims of integration—if not direct and political, then indirect and

⁹⁹ "Russian MFA Information and Press Commentary Regarding UNOMIG Report Concerning April 20 Air Incident over Abkhazia," Ministry of Foreign Affairs of the Russian Federation Press Release, May 27, 2008, http://archive.mid.ru/brp_4.nsf/0/CFD9040C12125FEBC325745600598065.

¹⁰⁰ Vladimir Socor, "Evidence Accumulates on Russian Air Incursion into Georgia," *Jamestown Foundation Eurasia Daily Monitor*, August 13, 2007, [http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=32943](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=32943).

¹⁰¹ "Russian MFA Information and Press Commentary Regarding UNOMIG Report Concerning April 20 Air Incident over Abkhazia," op. cit.

¹⁰² "NATO Backs Georgia in Dispute with Russia, Seeks Reversal of Recent Moves by Russia in Abkhazia," Government of Georgia Press Release, April 29, 2008.

¹⁰³ See "Georgia and NATO Start Air Situation Data Exchange Programme," NATO News Release, September 9, 2008, <http://www.nato.int/docu/update/2008/09-september/e0909b.html>.

technical—into NATO air defense. Upon the 2008 conclusion of the trilateral ASDE arrangement between Georgia, Turkey, and NATO’s Supreme Headquarters Allied Powers Europe, Alliance officials downplayed Georgian claims by stressing that ASDE “does not integrate a Partner Nation’s Air Surveillance Capability into” NATO air defense. Further, they noted that the exchange was “limited to a clearly defined airspace extending on both sides of the common border between the Partner nation and NATO nations.”¹⁰⁴

According to “senior Georgian national security officials,” Russian airpower destroyed all of Georgia’s radar systems during the conflict.¹⁰⁵ As a report noted, “[w]hile some radars have been replaced, these are allegedly designed for civilian use and ill-suited for early warning. Hence, Georgia reportedly still cannot monitor all of its airspace, and even the airspace that is covered by radar lacks early warning capabilities.”¹⁰⁶ Thus, at least at present, an operationalized ASDE should provide some degree of additional airspace awareness and NATO assurance to Georgia.

4.5. NATO-Russian Cooperation Takes Flight

In 2002, U.S./NATO and Russia began to explore cooperation on airspace issues that built on the Western experiences with RAI and the ASDE concept. The Cooperative Airspace Initiative (CAI) appears to have been originated from a U.S. proposal to extend the ASOC concept to Russia. This section focuses on the

¹⁰⁴ Ibid.

¹⁰⁵ See Senate Committee on Foreign Relations, *Striking the Balance: U.S. Policy and Stability in Georgia*, United States Senate (2009), <https://www.gpo.gov/fdsys/pkg/CPRT-111SPRT53985/pdf/CPRT-111SPRT53985.pdf>, pg. 8.

¹⁰⁶ Ibid.

development of the CAI and discusses its potential role in airspace incidents between Russia and the Baltics.

An ASOC from Vancouver to Vladivostok

Coming on the heels of the September 11, 2001 attacks of airborne terrorism on New York and Washington, the 2002 NATO Summit in Rome offered an opportunity to think of creative cooperation avenues between NATO and Russia.¹⁰⁷ At the summit, then-Prime Minister of Denmark (and future NATO Secretary General) Anders Fogh Rasmussen pointed to converging NATO-Russian concerns about the threat of terrorism and the possibility of a “new beginning” in the long-suffering relationship with Moscow.¹⁰⁸ In the Rome Declaration, NATO and Russia agreed to pursue “a multi-faceted approach, including joint assessments of the terrorist threat to the Euro-Atlantic area, focused on specific threats, for example, to Russian and NATO forces, [and] to civilian aircraft.”¹⁰⁹

Shortly thereafter, the Bush administration introduced a proposal into the NATO-Russia Council that offered Russia the development of an ASOC on its territory. Reportedly also supported by NATO countries, the proposal was discussed with then-Russian Minister of Defense Sergey Ivanov and placed on the agenda in the

¹⁰⁷ In these attacks, terrorists used aircraft as manned missiles. Post 9-11 NATO policy refers to such hijacked aircraft as “renegade” aircraft. See Waldemar Zubrzycki, “NATO-Russian RENEGADE Aircraft Joint Initiative,” in Robert Czulda, Robert Łoś, editors, *NATO: Towards the Challenges of a Contemporary World 2013* (Warsaw: International Relations Research Institute in Warsaw, 2013), pp. 130-133.

¹⁰⁸ Rasmussen statement at the NATO Rome summit, May 28, 2002, <http://www.nato.int/docu/speech/2002/s020528t.htm>.

¹⁰⁹ “NATO-Russia Relations: A New Quality,” NATO Press Release, May 28, 2002, http://www.nato.int/cps/en/SID-95EFE71A-E55E95E1/natolive/official_texts_19572.htm.

NATO-Russia Council.¹¹⁰ As a U.S. Department of Defense official explained to reporters, the U.S. position involved “the development of an air sovereignty operations center for the entire European and Russian area of operations” that would also be buttressed by joint exercises.¹¹¹ In effect, “the concept, if fully developed, would be to have an ASOC that would cover effectively cover from Vancouver to Vladivostok.”¹¹²

When prompted by the press, the U.S. official carefully clarified that this was not a proposal for integrated air defense between NATO and Russia—something that would require much more extensive discussions with NATO allies—but more of a “peacetime” cooperation concept. “An ASOC provides a picture of the airspace over a particular country. We've done ASOCs with most of the Central European countries,” he said in a reference to the RAI.¹¹³ “We're suggesting the Russians do the same because it provides an ability to share airspace pictures that will enhance the safety of civilian air traffic, coordinate it with military traffic, and it can also be used for contingencies, like emergencies or terrorist situations, as one moves in the progression of cooperation. You could envision an ASOC for Russia that covered all of Russia.”¹¹⁴

At a meeting in June 2002, the NATO-Russia Council formally launched a technical working group to explore the proposal. The group would “discuss ways of improving cooperation in the sphere of airspace management [in order to] enhance

¹¹⁰ "Background Briefing on Secretary Rumsfeld's Trip," Department of Defense news transcript, June 3, 2002.

¹¹¹ Ibid.

¹¹² Ibid.

¹¹³ Ibid.

¹¹⁴ Ibid.

capabilities in fighting terrorist threats to civil aviation.”¹¹⁵ This task resulted in the development of an operational concept for “a joint [NATO-Russia] capability for [air traffic management] interoperability to enable reciprocal exchange of air traffic data.”¹¹⁶

By the summer of 2003, the NATO-Russia Council had allocated funding for a feasibility study.¹¹⁷ The feasibility study culminated in the development of the Cooperative Airspace Initiative (CAI). The CAI would facilitate a continuous exchange of ground sensor data tracked 150 kilometers (81 nautical miles) along each side of the border in three pairs of flight information regions between Russia and NATO.¹¹⁸ The air situational data sharing arrangement would involve practical cooperation between Russia and NATO members Norway, Turkey, and then-new NATO member Poland. Figure 7, below, depicts the structure of the data exchange mechanism, with blue stars depicting center locations in Russia and NATO countries.

¹¹⁵ Yuriy Tokarev, “NATO-Russia Council’s Cooperative Airspace Initiative,” briefing of the Russian Delegation on behalf of CAI Participants presented in Montreal, October 19-20, 2009.

¹¹⁶ Ibid.

¹¹⁷ “Statement: Meeting of the NATO-Russia Council at the level of Ministers of Foreign Affairs in Madrid, Spain,” Russia’s Mission to NATO website, June 4, 2003.

¹¹⁸ Alan Fowler, “CIMA CT and Lara,” EUROCONTROL Presentation, June 9, 2008, http://www.eurocontrol.fr/projects/edep/slides/CIMA CT_LARA.ppt.

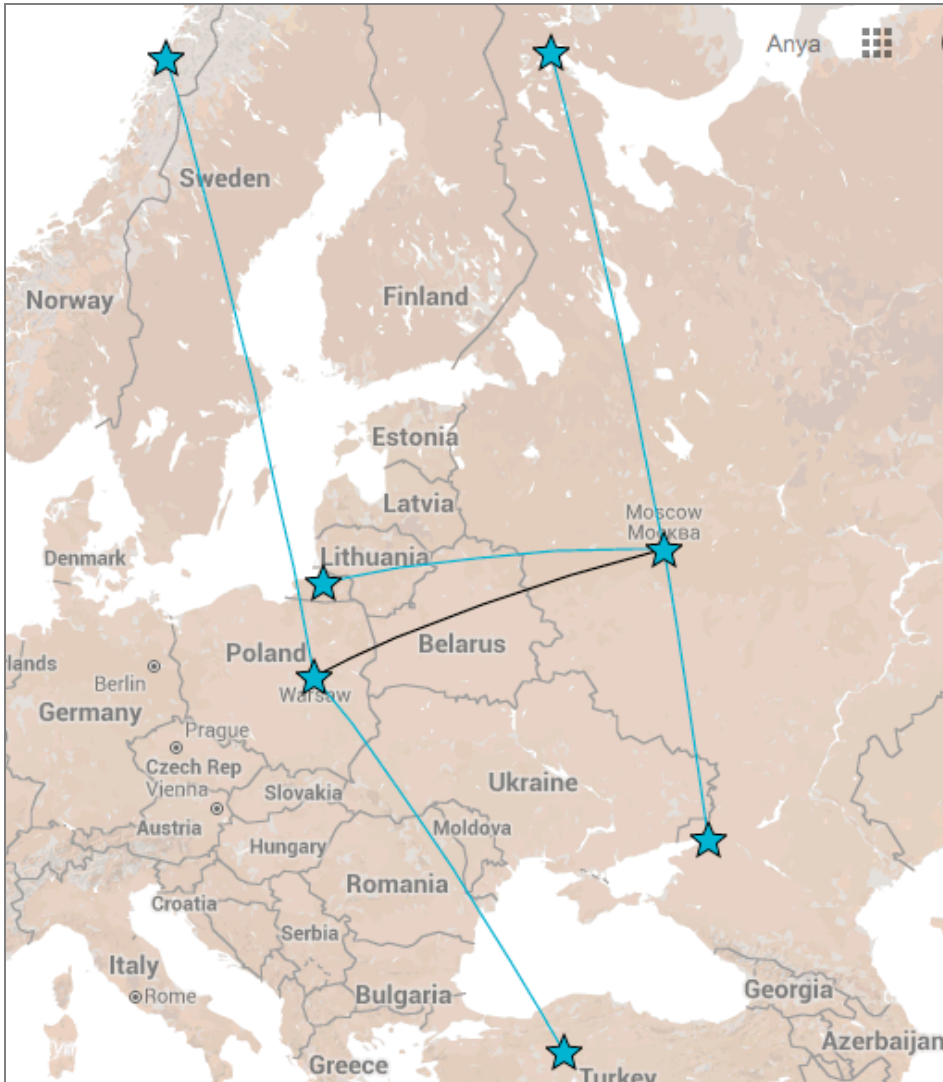


Figure 7: NATO-Russia Council CAI. (Map data: Google.)

The CAI’s objectives included the “detection [of] and notification” about a potential hijacked aircraft and the “continuity of real-time air track information for the purpose of coordination [of action between CAI participants and] obtaining alerting notification on aircraft outside the [national airspace] limits.”¹¹⁹ The Russian interface for the system, analogous to the EUROCONTROL interface used in CAI by NATO, would be developed by Russia’s Almaz Antey Concern.

¹¹⁹ Tokarev, op. cit.

The importance of the CAI grew as Russia suffered two acts of airborne terrorism in May 2004. In these acts, two female suicide bombers detonated explosive devices on board regional aircraft, killing a total of 89 people.¹²⁰ Later that year, the CAI's political importance was reiterated in the 2004 NATO-Russia Action Plan on Terrorism.¹²¹ A press release issued by the Russian mission to NATO in 2005 focused on the importance of the “underlying goals” of the CAI—“enhancing transparency [and] predictability” of the regional airspace.¹²² Both of these goals were important especially in Russia's relationship with the Baltic states.

Turbulent Skies Over the Baltic

After the three Baltic states joined NATO in 2002, airspace violations by a Russian Beriev A-50 Airborne Warning and Control System (AWACS) aircraft with Sukhoi escorts—reportedly on a mission to test Estonia's radars—prompted an exchange of diplomatic notes between Tallinn and Moscow.¹²³ Russia apparently issued denials despite being confronted with electronic evidence of its incursions, derived from BALNET. At the same time, Moscow was repeatedly expressing concern about the surveillance of its military installations by NATO aircraft, including an AWACS aircraft, in close proximity to its borders.¹²⁴

¹²⁰ See, for example, "Bomb Traces in Both Russian Jets," BBC News, August 29, 2004, <http://news.bbc.co.uk/2/hi/europe/3607886.stm>.

¹²¹ See “NATO-Russia Action Plan on Terrorism,” NATO-Russia Council Press Release, December 9, 2004, http://www.nato.int/cps/en/SID-E35A6C2F-E65CD507/natolive/official_texts_21003.htm.

¹²² Tokarev, op. cit.; also see press release of the Russian mission to NATO, April 27, 2009.

¹²³ Aleksandras Matonis, “Airspace Control: Lithuania Will Remain ‘Blind’ for Approximately 10 More Years,” Delfi, July 27, 2006.

¹²⁴ See, for example, "U Rossiiskoi Granitsy Zamecheny Dva Samoleta-razvedchika NATO" (Two NATO Reconnaissance Aircraft Noticed Close to Russian Border), Lenta.ru, February 25, 2004, <http://lenta.ru/russia/2004/02/25/plane/>.

In light of complaints from the Baltics about Russian behavior, U.S. officials sought to create a forum for a cooperative discussion of the problem. In 2004, they put forward a proposal for the NATO-Russia Council to host a regional airspace safety conference that would include Russian and Baltic state representation. The Baltic states, however, rejected this idea fearing that Moscow would exploit the conference to single them out and divide the Alliance. As a result, the conference never took place, and the issue didn't go away.

On September 15, 2005, seven Russian Air Force aircraft were conducting a patrol flight from St. Petersburg to Kaliningrad. One of the fighters, a Su-27, unexpectedly strayed from its flight path over the Baltic Sea and entered Lithuanian airspace.¹²⁵ Detected by BALNET radars, the descending fighter's track flickered on air traffic control monitors in a regional air surveillance coordination center for twenty minutes before it disappeared.¹²⁶ In response to the incursion, a NATO joint operations center ordered a NATO Air Police contingent comprised of four German Air Force F-4 Phantom fighters to scramble from the former Soviet military air base at Zokniai, Lithuania.¹²⁷ This order, however, came several minutes too late—after the Su-27 had already crashed near a small village northwest of Vilnius.¹²⁸

The delayed reaction of NATO Air Police to the incursion resulted in public shaming in Baltic papers. They questioned the credibility of NATO's commitment to

¹²⁵ Aiste Skarzinskaite and Anatoly Medetsky, "Tensions Simmer Over Su-27 Plane Crash," *The Moscow Times*, September 27, 2005, <http://www.themoscowtimes.com/news/article/tensions-simmer-in-su-27-crash/209704.html>.

¹²⁶ Ian Demidov and Andrey Ivanov, "Ukraina Zamenila Litve NATO" (Ukraine Replaced NATO to Lithuania), *Kommersant*, September 27, 2005, <http://www.kommersant.ru/doc/613190>.

¹²⁷ Matonis, op. cit.

¹²⁸ Demidov and Ivanov, op. cit.

Baltic security, and calling the Air Police a “public relations gimmick.”¹²⁹ “The NATO umbrella over Estonia, Latvia, and Lithuania seems to be full of holes. We do not even know what kind of event would have to happen before the NATO eagles would hurry to help us,” Estonian papers noted. Latvian papers warned of the potential dangers of escalation. They wrote, “[i]t would be quite dangerous for NATO forces to shoot down a Russian plane over Lithuanian territory, and the international consequences could not be foreseen.”¹³⁰

After an investigation confirmed that the incursion of the Russian fighter was an accident, Moscow repaid Vilnius for the damages incurred.¹³¹ Despite a resolution, the crisis pointed to the presence of escalatory dangers with regards to incidents in the Baltic airspace. The Russians seemed to agree on the dangers of escalation and pointed to air situational data exchange mechanisms as one of the ways to alleviate concerns.

In an October 2005 statement, Russia’s Ministry of Foreign Affairs called for “special trust- and cooperation-building measures” in the airspace along the Baltic, the “development of which the Russian side had repeatedly suggested.” Its statement reiterated the importance of the CAI, noting that “a special significance would be an increase in the pace of implementation of the NATO-Russia Council project on a

¹²⁹ For a discussion of the Baltic reaction, see “Russian Jet Jangles Baltic Nerves,” BBC News, September 20, 2005, <http://news.bbc.co.uk/2/hi/europe/4264010.stm>.

¹³⁰ Ibid.

¹³¹ Ministry of Foreign Affairs of the Republic of Lithuania, “Lithuanian Foreign Policy in 2005: Chronology of Events,” undated.

common air traffic monitoring and control system, which could also be a means to counter potential ‘airborne’ terrorist threats.”¹³²

4.6. From the Reset and to the Present

Despite incidents suggesting the potential importance of a cooperative airspace mechanism, the NATO-Russia CAI was faced with a lack of political attention and funding. Apparently, interest in the CAI was strong enough that the project was able to endure the chill in NATO-Russian relations following the 2008 Caucasus conflict.¹³³ On the U.S. side, the project had to weather a transition between the administrations in the United States before it was resurrected in 2010 only to be halted four years later. This halt in U.S./NATO-Russian cooperation came at a time when the CAI was perhaps most needed to facilitate airspace safety between NATO and Russia. However, like in the case with Georgia and ASDE, the CAI had obvious technical and political limits.

The CAI Advances to Military Exercises

In 2006, during a visit to NORAD (North American Aerospace Defense Command) headquarters, a Russian Air Force commander proposed to study the sharing of a U.S.-Russian airspace picture across the Bering Strait.¹³⁴ His counterparts

¹³² “Kommentariy Departamenta Informatsii i Pechati MID Rossii Otnositelno Zaversheniya Rassledovaniya v Svyazi s Avariey Samoleta Su-27,” (Commentary by the Information and Print Department of the Russian MFA Regarding the Completion of the Investigation of the Accident of the Su-27 Aircraft), Ministry of Foreign Affairs of the Russian Federation, October 7, 2005, http://www.mid.ru/brp_4.nsf/0/D5741697284E7F32C325709700205263.

¹³³ Author email exchange with government official, February 2010.

¹³⁴ Anthony Hill, “NORAD Initiative Intended to Strengthen Ties with Russia, Better Fight Terrorism,” NORAD Public Affairs, September 6, 2006, <http://www.norad.mil/Newsroom/tabid/3170/Article/578122/norad-initiative-intended-to-strengthen-ties-with-russia-better-fight-terrorism.aspx>.

from the U.S. and NATO soon traveled to a Russian air traffic control facility in the Far Eastern town of Magadan to examine ways to link it with Elmendorf Air Force base, close to Anchorage, Alaska. At the time, both militaries noted that a U.S.-Russian CAI across the Strait could serve as a “tool” to “get past the Cold War axioms.”¹³⁵ Action on this was linked to the progress on European phase of the CAI. However, the program was not a priority in the transition between the Bush and Obama administrations.

In the spring of 2009, U.S. officials sought to realize earlier pledges of U.S. funding for the CAI. Some noted that the program was a model for cooperation in the NATO-Russia Council, but that it was currently hamstrung by the absence of U.S. support. They also acknowledged Russia’s interest in the program and noted that Russia’s in-kind contribution to its development was larger than anyone else’s at the time. As Russian officials stated, they saw the CAI as essential for “encouraging the joint use of civil [air traffic control] and military equipment, facilitating the sharing of airspace information internally and with neighbor[s], encouraging civil [air traffic control] integration into Western Europe, [and] facilitating the future exchange of civil and military air situation data.”¹³⁶

In the United States, initial inattention shifted to a sharp focus after the launch of the Obama administration’s Reset policy. In an effort to kick-start counterterrorism cooperation through the nascent U.S.-Russian Presidential Working Group, Moscow

¹³⁵ Ibid.

¹³⁶ Tokarev, op. cit.

and Washington prioritized joint work on airborne threats.¹³⁷ In August 2010, the first Vigilant Eagle exercise was conducted. In it, U.S. and Russian aircraft participated in an activity that saw the civil and military authorities of both states track and shadow a “renegade” aircraft across the Pacific Ocean.¹³⁸

In 2011, practical exercises also began in the European portion of the CAI. The first Vigilant Skies exercise was conducted in June of that year. Russian papers even promoted the exercise, which engaged civilian air traffic controllers as well as fighter jets, reconnaissance aircraft, and air defense elements on both sides, and cited their importance for both Russia and NATO.¹³⁹ The exercise was also meaningful to NATO participants. As a Polish official described the experience:

"The goal of the exercise was to test the procedures in place for dealing with the event of an aircraft being hijacked by terrorists and it heading towards the territory of another state. The exercise phase, featuring real aircraft, took two days. On June, 7, a Polish aircraft taking off from Krakow played the role of a hijacked aircraft. After it deviated from the flight route and contact was lost, Polish fighters intercepted it and passed it over to Russian fighters. After a struggle in the cockpit, the terrorists were overcome but the navigation system of the aircraft was damaged. It was necessary for the Russian fighters to escort the aircraft back to Poland. One day later a Turkish aircraft deviated from its route over the Black Sea, contact was lost. A coordinated interception by Turkish and then Russian fighters was carried out."¹⁴⁰

¹³⁷ See description of the bilateral working group on counterterrorism:

<http://www.state.gov/p/eur/ci/rs/usrussiabilat/c37330.htm>.

¹³⁸ Dan Elliott, “Russia, U.S. Chase Jet in Hijack Drill,” Associated Press, August 9, 2010,

http://www.msnbc.msn.com/id/38628835/ns/world_news-europe/.

¹³⁹ See Nataliya Yarmolik, “Sovmestnoye ‘Bditelnoye nebo’” (Joint Vigilant Sky), *Krasnaya Zvezda*, June 7, 2011, http://old.redstar.ru/2011/06/07_06/1_06.html and Viktor Litovkin, “U istrebiteley Rossii I NATO—odna zadacha” (Russian and NATO Interceptors Have a Common Task), *Nezavisimaya Gazeta*, June 10, 2011, <http://ng.ru/printed/255822>.

¹⁴⁰ Zubrzycki, op. cit., pg. 137.

The exercise tested the work of the communications nodes created under the CAI system, including four in Russia, two in Poland, and one in Norway and Turkey, respectively with several computer terminals each.¹⁴¹ These nodes are connected through digital data links and voice coordination circuits.¹⁴² The three local coordination units are connected to one another through digital data links—and the same goes for the three NATO local coordination units. The digital data (and voice) exchange occurs only through the two command centers set up in Warsaw and Moscow—a NATO local coordination unit is not set up to receive digital data from its Russian flight information region counterpart, and vice versa.¹⁴³

As discussed in the introductory section of this chapter, two high-profile CAI exercises were conducted between U.S./NATO and Russia in August and September of 2013.¹⁴⁴ After Russia's invasion of Ukraine in 2014, the United States and NATO halted military cooperation with Russia. In practice, this meant a stop to activities in the U.S. Presidential Working Groups and the NATO-Russia Council. Planning for

¹⁴¹ Out of these nodes, six local communication units (LCU) facilitate the exchange of data from national ATC centers to one NATO coordination center (CC) and one Russian CC. Upon the detection of a potential “renegade,” a national ATC center informs its LCU which, in turn, informs the respective CC. The CC, in turn, informs its counterpart CCs. Tokarev, *op. cit.*

¹⁴² “NATO-Russia Air Space Monitoring System Has Initial Tests,” *Interfax*, April 24, 2009; “Rogozin hopes Russia-NATO center to share info on airspace incidents will open soon,” *Interfax*, April 24, 2009; press release of the Russian mission to NATO, April 27, 2009, *op. cit.*

¹⁴³ In the northernmost flight information region, the Russian LCU in Murmansk is configured for a voice communication capability with its NATO counterpart in Bodø, Norway. In the southernmost flight information region, the Russian LCU in Rostov is similarly set up to communicate via voice with its NATO counterpart in Ankara, Turkey. In the westernmost flight information region, the Russian LCU in Kaliningrad is also capable to communicate via voice with its NATO counterpart in Warsaw, Poland.

¹⁴⁴ See also “The People Keeping the NRC Safe From Air terrorism,” NATO-Russia Council Press Release, September 23, 2013, <http://www.nato.int/nrc-website/EN/articles/20130923-nrc-cai-operators/index.html>.

exercise Vigilant Eagle 2014 was ongoing at the time.¹⁴⁵ However, even before this halt, there was a recognition of the political and practical limitations of the CAI.

The Limits of the CAI

The CAI had promoted practical cooperation between Russia and some CEE states. Among new NATO members from the CEE, Poland has seen this project as very important. A Polish author pointed out that, "the CAI should be perceived as a way to start introducing NATO standards in Russia and as a confidence-building measures in NATO-Russia relations [and] it may also contribute to [...] the enhancement of the capabilities of the Polish air defense system with regard to the security of Poland's north-east air border and NATO's south-east air border."¹⁴⁶ To that end, "once the system reaches operational status, Poland will gain access to the airspace of Kaliningrad Oblast, Lithuania, Latvia, Estonia, and north-west Russia."¹⁴⁷

However, the efforts to expand CAI to other countries have not been successful. The Russians have apparently been interested in bringing the Baltic states into the program at least since 2007, but it is unknown why this never happened. Talks with Finland and Ukraine on their participation in the CAI were taking place before the 2014 halt to NATO-Russian cooperation.¹⁴⁸ Thus, if the project was restarted, one could definitely envision a networked system that would connect the mechanism through information exchange mechanisms developed through the RAI

¹⁴⁵ Donna Miles, "NORAD, Russia Hope to Build on Vigilant Eagle 13 Successes," American Forces Press Service, August 29, 2013, <http://archive.defense.gov/news/newsarticle.aspx?id=120694>.

¹⁴⁶ Zubrzycki, op. cit., pg. 138.

¹⁴⁷ Ibid.

¹⁴⁸ Ibid., pg. 139.

and ASDE, and lead to a gradual expansion of the information network to the whole of the Euro-Atlantic.

But questions would still persist regarding what the countries see on their respective common airspace pictures and the extent to which their militaries are engaged. Past CAI live exercises certainly involved military-to-military cooperation as NATO and Russian military aircraft had to coordinate a joint operation to intercept and escort aircraft. However, the chief limitation of the CAI was that the transmission of sensor data had been filtered to restrict it to tracking of civilian aircraft.¹⁴⁹ In effect, this confined cooperation to the exchange of data and communication between civilian air traffic controllers. Aside from contingencies such as a hijacked aircraft—which would require coordination with military officials on both sides—the CAI was not universally viewed as a potentially-transformational avenue of cooperation between U.S./NATO and Russian militaries.

Since its inception, the CAI was intended to exchange data on both “civil and military air traffic.”¹⁵⁰ A 2010 article quoted a NATO agency spokesman as saying that a two-step transition to the exchange of military air traffic data was envisioned within the next five years.¹⁵¹ This transition would arguably reduce the number of unnecessary air interceptions for visual identification. Similarly, a Russian official

¹⁴⁹ Brooks Tigner, “NATO, Russia Launch Joint Live Air Data Exchange System,” *Jane’s Airport Review*, May 11, 2010; Fowler, op. cit.

¹⁵⁰ Tokarev, op. cit.

¹⁵¹ Tigner, op. cit.

has stated that the “exchange of information may include both civil and military air traffic according to identified selection criteria.”¹⁵²

Analysts have pointed out that NRC CAI capabilities could leverage those of the NATO ASOCs. Some pointed out that “the CAI project could eventually plug into” CEE ASOCs in order to “fully exchange air situation data.”¹⁵³ Others argued that this selective networking could “form the basis for investigating an expansion of air monitoring capabilities to the domain of cruise missile warning and defense.”¹⁵⁴ Thus, CAI “could form the foundation of a NATO-Russian cruise missile defense concept that could also employ Russian S-family missiles.”¹⁵⁵

However, all these ideas for cooperation stumbled into the fact that the 2002 U.S. concept of a Russian ASOC was not a proposal for integrated air defense between NATO and Russia. It was a “peacetime” cooperation concept that would not go as far as air defense on the spectrum of cooperation.¹⁵⁶ As such, it would not require extensive negotiations with NATO allies and Russia’s role in NATO’s command and control. To be sure, the Ukraine crisis prevented the possible deepening of the information exchange—as well as its broadening to other countries. But it also underlined that neither Russia nor NATO were politically ready to have a

¹⁵² Tokarev, pg. 3.

¹⁵³ Tigner, op. cit.

¹⁵⁴ Dennis Gormley, “The Path to Deep Nuclear Reductions,” IFRI Proliferation Papers, Fall 2009, <https://www.ifri.org/en/publications/enotes/proliferation-papers/path-deep-nuclear-reductions-dealing-american-conventional>.

¹⁵⁵ Ibid.

¹⁵⁶ Ibid.

serious conversation about cooperative air/missile defense in the region—a possibility noted as far back as the 1997 Founding Act.¹⁵⁷

4.7. Conclusion

Since their inception in 1993, U.S.-led initiatives facilitating air situational data exchange recognized that this type of cooperation carries the potential to build confidence, predictability, and security between neighbors and within the broader Euro-Atlantic region. And, in present-day Euro-Atlantic region, there is an existing infrastructure for the real-time exchange of about airspace activity between NATO and non-NATO nations. But, as of present, this infrastructure is not sufficient to keep the peace in the whole of the Euro-Atlantic.

Summary

The RAI were bilateral projects between the United States and 17 states in the Euro-Atlantic. Started in 1994, they involved the development of airspace sovereignty centers, radar upgrades, emergency communication centers, and improvements in command and control. The initiative's goals were, among others, to “increase cooperation among CEE countries in [air traffic control and to] support a modernized CEE regional air sovereignty system that could be integrated into NATO systems, if desired in the future.”¹⁵⁸ For many CEE countries wishing to join NATO, RAI studies developed networks of ASOCs and radar systems such as BALTNET that could easily plug into NATO air defense when those countries joined NATO. But, while the

¹⁵⁷ “Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation,” Press Release, May 27, 1997, http://www.nato.int/cps/en/natohq/official_texts_25468.htm.

¹⁵⁸ PRD-36, Annex 5, pg. 1.

RAI studies succeeded in building cooperation among participant states, they had the unintended consequence of contributing to a strain in NATO-Russia relations. Some CEE states used their cooperation with U.S./NATO as a wedge against the Russians. Subsequently, their integration into NATO only introduced this dynamic into the Alliance's relationship with Moscow. Thus, if one were to assess the Clinton administration's two-prong policy of enlarging NATO while engaging NATO and Russia, its latter component has been unsuccessful.

The ASDE is a program involving eight NATO states with ten non-NATO nations engaged in reciprocal exchange of filtered airspace activity data. Created in 2001, this program was "designed to enhance mutual situational awareness, enhance transparency and minimize possible cross-border air incidents. [It] also provides Partner countries with insight into NATO procedures and offers valuable training experience."¹⁵⁹ While this program has been successful in providing increasing airspace awareness to participating states, similar to ASDE, this program has been controversial insofar as it prepared NATO aspirants for integration into NATO air defense. At least in the Georgia case, ASDE was used as wedge against the Russians. Instead of focusing on the explicit benefits of the program for transparency in times of conflict, some NATO states saw the program as a way to counter Russian aggression and express their support for Georgia.

Of all the projects, the CAI perhaps presents the most interesting case study. Proposed in 2002 by the United States as a "Russian ASOC," and building on past

¹⁵⁹ "Air Situation Data Exchange with Ukraine," NATO newsroom, June 16, 2009, www.nato.int/cps/en/natolive/news_7498.htm?selectedLocale=en.

U.S. efforts to engage Russia in the RAI, the program involves reciprocal exchange of filtered airspace activity data, emergency communication channels, and exercises involving fighter aircraft scramble and handoff. A NATO-Russia Council project that directly connects Russia and two NATO states (Poland and Turkey), it also facilitates cooperation with the United States. By directly engaging Poland and Russia, it is also symbolic of the new era of cooperation between Russia and a new NATO member. In fact, the Polish ASOC is the entity that developed the CAI's concept of implementation in Poland.¹⁶⁰ While CAI was nurtured to the final testing phase in 2013, it was halted in 2014. Ultimately, the rationale of common counterterrorism cooperation was not sufficient to keep it going through the crisis in Ukraine. Its halt also underlined the fact that that neither Russia nor NATO were politically ready to take the next step and have a serious conversation about cooperative air/missile defense in the region.

Analysis

From an institutional perspective, the airspace initiatives reduced uncertainty, but their overall structure evolved in step with the security environment in the region. The level of effectiveness of all these programs was high because they involved cooperation among states that were neighbors. Institutional concerns with regard to NATO initially drove the United States to launch the RAI studies outside of the Alliance, yet the projects were successful when implemented in cooperation with other NATO members. And, while the NATO-Russia Council was initially very effective in implementing the CAI, the halt to NATO-Russian engagement in 2014

¹⁶⁰ Zubrzycki, op. cit., pg. 138.

pointed to the challenge of placing initiatives within an institution that some have argued is ineffective.

All of the airspace initiatives—the Regional Airspace Initiative (RAI), the Air Situational Data Exchange (ASDE), and the Cooperative Airspace Initiative (CAI)—were developed from the ground up in bilateral programs with the United States and NATO. CEE states and the NIS used these programs to integrate into Western institutions and expand their military cooperation with NATO. As long as the NATO-Russia Council functioned, this approach to cooperation with Russia also seemed to work. To this end, the current halt in U.S./NATO-Russian airspace activities is the direct outcome of the ad hoc nature in which this arrangement was created. Moreover, the inability to bring the three networks—RAI, ASDE, and CAI—closer together has limited the potential impact of this arrangement.

Understandings by states of norms and values involved in cooperation with U.S./NATO played a vital role in the implementation of these projects. They signaled intent and facilitated common concepts of security among some, but not all, within the region. CEE states viewed their participation in the RAI studies as a part of their efforts to join the Western community of states. ASDE involved narrow security gains by states in an uncertain security environment. In turn, Russia wanted to see CAI as more than just a system to counter terrorism.

As outlined in Presidential Review Directive-36, the goals of airspace initiatives were numerous—some practical and some more lofty. The more immediate goal involved achievement of “airspace sovereignty” and cooperation among

neighbors. However, CEE states also viewed the arrangements as an opportunity to come closer to U.S./NATO. The use of ASDE, especially among NIS, has involved narrow security gains by states in an uncertain security environment. In turn, both U.S./Russia and NATO at various times wanted to see the CAI as more than just a system to counter airborne terrorism, and that narrow vision made the project much less political. However, there was no broader underpinning that saw CAI-facilitated transparency between U.S./NATO-Russia as a standard of behavior and no compelling normative underpinnings for bringing together RAI, ASDE, and CAI in a regional network of transparency.

In the case of airspace initiatives, the CEE sought to engage with U.S./NATO in order to push away from Russia. But, unlike Poland, the Baltics likely missed a useful cooperation opportunity in the CAI—an opportunity that could ultimately have had positive implications for their security. Georgia, in turn, sought to achieve the security gains of cooperating with NATO through ASDE even before that cooperation officially began. NATO-Russian cooperation through the CAI began only in 2002 when threat perceptions shifted toward mutual concerns about terrorism. However, the halt in implementing CAI reinforces the argument that technical cooperation is difficult in times of broader discord. NATO and Russia were also never able to deepen their cooperation—by extending transparency to military aircraft—in a way that would have significantly mattered for their mutual concerns about escalation.

All airspace initiatives increased the habit of cooperation between the participating bureaucracies. Yet, this impact was more widely felt in states with

smaller bureaucracies participating in RAI and ASDE. In turn, while its bureaucratic actors were proud of the fact that the CAI was insulated enough to have worked through the conflict in Georgia, this insulation raised questions about the transformational potential of this initiative and whether it could ever be expanded to the exchange of military information. The engagement of militaries the CAI case was its strongest element.

Finally, this case is a clear cut situation in which cooperative exploitation of information technologies promoted security of participating states. While states had unilateral capabilities to monitor airspace activity, the ability to cooperate on this with their neighbors was what made these arrangements so compelling.

In sum, sharing air situational data can be a powerful transparency measure among neighbors and within a broader region. As the Clinton administration's PRD-36 noted in 1993, this type of cooperation has great potential in "enhancing intra-regional habits of cooperation and reducing the likelihood or fear of war among participating states."¹⁶¹ However, to be an effective mechanism that eliminates escalation risks, a comprehensive airspace picture needs to be shared among states that have mutual security concerns and information gaps resulting from military operations in their common airspaces. A functional system that integrates efforts under the RAI, ASDE, and CAI—expanding cooperation between Russia and Belarus on the one side and the United States, Ukraine, Finland Baltic states on the other—

¹⁶¹ PRD-36, Annex 5, pg. 1.

could offer a greater degree of security to all actors. It could also help tackle threats such as airborne terrorism, including with weapons of mass destruction.¹⁶²

Unfortunately, more than 20 years since the start of RAI, a region-wide network of air situational data exchanges is still not in place and military aircraft operations are once again used for coercion and threaten regional escalation.¹⁶³ As Chapter 6 will discuss further, it may be essential to restart NATO-Russian cooperation on air situational data exchanges and ensure that it is deliberately aimed at enhancing predictability of military activities, transparency in conflict situations, and seeks to re-integrate Russia into Western institutions.

¹⁶² See Timo Hallenberg, Pekka Visuri, and Lars Nicander, “Securing Air Traffic: Case of CBRN Terrorism,” University of Helsinki Report, 2011, <http://www.helsinki.fi/aleksanteri/julkaisut/tiedostot/SecuringAirTraffic.pdf>

¹⁶³ Thomas Frear, Lukasz Kulesa, Ian Kearns, “Dangerous Brinkmanship: Close Military Encounters Between Russia and the West in 2014,” European Leadership Network Policy Brief, November 2014, <http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf> <http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf>

Chapter 5: Joint Engagement of Theater Air and Missile Threats

5.1. Introduction

In early 2010, the pages of the Russian-language defense publication *Independent Military Review* detailed the views of Russian military thinkers on the role of air and theater missile defense in Russian security. These perspectives, expressed in articles authored by independent analyst Alexander Khramchikhin and Carnegie Endowment's senior scholar Alexey Arbatov, highlighted differing perceptions of Russian military vulnerability and the resulting implications for Moscow's cooperation with the West. Coming on the heels of a shift in the U.S. missile defense strategy in Europe in September 2009, this exchange also exposed diverging understandings of the historical role of Soviet air defense and threats from U.S./NATO conventional weapons.¹

In his piece, Khramchikhin reminisced about the deterrent capabilities provided by the Soviet air defense system.² His concern was that, as Moscow rushed to develop ballistic missile defenses to counter elements of the newly-announced U.S. ballistic missile defense system in Europe, Russia's theater air and missile defense architecture—intended to deal with already existing threats—was in a state of

¹ The shift in U.S. missile defense strategy refers to the Obama Administration's announcement of the European Phased Adaptive Approach (EPAA). See "Fact Sheet: U.S. Missile Defense Policy: A Phased, Adaptive Approach for Missile Defense in Europe," The White House Office of the Press Secretary, September 17, 2009, <https://www.whitehouse.gov/the-press-office/fact-sheet-us-missile-defense-policy-a-phased-adaptive-approach-missile-defense-eur>.

² Aleksandr Khramchikhin, "Diagnoz: otechestvennaya PVO v razvale" (Diagnosis: Our Country's Air defense is in Disrepair), *Nezavisimoye Voyennoye Obozreniye*, February 19, 2010, <http://nvo.ng.ru>.

collapse. This meant that Russia was unable to defend against a U.S. attack with high-precision cruise missiles or a Chinese attack with short- and medium- range ballistic missiles.³ He noted that Russia deployed so few air defense systems (and the newest one, the S-400, was still so technologically deficient) that the United States would be able to destroy Russian nuclear launchers in a first strike while Europe-based U.S. missile defense would intercept Russia's remaining second strike nuclear missiles. Worse, Khramchikhin warned that Moscow's irrational foreign policy was likely to push it into a confrontational relationship with Washington—all while the effectiveness of Russia's conventional forces was in decline—and called for the development and deployment of a more effective layered air defense network.⁴

In a response, Arbatov countered that the past might of Soviet air defense system was a “myth” and instead only created “an illusion” that the Russian homeland was defended.⁵ While sizeable in the numbers of sensors to detect and shooters to counter a Western aerial attack, the Soviet air defense network had repeatedly proven ineffective.⁶ Arbatov posited that, in a U.S./NATO cruise missile attack, Russia could use countermeasures and jamming technology in combination with existing lower-altitude air defense systems. He noted that Moscow would have

³ Khramchikhin's concern focused on U.S. Aegis guided missile cruisers, armed with Tomahawk cruise missiles, set to be based in the Black Sea and the U.S. Navy's X-47 unmanned aerial vehicle system. Ibid.

⁴ He also noted that air defense needs to at least cover intercontinental ballistic missile bases in point defense. Aleksandr Khramchikhin, “Slabost' provotsiruet silnee, chem mosh'” (Weakness Provokes More than Might), *Nezavisimoye Voyennoye Obozreniye*, March 19, 2010, <http://nvo.ng.ru>.

⁵ Alexey Arbatov, “Strategicheskii surrealism somnitelnykh kontseptsii” (Strategic Surrealism of Questionable Concepts), *Nezavisimoye Voyennoye Obozreniye*, March 5, 2010, <http://nvo.ng.ru>.

⁶ Arbatov argued that, despite a stated goal to defend against nuclear attacks from U.S. bombers, Soviet air defenses couldn't defend against nuclear intercontinental ballistic missile or submarine-launched ballistic missile threats. He also noted that Khramchikhin overestimated the speed and effectiveness of U.S. Tomahawk missiles on Russian nuclear silos and command/control networks. Ibid.

ample time to detect Western attack preparations and that Russia's tactical nuclear weapons would provide a deterrent since they could target U.S./NATO forward-deployed forces.⁷ Because of that, Washington also understood that attacking Russia involved a significant risk of escalation and nuclear war. Arbatov thus argued that Russia did not require a layered air defense network that could counter an imaginary U.S./NATO threat, as Khranchikhin proposed, but a much less extensive architecture that covered a wide swath of territory and could be used in point-defense of nuclear, chemical, and other dangerous installations against attacks by irresponsible states and nonstate actors. He also noted the importance of cooperation with the West on air/missile defense issues.⁸

As this chapter will posit, U.S. missile defense in Europe was but one factor in Russia's growing perception of insecurity—it joined a list of things, including NATO expansion's to Russia's borders, the Alliance's increased interoperability and proven effectiveness in war fighting, and the development of U.S. offensive capabilities. A decade of decline in Russia's conventional forces left Russia with few credible conventional deterrence options, and the inability to reinvigorate two key arms control treaties—the Conventional Forces in Europe (CFE) treaty and the Intermediate-Range Nuclear Forces (INF) treaty—meant that whatever semblance of order was achieved after the end of the Cold War was now in jeopardy. Thus, cooperation between Russia and the West to counter conventional theater air and missile threats could have been a powerful mechanism to facilitate the predictability

⁷ Arbatov noted that, while Russia has a nuclear deterrent, "the scenario of massive and extensive aviation and missile raids by U.S. forces with precision weapons is a contrived threat." Ibid.

⁸ Ibid.

of military operations and alleviate concerns about aerial attack and coercion. Instead, cooperation between Russia and U.S./NATO on theater air and missile defense issues merely lumbered along before being halted in 2013 after both sides finally admitted that their “aims and objectives” for joint engagement on this issue were different.⁹ And, when the Ukraine crisis put an end to U.S./NATO-Russian military cooperation, Washington and Brussels realized that there were no procedures in place to deal with potentially escalatory encounters resulting from Russian air operations.

This chapter first discusses the evolution of the role of Soviet air defense toward the end of the Cold War and its impact on Russia’s perception of its vulnerability. It then focuses on NATO expansion and relevant air/missile defense elements that sought to mitigate Central and Eastern European (CEE) state concerns about perceived threats posed by Russia.¹⁰ It then details Russia’s implementation of collaborative Commonwealth of Independent States/Cooperative Security Treaty Organization (CIS/CSTO) in theater/air missile defense and its planning for defensive and offensive options against a U.S./NATO attack.¹¹ The chapter then notes the limited cooperation between U.S./NATO and Russia on these issues and its gaps. The conclusion offers a summary and an analysis of the role of these arrangements for cooperation and discord in region.

⁹ “NATO-Russia Council Practical Cooperation Fact Sheet,” NATO-Russia Council Press Release, October 2013, http://www.nato.int/nrc-website/media/104666/nato-russia_council_factsheet_final_2013-11-07_trilingual.pdf, pg. 8.

¹⁰ CEE states are Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania;

¹¹ CIS/CSTO states include Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

5.2. Losing a Perceived Deterrent

In the early 1980s, Soviet Air Defense forces were the second largest (out of four) Soviet military branches in terms of manpower.¹² The air defense system, which was highly integrated and redundant, was perceived as impenetrable. As Russia's head of air defense noted in 2009, the capability once "carried out a deterrence function on par with ... the nuclear arsenal."¹³ However, by the end of the Cold War, the Air Defense forces were demonized and the system was ridiculed for its ineffectiveness. This section focuses on evolution of the role of Soviet air defense toward the end of the Cold War and its impact on Russia's perception of its vulnerability.

Soviet Strategic Air Defense

As Soviet Marshal Georgy Zhukov wrote in his memoirs, "a heavy woe awaits a country, which is unable to counter an enemy's aerial attack."¹⁴ For the Soviet Union, World War 2 (WW2) officially began in June 1941 when German bombers attacked targets in and around the city of Kiev, present-day Ukraine. In the first hours of the Great Patriotic War, the Luftwaffe carried out bombing raids on Soviet aircraft amassed at airfields in the USSR's Western military district. The Luftwaffe quickly established air superiority and was able to maintain it because its

¹² John W. R. Lepingwell, "Soviet Strategic Air Defense and the Stealth Challenge," *International Security*, vol. 14, no. 2 (Fall 1989), pg. 64.

¹³ Quote from Lt. Gen. Sergey Razygrayev, deputy commander of VVS and head of PVO from March 2009 to May 2011 (relieved of command due to age) in interview to *Armeyskiy Sbornik*, October 2009.

¹⁴ Quoted in Mikhail Khodarenok, "Ot protivovozdushnoi k vozdushno-kosmicheskoi oborone" (From Air Defense to Air and Space Defense), *Voенно-Kosmicheskaya Oborona*, February 9, 2014, www.vko.ru/vuzy-i-poligony/ot-protivovozdushnoy-k-vozdushno-kosmicheskoy-oborone.

destruction of runways prevented the few surviving Soviet aircraft from taking off.¹⁵ The Soviet Union's experience with aerial warfare during WW2 was an important foundation for its extensive development and deployment of air defense systems during the Cold War.

Soviet military planners placed a premium on the development of an integrated air defense capability, comprised of a network of radar and advanced surface-to-air missile (SAM) systems and fighter jets, that would detect and counter a Western attack.¹⁶ The mission of the Air Defense forces was to maintain the integrity of Soviet airspace and to provide deterrence and defense against an attack with nuclear and conventional weapons. In the beginning of the ballistic missile age, Soviet air defense force commanders heavily lobbied for funding to support an “integrated strategic defense system, including air defenses, [anti-ballistic missiles], and anti-satellite programs, to be jointly employed in an ‘aerospace defense operation.’”¹⁷ These plans were curbed by the 1972 signing of the U.S.-Soviet Anti-Ballistic Missile Treaty, which limited the development and deployment of missile defenses to a ring of nuclear-tipped missiles around Moscow. With mutual assured destruction as the organizing principle of the strategic nuclear relationship between

¹⁵ In the first days of Operation Barbarossa, the Soviet Union lost between 1,000 and 2,000 aircraft, which left very few fighters to cover Soviet bombers during raids. A Luftwaffe Field Marshal would use the term “infanticide” to describe this. Lonnie O. Ratley III, "A Lesson of History: The Luftwaffe and Barbarossa," *Air University Review* (March-April 1983), www.airpower.maxwell.af.mil/airchronicles/aureview/1983/mar-apr/ratley.htm. For other numbers, see Richard C. Lukas, *Eagles East: The Army Air Forces and the Soviet Union, 1941-1945* (Tallahassee, FL: Florida State University Press, 1970) and Reina Pennington, “From Chaos to the Eve of the Great Patriotic War, 1922-41,” in Robin D. S. Higham, John T. Greenwood, Von Hardesty, editors, *Russian Aviation and Air Power in the Twentieth Century* (London: Frank Cass Publishers, 1998).

¹⁶ *History of Strategic Air and Ballistic Missile Defense (1945-1975)* volume 1 (Fort McNair, DC: U.S. Army Center of Military History, 1975), pg. 77.

¹⁷ Lepingwell, op. cit., pg. 68.

the United States and the Soviet Union, addressing issues related to the theater nuclear and conventional balance between NATO and the Soviet Union front took more immediate priority. With the shifts in the security environment, the Air Defense forces were periodically reorganized from defending the Soviet homeland to defending Soviet forces deployed in the European theater, and closer integrated with Soviet Army air defense systems that had low altitude air and missile defense capabilities.¹⁸

The most visible—to the Soviet leadership and the public—mission of Air Defense forces involved the guarantee of airspace integrity vis-à-vis Western aircraft.¹⁹ The Soviet Union sought to develop and deploy air defense systems with greater speed and altitude in a response to the development of U.S. bombers as well as reconnaissance aircraft. Generations of SAM systems were fielded. Some Western analyses acknowledge that air defense developments were also a response to Western aerial reconnaissance, despite also stressing that “new satellite technologies have long since reduced the need for reconnaissance by air breathing vehicles.”²⁰ This interaction persisted even after the United States ceased overflights of Soviet territory with spy aircraft like the U-2 and instead sought to fly close to Soviet borders with aircraft like the SR-71. The lingering practice carried out by reconnaissance aircraft was to briefly overfly and “paint” radar and SAM systems in order to gain an understanding of their vulnerabilities.

¹⁸ Lepingwell, op. cit. pg. 70.

¹⁹ It should be noted that the Soviet Union did not disclose to its public the persistence of Western overflights until the downing of the Gary Powers’ U-2 in 1960 demonstrated the effectiveness of its new air defense capability.

²⁰ Gordon MacDonald, Jack Ruina, and Mark Balaschak, “Soviet Strategic Air Defense,” in Richard Betts, editor, *Cruise Missiles: Technology, Strategy, Politics* (Washington, DC: Brookings Institution Press, 1981), pg. 69.

Russian analysts noted that, by the mid-1980s, “about 95 percent of Soviet strategic nuclear assets were directly covered by air defense missile forces: the Strategic Missile Force was 96 percent covered; sea-based strategic force were 100 percent covered; and air-based strategic forces were 88 percent covered.”²¹ However, Western analysts pointed out that, in a combat situation, real-time classification of aerial targets would pose a problem for the Soviet Union that could inflict pressures and trigger inadvertent escalation to nuclear use.²² As Barry Posen also wrote, “An air war over Eastern Europe would have activated the Soviet air defenses on a regular basis, under stressful conditions, in circumstances where the Soviets would have been more inclined to use everything they had out of fear that any given penetration could be particularly lethal.”²³

Analysts further surmised that the Air Defense forces were not effective against the threat of U.S. B1B bombers armed with cruise missiles.²⁴ The Soviet Union also had “essentially little or no capability against the well-known U.S. bomber threat, low-flying B-52s carrying [nuclear short-range attack missiles].”²⁵ Other difficult-to-plan for contingencies for Soviet military planners in the 1980s involved an attack by the U.S. Navy on Soviet bases on the Kola peninsula and in the Far East

²¹ Viktor Myasnikov, “The Air-Space Threat to Russia,” in Alexey Arbatov, Vladimir Dvorkin, and Natalia Bubnova, editors, *Missile Defense: Confrontation and Cooperation* (Moscow: Carnegie Moscow Center, 2013), pg. 126.

²² Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1989), pg. 49.

²³ “One practice that air-defense organizations like to pursue is to keep some of their radars mobile and some dormant so that the adversary lacks a complete picture of how well a given piece of terrain is surveyed. Constant “tickling” of Soviet air defenses would have forced these radars to emit, providing information that U.S. strike planners would have used to develop the best routes into the Soviet Union” Posen, op. cit., pg. 51.

²⁴ Lepingwell, op. cit., pp. 73-74.

²⁵ MacDonald et al, pg. 69. The nuclear SRAM was a system that the Bush 41 administration eventually cancelled.

with carrier-based aircraft and conventional cruise missiles that would “blind” early warning systems and knock out command and control nodes that would deny the Soviet Union an ability to respond.²⁶

The need to counter the threat of Western aerial attacks on key nuclear assets resulted in fielding of sophisticated integrated air defense infrastructure with multiple radar, SAM, and interceptor systems on its borders as well as the territories of East Germany and other Warsaw Pact members.²⁷ In addition to defense, the Soviet Union was planning for offense, including preemptive offensive operations in the theater. In an offensive conventional operation against NATO, its air defense forces would work in coordination with air, ground, and naval forces to achieve offensive momentum.²⁸ Its short-range ballistic missiles could be used in a conventional attack on Western airfields and nuclear weapons sites in Europe.²⁹ The Soviet Union and the Warsaw Pact also gave an important role to countermeasures that could facilitate the advance of Soviet air defense forces by jamming NATO radar.³⁰ Detection, recognition, and tracking remained a persistent challenge as offensive technology continued to evolve. The 1983 deployment of Pershing 2 medium-range ballistic missiles and the BGM-109G ground-launched cruise missiles in Europe by the United States and NATO compounded the detection challenge for the Soviet military. The concerns regarding these systems involved the speed of the ballistic missile and the difficulty in detection

²⁶ Lepingwell, *op. cit.*, pp. 70, 78-81.

²⁷ *History of Strategic Air and Ballistic Missile Defense*, *op. cit.*

²⁸ See Philip A. Petersen and Major John R. Clark, “Soviet Air and Antiair Operations,” *Air University Review* (March-April 1985).

²⁹ Dennis Gormley, *Missile Contagion* (Westport, CT: Praeger, 2008), pp. 23-25.

³⁰ Petersen and Clark, *op. cit.*

of cruise missile.³¹ These concerns were alleviated by the signing in 1987 of the Intermediate-Range Nuclear Forces (INF) Treaty.

The Air Defense forces, and the sizable air defense network, had a high political value for Soviet leadership because their presence “assur[ed] the population that the homeland [was] well-defended.”³² However, concerns about airspace sovereignty led several Air Defense interceptor aircraft to accidentally down two civilian Korean Air Lines (KAL) aircraft that found themselves in close proximity to Soviet military exercises. After the 1978 downing of KAL flight 902, which (somewhat miraculously) resulted in the deaths of only two individuals out of 107 passengers on board, the air defense forces’ missions shifted from homeland defense toward the defense of Soviet forces in the European theater.³³ But this shift was reversed after the 1983 downing of KAL flight 007, which resulted in the deaths of over 260 innocent people and caused immense embarrassment to the Soviet General Staff in addition to a high-profile row between the United States and the Soviet Union. In that incident, a Soviet interceptor mistakenly downed a passenger aircraft that accidentally strayed deep into Soviet airspace over the Pacific. The attention on Air Defense forces following the downing resulted in a reorganization that sought to re-focus on homeland defense and improve command and control.³⁴

The nail in the coffin of Soviet Air Defense forces was a 1987 incident in which a German teenager managed to fly through heavily-guarded Soviet airspace

³¹ One possible option for cruise missile detection involved forward defenses such as airborne early warning patrols, but the Soviet Union never had enough of these aircraft.

³² MacDonald et al, pg. 69. They also noted the “historical [...] Soviet emphasis on defense as well as bureaucratic pressure to maintain a deployed system.”

³³ Lepingwell, op. cit., pp. 70.

³⁴ Lepingwell, op. cit., pp. 70-71.

and land his Cessna aircraft on the Red Square. Soviet leader Mikhail Gorbachev used the incident to remove the Minister of Defense, the head of Air Defense forces, and other high-ranking military officials from power. To this day, despite the existence of any credible evidence, many of these military officials believe that Rust's flight (along with both downed KAL flights) was an intelligence operation intended to embarrass and undermine the Soviet military.³⁵ Their conspiratorial beliefs persist largely because Gorbachev's action assured the Soviet military's acquiescence to the conclusion of the INF treaty later that year. This treaty, alongside other U.S.-Soviet breakthrough arms control cooperation, marked the beginning of the end of the Soviet Union as well as the start of a period of deliberate reductions in and inadvertent decline of its conventional power.

Post-Cold War Challenges

The success of U.S. and NATO forces in the 1990-1991 Operation Desert Storm brought home the effectiveness of Western aerial strike capabilities against Soviet-developed air defense systems.³⁶ The victory against Iraq's Soviet-supplied air defense also showed that the Soviet "integrated, overlapping, and redundant air defense [concept] ha[d] serious vulnerabilities."³⁷ Emergence of stealthy airborne technologies further complicated Soviet air defense efforts, requiring additional

³⁵ For a discussion on the persistence of the embarrassment and anger related to the Rust incident, see Anya Loukianova, "A Cessna-Sized Hole in the Iron Curtain, Revisited," *Arms Control Wonk*, May 7, 2014, www.armscontrolwonk.com/archive/604381/a-cessna-sized-hole-in-the-iron-curtain-revisited/.

³⁶ U.S. and Russian forces have never directly confronted one another on the battlefield. However, since the Korean War, in which U.S. aircraft encountered and captured a key Soviet-supplied SAM system, Western conventional air assets have had multiple opportunities to engage Soviet-designed air defense networks in offensive operations.

³⁷ Benjamin S. Lambeth, *Desert Storm: The View from Moscow* (Washington, DC: RAND, 1992).

investment in methods to defeat it.³⁸ While the Soviet General Staff had foreseen the “revolution in military affairs” and the benefits that increases in information processing speed would bestow on U.S. conventional capabilities, seeing these capabilities in action was something quite different.³⁹ With the conclusion in 1990 of the CFE treaty, the previously large numbers of U.S. and NATO tactical aircraft in Europe had become much less of a threat to the Soviet Union.⁴⁰ While U.S./NATO conventional precision cruise missiles were not included in arms control agreements, there was hope that the military threat from the West had receded. To this end, the Russian military had not given thought or budgeted for defending against or countering the threat of an attack with high-precision weapons that was articulated in its 1993 military doctrine.⁴¹

Before the end of the Cold War, the Soviet military was faced with an expensive option to modernize air defense further, shift to point defense of military-significant facilities and objects, or shift to an airspace sovereignty mission.⁴² The changes in the European security environment and an economically perilous situation in Russia led to a debate on the future of the Air Defense forces. Despite some resistance in the Russian military leadership, the Air Defense forces were merged into the Russian Air Force in 1997. As part of this restructuring, the Air Defense forces’

³⁸ Lepingwell, *op. cit.*, pp. 64-100.

³⁹ See, among others, Mary C. FitzGerald, “The Russian Military’s Strategy for ‘Sixth Generation’ Warfare,” *Orbis*, vol. 38, no. 3 (Summer 1994), pp. 457-476.

⁴⁰ Air defense forces’ aircraft were also included in the CFE treaty. This further shifted the balances of forces—especially as those were withdrawn from forward deployed positions. Theater defenses also were developed—systems like the Buk. Viewed as purely defensive systems, these air defense systems were not a part of the CFE agreement. Russia also aimed at the integration of command posts in order to be able to command S-300 and lower-tier systems.

⁴¹ Alexei Arbatov, “The Transformation of Russian Military Doctrine: Lessons Learned from Kosovo and Chechnya,” George C. Marshall Center Paper, 2000, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA478927>, pg. 7.

⁴² Lepingwell, *op. cit.*, pp. 90.

aircraft and command and control assets were transferred to the air force while SAM assets were delegated to the immediate command of Russia's military districts.⁴³ The result of all of these transitions was difficulty on the part of the Russian military to carry out the homeland defense and airspace sovereignty missions.

Russia's withdrawal of forces and equipment previously stationed in CEE and East Germany exacerbated the airspace detection challenge as Moscow was unable to hold on to the vast airspace control architecture once deployed by the Soviet Union. During the 1990s, "it [was also] virtually impossible for Russian [military] commanders to be provided with a comprehensive [air picture]."⁴⁴ According to one Air Defense forces' assessment made in 1992, "if the Baltics, Moldova, Ukraine, Belarus, and Georgia were to completely withdraw from a unified air defense system, Russia would lose 1,000-1,500 km of extended air surveillance coverage."⁴⁵

Moscow tried to remedy this situation by concluding bilateral agreements with the newly independent states that retained elements of the Soviet air defense system and, in 1995, it stood up a CIS/CSTO Joint Air Defense System comprised of the militaries and respective infrastructures of most of the newly independent states.⁴⁶ By the end of the decade, however, only Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan remained as participants in this arrangements, with Ukraine and Uzbekistan cooperating with Russia on air defense in a bilateral format. While

⁴³ See a great discussion in Benjamin Lambeth, *Russia's Air Power in Crisis* (Washington, DC: Smithsonian Institution, 1999), pp. 174-185.

⁴⁴ Dennis J. Marshall-Hasdell, "The Defense of Russian Aerospace," in Higham et. al., pg. 200.

⁴⁵ Ibid., pg. 202.

⁴⁶ Interview with Head of Radiotechnical Troops Anatoliy Boyarintsev in "15 dekabrya—Den Radiotekhnicheskikh voisk VVS" (December 15 is the Day of Electronic Troops of the Air Force), Russian Ministry of Defense Press Release, December 15, 2010, <http://www.mil.ru>.

former Soviet states appeared to be open to the prospect of air defense cooperation, CEE states, especially Estonia, Latvia, and Lithuania, rejected the possibility outright. Instead, many of the CEE states began to accept U.S. and NATO assistance aimed at strengthening their airspace sovereignty.

While Russia was ambivalent with regard to U.S. plans to expand NATO to former Warsaw Pact states, the 1998 NATO bombing of Yugoslavia came as a cold shower. Moscow had spent most of the decade focused on an internal transition that was made possible by an improvement in political-military relations with the West. Toward the decade's end, Russia's conventional forces—especially the troops and assets related to air defense—were at their weakest point and were no longer forward deployed. The Yeltsin administration had carried out dramatic cuts to military manpower and had substantially reduced the budget allocations for the services. The funding was also perpetually delayed or absent, a trend which resulted in a precipitous decline in readiness.

In the wake of the 1998 NATO bombing of Yugoslavia, Russian military planners sought to shift to a “new emphasis on building up and modernizing Russia's conventional air defense, air force, and naval assets.”⁴⁷ As Alexey Arbatov explained, “[t]hese [systems] should be capable of inflicting sufficient losses on attacking NATO forces and bases to induce NATO either to stop its aggression, or to escalate it to the level of massive conventional warfare, including a ground offensive. This

⁴⁷ These included S-300 and S-400 SAMs, a new air superiority fighter..., new Yakhont-type naval missiles, as well as a new precision-guided, long-range, conventional Air-to-Ship Missile [ASM] to be based on heavy bombers. Arbatov, *The Transformation...*, op. cit., pg. 18.

would then justify Russia's first use of tactical nuclear weapons."⁴⁸ Moscow's siege mentality progressively worsened as NATO plugged some of the former Warsaw Pact members into its air defense network upon the admission of CEE states into NATO during the 1999 round of expansion. And, as it was dealing with the threat of separatism and terrorism in the Northern Caucasus, Russia also had to contend with the threat of a highly effective military alliance close to its borders.

5.3. NATO Expansion and Integration

With the end of the Cold War, and the dissolution of the Warsaw Pact, NATO found itself as an unrivaled military force in a politically and economically unstable region. This section focuses on the formidable air defense network created by the Alliance. It builds on the discussion in Chapter 4 of ways in which the Alliance expanded to the CEE, and discusses additional implications of this expansion for these countries' relations with Russia as well as the broader U.S./NATO-Russian engagement.

NATO's Integration through Air Defense and Command and Control

In the 1960s, NATO states placed their individual air defense assets under the operational command of Supreme Allied Commander Europe and constructed a common early warning system that was eventually integrated.⁴⁹ Still today, the

⁴⁸ Arbatov, *The Transformation...*, op. cit., pg. 18.

⁴⁹ See "Integrated NATO Air Defense System: the NIKE Years," in www.nikesystem.be, undated. As part of a broad reassurance package to the alliance, Washington proposed and the alliance adopted in 1978 a Long-Term Defense Plan that, among other measures, called for "integrated air defenses, more effective command, control, and communications, rationalized procedures for joint development and procurement of weapons." As discussed in David N. Schwartz, "A Historical Perspective," in John D. Steinbruner and Leon V. Sigal, editors, *Alliance Security: NATO and the No-First-Use Question* (Washington, DC: Brookings Institution Press, 1983), pg. 18.

integration of air defense and command and control assets is one of the ways in which NATO practices assurance among its member states. NATO's Integrated Air Defense System (NATINADS), which webs together sensors, command and control facilities, national air defense systems, and fighter aircraft, remains—much like it did during of the Cold War—the “cornerstone of Alliance solidarity and cohesion.”⁵⁰

As Chapter 4 discusses in greater detail, U.S. and NATO airspace cooperation with countries in the CEE in the 1990s paved the way for these states' integration into NATINADS.⁵¹ This cooperation facilitated the acquisition by these countries of radar systems, air sovereignty operation centers (ASOCs), and the upgrades of airfields. For instance, the three Baltic states constructed a jointly operated system called BALTNET, which consisted of radar sensors, airspace surveillance coordination centers, and a regional data and communications network. Russia perceived the development of ASOCs in CEE states as a NATO “defensive belt against [Russia] that could also be used for missile guidance or tracking purposes.”⁵² Moscow also expressed concerns about the command, control, communications, computers upgrade studies carried out by the United States in Hungary, Romania, and Slovenia.⁵³ With the expansion of NATO to CEE states, Alliance operations and infrastructure moved closer to Russia's borders.

⁵⁰ "NATO Air Policing," Supreme Headquarters Allied Powers Europe, undated, www.aco.nato.int/page142085426.

⁵¹ After the admission of the Baltic states, NATO even somewhat symbolically even added an E for “Extended” to the abbreviation NATINADS, briefly making it NATINAEDS.

⁵² Brooks Tigner, "NATO and Russia Near Air Traffic Information Exchange," *Jane's International Defence Review*, April 29, 2009.

⁵³ “Central European Air Requirements Central Focus,” *Jane's Defence Weekly*, May 13, 1998.

As an increasingly integrated network powered by information fused from old and new NATO members, NATINADS is a strong, yet unacknowledged milestone for the Alliance's expansion to the East. Its backbone is a unified Air Command and Control System (ACCS), which integrates from command to execution "all air operations, including the historically separate [in NATO] command structures for [tactical air] operations and air defense."⁵⁴ The procurement of ACCS systems has brought NATO members closer together since it was "financed by all the NATO nations, with a proportional return on industrial participation" and served as "an integration benchmark" for CEE NATO aspirants that sought to purchase or independently develop sensors, shooters, and command and control systems.⁵⁵

Utilizing the sensor fusion trend that began in the 1990s—which the Soviet Union once foresaw and feared—ACCS combines data inputs from multiple national sensors and sensor types and offers the formation and distribution of a comprehensive air picture among Allies.⁵⁶ The ultimate goal of the system is to have "a single core software baseline able to support air and missile defense," meaning that all allies will see the same aerial threats at the same time, thereby enhancing the ability for quicker

⁵⁴ "NATO's Integrated Air Command and Control System Advances to Next Stage," *Jane's International Defence Review*, July 5, 2007.

⁵⁵ Ibid. For example, a common type of radar developed by Italy's Finmeccanica was deployed in Poland, Czech Republic, Turkey, Greece, and Hungary. "Finmeccanica Cements Position As NATO's Air Defence Partner with Polish Radar Delivery," October 8, 2015, www.defense-aerospace.com/articles-view/release/3/167669/selex-delivers-air-defense-radar-to-poland.html.

⁵⁶ For example, if an aerial threat is detected by radars located in one of the Baltic states, this data is instantly transmitted to the Baltic Air Surveillance Network (BALTNET), run out of Lithuania, and then to NATO's ACCS through the Combined Air Operation Centre (CAOC) in Uedem, Germany. "ACCS will carry out this process in Sensor Fusion Posts (SFPs) and RAP Production Centers (PRCs). The former will accept inputs from military and civilian radars—in fixed, transportable and mobile configurations—and from passive sensors such as ESM systems, passive jammer location (PJM) equipment and bistatic radars." Mark Hewish, "Sensor Fusion for Air Defense," *Jane's International Defence Review*, April 1, 1993.

identification of aerial threats and engagement decisions.⁵⁷ And, because the system will “replace a wide variety of NATO and national air systems currently fielded across the Alliance,” ACCS will also stretch across Europe from the “northernmost point of Norway in the north of Europe to the easternmost point of Turkey in the south,” and include “around 300 air surveillance sensor sites interconnected with more than 40 different radar types.”⁵⁸ Thus, it will allow an even quicker detection and response to a perceived aerial threat in any NATO member state.

The political and military impact of this type of military cooperation among the 28 NATO members cannot be understated—it is a true feat of integration. But, as far as new NATO members were concerned, integration did not always make them feel secure and reassured.

NATO Expansion to the Baltics and Implications

Upon their 2002 entrance into NATO, Lithuania, Estonia, and Latvia lobbied for NATO-member air force presence on their respective soils. This resulted in the stationing of a rotating contingent of fighter aircraft on Zokniai airfield in Lithuania in 2004 performing an Air Policing mission. The practice of Air Policing is an important way in which NATO exercises its “collective use of fighter aircraft to

⁵⁷ “ACCS in Action: NATO Finally Takes Command of the Air,” *Jane’s International Defence Review*, November 6, 2015.

⁵⁸ “Around 300 air surveillance sensor sites interconnected with more than 40 different radar types; Around 16 basic standard interfaces, links and data types; around 550 external systems in 800 locations with 6,500 physical interfaces; 81 million square kilometers of theatre of operations (not including deployable capability) from the northernmost point of Norway in the north of Europe to the easternmost point of Turkey in the south; more than 13 million lines of integrated and delivered software code; 27 operational site locations and deployable components; 142 operator roles, more than 450 work positions and more than 60 servers; and around 200 commercial off-the-shelf products providing operational tools.” NATO Air Command and Control System (ACCS),” September 24, 2015, www.nato.int/cps/en/natohq/topics_8203.htm.

preserve the integrity of NATO airspace.”⁵⁹ In addition to air sovereignty and air defense roles, NATO Air Police aircraft have also “provided assistance to aircraft experiencing in flight emergencies, intercepted and escorted defecting aircraft, [and] shadowed hijacked aircraft.”⁶⁰ Unified under Supreme Allied Commander Europe, Air Police is comprised of NATO member state fighter aircraft, airfields, radar, and command and control infrastructure (ACCS).⁶¹ It is also a practice in which states with air force assets cover states without air force assets. For example, fighter aircraft from Italy and Hungary cover Slovenia, Italy and Greece cover Albania, and Luxembourg is protected by a Belgian fighter contingent.⁶² NATO also performs an air policing mission in Iceland.

In numerical terms, NATO expansion has meant the increase in the geographical size of the Alliance from 16 to 28 states. The CFE treaty cut the numbers of both fighter and bomber aircraft that NATO and the Warsaw Pact could respectively possess. However, former Warsaw Pact states were now joining NATO, which led to Moscow arguing that NATO was effectively “pocketing” previously-agreed upon quotas for conventional forces—all while moving Alliance infrastructure and strike assets closer to Russia’s borders.⁶³ In 1999, CFE signatories agreed to adapt the treaty (via the so-called Istanbul Commitments) to reflect these new post-Cold War realities and, as part of that agreement, Russia pledged to remove its peacekeeping forces from Abkhazia, South Ossetia, and Transnistria. While Russia,

⁵⁹ Bill Alexander, “NATO Air Policing—Past, Present, and Future,” *The Ramstein Sword*, April 2008.

⁶⁰ Charles Butler, “NATO Air Policing: Past, Present, and Future Roles” (master’s thesis, Air Command and Staff College, Air University, 2006).

⁶¹ Alexander, *op. cit.*

⁶² *Ibid* and “NATO Air Policing,” Supreme Headquarters Allied Powers Europe, undated, www.aco.nato.int/page142085426.

⁶³ Nikolai Sokov, “Russian BMD Anxieties Impact CFE treaty,” *WMD Insights*, March 2008.

Ukraine, Belarus, and Kazakhstan ratified this updated CFE treaty, Western states linked their ratification to Russia's implementation of its pledge to remove its forces, thus resulting in a stalemate that lingered as NATO expanded.⁶⁴

The United States attempted consultations within NATO to pave the way for updating the CFE treaty, but these were ultimately not successful in achieving consensus to break through the CFE stalemate. The resulting inability to include the Baltic states in the CFE agreement meant that—at least in theory—NATO was not bound by legal obligations with regards to its force deployments and their transparency in those states. In December 2007, Russia stopped fulfilling its obligations to exchange CFE information with other signatory states. The 2008 Russo-Georgian war further exacerbated the issue because Russia recognized South Ossetia and Abkhazia as sovereign states, and its forces thus remain on the territories of those countries.

To add to all of this, NATO countries greatly increased their interoperability by fighting in Iraq and Afghanistan over the last several decades. NATO operations in Libya in 2011 were praised for the Alliance's ability to exercise command and control over aerial strike operations that required a high degree of coordination among allies and partners.⁶⁵ And, while the overall numbers of NATO strike aircraft have not dramatically increased, the emergence of new capabilities and offensive systems has given even new NATO members like Poland a substantial tactical air

⁶⁴ Jeffrey McCausland, "The CFE Treaty, or: Can Europe do without cooperative security?" in Wolfgang Zellner, Hans-Joachim Schmidt, and Gotz Neuneck, editors, *The Future of Conventional Arms Control in Europe* (Hamburg: Nomos, 2009).

⁶⁵ Ivo H. Daalder and James G. Stavridis, "NATO's Victory in Libya," *Foreign Affairs* (March/April 2012), <https://www.foreignaffairs.com/articles/libya/2012-02-02/natos-victory-libya>.

capability for deterrence if not defense. The introduction of the F-35 Joint Strike Fighter, a stealthy aircraft with a significant range operated by a handful of allies, will also promote further interoperability among members and partners.⁶⁶ It will also be able to reach deeper into Russia's territory. In addition to manned aircraft, unmanned aerial systems extensively used in conflicts in Iraq and Afghanistan are another capability on NATO's side of the ledger.

In sum, NATO has fielded an unparalleled network of airspace awareness and command and control, which promotes practical cooperation among member states and contributes to their military integration. In addition, NATO can draw on U.S. conventional forces and its missile defense capabilities.

The Missile Defense and Precision Global Strike Dimensions

NATO has its own lower altitude air and missile defense assets, coordinated as part of NATINADS.⁶⁷ U.S. leadership—financial and technological—has historically been the key to NATO's defense of its airspace. The mainstay of the NATO SAM network has been the U.S.-developed Patriot air/missile system, stationed in and operated by Germany, the Netherlands, Greece, and Spain. Since 2010, Poland has hosted a rotating battery of Patriots, despite some Russian objections.⁶⁸

⁶⁶ JAPCC Editorial Board, "F-35, The Backbone of Next Generation NATO Operations," *Transforming Joint Air Power*, November 13, 2013, <https://www.japcc.org/f-35-the-backbone-of-next-generation-nato-operations/>.

⁶⁷ NATO Active Layered Theatre Ballistic Missile Defense (ALTBMD).

⁶⁸ "Building the Shield: NATO's European Anti-Missile Effort Bumps into Local Challenges," *Defense News*, March 21, 2011, www.defensenews.com/article/20110321/DEFFEAT06/103210309/Building-the-Shield.

One of the most challenging procurement projects for NATO has been the Medium Extended Air Defense System (MEADS)— an effort to replace the aging Patriot system. Begun during the Clinton administration and led by the United States, Germany, and Italy, MEADS has involved the development of air/missile defense capabilities of short and medium range. But, in an environment where Washington and Brussels did not perceive Russia as a conventional threat, developing capabilities some may have perceived as redundant proved difficult. Citing costs, the United States cancelled its participation in MEADS during the Obama administration. Despite this setback, Germany has worked hard to finish a MEADS launcher which can use both Patriot PAC-3 and shorter range German air defense missiles.⁶⁹

Some analyst have argued that Russia’s frustration with the CFE treaty regime was also related to the U.S. development of missile defense.⁷⁰ After the United States abrogated the Anti-Ballistic Missile Treaty in 2002, Washington began discussion within NATO to station elements of the U.S. missile defense architecture in Europe.⁷¹ During the Bush administration, this proposal featured a controversial “third site” in Poland, which triggered Russian threats to abrogate the INF treaty. While Washington did discuss transparency measures that could assuage Moscow’s concerns that the systems were not aimed against Russia and would not compromise its nuclear deterrent, the Bush administration was ultimately not successful in finalizing any practical arrangement.

⁶⁹ Jen Judson, "Lockheed, MBDA See NATO Future for MEADS," *Defense News*, September 18, 2015, www.defensenews.com/story/defense/show-daily/dsei/2015/09/18/lockheed-mbda-see-nato-future-meads/72390236/.

⁷⁰ Nikolai Sokov, “Russian BMD Anxieties Impact CFE Treaty,” *WMD Insights*, March 2008.

⁷¹ *Ibid.*

The 2008 announcement by the Obama administration of the shift in U.S. ballistic missile defense strategy also had implications for Europe and Russia. The capability to defend the Alliance from short-range and intermediate ballistic missile threats has also included the development of Aegis Ashore plans that would be based in CEE NATO members Romania and Poland.⁷² But, again, the Obama administration ultimately proved unable to negotiate an agreement with Russia that would offer Moscow cooperation or transparency. Efforts to make missile defense work while reassuring Russia that its retaliatory capability would not be compromised missed a much larger point about the change in the political order in Europe. In effect, U.S. diplomacy and security guarantees via the spread of missile defense infrastructure began to supplant past cooperative security approaches in the Euro-Atlantic, including long-negotiated arrangements like the CFE and the INF.

For over a decade, the United States has also sought to reduce its reliance on nuclear use and develop conventional options that would improve the speed of its offensive strike capabilities.⁷³ These programs, known as Precision Global Strike (PGS) added yet another concern for analysts in Moscow, arguably already preoccupied with the absence of an orderly system of conventional balance, U.S. missile defense deployments, and the vulnerability of its conventional forces vis-à-vis NATO. As early as 2006, U.S. analysts were arguing that the United States possessed conventional and nuclear superiority that would allow it to promptly disarm Russia,

⁷² Sydney J. Freedberg Jr., "Aegis Ashore: Navy Needs Relief From Land," *Breaking Defense*, July 2, 2015, breakingdefense.com/2015/07/aegis-ashore-navy-needs-relief-from-land/.

⁷³ See Dennis Gormley, "Securing Nuclear Obsolescence," *Survival*, vol. 48, no. 3, 2006.

hinting at the “end of [mutual assured destruction].”⁷⁴ Challenges of crisis stability arose to an even greater extent thereafter.

5.4. Russia’s Defensive and Coercive Responses

Russia’s policy of threatening to use tactical nuclear weapons in a conflict situation with NATO has arguably deterred NATO from a conventional attack on Russia. However, given a decade of decline in its conventional forces, Russia had very few defense or conventional deterrence options. Thus, Russia has sought to improve its air/missile defenses and countermeasures as well as to develop to develop precise systems that could fulfill conventional targeting missions in Europe and Asia.

Defending the Russian Homeland

As this chapter already noted, in the mid-1980s, the Soviet Air Defense forces were able to cover between 88 to 100 percent of the Soviet Union’s strategic nuclear forces. However, this number plummeted over the next decade. By 2002, “only about 36 percent of the strategic nuclear systems were covered (the Strategic Missile Force was 23 percent covered; sea-based Strategic Nuclear Forces were 100 percent covered, and air-based strategic nuclear forces were 13 percent covered).”⁷⁵ Russia’s efforts to rebuild air defense capabilities to cover its nuclear weapons assets from conventional and nuclear strikes remained a challenge.

Even in 2010, some Russian commentators questioned the country’s ability to defend against a U.S./NATO high-precision weapon or a cruise missile attack,

⁷⁴ Keir A. Lieber and Daryl G. Press, “The End of MAD? The nuclear dimension of U.S. primacy,” *International Security*, vol. 30, no. 4 (Spring 2006), pp. 7-44.

⁷⁵ Myasnikov, *op. cit.*, pg. 126.

especially a disarming strike directed against its nuclear forces.⁷⁶ Others pointed to NATO's 2011 operations in Libya and argued that that Russia needs to be ready to defend against a NATO and a U.S. air attack that would defeat Russian air defense to achieve air superiority and then commence aerial strikes on targets in the Russian homeland.⁷⁷

Like the Soviet Air Defense system, the Russian national air defense system is heavily oriented at a defense against a Western attack. The focus is on the protection of Moscow and St. Petersburg, naval facilities on the Kola peninsula and in the Far East, and facilities located close to the Black Sea.⁷⁸ The network consists of over a thousand air defense sites, including more than 350 primary early warning and radar locations.⁷⁹ Soviet legacy SAM systems have been modernized or replaced with the S-300 system series.⁸⁰ Despite the military's desire to field S-400 complexes with improved detection, tracking, and capabilities to intercept at greater ranges, their testing and deployment has been fraught with delays, and deployment only began in 2007.⁸¹ The development of S-500 was announced in 2009, with plans to enter into

⁷⁶ Khranchikhin, "Diagnoz: otechestvennaya PVO v razvale," op. cit.

⁷⁷ Mikhail Krush and Viktor Bezyaev, "Po vozdušnym tselyam luchshe strelyat iz zasady" (It is Better to Shoot Air Targets From an Ambush), *Nezavisimoye Voyennoye Obozreniye*, May 20, 2011, <http://nvo.ng.ru>.

⁷⁸ The combined strength of the Air Force (and Air Defense) force "included 2,800 aircraft and helicopters and over 100 divisions of ... S-300 and S-400" air defense complexes as of 2008. Anton Lavrov, "Reformirovaniye voyenno-vozdushnykh sil Rossii," (Reforming the Air Forces of the Russian Federation) in Mikhail Barabanov, editor, *Novaya Armiya Rossii* (Russia's New Army) (Moscow: CAST, 2010).

⁷⁹ This summary is based on imagery analysis conducted by Sean O'Connor and presented on the blog IMINT and Analysis, available at <http://geimint.blogspot.com/>, and in Sean O'Connor, *I&A*, vol. 9, no. 1, October 2011.

⁸⁰ Russian officials and military publications have touted the newer SAM systems as "not having analogues in the world." See, for instance, the August 2009 issue of *Rossiiskoye Voyennoye Obozrenie*, pg. 17, Vadim Solov'yev, "Rossiyskaya PVO vs amerikanskaya udarnaya aviatsiya" (Russian AD vs U.S. Strike Aviation) *Nezavisimoye Voyennoye Obozreniye*, February 20, 2009, <http://nvo.ng.ru>.

⁸¹ See Aleksandr Khranchikhin, "Samoobman oxvatil PVO," (AD is in Denial), *Nezavisimoye Voyennoye Obozreniye*, May 30, 2008, <http://nvo.ng.ru>. The S-400 "can prepare for movement in less

service by 2020.⁸² Russia has also pursued a high-level effort to develop and deploy new radar and command and control technologies in order to enhance airspace awareness and the detection of and response to airborne threats.⁸³ Russian officials have argued that this effort would be achieved without imports—especially from the West—and a reliance solely on Russia’s defense industry.⁸⁴ The emergence of these indigenous technologies has taken some time and, with proper funding, Russian radar and command and control networks have recently begun to receive much needed upgrades.⁸⁵

The bulk of Russia’s fighter aircraft fleet, manufactured during the Soviet years, had not been sufficiently maintained or properly upgraded during the decade of subsistence funding for the military. As part of the 2008 military restructuring, the number of brigades, bases, and air fields had been reduced to facilitate upgrades.⁸⁶ At the same time, Moscow has pushed for the development and testing of a fifth-generation fighter aircraft PAK FA, the production of new Su-35S and MiG-35S

than five minutes, and be ready for action less than five minutes after reaching a new deployed position.” “Each SAM battery must be able to operate autonomously if it loses tactical information normally supplied from a higher level of the air-defense system.” S-400 altitude coverage is between 30ft to 90,000ft. Miroslav Gyurosi, “Russia’s Almaz-Antey Displays Components of Newly Deployed S-400 Triumf SAM System,” *Jane’s Missiles & Rockets*, October 1, 2007.

⁸² This system, according to some military publications, is intended to counter “any ballistic missile and hypersonic aircraft.” Interview with Air Force chief Aleksandr Zelin, *Rossiiskoye Voyennoye Obozrenie*, August 2009, pg. 17.

⁸³ The lower radar limits were raised in certain areas, thus creating loopholes. The radar ceiling is kept sufficiently low only over key individual facilities and Moscow while blanket air defence missile protection of the Russian frontiers is not provided. All air defence assets around Moscow are integrated into one automated command-and-control (C2) system, which will allow future integration of more advanced weapons systems, such as S-500 SAMs. “Russia-Air Forces,” *Jane’s World Air Forces*, January 4, 2016.

⁸⁴ “Strazhi Russkikh Nebes,” (Guards of the Russian skies), *Krasnaya Zvezda*, August 12, 2006, <http://old.redstar.ru/>.

⁸⁵ The current effort is to have in service technologies that could detect at a distance of up to 1,500km and up to 600km. “V VKS postupit RLS s dalnostiui obnaruzheniya 1,5 tysyachi kilometrov,” RIA Novosti, December 12, 2015, http://ria.ru/defense_safety/20151212/1340764529.html.

⁸⁶ While the official numbers of the aircraft on Air Force roles have not been disclosed, some have noted that no less than a third of the aircraft had been cut as well. Lavrov, op. cit., pg. 64.

interceptors and the multirole Su-34 aircraft, and the modernization of other elements of its military airborne fleet.⁸⁷ The military has also indicated the importance of developing new Airborne Warning and Control System and reconnaissance aircraft, with a focus on both piloted and unmanned systems.⁸⁸ Action on this latter priority, however, has been slow.⁸⁹

In 2011, Russia attempted to stand up a unified system of air and space defense by bringing together air defense, missile defense, and early warning forces. These Air and Space Defense forces would include ballistic missile early warning, anti-missile defense, air defense, space monitoring, and space launch.⁹⁰ Initially, it was unclear whether assets such as S-300, S-400, short-range air defense systems, and air defense radar systems would fall under the command of this new entity, thereby disrupting existing air defense arrangements.⁹¹ And, because of the perceived deficiency of strategic thought within the Ministry of Defense or debates that would be transparent to Russia's security analysts, some argued that this most recent push may be destined to fail, repeating the fate of similar integration efforts that have taken place since the 1990s.⁹² The announcement in August 2015 that these Air and Space Defense Forces would be merged with the Air Force into one branch appears to have justified some of these concerns.

⁸⁷ Interview with Zelin, op. cit., pg. 14-16.

⁸⁸ Ibid.

⁸⁹ Moscow concluded an agreement to produce under license an Israeli Searcher UAV in 2011. See discussion in "Israel and Russia in UAV Deal," *Defense Industry Daily*, May 30, 2011, <http://www.defenseindustrydaily.com/Israel-and-Russia-in-UAV-Deal-05459/>.

⁹⁰ "1 dekabrya pervaya dezhurnaya smena komandnogo punkta voisk VKO zastupayet na boyevoye dezhurstvo," (December 1 is the First on Military Duty Shift of the Command Post of the ASDT) Russian Ministry of Defense website, December 1, 2011, http://function.mil.ru/news_page/country/more.htm?id=10827666@egNews.

⁹¹ Aleksandr Khranchikhin, "Vozdushno-kosmicheskaya oborona kak vozmozhnost," (Air Space Defense as an Opportunity) *Nezavisimoye Voyennoye Obozreniye*, March 4, 2011, <http://nvo.ng.ru>.

⁹² Ibid.

One Western analyst described the Russian air defense system as follows: “[d]espite the fact that there are many significant coverage gaps in the SAM network, the presence of numerous systems held in garrison as well as the incorporation of an air element into the strategic air defense system makes Russian airspace arguably the most heavily defended airspace on the planet.”⁹³ Thus, several decades after the collapse of the Soviet air defense system, Moscow is finally able to carry out some aspects of the homeland air defense mission. However, its key challenge is too much airspace to “ensure contiguous overlapping coverage of the entire nation.”⁹⁴ Given this need to at least cover some potential attack routes that could be used by U.S./NATO forces from the West and the South, Russia has also tried to create a buffer by cooperating with some of its CIS/CSTO neighbors.

Creating a Buffer

In addition to improving its capabilities to defend the homeland, Russia has also sought to deploy detection and defensive capabilities in CIS/CSTO. Belarusian officials have even acknowledged that they serve as a buffer for Russia—and joint operation of air defenses need to be able to cover both countries in case of an aerial attack from the West.⁹⁵ As of present, Russia deploys aircraft at air bases in Belarus, Armenia, and Kyrgyzstan. In Belarus, there are plans to establish a permanent

⁹³ O’Connor, op. cit., especially pg. 28-29. O’Connor also argues that “while it is true that some locations no longer enjoy strategic SAM protection, the overall impression that the network suffers purely because of a reduction in the number of deployed batteries is clearly flawed. In truth, in-garrison assets could easily protect many of the locations no longer actively defended if the need arises.” See O’Connor, pg. 25.

⁹⁴ O’Connor, op. cit., pg. 25.

⁹⁵ Asked whether the common network would guard the approaches to Moscow, the general said, “True, main routes between the East and the West go through Belarus and we cover up Russia’s western boundaries while covering ourselves.” “Belarus, Russia to Test Common Air Defense System in Autumn Drill,” Interfax-AVN, February 16, 2009.

Russian air base to offset, in part, the Belarusian military's inability to patrol its airspace.⁹⁶ In addition, Russian forces are present in Abkhazia, South Ossetia, and Transdnistria.

The CIS/CSTO Joint Air Defense System is comprised of the militaries and respective infrastructures of its member states.⁹⁷ CSTO officials have indicated that a total of three air defense systems were planned within the organization, including “between Russia and Belarus, between Russia and Armenia in Transcaucasia, and a unified air defense system in the Central Asian region.”⁹⁸ The latter presumably to include Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.⁹⁹ Moscow has promoted the creation of a regional air defense system in Central Asia since 2008.¹⁰⁰ Unlike cooperation within NATO, however, this would not include extensive joint procurement and integration efforts among the six participating states, with the exception of Russia and Belarus.¹⁰¹

⁹⁶ “Belarus Armed Forces,” *Jane’s Sentinel Security Assessment-Russia and the CIS*, December 10, 2015.

⁹⁷ “Belarus, Russia to Test Common Air Defense System in Autumn Drill,” *Interfax-AVN*, February 16, 2009. Today, the stated goals of the CSTO system are as follows: protection of borders of participant states; implementation of joint control of the use of participant state airspaces; notification of participant states regarding the airspace situation, warning of missile and air attack; management of coordinated activities of air defense forces of state participants in defense against airspace threats. Officials have also “accentuated the network’s possibilities in peace times, as [participants] might use the system to assist each other’s aircraft in distress.”

⁹⁸ “CSTO Plans to Create Three Regional Air Defense System—Bordyuzha,” *Interfax AVN*, February 6, 2009.

⁹⁹ Kazakhstan has focused more on protecting its largest cities from terrorists that might use hijacked aircraft. S-300 advanced medium-range surface-to-air missiles (SAMs) guard airspace over major population centres. Communication between civilian airport traffic control authorities and the air defence command has also been improved and all Kazakh-based civilian pilots have been vetted.” “Kazakhstan Air Force,” *Jane’s Sentinel Security Assessment-Russia and the CIS*, October 30, 2015.

¹⁰⁰ “CSTO Holding Negotiations on Central Asian Air Defense System,” *Interfax*, March 2, 2010.

“Russia to Allocate Over 20 Million Rubles for Modernization of CIS Missile Defense System,” *Interfax*, August 14, 2008.

¹⁰¹ Since they are technically already a Union State.

The foundation of the CIS/CSTO Joint Air Defense System is the Russo-Belarusian cooperative network, based on the S-300 system.¹⁰² In 2005, Russia delivered an upgrade to this system that was armed with missiles with an ability to strike targets at up to 90km, and thus its coverage could extend into Polish airspace and also be used on targets in that country.¹⁰³ In response, Belarusian officials have argued that Poland's F-16 aircraft could be used in an offense against targets in Belarus.¹⁰⁴ In an attempt to assuage NATO concerns at the time, Russian Defense Minister Sergei Ivanov stressed in 2005 that the systems were "purely defensive" and "the deployment was not directed against" NATO.¹⁰⁵ In 2008, Belarus stated its intent to procure the S-400 SAM from Russia.¹⁰⁶ Political officials in both countries argued that this upgrade would be "a logical response to the hasty decision to deploy missile defense elements in Poland, which is viewed as a threat to Belarus, Russia, and the whole of Europe."¹⁰⁷ However, the conversations between Russia and Belarus were cooled and it was reported in 2009 that the transfer would not take place.¹⁰⁸ As of 2015, it still has not been completed, which suggests that Moscow either does not

¹⁰² Vladimir Petrov, "S-400 Will Form Core of Joint Russo-Belarusian Air Defenses," *Jane's Defence Weekly*, April 17, 2009 and Aleksandr Aleksandrov, "Bez oblakov nad sodruzhestvom," (Without Clouds Over the Union) *Krasnaya Zvezda*, February 9, 2010.

¹⁰³ Belarusian officers have noted that they have learned to use the S-300 system against ground targets as well. "Russia Completes S-300PS Deliveries to Belarus," *Jane's Missiles and Rockets*, July 1, 2006.

¹⁰⁴ "However, Belarusian officials point out that the 48 Lockheed Martin F-16C/D Block 52M+ multirole fighters that Poland ordered in 2004 have significant offensive capabilities and could potentially threaten targets on Belarusian territory. The newly deployed S-300PS will extend Belarus air defense coverage 150km farther to the west. "Russia Completes S-300PS Deliveries to Belarus," *Jane's Missiles and Rockets*, July 1, 2006.

¹⁰⁵ "Russia Completes S-300PS Deliveries to Belarus," *Jane's Missiles and Rockets*, July 1, 2006.

¹⁰⁶ "Belarusian Cadets to be Trained in Operating Advanced Air Defense Systems," *Belapan*, June 8, 2010.

¹⁰⁷ "Russian-Belarusian Joint Air Defense System is Response to U.S. Missile Defense Plans—Official," *Interfax*, August 19, 2008.

¹⁰⁸ Vladimir Mukhin, "Vozdushnaya oborona bez Triumfa" (Air Defense Without "Triumph)," *Nezavisimaya Gazeta*, May 22, 2009, <http://nvo.ng.ru>.

trust Brest with a more advanced (and potentially escalatory) air defense capability or it is concerned with Western ability to reconnoiter the system's characteristics.

The cooperation within the CIS/CSTO does not even come close to the degree of integration among NATO countries. However, coupled with installations in Kaliningrad, the arrangement has allowed Russia to expand radar and airspace awareness coverage of Europe and Central Asia. In addition, creating a buffer that would facilitate defense and forward-deployment of air defense systems has also come with Russia's development of offensive systems to counter U.S./NATO conventional superiority.¹⁰⁹ Figure 8 depicts the current bloc-to-bloc dynamic in the region, including original NATO states (blue circles), new NATO states (blue squares), and CIS/CSTO states (red stars).

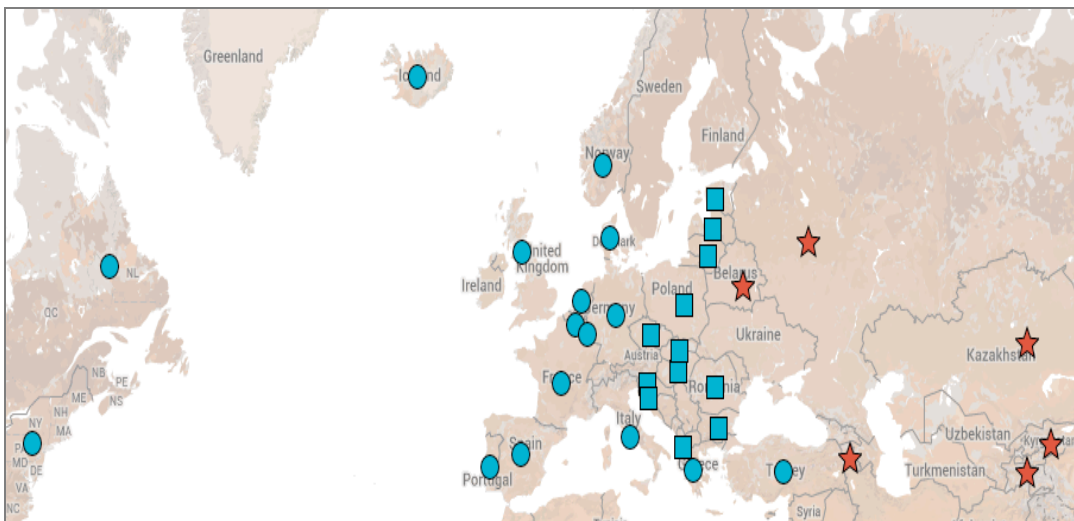


Figure 8: NATO and CSTO Members. (Map data: Google.)

¹⁰⁹ “Russia Air Forces,” *Jane’s World Air Forces*, January 4, 2016. “There is a Joint CIS Air Defence System (JADS) although it is unclear whether it provides a useful addition to the missile tracking system operated by the Russian Aerospace Defence Forces. Indeed, some have argued that the Commonwealth of Independent States (CIS) JADS only exists on paper and is merely an international agreement allowing Russia to retain some of the former Soviet air defence assets that remain in the CIS area.”

Improving Anti-Access/Area-Denial Capabilities

As discussed throughout this thesis, Russia has compensated for the weakness of its conventional forces with a reliance nuclear weapons. In part, this was a response to the evolution of modern aerial warfare campaigns as modeled by the United States (alone or in coalitions) in Iraq, Kosovo, and other regional conflicts. In these campaigns, the first cruise missile salvos would destroy or disable air defense networks, command and control infrastructure, and critical communication nodes. They would seek to destabilize the prevailing structure of political power in those countries. Once this structure was destabilized, the countries would descend into political chaos.

To improve its ability to deter NATO, Russia has developed short-range ballistic and cruise missile systems that could be used for conventional targeting missions, including in Europe. With the nascent U.S. deployment of missile defense infrastructure in Europe, Russia needed to have the ability to target military installations in Poland and the Baltic states, including command and control nodes, airfields, and missile launchers. But this has meant that Russia has needed to exit treaty arrangements that could constrain the development of these capabilities.

As early as 2000, Russian officials began saying to their U.S. counterparts that Moscow was considering a pullout from the INF treaty.¹¹⁰ To be sure, Mikhail

¹¹⁰ Nikolai Sokov summarized this internal debate as follows in a 2006 article, “Some attribute it to institutional and economic interests, for example, those of defense industry firms eager for new contracts. Others [attribute] Russian proposals to deploy [conventionally-armed] intermediate-range missiles to the desire of Russian military experts to acquire a counter to American deployment of missile defenses in Europe.” Nikolai Sokov, “Russia Military Debates Withdrawal from the INF Treaty,” *WMD Insights*, October 2006.

Gorbachev's seeming concessions to the West under the INF, including the destruction of the much shorter-range Oka (SS-23) missile that technically did not fall under the treaty, were never fully accepted by some in the Russian military. This time, treaty critics noted that Western assets, air- and sea-launched conventional cruise missiles were not restricted by the arrangement and could threaten Russia. The system that would "close the missile coverage gap caused by Russia's participation in the INF treaty" was the Iskander.¹¹¹ In 2007, Russian officials noted that if the Iskander were to be deployed in Belarus and Kaliningrad, some of its INF-compliant missiles would be able to reach missile defense and radar sites in CEE. If Russia were to withdraw from the INF, however, this would facilitate the development of a missile with a greater range that could reach targets in the CEE from Russia proper.

The conflict in Georgia in the summer of 2008 demonstrated Russia's atrophied military capabilities to a Western audience. While the Russian military managed to quickly overcome the resistance of the small country, it was ridiculed for inadequate coordination. Worse, Georgia's use of its own Soviet-origin air defense systems proved surprising and lethal for a handful of Russian aircraft.¹¹² This resulted in Russian forces conducting a campaign to destroy radar and SAM sites in order to establish air superiority. In addition, the Russian military appeared to test the Iskander on ground targets in Georgia.¹¹³

¹¹¹ Iskander would close the coverage gap at 300-500km (190-310 miles) previously intended for coverage by the Oka. "Russia to Compensate for INF Losses with Iskander Missile System," RIA Novosti, November 14, 2007.

¹¹² Aminov, *op. cit.*

¹¹³ Andrew Roth, "Deployment of Missiles is Confirmed by Russia," *New York Times*, December 16, 2013, www.nytimes.com/2013/12/17/world/europe/russia-deploys-missiles-in-western-region.html.

Another area of extensive development has been jamming technologies. Today, Russian military officials view electronic warfare and electronic countermeasures as an inexpensive, yet key determinants in the conduct and outcome of combat.¹¹⁴ They posit that “new developments allow to achieve information dominance over the adversary by the suppression of its [command, control, communications, and computer, intelligence, surveillance, and reconnaissance] systems, achieve air superiority by neutralization of enemy radar, and deal with many other tasks.”¹¹⁵

5.5. NATO-Russian Cooperation and Discord

Between 2004 and 2013, NATO and Russia cooperated on theater air and missile defense issues, but this cooperation was not progressing quickly. Despite the abundance of technical ideas for how information-sharing and joint response to threats could work, there were practical obstacles to more deeper engagement. This section discusses some of these issues.

Disagreement over Joint Projects

Despite rhetoric by Moscow, Washington, and Brussels regarding the desirability of practical military cooperation, opportunities for such activities have been scarce since the end of the Cold War. Since 1995, when Russia’s then-President Boris Yeltsin reluctantly allowed Russian peacekeepers to operate under U.S.

¹¹⁴ Viktor Khudoleyev, "Na sluzhbe bezopasnosti efira," (At the Duty of Spectrum Safety), *Krasnaya Zvezda*, April 15, 2010, http://old.redstar.ru/2010/04/15_04/2_01.html.

¹¹⁵ Oleg Grozny, "Splav opyta i novykh tekhnologiyi," (Melding of Experience and New Technologies) *Krasnaya Zvezda*, April 14, 2015, <http://www.redstar.ru/index.php/news-menu/vesti/iz-vvs1/item/23087-splav-opyta-i-novykh-tekhnologij-i-boevogo-primeneniya-vojsk-reb>.

command in the Former Republic of Yugoslavia, Moscow has resisted security engagement with NATO that would put Russian forces under Western military authority. Over the last decade, new opportunities for military cooperation have been confined to quite successful (albeit limited in their visibility and broader impact) joint activities between Russian and Western navies to counter maritime piracy as well as limited counterterrorism efforts

In the 1997 NATO-Russia Founding Act, the parties pledged that Brussels and Moscow would “include exploring possible cooperation on appropriate air defense related matters.”¹¹⁶ But, as with airspace initiatives discussed in Chapter 4, practical cooperation did not take place until after 2002 when the NATO-Russian relationship was reinvigorated and refocused on counter-terrorism. While some experts had proposed cooperation focused on cruise missile defense issues that would involve air defense assets, NATO and Russia have not cooperated on air defense or cruise missile defense issues.¹¹⁷ Cooperative ballistic missile defense was also viewed as easier in technical terms since “the estimated trajectory of a ballistic missile can be accurately predicted using Kepler’s laws and classical orbital mechanics. Therefore, fewer and less-frequent sensor updates are required for tracking missiles than aircraft.”¹¹⁸

It should also be noted that there is competition between the respective Russian and U.S./NATO country defense industries with regard to the export of air

¹¹⁶ “Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation,” May 27, 1997, http://www.nato.int/cps/en/natohq/official_texts_25468.htm.

¹¹⁷ See Dennis Gormley, “NATO and Cruise Missile Defense,” IFRI Proliferation Papers, Spring 2012, <https://www.ifri.org/en/publications/enotes/proliferation-papers/cruise-missiles-and-nato-missile-defense-under-radar>.

¹¹⁸ Patrick O’Reilly, “Universal Data Fusion: Enabling Cost-effective US/Russia/NATO Cooperative Missile Defense,” Atlantic Council Issue Brief, September 2013, <http://www.atlanticcouncil.org/publications/issue-briefs/universal-data-fusion-enabling-cost-effective-us-russia-nato-cooperative-missile-defense>.

defense systems and countermeasures to other countries. The cooperative air defense task would involve some potential disclosures of information on both offensive and defensive radar and missile systems that both U.S./NATO and Russia would not find desirable. Additional disclosures regarding the performance of the systems could probably violate confidentiality of commercial firms and could have also been damaging to both sides' export prospects.

Cooperation on Theater Ballistic Missile Defense

On theater ballistic missile defense, cooperation began in earnest in 2003, when NATO and Russia completed an interoperability study that analyzed how their air and missile defense assets could work together.¹¹⁹ Over the following several years, practical cooperation involved a multi-stage command post exercise, including on-site computer simulations at facilities in the United States, the Netherlands, Russia, and Germany. The exercises were “not linked to any geography or existing threats” and “not based on possible actual cooperation of the parties.” This allowed unfettered cooperation in which data on the capabilities of “both Russian and NATO [air defense] and [ballistic missile defense] assets” were input into the simulations.¹²⁰

After the Georgia crisis briefly halted engagement between NATO and Russia, the cooperation was restarted in 2010 to discuss and rehearse practical aspects of missile defense in Europe. In an attempt to develop a Comprehensive Joint Analysis, NATO and Russia conducted a computer-assisted exercise that was much

¹¹⁹ "NATO-Russia TMD Cooperation in New Phase," *Arms Control Today* (June 2003), <http://legacy.armscontrol.org/node/3280>.

¹²⁰ General-Major I. Sheremet, “Russia’s Assessment of NATO-Russia Theater Missile Defense exercise,” presentation at International BMD Conference, Moscow, 2012.

more sophisticated than any of their previous cooperative exercises. Experts have praised this cooperation, aimed at working out how the missile defense systems would handle mutual threats from rogue theater ballistic missiles. Some have argued that deepening cooperation on ballistic missile defense issues could "contribute decisively to the demilitarization of international relations in the Euro-Atlantic area."¹²¹

In the first term of the Obama administration, U.S. government officials were in extensive discussions with Russia on ballistic missile cooperation. This continued the efforts of the Bush administration aimed at sharing data from radar systems and creating a center that would fuse information. The rub was that, during both the Bush and Obama administrations, Russia expressed its concerns that U.S.-deployed missile defense systems would pose a threat to Russia's nuclear retaliatory capabilities. To mitigate that, Moscow pushed for a system of joint decision-making on missile issues that would bring Russia and NATO closer together. However, internal pressures in NATO with regard to the prospect of a Russian veto of NATO activities and U.S. reluctance to share deeper technical information with Russia (for fear that it would not be secure) ultimately doomed the prospect of a cooperative solution.

¹²¹ An arrangement focused on dealing with the threat of medium- and intermediate-range ballistic missiles, the group argued, "would enhance the threat picture and launch information available to each of the parties and provide a framework for coordinating responses among the parties to ballistic missile attack to the extent the parties wish to do so." Euro-Atlantic Security Initiative, "Missile Defense: Toward a New Paradigm," EASI Working Group Paper, February 3, 2012, <http://carnegieendowment.org/2012/02/03/missile-defense-toward-new-paradigm/9cvz>.

In 2013, it became clear that the window of opportunity for cooperation had been slammed shut.¹²² As an October 2013 fact sheet stated, “there are differences in Russian and NATO approaches towards the aims and objectives of building a missile defense in Europe. As a result, progress on the [Theater Missile Defense Computer Assisted Exercise] After Action Report and the Joint Analysis of the future framework for Russia-NATO missile defense cooperation, has been limited so far.” In 2014, and as of present, all military-military cooperation between NATO and Russia has been halted.

5.6. Escalating into Conflict

Despite rhetorical assurances by both U.S./NATO and Russia that they didn’t see a future in which they would resolve their conflicts by force, Washington, Brussels, and Moscow began to engage in contingency planning against one another over the last decade. This section focuses on the challenge of defending the Baltics and then transitions to the challenge of mitigating Russia’s coercive aerial incursions.

Baltic Defense Scenarios

A 2004 RAND report that explored a hypothetical conventional conflict offered a rare unclassified example of U.S./NATO perception of threats from Moscow by detailing an anti-access scenario in which Moscow utilized coercion in an

¹²² As an October 2013 fact sheet stated, “there are differences in Russian and NATO approaches towards the aims and objectives of building a missile defense in Europe. As a result, progress on the TMD CAX After Action Report and the Joint Analysis of the future framework for Russia-NATO missile defense cooperation, has been limited so far.” NATO-Russia Council Practical Cooperation,” Fact Sheet, October 2013, http://www.nato.int/nrc-website/media/104666/nato-russia_council_factsheet_final_2013-11-07_trilingual.pdf, pg. 8.

attempt to “separate the three Baltic states [...] from NATO.”¹²³ The scenario envisioned Russian involvement in the Baltic states on the pretense of separatists sentiments in the Baltics.¹²⁴ The involvement triggered a strong NATO response which, in turn, provoked a political crisis in Russia.¹²⁵ The scenario presumed that, in an attempt to “save face,” the Russian government would order the mobilization of forces to launch an attack that would isolate and overrun the Baltic states. While also preparing for a potential NATO counterattack, Russia would “present NATO with a fait accompli that will lead to a negotiated settlement acceptable to Russia.”¹²⁶

In the scenario, Russia utilized its mobile air defense systems and elements of the Russo-Belarusian air defense network to aid in a rapid ground offensive that was facilitated, in part, by its anti-access/area denial capabilities. Working in combination with short-range ballistic missiles, the air defense systems created an integrated air defense system that covered the Baltic states to prevent access by U.S./NATO air forces. The report noted, “the long range of [air defense surface-to-air missile systems] would force NATO [intelligence, surveillance, and reconnaissance] and [command and control]/battlefield management aircraft to stay back from the area of operations, thus complicating the search for Russian mobile [short range ballistic missiles] and [surface to air missiles] and the detection of penetrating Russian

¹²³ Eric V. Larson, Derek Eaton, Paul Elrick, Theodore Karasik, Robert Klein, Sherrill Lingel, Brian Nichiporuk, Robert Uy, John Zavadil, *Assuring Access in Key Strategic Regions: Toward a Long-Term Strategy* (Washington, DC: RAND, 2004), pg. 65.

¹²⁴ Estonia has 25 percent of Russian speakers, Latvia 27 percent, and Lithuania 6 percent, respectively. Lora Chakarova, “Baltic States Join Forces to Resist Russia,” *Jane’s Intelligence Review*, January 9, 2105.

¹²⁵ Larson et al, pg. 67.

¹²⁶ The scenario also assumed a month-long mobilization effort on part of the Russian military that gave ample warning time and preparation to U.S. and NATO. However, arguably, in a crisis, the restraint and ample warning time criteria would not hold as effectively. Larson et al, pp. 67-68.

aircraft. As a result, a lengthy—and by no means certain—[a suppression of enemy air defenses] campaign might be required before some U.S. anti-access capabilities can be utilized effectively.”¹²⁷

Written in 2004, the RAND report judged that Russia’s ability to deny access was “protracted” at best due to “the chronic and difficult-to-reverse weaknesses of the Russian military.”¹²⁸ Given this scenario, an issue of major importance to the United States was the protection airfields and air bases in Poland since these would host the bulk of U.S./NATO tactical aircraft.¹²⁹ And, the chief implication of this scenario for U.S. military planners was the importance of forward deployment of U.S./NATO conventional forces not far from Russian borders.¹³⁰ One of the scenario’s key assumptions involved the restraint by Russia and U.S./NATO of strikes on one another’s territories since those could potentially escalate the conflict.¹³¹

By the fall of 2009, the scenario was upstaged by reality. That year, Russian military exercises featured an invasion and occupation of the Baltics as well as nuclear use on CEE targets, including Warsaw.¹³² In the wake of these exercises, the Baltic states requested contingency plans from NATO. The plans, dubbed Eagle Guardian, were then drawn up to defend both Poland and the Baltic states from a

¹²⁷ Larson et al, pg. 81.

¹²⁸ Larson et al, pp. 72-77.

¹²⁹ Finally, of major importance was “full access to ... ports, air bases, highways, and railroads” especially in Germany, the Netherlands, Belgium, and Poland as well as potential contributions of “capable heavy ground and tactical air units” to operations, especially on the part of the United Kingdom, Germany, and France, as well as their interoperability. Larson et al, pg. 83-84.

¹³⁰ Larson et al, pg. 82.

¹³¹ Larson et al, pp. 67-68.

¹³² Edward Lucas, “The Coming Storm: Baltic Sea Security Report,” Central for European Policy Analysis Security Report, 2015, [http://cepa.org/sites/default/files/styles/medium/Baltic%20Sea%20Security%20Report-%20\(2\).compressed.pdf](http://cepa.org/sites/default/files/styles/medium/Baltic%20Sea%20Security%20Report-%20(2).compressed.pdf).

Russian attack.¹³³ These plans were revealed during the Wikileaks scandal in 2010, complicating the relationship between NATO and Russia.

Russian aircraft activities in the Baltic sea airspace gradually became a part of coercive strategy after the Ukraine conflict began.¹³⁴ At the September 2014 summit in Wales, NATO heads of state endorsed a Readiness Action Plan that “envisages a 5,000-strong 'High Readiness Joint Task Force', additional military exercises, and enhanced air policing. NATO air assets in the Baltic region were quadrupled by the end of 2014 to 16 aircraft, and regional command-and-control headquarters will be established in all three Baltic states in 2015 to ensure a permanent NATO presence.”¹³⁵ In January 2015, Estonia also inaugurated a long range radar that has given it a comprehensive capability to monitor the Baltic nations’ airspace “over the northern part of Russia's Western Military District, from the Pskov Air Base and training range to beyond St Petersburg.”¹³⁶

These measures notwithstanding, some argue that the level of current NATO commitments on the conventional level invites a conventional attack from Russia, especially in light of the fact that NATO’s nuclear deterrent does not appear to be

¹³³ Ian Traynor, "Wikileaks Cables Reveal Secret NATO Plans to Defend Baltics from Russia," *Guardian*, December 6, 2010, www.theguardian.com/world/2010/dec/06/wikileaks-cables-nato-russia-baltics

¹³⁴ Chakarova, op. cit.

¹³⁵ Ibid.

¹³⁶ Nickolas de Larrinaga, “Estonia Completes Air Surveillance Programme,” *Jane’s Defense Weekly*, January 28, 2015. “With an operational range of at least 470 km, the two GM403 radars each provide coverage of all of Estonia, with the radar installed at Tõikamäe also covering all of Latvia, most of Lithuania, and parts of northern Belarus and western Russia. Meanwhile, the GM403 radar at Muhu provides coverage over the majority of the Baltic Sea and the entirety of the Gulf of Finland. The country also possesses two Saab Giraffe-AMB C-band air surveillance/targeting radars based with the Estonian Defence Forces' air defence unit at Tapa in northeast Estonia.” The air surveillance picture that the two GM400 radars provide is already being used by the alliance to support its Baltic Air Policing mission at Amari Air Base in Estonia and Siauliai Air Base in Lithuania

credible. A Recent RAND report, for example, noted that Russian forces could “reach the outskirts of Tallinn and Riga in 60 hours.”¹³⁷ As of this writing, the NATO summit in the summer of 2016 is expected to make decision and commitments with regard to this issue.

Russia’s Coercive Use of Airpower

Russia’s demonstrative use of its anti-access/area denial arguably came as a surprise to Western analysts.¹³⁸ Since 2014, Moscow has provocatively operated these systems in close proximity to U.S. forces and widely publicized these developments in state-run media organizations.¹³⁹ In response to these actions, U.S. and NATO officials have expressed concerns about the implications for Western military operations, especially those conducted in close quarters with Russian forces.¹⁴⁰

In the spring of 2014, a Russian Su-34 aircraft provocatively buzzed USS Don Cook, an Arleigh Burke-class guided missile destroyer.¹⁴¹ A report later that year would detail multiple dangerous incidents in regional airspace. These included “[four] separate cases of harassment of U.S. and Swedish reconnaissance planes in international airspace by armed Russian fighters; cases of Russian aircraft conducting

¹³⁷ David A. Shlapak and Michael W. Johnson, “Reinforcing Deterrence on NATO’s Eastern Flank,” RAND Report, 2016, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1200/RR1253/RAND_RR1253.pdf.

¹³⁸ They, however, predicted the development of these technologies. Larson et al, pp. 11-12, <http://www.rand.org/pubs/monographs/MG112.html>.

¹³⁹ See “Russian Jamming System Blocks All NATO Electronics Over Syria,” Sputnik, October 29, 2015, <http://in.sputniknews.com/world/20151029/1016211289/russian-jamming-system-syria-nato.html> and Paul D. Shinkman, “More ‘Top Gun’: Russian Jets Buzz U.S. Navy Destroyer in Black Sea,” *U.S. News and World Report*, June 1, 2015, www.usnews.com/news/articles/2015/06/01/more-top-gun-russian-jets-buzz-us-navy-destroyer-in-black-sea.

¹⁴⁰ Andrew Tilghman and Oriana Pawlyk, “U.S. vs. Russia: What a War Would Look Like Between the World’s Most Fearsome Militaries,” *Military Times*, www.militarytimes.com/story/military/2015/10/05/us-russia-vladimir-putin-syria-ukraine-american-military-plans/73147344/.

¹⁴¹ Anton Valagin, “Chto napugalo amerikanskii esminets” (What Scared the U.S. Destroyer), *Rossiiskaya Gazeta*, April 30, 2014, www.rg.ru/2014/04/30/reb-site.html.

closer overflights over U.S. and Canadian ships in the Black Sea; Russian aircraft violating Swedish airspace on a mock ‘bombing raid’ mission; a mock attack on the Danish island of Bornholm; [and] the practicing of cruise missile attacks against the U.S. mainland.”¹⁴² Analysts have noted that Russia was using its air power to “put pressure on risk-averse European states to change their policy toward Russia.”¹⁴³

In the fall of 2015, Russian forces surprised observers by initiating military activities in Syria, where Western troops were already operating. Russian bombers began conducting bombing raids of targets in Syria from airfields near Latakia.¹⁴⁴ Russia’s footprint in Syria had dramatically increased over the fall months.¹⁴⁵ Its bombers carried out raids against anti-Assad rebels, and its cruise missiles launched from ... against targets in the opposition’s territory. Analysts have noted that, in addition attempting to achieve broader political goals, Russia also sought to test and demonstrate the use of its conventional capabilities.¹⁴⁶ Russia fielded electronic warfare equipment, boasting that it could “blind” NATO radar.¹⁴⁷

These actions raised concerns about close proximity operations between Russian forces and militaries that had already been engaged in the conflict, and resulted in efforts to mitigate the risks that could result from an accident or incident.

¹⁴² Thomas Frear, Lukasz Kulesa, Ian Kearns, “Dangerous Brinkmanship: Close Military Encounters Between Russia and the West in 2014,” European Leadership Network Policy Brief, November 2014, <http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf>, pp. 3-4.

¹⁴³ Pavel K. Baev, "Russian Air Power is Too Brittle for Brinkmanship," PONARS policy memo, November 2015, www.ponarseurasia.org/memo/russian-air-power-too-brittle-brinkmanship

¹⁴⁴ Ibid.

¹⁴⁵ Mark Galeotti, Samir Naser, Sean O’Connor, “Russia’s Middle Eastern Adventure Evolves,” *Jane’s Intelligence Review*, December 30, 2015.

¹⁴⁶ Ibid.

¹⁴⁷ Sputnik, op.cit.

Russia and Israel created a mechanism to deconflict their operations in Syria.¹⁴⁸ A deconfliction mechanism has also been worked out with the United States.¹⁴⁹ However, no such mechanism was developed with NATO or any other states operating in close proximity to Russian forces in the theater of conflict.

On November 24, a Turkish F-16 fighter shot down a Russian Su-24 aircraft that was reportedly violating Turkish airspace, killing one of the two pilots. The incident triggered a crisis in relations between Russia and Turkey that built on simmering tensions resulting from Russian military presence in Syria and its activities in close proximity to Turkish borders.¹⁵⁰ And so, whereas its European NATO counterparts had been careful in their scrambles to identify and escort Russian aircraft, Ankara stood firm that its use of force to down the violating jet was justified.

In response, Western analysts argued of the need to develop an arrangement between Russia and NATO to avoid dangerous airspace incidents.¹⁵¹ They proposed a vehicle for “rules of the road” between the two sides, especially with regard to airspace incidents, and an assurance that both sides would utilize transponders.¹⁵² NATO countries also sought to consult with Russia on avoiding incidents in late

¹⁴⁸ Barbara Opall-Rome, "Russia, Israel To Broaden Defense Coordination in Syria," *Defense News*, December 1, 2015, www.defensenews.com/story/defense/air-space/2015/11/30/russia-israel-broaden-defense-coordination-syria/76576390/.

¹⁴⁹ Neil MacFarquhar, "U.S. Agrees With Russia on Rules in Syrian Sky," *New York Times*, October 20, 2015, www.nytimes.com/2015/10/21/world/middleeast/us-and-russia-agree-to-regulate-all-flights-over-syria.html?_r=0.

¹⁵⁰ Galeotti et al, op. cit.

¹⁵¹ Frear et al.

¹⁵² Ian Kearns, "Avoiding War in Europe," *Arms Control Today* (November 2015), https://www.armscontrol.org/ACT/2015_11/Features/Avoiding-War-in-Europe-The-Risks-from-NATO-Russian-Close-Military-Encounters.

2015.¹⁵³ However, even as recently as January 2016, U.S. news outlets reported that Russian fighters continued to harass U.S. aircraft and vessels operating in international territory (Baltic and Black Sea) and in the Pacific.¹⁵⁴

5.7. Conclusion

After the Cold War, cooperation between Russia and the West to counter conventional theater air and missile threats could have been a powerful mechanism to facilitate predictability of military operations and alleviate concerns about aerial attack. Given Russia's history of concerns about aerial attacks from the West, cooperation could have alleviated Russia's pervasive sense of vulnerability after the collapse of the Soviet Union. Instead, Moscow had to deal with NATO expansion to CEE in light of growing U.S. conventional superiority and the disintegration of previously-constructed arms control regimes. Any prospect for cooperation was eventually defeated by the emergence of two separate air defense networks—one comprised of NATO and its new CEE members and the other involving Russia, Belarus, and four other states in the CSTO.

Summary

After several rounds of NATO expansion, the number of countries participating in NATO's air defense network went from 16 to 28. As an increasingly integrated network powered by information fused from old and new members, the

¹⁵³ "NATO Members Seek Agreement With Russia on Prevention of Military Incidents," Sputnik, December 16, 2015, <http://sputniknews.com/politics/20151216/1031825548/nato-russia-incidents.html>.

¹⁵⁴ Bill Gertz, "Russian Fighter Conducts Dangerous Intercept of U.S. Recon Jet," *Washington Free Beacon*, January 28, 2016.

air/missile defense system is a strong, yet unacknowledged milestone for NATO expansion to the East. The infrastructure of radar installations for surveillance and identification, aircraft for escort, and air sovereignty also crept closer to Russian borders. Designed to provide security assurances to the Baltics, Air Policing patrols instead potentially made the situation with Russia even more tense. NATO could also draw on the strength of U.S. offensive and defensive capabilities.

Since 1995, Russia has sought to facilitate air defense cooperation within the CSTO. In effect, this cooperation has allowed Russia to create a small buffer by deploying radar and air defense systems in Belarus as well as expanding the reach of its airspace awareness to the south by facilitating cooperation in Central Asia. Unlike the NATO network, however, the CIS/CSTO network does not involve joint procurement and a high level of integration.

Analysis

Russia's perception of its weakness and U.S./NATO conventional superiority were the defining features of their engagement. Russian concern with regard to NATO expansion to its borders, integration of CEE, and potential engagement of NIS drove threat perception on the Russian side. From the perspective of the CEE and NIS, Russian behavior and its development of anti-access capabilities just followed a pattern of Russia bullying its neighbors. Ultimately, the disagreement about threat perceptions was a key challenge that doomed any U.S./Russian-NATO cooperative solution on this issue.

NATO's integration of CEE into the Alliance meant that, in practice, NATO infrastructure came closer to Russia's borders. However, these developments were not reflected in arms control agreements, and regional security structures instead began to rely more on the ad hoc nature of NATO engagement of its partner states. Russia's efforts to beef up cooperation within the CIS/CSTO were a response to managing this challenge. In turn, U.S./NATO-Russian cooperation never really worked since it began in earnest only after the appearance of the new "bloc-bloc" structure between NATO and CIS/CSTO.

Separately from one another, NATO and CIS/CSTO were as effective as they could have been in terms of facilitating cooperation among their members. But this internal focus also undermined U.S./NATO-Russian cooperation, deepening the chasm between the two. The collapse of the CFE and INF Treaties pointed to the inability of all stakeholders to control the regional security environment. U.S. diplomacy and security guarantees via the spread of its missile defense infrastructure began to supplant past cooperative security approaches in the Euro-Atlantic.

In this case study, the norms and values that U.S./NATO and Russia brought to the table were different. Initiated in 2004 and halted in 2013, NATO-Russia theater missile defense cooperation was a practical exercise that stumbled into the political reality of Euro-Atlantic security. NATO and Russia were now too far apart to cooperate on the issue. The conflict in Georgia worsened the situation when NATO sought to develop contingency plans to reassure members in the CEE. And, in response to U.S. efforts to deploy missile defense to CEE states (in part to reassure them against Russia), Moscow sought to design offensive strike options at targets in

those countries. Despite the push for cooperation, including from the expert community, the military bureaucracies on both sides did what they do best—plan against one another.

In NATO, the cooperative exploitation of sensors is in effect integration among member states. In CIS/CSTO, the cooperative exploitation does not rise to the level of integration achieved by NATO. In turn, Russia and U.S./NATO faced obstacles in cooperation insofar as their potential for technical cooperation was limited. There were challenges insofar as they could find cooperative technologies to be exploited without compromising respective sensitive technologies. Finally, NATO integrated CEE through direct engagement of bureaucracies. However, cooperation between U.S./NATO and Russia was limited to computer simulations, and ultimately embedded in the NATO-Russia Council, which did not prove to be a durable platform for cooperation.

All that said, officials and experts from the United States, Russia, and Europe have hoped that missile defense cooperation in the Euro-Atlantic would bring U.S./NATO and Russia closer together. These discussions, in official and non-official channels, intensified after it became clear that U.S. missile defense policy in Europe would not change in terms of political significance from the Bush to the Obama administrations. After a decade of these efforts, however, it became clear that U.S./NATO-Russian relations would center on confrontation rather than transformation—at least for the time being.

Chapter 6: Conclusions and Recommendations

6.1. Airspace Arrangements and Euro-Atlantic Security

This study was driven by a puzzle that—despite two decades of cooperative development of regional security institutions after the end of the Cold War—the airspace arrangements developed by U.S./NATO and Russia appear to be ineffective in assuring security. The study sought to assess how these arrangements have contributed to cooperation and discord in the Euro-Atlantic region. It also sought to understand how these arrangements could help mitigate escalatory dynamics between U.S./NATO and Russia resulting from airspace incidents.

This chapter revisits the hypotheses and the analytical framework. It distills findings relevant to the airspace arrangements and preliminary conclusions for escalation management. The chapter ends with a discussion of the importance of an inclusive vision for Euro-Atlantic security.

Revisiting the Hypotheses

The study tested the proposition that states in the Euro-Atlantic region expressed and institutionalized trust through political-military arrangements that enabled them to buttress their airspace sovereignty, cooperatively monitor military postures and activities, and plan a defense against common aerial threats. It thus assessed several existing airspace arrangements among U.S./NATO, Russia and other Newly Independent States (NIS), as well as Central and Eastern European (CEE)

states.¹ These arrangements included the Open Skies Treaty (OST), Airspace Initiatives, and Joint Engagement of Theater Air and Missile Threats.

The study posited that all states have unilateral capabilities to observe activity in their own airspaces and, to varying degrees, look into the airspaces of their neighbors. In addition to these unilateral capabilities, institutionalized reciprocal exchanges of certain types of airspace activity information among states could contribute to some improvements in the political-military relations among neighbors and within a region. While these arrangements could be useful to some states, they could also be ineffective or harmful to others. Cooperative efforts to buttress the airspace sovereignty of one state could be perceived as diminishing the security of another, and thus contributing to the destabilization of the regional security environment. States could also deliberately misuse these arrangements to achieve their broader political-military goals. In turn, breaches of airspace sovereignty, coercion using aerial threats, and the use of airpower in modern conflict all have the potential to fuel the escalation of conventional conflicts.

The study found general support for the hypothesis that airspace arrangements could facilitate improvements in relations among neighboring states. However, because U.S./NATO cooperation with CEE on airspace issues moved at a faster pace than its cooperative activities with Russia, Moscow perceived that this cooperation could potentially be directed against it. At the same time, Russia was faced with perceived challenges from U.S./NATO superiority in reconnaissance and

¹ CEE states are Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria, Macedonia, and Albania; NIS states in this case are Georgia and Ukraine.

conventional strike and sought to build up cooperative air defense arrangements with the Commonwealth of Independent States/Cooperative Security Treaty Organization (CIS/CSTO).² The relationships between CEE states and Russia were never normalized, which meant that their admission into NATO complicated the U.S./NATO-Russia political–military dynamic. The NIS states, in turn, were stuck in the middle—wanting to join the West, but also understanding that their price of admission into Western institutions was much higher than that of their CEE counterparts.

The broader context of this issue is that all regional stakeholders, to varying degrees, were lulled into complacency by the existence of negotiated arms control agreements like the Conventional Forces in Europe (CFE) and Intermediate-Range Nuclear Forces (INF) treaties. These treaties, however, were not updated to reflect the changing realities of Euro-Atlantic security, and no formal vision for the region’s future that fully integrated Russia was proposed. Thus, while the cumulative effect of information exchanges conducted through airspace arrangements, among other TCBMs, could have had a positive effect on broader Euro-Atlantic security, it instead contributed to existing suspicions among U.S./NATO and Russia, and now to broader regional discord with regard to the NIS.

State concerns about airspace sovereignty and vulnerability to aerial attack are an important dynamic in Euro-Atlantic security. In the current security situation, there is a place for transparency and confidence-building measures (TCBMs) focused on reducing the potential escalatory impact of close military encounters. However,

² CIS/CSTO states include Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan.

efforts to develop new political measures need to incorporate existing airspace arrangements involving U.S./NATO, Russia, and others. Moreover, despite the existence of opportunities to reduce the coercive use of airpower, efforts to do so will never be successful unless they are set in a much broader political context that incorporates the perspectives of all regional stakeholders.

Assessing Airspace Arrangements as TCBMs

To assess the role of airspace arrangements in cooperation and discord among neighbors and within the region, the study relied on a framework developed from literature on TCBMs. This framework allowed the evaluation of changes across five factors, including institutions, norms and values, threat perceptions, information technologies, and bureaucratic engagement. It also enabled us to make some broad generalizations about the role of each factor in developing TCBMs in the current security situation.

From an institutional perspective, cooperative arrangements structured around information exchanges were developed by states to execute their security strategies in more effective ways. They provided rules of the road and created path dependencies. They also interacted with the broader institutional context into which they were embedded. On their own, and within that context, it was thus necessary to assess whether the arrangement in question reduced uncertainty in the security environment or made cooperation efforts more difficult. This study found that airspace arrangements were indeed used by states to achieve their political-military goals and reduced some uncertainty. However, the broader institutional context did not allow

for airspace arrangements to be at their most effective, and contributed to some potentially counterproductive path dependencies in relations among neighbors. A relevant implication of these findings is that any future U.S./NATO cooperation with Russia dealing with airspace issues needs to be mindful of the limitations of existing institutions and the broader context. Future arrangements need to be embedded into inclusive security institutions so that they do not perpetuate, but seek to mitigate existing divisions.

In accordance with literature on norms and values, cooperative arrangements structured around information exchanges could work as an instrumental norm that strengthened deterrence, a moral norm, or a standard of behavior. While it was important to have a broad vision for how the arrangement interacted with regional security, attainment of this vision could also conflict with immediate security benefits. This study found that airspace arrangements worked as a norm that buttressed deterrence and a standard of behavior. The arrangements also facilitated a common concept of security—until that common concept of security became out of sync with the security situation in the region and states halted the implementation of cooperative arrangements. The perception of Russia as a threat by then-NATO aspirants became a self-fulfilling prophecy. A relevant implication of these findings is that norms (e.g. for airspace sovereignty) need to be reinforced with explicit understanding of consequences that follow their violation. Further, it will be difficult to develop a U.S./NATO strategy for dealing with Russia without a broad understanding of how to integrate it into the region's security architecture.

From the perspective of threat perceptions, states were only willing to create cooperative arrangements structured around information exchanges when their respective threat environments were relatively benign. They also needed to tread carefully and pay attention to the shifts in the threat environment since the exchange of too much information could ultimately be used to their detriment. This study found no evidence to suggest that information gleaned through cooperative arrangements was used against states, but such concerns persisted and, at low points in relations, led to halts in cooperative activities. In turn, differing threats perceived by states were a key impediment and limitation on cooperative arrangements between neighbors and within the region. A relevant implication of these findings is that the threat perceptions of CEE and NIS will play an important role in regional security, but ultimately they need to be reassured in a way that doesn't threaten Russia.

Scholarship that focuses on the role of information technologies suggests that states seek to cooperatively exploit sensors through cooperative arrangements with an understanding that resulting transparency may increase their mutual security. Developments in information technologies, however, could also erode governments' monopolies on security information and states could have different attitudes toward these types of information exchanges. This study found that cooperative exploitation of sensors as part of an information exchange arrangement was important for states and could override the general tendency for opacity with regard to security affairs over time. However, while this type of cooperation could contribute to positive relations, there are questions regarding its sustainability during the low points of political relationships. A relevant implication of these findings is that future

agreements between U.S./NATO-Russia need to incorporate ways to share data via common sensors or interfaces, which could be done by drawing on existing airspace arrangements.

With respect to bureaucratic engagement, cooperative arrangements could engage bureaucracies in the routine exchanges of shared evidence of credible threats and create a habit of cooperation. However, cooperation could also focus attention on the mismatch of security attitudes among different bureaucracies. This study found that engagement of bureaucracies was important—agreements that were truly military-to-military elements were deemed by stakeholders to be important. That said, the engagements do not appear to have had positive spillover effects that could impact the regional security environment as a whole. A relevant implication of these findings is that sustained bureaucratic engagement, especially among militaries, is essential to normalize, and potentially even transform, the regional security environment.

6.2. Airspace Arrangements in Cooperation and Discord

The airspace arrangements at the center of this study were never purposefully designed in a comprehensive fashion, and were not developed as flexible measures reflecting the views of all stakeholders and addressing the shifts in the regional security environment. They emerged in a more ad hoc manner, at different times, and among groups of states with different intentions. All of the arrangements had to contend with the implications of NATO expansion to the CEE and the growing regional discord that centered around Russia's role in the region.

This section revisits the conclusions from individual case study chapters. Drawing on the TCBMs framework, it assesses the role played by various factors including institutions, norms, threat perceptions, information technologies, and bureaucracies.

The Open Skies Treaty

The whole-of-region Open Skies Treaty (OST) was championed by Canada and CEE states in the Warsaw Pact. Arguably, it never would have been negotiated or concluded in a bilateral format between the United States and the Soviet Union/Russia. OST was signed as the Cold War was ending and thus carried some optimism with regard to possibilities of military-military cooperation for regional transparency. Since then, OST has since worked to both buttress deterrence and become a standard of behavior. That said, reaffirming its importance for and fit into the regional security architecture is essential if the treaty is to survive into the future.

There are a variety of institutional dimensions that challenge the treaty's implementation and evolution. While it is positive that the consultative commission and data exchange mechanism are located in the OSCE, the OST has to deal with challenges resulting from questions on OSCE relevance and its role in a region dominated by NATO. The actions of NATO countries, especially as NATO has expanded to many more countries, are an issue. NATO acts as a bloc and does not overfly one another, which makes it difficult to assess equality of implementation and whether Russia's access to imagery is unequal. Because the treaty mechanism is based in the OSCE, it has managed to operate while other U.S. and NATO military-

military activities with Russia has been suspended. But OSCE needs to be a stronger security institution if it is to benefit OST implementation and expansion.

For Russia, the ability to overfly U.S. and NATO military facilities eventually trumped Moscow's initial concerns about the treaty as a threat to its security. CEE states once championed this agreement for its ability to improve neighborly relations, however, their integration into NATO (and the West) has largely quieted their constructive activism. With NATO's expansion to the CEE, these states don't overfly one another anymore and jointly analyze the data gathered, which feeds Russia's concerns about being starved of data and left out of the loop. With regard to the NIS, the biggest challenge for OST was and remains the seeming inability of regional institutions to prevent or resolve conflict, especially with respect to Georgia and Ukraine. On a final institutional note, because the OST was embedded into the Organization for Security and Cooperation in Europe (OSCE) and not NATO, it is the only airspace arrangement out of those assessed that has not been halted.

States' threat perceptions played an important role in the evolution of the arrangement. Russia was unable to finalize its participation in OST until 2002 due to concerns that overflights over its territory may reveal too much. The current U.S. debate on Russia's potential use of the arrangement to improve its targeting capabilities is somewhat similar in nature. In turn, Russia and Georgia were unable to use the treaty to constructively resolve their differences after the 2008 war, instead choosing to suspend overflights. And, while the treaty faced questions on future relevance before the Ukraine crisis, it appears that the United States and NATO use OST to reassure allies and partners in the region.

OST negotiations were driven by the desire of CEE states to access inexpensive aerial intelligence. At the end of the Cold War, the United States had (and still has) the dominance in terms of unilateral aerial and satellite reconnaissance capabilities. Even during the initial negotiations of the OST, U.S./NATO resisted pooling data with their Warsaw Pact counterparts. The cooperative certification and exploitation of technologies has, on the whole, been a productive feature of the treaty. However the improvements in resolution of commercial satellite imagery and the deployment of unmanned systems will continue to challenge treaty participants to innovate.

Finally, all OST participants have pointed to the importance of the “cooperative spirit” for treaty success. The military-to-military cooperation element is perhaps the most durable feature of the arrangement. Treaty implementation has built relatively professional relationships among implementing bureaucracies, and this is only likely to grow with the rise in multi-country OST flights. However, the potential spillover effect of this to the broader relationships in the region appears to have been limited—likely since the bureaucracies involved are relatively small.

Airspace Initiatives

All of the airspace initiatives—the Regional Airspace Initiative (RAI), the Air Situational Data Exchange (ASDE), and the Cooperative Airspace Initiative (CAI) were developed from the ground up as bilateral programs with the United States and NATO. The level of effectiveness of all these programs was high because they involved building cooperation among neighbors. CEE states and the NIS used these

programs to integrate into Western institutions and expand their military cooperation with NATO. As long as the NATO-Russia Council functioned, this approach to cooperation with Russia also seemed to work. However, the current halt of U.S./NATO-Russian airspace activities is the direct outcome of the ad hoc nature in which this arrangement was created. Moreover, the inability to bring the three networks—RAI, ASDE, and CAI closer together has limited the potential impact of the latter arrangement in improving regional security.

The goals of airspace initiatives were quite practical and focused on promoting cooperation among neighbors. CEE and NIS states viewed airspace initiatives as an opportunity to come closer to their neighbors in NATO. Both U.S./NATO and Russia at various times wanted to see the CAI as more than just a system to counter airborne terrorism. However, there was no vision or compelling narrative that could build on these programs to develop a functional integrated network that includes the outcomes of the RAI, ASDE, and CAI.

The CEE states used RAI to engage with U.S./NATO to push away from Russia. But, unlike Poland, the Baltics likely missed a useful cooperation opportunity in the CAI—an opportunity that could ultimately have had positive implications for their security. Georgia, in turn, sought to achieve the security gains of cooperating with NATO through ASDE even before that cooperation officially began. NATO-Russian cooperation through the CAI began only in 2002, when threat perceptions shifted toward mutual concerns about terrorism. However, the halt in implementing CAI appears to reinforce the argument that technical cooperation is difficult in times of broader discord. NATO and Russia were also never able to deepen their

cooperation—by extending transparency to military aircraft—in a way that would have significantly mattered for their current security concerns.

Airspace initiatives discussed in this thesis were a clear cut case in which cooperative exploitation of information technologies promoted security of participating states. While states had unilateral capabilities to monitor airspace activity, the ability to cooperate on this with their neighbors was what made these arrangements so compelling. In turn, all airspace initiatives increased the habit of cooperation between the participating bureaucracies. Yet, this impact was more widely felt in states with smaller bureaucracies participating in RAI and ASDE. And, while its bureaucratic actors were proud of the fact that the CAI was insulated enough to have worked through the conflict in Georgia, this also raised questions about the transformational potential of this initiative and whether it could ever be expanded to the exchange of military information. The engagement of militaries the CAI case was its strongest component.

Joint Engagement of Air/Missile Threats

Drawing an accurate picture of cooperation and discord in the third case study is much more difficult. NATO's integration of CEE into the Alliance meant that, in practice, NATO infrastructure came closer to Russia's borders. These developments were not reflected in arms control agreements, and regional security structures instead began to rely more on the ad hoc nature of NATO engagement of its partner states, including Russia.

The norms and values that the stakeholders brought to the table were different. Russia's efforts to beef up cooperation within CIS/CSTO were a natural response to managing the threats felt from NATO expansion and the decline of post-Cold War conventional arms control. NATO largely saw its cooperation with CEE as a natural way to integrate these states—part of what a military alliance does when it admits new members. In turn, U.S./NATO-Russian cooperation never really worked since it began in earnest only after the appearance of the new “bloc-bloc” structure between NATO and CIS/CSTO, and the gradual understanding that cooperation would be impeded by the lack of a normative organizing principle for regional security.

Russia's fixation on its weakness and U.S./NATO conventional superiority were the defining features of their respective political-military engagement. Russia's threat perception was driven by its concern about NATO expansion to its borders, integration of CEE, and potential integration of NIS. From the perspective of the CEE and NIS, Russian behavior and its development of anti-access capabilities just followed a pattern of Russia bullying its neighbors. Ultimately, the disagreement about threat perceptions was a key challenge that doomed any U.S./Russian-NATO cooperative solution on this issue.

In NATO, the cooperative exploitation of sensors is in effect integration among member states. In CIS/CSTO, the cooperative exploitation does not rise to the level of integration achieved by NATO. In turn, Russia and U.S./NATO faced obstacles in cooperation insofar as their potential for technical cooperation was limited. Finally, NATO integrated CEE through direct engagement of bureaucracies. However, cooperation between U.S./NATO and Russia was limited to computer

simulations, and ultimately embedded in the NATO-Russia Council, which did not prove itself to be a durable platform for cooperation.

6.3. Airspace Arrangements and Escalation Dangers

This study sought to understand the dynamics of escalation that could result from airspace incidents. This section revisits concerns about deliberate, inadvertent, and accidental escalation and discusses some of the implications that case study findings raise for escalation management.

Deliberate Escalation Risks

States can and do choose to escalate political-military conflicts by violating one another's respective thresholds for instrumental and suggestive purposes. Escalation can be carried out across several dimensions, including intensity, capabilities, and geographic scope. Deliberate escalation to nuclear use—whether it involves tactical nuclear weapons or an all-out strategic exchange between Russia and the United States—is a worst-case scenario. However, escalation from a show of force to a conventional conflict between two nuclear-armed adversaries is also a dangerous proposition, especially since further escalation could be accidental and inadvertent—mechanisms that could be much more difficult to control.

The best way to deal with deliberate escalation is through self-restraint coupled with a strategy and a force posture visibly structured primarily for deterrence for denial. TCBMs could also assist in facilitating escalation management. Airspace arrangements could contribute to state strategies in this regard. For example, cooperative aerial reconnaissance offers states a common observable baseline of

information on changes in one another's force postures and can help in signaling restraint. Exchange of radar data similarly allows states to detect real-time preparations (or stand downs) in their common border areas and minimize the impact of breaches of airspace sovereignty. Finally, cooperative arrangements to defend against air and missile threats provide a framework for deterrence strategies.

The 2008 war between Russia and Georgia war took place against the backdrop of Georgia's spring 2008 NATO membership action plan and its increasing desire to join the Alliance. The war proved to be a watershed in regional security that halted NATO-Russian relations and increased security concerns across the CEE states. In that conflict, airspace incidents were provocations that preceded and effectively signaled an impending conventional war. One of the contributing factors was the inability to prove culpability for breaches of airspace sovereignty, which could have been aided by an arrangement involving cooperative detection, identification, and tracking of airspace activity. Despite efforts by external parties, neither side exercised restraint and the escalation of this conflict from shows of force to conventional war could not be prevented. Russia's subsequent recognition of Abkhazia and South Ossetia as independent states (that Moscow justified in part by the West's earlier recognition of Kosovo) proved to be a bad omen for U.S./NATO-Russian relations and Euro-Atlantic security as a whole.

In Ukraine, Russia deliberately sought to engage in horizontal and vertical escalation in the conflict in order to annex Crimea and support pro-Russian separatists. Cooperative aerial surveillance was a key measure that facilitated an understanding of the conflict by regional stakeholders. However, Russia did not use

airpower in that conflict as extensively as it did in Georgia, arguably so that it could retain plausible deniability. To this end, Ukraine's engagement with NATO countries in cooperative detection, identification, and tracking of airspace activity may have further dissuaded Russia from using airpower. The reassurance that comes from this airspace arrangement is important for regional security.

Russia has learned to use conventional air power for coercion.³ The activities of its Air Forces have sought to test the preparedness of NATO members.⁴ In addition, through the development of anti-access/area denial capabilities, Russia has also strengthened its deterrence by denial potential. Its use of these capabilities in Syria, including in close proximity to U.S. forces, has been intended for demonstration purposes. To be sure, NATO has responded with actions intended to reassure its members, including additional deployments, exercises, and air patrols in CEE states, as well as buttress its capability for denial. However, some argue that Russia could perceive NATO military exercises as escalatory and call for development of crisis prevention measures.⁵ Up till now, U.S./NATO leaders and forces have exercised a remarkable degree of restraint in light of the Russian behavior.

³ See, for example, Pavel K. Baev, "Russian Air Power is Too Brittle for Brinkmanship," PONARS Policy Memo, November 2015, www.ponarseurasia.org/memo/russian-air-power-too-brittle-brinkmanship.

⁴ Thomas Frear, Lukasz Kulesa, Ian Kearns, "Dangerous Brinkmanship: Close Military Encounters Between Russia and the West in 2014," European Leadership Network policy brief, November 2014, <http://www.europeanleadershipnetwork.org/medialibrary/2014/11/09/6375e3da/Dangerous%20Brinkmanship.pdf>, pp. 3-4.

⁵ Ian Kearns, Lukasz Kulesa, and Thomas Frear, "Preparing for the Worst: Are Russian and NATO Military Exercises Making War in Europe More Likely?" European Leadership Network, 2015, http://www.europeanleadershipnetwork.org/preparing-for-the-worst-are-russian-and-nato-military-exercises-making-war-in-europe-more-likely_2997.html.

Unlike its European NATO counterparts, Turkey did not exercise the same restraint when it downed a Russian jet that entered its airspace. Despite the damage that the incident caused to the political relationship between Russia and Turkey, Moscow did not take the opportunity to significantly escalate its presence in Syria. Its deployment of an S-400 air defense system is perceived by analysts largely as a symbolic gesture.⁶ Arguably, Turkey's action was the best thing that could have happened to NATO insofar as it demonstrated that Russia could exercise relative restraint and also not use the pretense of a downing to escalate. (Sadly, the contrast between CAI exercises that featured cooperative activities between Russian and Turkish air forces several years prior could not have provided a more stark contrast to the current situation.) These observations suggest that, while deliberate escalation has manifested itself in the current regional security environment, all regional stakeholders appear to have managed it. Unless the current conflict expands (e.g. to the Baltics), the risk of escalation to nuclear use also appears to be relatively low.

Inadvertent and Accidental Escalation Risks

Inadvertent escalation is a dynamic in which conflict expands vertically or horizontally and is an unexpected result of a deliberate action. The way to deal with inadvertent escalation is through understanding and managing escalation thresholds. Accidental escalation, in turn, is best defined as operator error or an inability by leaders to control their respective forces. The best way to mitigate the risks of this type of escalatory dynamic is to effectively exercise control over one's forces.

⁶ Mark Galeotti, Samir Naser, Sean O'Connor, "Russia's Middle Eastern Adventure Evolves," *Jane's Intelligence Review*, December 30, 2015.

Airspace arrangements can contribute to state strategies for managing the risks of inadvertent and accidental escalation. For example, cooperative aerial reconnaissance (or its denial) can help clarify thresholds and their shifts. Exchange of radar data and development of common procedures for engagement of aerial threats can help exercise control over one's forces.

Accidental escalatory dynamics and opportunities for error pervade the conventional realm. The 2005 crash of Russian fighter jet in the Baltics points to the dangers of accidents. Further, the downing of flight MH 17 serves as a tragic reminder of the importance of force management and ensuring that destructive weapons not be transferred from states into the hands of non-state actors. In both cases, cooperative detection, identification, and tracking of airspace activity as well as cooperation on air/missile defense issues would have been useful.

Developing common concepts of thresholds and understanding motivations behind escalatory actions among adversaries is thus a time-consuming process fraught with challenges and dangers. Russian-backed separatists are engaged in a limited conventional conflict on Ukrainian territory. Russia's actions in Euro-Atlantic airspace could be viewed as a show of force intended to coerce the West.⁷ One can suppose that Russia is engaging in these activities to force the West to recognize Crimea as a part of Russia as well as to forestall closer NATO relations with Ukraine and Georgia. It is unknown how far Russia is willing to go to achieve these objectives.

⁷ Andrew Tilghman and Oriana Pawlyk, "U.S. vs. Russia: What a War Would Look like Between the World's Most Fearsome Militaries," *Military Times*, www.militarytimes.com/story/military/2015/10/05/us-russia-vladimir-putin-syria-ukraine-american-military-plans/73147344/.

In response, U.S./NATO officials have shied away from providing Ukraine with advanced conventional weapons that Russia could perceive as escalatory or use as an excuse to escalate.⁸ NATO has also attempted to respond to Russia's actions—while reassuring its members that it would respond to any Russian aggression—with strategies that are best understood as deterrence by denial.⁹ Even then, military exercises conducted by both sides could arguably result in escalation from a show of force to a limited war. In turn, in efforts to manage the risk of deliberate escalation, there is also need to communicate the exercise of self-restraint. However, as Turkey's downing of the Russian fighter jet suggests, sides may perceive escalation differently and escalation control may also be difficult to achieve in an alliance setting.¹⁰

One of the dangers in the current situation is that exercises or changes in force postures on either side could be misunderstood as attack preparations. Russia's demonstrative use of anti-access/area-denial capabilities may also muddle thresholds on both sides and cause Russia to be overconfident about its capabilities. This, again, raises the prospect that Russia would get into a situation with U.S./NATO forces that it would be unable to control. But the current cycle in which NATO exercises restraint and deliberately responds to Russian actions also suggests that there may be mutual learning taking place about one another's thresholds.

⁸ Ivo Daalder, Michele Flournoy, John Herbst, Jan Lodal, Steven Pifer, James Stavridis, Strobe Talbott and Charles Wald, "Preserving Ukraine's Independence, Resisting Russian Aggression," Report by Atlantic Council, Brookings, and Chicago Council on Global Affairs, 2015, www.thechicagocouncil.org/sites/default/files/UkraineReport_February2015_FINAL.pdf.

⁹ Although even this denial posture is arguably inadequate. David A. Shlapak and Michael W. Johnson, "Reinforcing Deterrence on NATO's Eastern Flank," RAND Report, 2016, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1200/RR1253/RAND_RR1253.pdf.

¹⁰ Galeotti et al, op. cit.

6.4. Recommendations for Airspace Arrangements

Existing cooperative airspace arrangements provide a useful baseline of activities that could be expanded and deepened in order to, at a minimum, reduce the dangers of escalation in the region. This section first discusses the challenges of designing new political-military arrangements to reduce the risks of airspace incidents. Drawing on the discussion of the role of these arrangements in cooperation and discord among neighbors and within a region, it then puts forward recommendations for each existing airspace arrangement.

Challenges of Designing New TCBMs

The introduction to this study highlighted how Western policy makers viewed airspace incidents as potential vectors for escalation of a U.S./NATO-Russian conflict. In 2015, Wolfgang Ischinger raised this issue when he asked Russian Foreign Minister Sergey Lavrov to comment on the provocative behavior of Russian military aircraft. Ischinger pointed out the importance of trying "to create an arrangement that would at least enable all of us—Russia, NATO, the United States, European countries—to avoid potentially dangerous close military encounters."¹¹

In response to the concerns about airspace incidents in the Euro-Atlantic, a prominent task force comprised of Euro-Atlantic leaders recently called for a NATO-Russia agreement on “Rules of Behavior for the Safety of Air and Maritime

¹¹ "Sergei Lavrov Responds to ELN Report," European Leadership Network, February 12, 2015, www.europeanleadershipnetwork.org/sergei-lavrov-responds-to-eln-report_2427.html.

Encounters.”¹² This effort would seek to develop special caution areas in which U.S./NATO-Russian military forces would act with due regard. Further, the government of Finland had taken a lead in discussing the problem of “invisible” flights in international airspace by both Russia and NATO.¹³ But there are challenges to the design of such arrangements given the context of airspace arrangements discussed in this study.

The types of dangers that currently trouble U.S./NATO policymakers are the outcome of Russia’s deliberate efforts to escalate the regional security situation. As discussed before, arms control arrangements like the CFE and the INF were never updated to reflect the changing realities of Euro-Atlantic security, and no formal vision for the region’s future that limited offensive technological developments and also incorporated Russia was proposed. In its actions, Russia is essentially following the dictum attributed to Dwight D. Eisenhower—“if a problem cannot be solved, enlarge it.” Thus, Western policy makers did not perceive a serious problem with regional security until Russia invaded Ukraine, started to use airpower for coercion, and began to show off its budding anti-access/area-denial capabilities in close proximity to Western forces.

During the Cold War, the successful negotiation, adoption, and implementation of TCBM suggested a consensus on “certain shared interests

¹² Task Force on Cooperation in Greater Europe, “Avoiding War in Europe: How to Reduce the Risk of a Military Encounter Between Russia and NATO,” European Leadership Network Report, 2015, www.europeanleadershipnetwork.org/avoiding-war-in-europe-how-to-reduce-the-risk-of-a-military-encounter-between-russia-and-nato_3045.html.

¹³ “Cooperation to Ensure Safer International Airspace Over the Baltic Sea,” Finland Ministry of Transport and Communications Press Release, January 15, 2015, <http://www.lvm.fi/pressreleases/4430690/cooperation-to-ensure-safer-international-airspace-over-the-baltic-sea>.

transcending the competition of the moment.”¹⁴ But, at present, NATO and Russia do not share a common interest in reducing the escalatory potential of airspace incidents. To the contrary, Russia would like to preserve its ability to deliberately escalate through the use of air power and is unlikely to negotiate a narrow agreement that limits its ability to coerce NATO members. To date, NATO’s restraint in responding to Russia’s coercion has actually limited its negotiating leverage. In turn, proposals to limit inadvertent or accidental escalation will be unable to limit the challenge of deliberate escalation.

Some have pointed to the example of the U.S.-Russian agreement on preventing airspace incidents in Syria as a possible model that could work to limit the dangers of NATO-Russian incidents.¹⁵ This agreement imposes certain restrictions of U.S. and Russian force operations and contains a communication channel. A similar agreement on operations in Syria has been also concluded between Russia and Israel. Presumably, these deconfliction mechanisms explicitly prohibit coercive flights and the jamming of one another’s radar systems, but this is unknown since Russia has apparently asked that the final texts of these agreements not be made public. Somewhat inadvertently, this Western discreetness has arguably helped Russia’s domestic narrative about its nascent ability to challenge U.S./NATO forces instead of creating a positive narrative about cooperation with the West.¹⁶

¹⁴ Johan Jørgen Holst and Karen Alette Melander, "European Security and Confidence-Building Measures," *Survival*, vol. 19 (July-August 1977), pp. 146-147.

¹⁵ Neil MacFarquhar, "U.S. Agrees With Russia on Rules in Syrian Sky," *New York Times*, October 20, 2015, www.nytimes.com/2015/10/21/world/middleeast/us-and-russia-agree-to-regulate-all-flights-over-syria.html?_r=0.

¹⁶ "Russian Jamming System Blocks All NATO Electronics Over Syria," Sputnik, October 29, 2015, <http://in.sputniknews.com/world/20151029/1016211289/russian-jamming-system-syria-nato.html>.

Perhaps the only point of consensus between Russia and NATO at present is their mutual aversion to the loss of innocent civilian life that could result from military engagement of civilian aircraft. But even in the wake of the MH17 downing, this issue has been more divisive than could have been anticipated. In sum, any new agreement when the parties don't have common interests are very difficult. Russia doesn't have an incentive to reduce its coercive use of force. Thus, instead of developing a new arrangement that provides guidelines for behavior in Euro-Atlantic airspace, a much more realistic proposition is to tailor existing arrangements to the current security situation.

The Open Skies Treaty

The OST is the only airspace arrangement that has the interest of all relevant states parties. Updating the OST would go a long way toward improving the cooperative aerial reconnaissance capability of all Euro-Atlantic stakeholders. Some possible recommendations for OST and its broader context include:

- Actively publicize the agreement's role in Ukraine, and in whatever political solution is found for that conflict;
- Work to resolve compliance issues, especially those involving Russia, Georgia, and Turkey;
- Speed up the transition to digital OST sensors, but also utilize commercially-available satellite imagery and data from unmanned systems, in a way that builds the analytical capacity of OSCE as a security management institution;

- Take Russia up on the “taxi option” in overflying its military facilities and exercises with its new aircraft;
- Facilitate cooperative activities between operators from Russia, CEE, and the NIS;
- Expand the treaty to include CIS/CSTO members that are now hosting Russian air bases, including Armenia, Kyrgyzstan, and Tajikistan;
- Strengthen OSCE as a security management institution and build its capacity for preventing conventional war in Europe and resolving frozen conflicts.

Figure 9, below, highlights all OSCE members that are party and not party to the treaty. In the figure, dark green points correspond to countries that are original treaty signatories, light green points correspond to countries that signed the treaty after its 2002 entry into force, orange points are OSCE members that are not party to OST, while the sole yellow point is Kyrgyzstan, which has signed but not ratified the treaty.

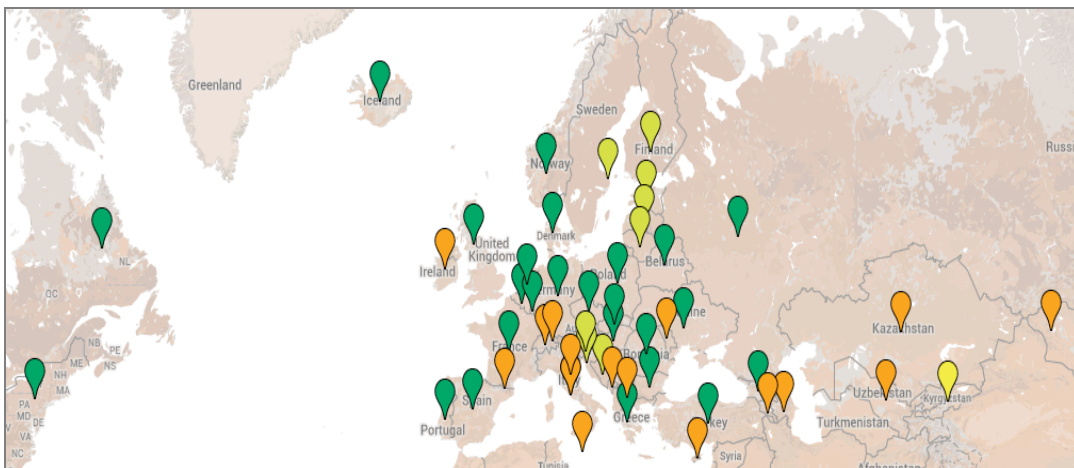


Figure 9: OSCE Member States and Their OST Membership. (Map data: Google.)

Airspace Initiatives

Airspace initiatives between U.S./NATO and other states in the Euro-Atlantic paved the way for a network of information exchange arrangements that need to be sustained. This area still retains the interest of all relevant stakeholders and it could also facilitate a discussion on “rules of the road.” Some possible recommendations for these arrangements and the broader context include:

- Restart cooperation within the NATO-Russia Council or, at a minimum, the technical operation of CAI networks on a bilateral level between Russia and its NATO counterparts;
- Expand CAI to the tracking of military aircraft to prevent and resolve incidents related to aircraft with disabled transponders in the common border area;
- Connect the CAI to ASDE and, more specifically, build connectivity between Russia and Ukraine, Finland, and the Baltics states.
- Use the CAI as a forum for discussion of what activities in the common airspace participant states find threatening;
- Use the CAI as a forum for promoting cooperation between U.S./NATO-Russian and NIS air and air defense forces.

Figure 10 highlights a possible expansion of connectivity. In the image, the ASDE structure engages NATO state (blue squares) and non-NATO state (green

squares) neighbors. In the CAI structure, blue stars depict center locations in Russia and NATO countries, and orange stars represent potential additional participants.

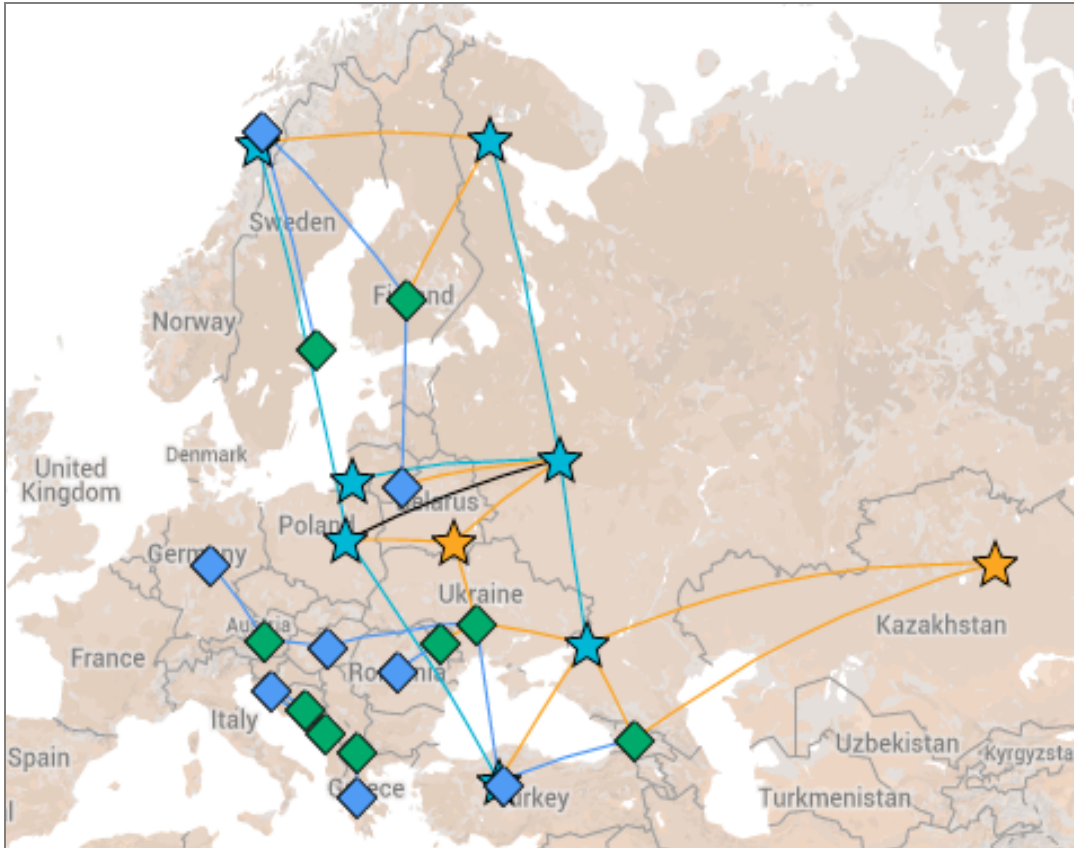


Figure 10: Potential Connections Between ASDE and CAI. (Map data: Google.)

Joint Engagement of Air and Missile Threats

Finally, deepening cooperation on joint engagement of air and missile threats could reduce the underlying ability to use airpower and anti-access/area-denial capabilities for coercion. Some possible recommendations for these arrangements and the broader context include:

- Develop a model fusion center for theater air/missile defense activities that builds cooperation between NATO and non-NATO nations, especially including those in Russia and CIS/CSTO.
- Discuss rules of the road with regard to air defense and reconnaissance activities, including unmanned systems;
- Discuss rules of the road for air defense activity in conflict areas;
- Develop cooperative activities for air forces in countering aerial threats from non-state actors; consider whether civilian aircraft security once again be a shared interest.

6.6. In Need of an “Altitude” Adjustment

In efforts to solve the challenge of the current security situation in the region, there is a role for TCBMs as far as airspace incidents are concerned. However, these will never be successful unless they are set in a broader political context that incorporates the perspectives of all regional stakeholders. This section discusses the challenge of regional security.

The Challenge of Russia’s Integration

This study began with a proposition that since the end of the Cold War, a major challenge for U.S. policymakers has been the design of Euro-Atlantic security policies to accomplish sometimes conflicting goals. The first was to engage Russia while also reassuring Moscow that an expanded NATO does not represent a military threat. The second was to integrate CEE (as well as NIS states) into Western institutions and also assure them that NATO would be able to counter Russian

aggression. We are at a point in time when it's important to reflect on the successes and failures of this policy and their broader implications for Euro-Atlantic security.

Today, analysts point out that U.S./NATO do not have a comprehensive strategy for dealing with Russia.¹⁷ There is also no consensus on its role in the Euro-Atlantic security architecture. Others warn of dangers of expanding NATO further to the NIS, positing that “the West’s continuing insistence that the only path to stability and security in Europe is for Russia’s neighbors to be absorbed into Euro-Atlantic institutions is now begetting threats to stability and security in Europe.”¹⁸

A recent RAND brief put forward an analysis of two competing options for engaging Russia that provide a great summary of the current security conundrum. One U.S./NATO strategy toward Russia would involve *punishment and disengagement*, while the other involve *resilience and engagement*. Whereas *punishment and disengagement* would rely much more on military means, *resilience and engagement* would rely on the development of infrastructure that could facilitate deeper integration among NATO countries and partners.¹⁹ The former would include an increase in NATO levels of military activities, use of U.S. forces in CEE as a “tripwire,” engagement of NIS states, and abandonment of security mechanisms in Europe that involve Russia.²⁰ The latter would “[prioritize] the goals and interests that defined NATO prior to Russia’s aggression in Ukraine and [seek] ways to continue to pursue them in the changed environment that Russia’s actions have

¹⁷ Olga Olikier, Michael J. McNerney, and Lynn E. Davis, “NATO Needs a Comprehensive Strategy for Russia,” RAND Perspective, 2015, <http://www.rand.org/pubs/perspectives/PE143.html>.

¹⁸ Samuel Charap and Jeremy Shapiro, “How to Avoid a New Cold War,” *Current History* (October 2014), pp. 270-271.

¹⁹ Olikier et al, pg. 10.

²⁰ *Ibid.*, pp. 5-7.

created.” It would strengthen integration among CEE, NIS, and other European countries to make them less vulnerable to potential “subversion and destabilization” from Russia, and also rely less on countering threats and more on countering vulnerabilities.

The RAND brief recommended *resilience and engagement* as a policy option. This strategy would seek to cooperate with Russia, initially on Ukraine, and then on broader issues—all while maintaining a level of sanctions on Russia’s economy. It noted that this strategy would be more sustainable.²¹ In the medium-term, the West needs to work with Russia on developing institutional arrangements that would be mutually acceptable while forcing Russia to accept restrictions on its behavior, especially with regard to meddling in the affairs of its neighbors. Ultimately, however, all regional stakeholders need to work toward the long-term goal of building stable peace in the Euro-Atlantic.

Toward a Zone of Stable Peace

As Charles Kupchan has written, the “challenge of contemporary statecraft entails not just preserving existing zones of stable peace, but also deepening and enlarging them.”²² To be sure, the Euro-Atlantic region is not a zone of stable peace, but his perspective is still instructive insofar as it can guide us through the phases that contribute to a “breakout” of stable peace out within a region.²³ These include:

²¹ Ibid.

²² Charles Kupchan, *How Enemies Become Friends: The Sources of Stable Peace* (Princeton, NJ: Princeton University Press, 2010), pg. 5.

²³ Ibid.

- Unilateral accommodation, a phase in which “a state confronted with multiple threats seeks to remove one of the sources of its insecurity by exercising strategic restraint and making concessions to an adversary. Such concessions constitute a peace offering, an opening gambit intended to signal benign as opposed to hostile intent.” Arguably, either U.S./NATO or Russia could take this first step.
- Reciprocal restraint, a phase in which “[t]he states in question trade concessions, each cautiously stepping away from rivalry as it entertains the prospect that geopolitical competition may give way to programmatic cooperation.” These first two phases are directly related to the demilitarization of state relations. The institutionalization of reciprocal restraint, according to Kupchan, is one of the keys to a preserving a “stable peace” between states.
- Finally, deepening of societal integration and generation of new narratives and identities will also require deliberate efforts.²⁴ These efforts are the outcome of extensive diplomatic engagement.

Creative proposals for new types of transformational cooperation in the Euro-Atlantic have been brought forward in the past. In 2012, the Euro-Atlantic Security Initiative concluded that “the only means to assure the long-term security of our peoples lies in building an inclusive, undivided, functioning Euro-Atlantic Security Community—a community without barriers, in which all would expect resolution of disputes exclusively by diplomatic, legal, or other nonviolent means, without recourse

²⁴ Kupchan, pg. 6.

to military force or the threat of its use.”²⁵ The Initiative suggested the urgency of two tasks at the heart of this community-building effort: “to transform and demilitarize strategic relations between the United States/NATO and Russia” and “to achieve historical reconciliation where old and present enmities prevent normal relations and cooperation.”²⁶

The challenge of Euro-Atlantic security is ultimately one of building institutions that could accommodate the conventional security concerns of all relevant stakeholders. The Clinton administration’s choice to expand NATO sought to bring CEE into Western institutions, but not at Russia’s expense. Policy implementation, however, is messy. And while expanding NATO worked for some time, this approach had the unintended consequence of weakening legal frameworks on the use of force in the region and institutional structures like the OSCE that were inclusive of all Euro-Atlantic stakeholders.

In light of the crisis in Ukraine, there has been some soul searching among key countries in Europe. And, in November 2015, an OSCE Eminent Persons panel released a report that started a discussion about the broader regional security challenges.²⁷ This report laid out narratives on the origins of the current security situation from three perspectives, including “the West,” Russia, and “states in-between,” beginning at the end of the Cold War. The report noted that:

²⁵ Euro-Atlantic Security Initiative, “Toward a Euro-Atlantic Security Community,” Carnegie Endowment for International Peace Report, 2012, <http://carnegieendowment.org/2012/02/03/toward-euro-atlantic-security-community/9d3j>.

²⁶ Ibid.

²⁷ Organization for Security and Cooperation in Europe, “Back to Diplomacy: Final Report and Recommendations of the Panel of Eminent Persons on European Security as a Common Project,” November 2015, <http://www.osce.org/networks/205846>.

“[These three narratives are] often in opposition to each other; and, in the case of the long versions, most do not accept any of them as an accurate or adequate way of describing their perspective on what happened. The point, however, is not historical accuracy but to illustrate how much our appreciation of the recent past diverges. These diametrically opposed narratives are a fact that, for the moment, we have to live with. While it should not prevent us from working together, it ought to help us realize how difficult that is.”²⁸

By looking at cooperation through airspace arrangements among multiple stakeholders in the Euro-Atlantic region, this thesis attempted to do just that—highlight the points of convergence and divergence between the narratives in Moscow, the West, and in the NIS and CEE, and appreciate the difficulty of cooperation. As the OSCE panel noted, however, “stamina” and “patience” will be important in the urgent endeavor of replacing “mutual recrimination” with “rebuilding trust.”²⁹ And, thus, chasing away the clouds of suspicion that have built up in Euro-Atlantic airspace over the last twenty five years will take creative and sustained efforts on behalf of policy makers all across the region.

²⁸ Ibid., pg. 2.

²⁹ Ibid., pg. 3.

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