A Call to Action: Lessons from Ukraine for the Future Force

John A. Nagl

Katie Crombe

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A CALL TO ACTION

LESSONS FROM UKRAINE FOR THE FUTURE FORCE

John A. Nagl
Project Director

Katie Crombe
Chief of Staff
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A Call to Action:  
Lessons from Ukraine for the Future Force

John A. Nagl
Project Director

Katie Crombe
Chief of Staff


Max Blumenfeld, Bridget Butler Interns

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# Table of Contents

**Acknowledgments** ........................................................................................................... v

**Foreword** ........................................................................................................................... vii

**Executive Summary** ........................................................................................................... ix

**Introduction: Lessons from Ukraine for the Future Force** .................. xi
  Katie Crombe and John A. Nagl

- Education, Training, and the Roots of Training and Doctrine Command ........................................... xii
- Why Now? ........................................................................................................................... xiii
- Command and Control ....................................................................................................... xiii
- Culture Eats Strategy for Breakfast .................................................................................... xiv
- Casualties, Replacements, and Reconstitutions ....................................................................... xv
- The Changing Character of War ............................................................................................ xv
- Embrace Deception and Increase Usage of Unclassified Intelligence ........................................... xvi
- Multidomain Operations ...................................................................................................... xvii
- So What? ............................................................................................................................. xvii
- Endnotes ............................................................................................................................. xix

**1 – Ukrainian History and Perspective** .......................................................... 1
  Volodymyr Grabchak and Syeda Myra Naqvi

- Ancient Ukrainian History: Ukraine’s Struggle for Independence ..................................................................... 2
- Annexation, Invasion, and War (2014–Present) ........................................................................ 11
- Conclusion ........................................................................................................................... 16
- Endnotes ............................................................................................................................. 19
# Table of Contents

Povilas J. Strazdas

  Definitions and Authorities ....................................................... 24
  2014–August 2021 ................................................................. 27
  August 2021–Present ............................................................... 28
  Lessons Learned and Way Forward........................................... 29
  Endnotes .................................................................................. 32

3 – The Case of Ukraine: Deterrence by Resilience ......................... 33
Larry D. Caswell Jr.

  What Is Deterrence?............................................................... 34
  Implementing Deterrence....................................................... 35
  Russia, Ukraine, and NATO................................................... 37
  Analyzing the Deterrent Threats .............................................. 38
    Capability .......................................................................... 38
    Credibility .......................................................................... 39
    Communication ..................................................................... 40
  When to Act?....................................................................... 41
  Observations and Implications ............................................... 42
    Denial by Resilience Can Work ............................................. 42
    The International Community Can Reinforce Resilience without Nuclear Escalation ................................................................. 42
    Signaling Nuclear Escalation Remains an Effective Deterrent against NATO ................................................................. 42
    The Credibility of NATO in Extended Deterrence Is a Vulnerability ................................................................. 43
## Table of Contents

Integrated Deterrence Will Rely on Compellence and Resilience to Be Effective ................................................................. 44

Implications for Deterrence ......................................................................................................................... 44

Endnotes .......................................................................................................................................................... 46

### 4 – Operational Art in the Russia-Ukraine War of 2022 ................................................................. 49

Rebecca W. Jensen

Leading Up to the Conflict .......................................................................................................................... 50

Operational Art and Outcomes of the Initial Attack .................................................................................. 51

Deception and Prioritization: Kharkiv and Kherson ............................................................................. 51

Advancement into Kharkiv ........................................................................................................................ 53

The Buildup to the New Bakhmut Counteroffensive .......................................................................... 55

Operational Art ............................................................................................................................................... 58

Lessons Learned .......................................................................................................................................... 60

Conclusion ..................................................................................................................................................... 61

Endnotes ......................................................................................................................................................... 63

### 5 – Intelligence ..................................................................................................................................... 69

Clay M. Huffman

Soviet Roots: The Security Service of Ukraine ......................................................................................... 70

Defense Intelligence and Military-Intelligence Reform ......................................................................... 70

Technical Innovation under Fire ............................................................................................................... 73

Artificial Intelligence in Use ...................................................................................................................... 74

Weaponizing Intelligence with Information Operations .......................................................................... 76

Lessons for the US Army in the Future ................................................................................................... 79

Open-Source Intelligence Is Highly Valuable and Enables Intelligence Sharing .................................. 79

Sensor-Agnostic Intelligence PED Supported by Artificial Intelligence Is Critical in Conflict .......... 81
Table of Contents

Increasing Impact of Corporations on Intelligence and the Information Environment ............................................................. 82
 Weaponizing Intelligence Enables Information Advantage in Information Warfare ................................................................. 83
 The Adoption of NATO Standards Enabled Intelligence Sharing .................................................................................... 84
 Conclusion ........................................................................................................................................................................... 85
 Endnotes ............................................................................................................................................................................... 86

6 – Fires ..................................................................................................................................................................................... 91
John “Jay” B. Bradley III

The Russian Way of Artillery and Its Failures ........................................... 92
 Predictable Fires-Centric Operations ................................................. 92
 Failure to Attain Combined Arms and Modernization Backslide ................................................................. 93
 Maintenance and Sustainment ........................................................... 95
 Targeting Civilians ........................................................................... 96
 The Ukrainian Approach .................................................................. 96
 Conditions of Artillery in February 2022 .......................................... 97
 Equipping While in the Fight ............................................................ 97
 The Ukrainian Path to Success ........................................................ 99
 Setbacks or Considerations .............................................................. 101
 Recommendations for US Fires ....................................................... 103
 Precision and Volume ...................................................................... 103
 Production ........................................................................................ 104
 Dynamic and Deliberate Targeting ................................................ 106
 Any Sensor, Best Shooter ............................................................... 107
 Artificial Intelligence and Airspace Management .............................. 108
Table of Contents

Improving System Use................................................................. 109
Training.................................................................................... 110
Conclusion...................................................................................... 111
Endnotes ...................................................................................... 112

7 – Mission Command: An Essential Component in Ukraine’s Fight against Russia ................................................................. 115
Jamon K. Junius

What Is Mission Command?.......................................................... 115
Ukraine and Mission Command ..................................................... 117
A Brief History of Mission Command in Ukraine ......................... 117
Mission Command in Action: The War in Ukraine ...................... 119
Russia and Mission Command ...................................................... 122
Lessons Learned and Recommendations ...................................... 124
The US Army and Risk Acceptance .............................................. 124
Professional Military Education and Training on Mission Command Matter .................................................. 125
Superior Command-and-Control Systems May Make Implementing Mission Command More Difficult .................... 125
Professionalism, Unit Cohesion, and Experience Are Essential to Mission Command ...................................................... 125
Mission Command Is the Operating System of Large-Scale Combat Operations; We Must Take Action .................... 125
Conclusion...................................................................................... 126
Endnotes ...................................................................................... 127

8 – Sustaining Effective Combat Leadership: Observations from the Russia-Ukraine War ................................................................. 131
Brian A. Dukes and Vincent R. Scauzzo

Leadership in the Army ........................................................................ 132
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being a Leader: Your People and You</td>
<td>132</td>
</tr>
<tr>
<td>Being a Leader: Being a Student</td>
<td>133</td>
</tr>
<tr>
<td>Leadership in the Armed Forces of Ukraine</td>
<td>134</td>
</tr>
<tr>
<td>General Zaluzhny</td>
<td>134</td>
</tr>
<tr>
<td>Colonel General Oleksandr Syrsky</td>
<td>136</td>
</tr>
<tr>
<td>Instances of Leadership Replacement</td>
<td>137</td>
</tr>
<tr>
<td>Examining (and Reexamining) the Russian Model</td>
<td>138</td>
</tr>
<tr>
<td>Current US Command Post Theory</td>
<td>141</td>
</tr>
<tr>
<td>Key Takeaways for Future Leaders in Large-Scale Combat Operations</td>
<td>141</td>
</tr>
<tr>
<td>Leadership in Action</td>
<td>141</td>
</tr>
<tr>
<td>Leadership Logistics</td>
<td>143</td>
</tr>
<tr>
<td>Conclusion</td>
<td>144</td>
</tr>
<tr>
<td>Endnotes</td>
<td>145</td>
</tr>
<tr>
<td>9 – Sustainment: Logistics</td>
<td>149</td>
</tr>
<tr>
<td>Darrick L. Wesson</td>
<td></td>
</tr>
<tr>
<td>Sustainment and Logistics Issues on the Russia-Ukraine Battlefield</td>
<td>150</td>
</tr>
<tr>
<td>Overreliance on Railways and Trucks</td>
<td>150</td>
</tr>
<tr>
<td>Issues within the Supply-Chain Structure</td>
<td>151</td>
</tr>
<tr>
<td>Industrial Challenges to Maintaining Adequate Levels of Production</td>
<td>152</td>
</tr>
<tr>
<td>Lessons Learned</td>
<td>153</td>
</tr>
<tr>
<td>Building a Strong Industrial Base</td>
<td>153</td>
</tr>
<tr>
<td>Maintaining Adequate Stockpiles of Ammunition and Equipment</td>
<td>155</td>
</tr>
<tr>
<td>Table of Contents</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>Protecting Supply Chains, Ammunition Storage, and Supply Dumps ................................................................. 155</td>
<td></td>
</tr>
<tr>
<td>Anticipating and Reevaluating Logistical Planning at the Magnitude of Large-Scale Combat Operations ............ 156</td>
<td></td>
</tr>
<tr>
<td>Conclusion .................................................................................................................................................. 158</td>
<td></td>
</tr>
<tr>
<td>Endnotes .................................................................................................................................................. 160</td>
<td></td>
</tr>
</tbody>
</table>

10 – Paper TigIRR: The Army’s Diminished Strategic Personnel Reserve in an Era of Great-Power Competition ........................................................ 163
Stephen K. Trynosky

| The Return of Attrition Warfare in the Russia-Ukraine War .......... 165 |
| Reassessment and Revitalization of the Individual Ready Reserve ... 165 |
| Research Findings: The Army’s Strategic-Personnel Depth in 2023 ................................................................. 167 |
| Large-Scale Combat Operations Will Exhaust the Army’s Pool of Trained Manpower ........................................ 167 |
| The Individual Ready Reserve Cannot Fill Current Force-Structure Gaps .......................................................... 168 |
| Acute Combat-Arms Recruiting Shortages ................................ 168 |
| Cross-Leveling Units Is Inappropriate for Large-Scale Combat Operations Mobilization .................................... 169 |
| The Department of Defense’s Guidance Does Not Reflect Today’s Environment .................................................. 170 |
| Mobilization and Expansion Timelines for LSCO Must Be Aggressively Shortened ........................................ 170 |
| Recommendation: A Critical Investment to Prepare for an Uncertain Era ............................................................ 171 |
| Conclusion .................................................................................................................................................. 172 |
| Endnotes .................................................................................................................................................. 174 |
# Table of Contents

## 11 – Russia-Ukraine War Lessons on Maneuver .............................. 179
Jason R. Lojka and Jason Du

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Background</td>
<td>179</td>
</tr>
<tr>
<td>The Evolution of an Idea: Maneuver Warfare</td>
<td>181</td>
</tr>
<tr>
<td>Maneuver Warfare on the Ukrainian Battlefield</td>
<td>183</td>
</tr>
<tr>
<td>Defense of Kyiv</td>
<td>183</td>
</tr>
<tr>
<td>Kharkiv Counteroffensive</td>
<td>183</td>
</tr>
<tr>
<td>Lessons Learned</td>
<td>185</td>
</tr>
<tr>
<td>Recommendations</td>
<td>187</td>
</tr>
<tr>
<td>Endnotes</td>
<td>189</td>
</tr>
</tbody>
</table>

## 12 – Protection: Electronic, Air, Civilian, and Infrastructure .......... 193
Matthew S. Holbrook

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Emerging Cyber and Electromagnetic Threat</td>
<td>194</td>
</tr>
<tr>
<td>Unmanned Aerial Systems and Air and Missile Defense</td>
<td>197</td>
</tr>
<tr>
<td>Protecting Civilians and Civilian Infrastructure</td>
<td>200</td>
</tr>
<tr>
<td>Protecting Supply Lines and Military Infrastructure</td>
<td>201</td>
</tr>
<tr>
<td>Conclusion</td>
<td>204</td>
</tr>
<tr>
<td>Endnotes</td>
<td>206</td>
</tr>
</tbody>
</table>

## 13 – Military Medical Adaptation in the Russia-Ukraine War ............ 209
Dennis M. Sarmiento

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reform</td>
<td>210</td>
</tr>
<tr>
<td>The Military Medical System</td>
<td>211</td>
</tr>
<tr>
<td>Adaptation to War</td>
<td>216</td>
</tr>
<tr>
<td>Lessons Learned</td>
<td>219</td>
</tr>
<tr>
<td>Lesson 1: Large-Scale Combat Operations Require Greater Medical Capability and Capacity Forward</td>
<td>219</td>
</tr>
</tbody>
</table>
Lesson 2: Specific Medical Training at Scale Improves Survival in Austere Large-Scale Combat Operations ........................................ 221

Lesson 3: Casualty Evacuation in Large-Scale Combat Operations Requires Adaptation of Available Transport .......................... 221

Lesson 4: Protection of Medical Capability and Capacity Must Be an LSCO Priority ................................................................. 222

Lesson 5: LSCO-Associated Medical Care Requires Role 4 Specialty Care in Depth ................................................................. 222

Way Ahead ........................................................................................................ 223

Endnotes ........................................................................................................ 224

14 – Russia-Ukraine War Lessons for Multidomain Operations .... 227
Steven L. Chadwick

Defining Multidomain Operations ................................................................. 228

The Russian Way of War ............................................................................. 228

Russian Doctrine Is Not Built for Large-Scale Combat Operations
Active Defense and Hybrid Warfare ............................................................. 229

Russian Force Design: Designed for the Wrong War ........................... 231

The Russian Challenges to Adapt: Lessons for Multidomain
Operations ..................................................................................................... 233

The Russian Army Is the First to Fail in Joint Operations ................. 234

The Russian Military Is Slow to Adapt to the Realities of Large-Scale Combat Operations ...................................................... 236

Russia-Ukraine War Lessons for Multidomain Operations ............. 237

Multidomain Operations Convergence Is Necessary for Effective Combined Arms in Large-Scale Combat Operations ............. 239

The Greatest Vulnerabilities for Multidomain Operations Are Command Posts and Sustainment Nodes .............................. 240

Conclusion ..................................................................................................... 242

Endnotes ........................................................................................................ 244
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Lessons from the War at Sea</td>
<td>247</td>
</tr>
<tr>
<td></td>
<td>Albert F. Lord Jr. and Thomas R. Kunish</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fundamentals of the Maritime Domain for Naval Operations</td>
<td>248</td>
</tr>
<tr>
<td></td>
<td>The Black Sea</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>The Maritime War in the Black Sea</td>
<td>251</td>
</tr>
<tr>
<td></td>
<td>Finding 1: Littoral Sea Control in the Near Seas</td>
<td>252</td>
</tr>
<tr>
<td></td>
<td>Finding 2: Extending Sea Control beyond the Littoral</td>
<td>253</td>
</tr>
<tr>
<td></td>
<td>Finding 3: Unmanned Surface Vessels</td>
<td>254</td>
</tr>
<tr>
<td></td>
<td>Recommendations and Conclusion</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>Endnotes</td>
<td>258</td>
</tr>
<tr>
<td>16</td>
<td>The Failure of Russian Airpower in the Ukraine War: Potemkin on the Dnieper</td>
<td>261</td>
</tr>
<tr>
<td></td>
<td>Sean M. Wiswesser</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Early Assumptions by Russia and the West</td>
<td>263</td>
</tr>
<tr>
<td></td>
<td>Russian Strategic Air Doctrine</td>
<td>264</td>
</tr>
<tr>
<td></td>
<td>Russian Air Force Initial Execution and Losses: How It Lost in the Air</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Why Russia Could Not Execute Its Airpower Doctrine in Ukraine</td>
<td>274</td>
</tr>
<tr>
<td></td>
<td>Conclusion</td>
<td>278</td>
</tr>
<tr>
<td></td>
<td>Endnotes</td>
<td>281</td>
</tr>
<tr>
<td>17</td>
<td>Jus Post Bellum: Creating a Better Peace</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Marlon A. Thomas and Gabriella N. Boyes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What Is Jus Post Bellum?</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Jus Post Bellum Principles</td>
<td>286</td>
</tr>
<tr>
<td></td>
<td>Applying Just-War Principles to the Russia-Ukraine War</td>
<td>288</td>
</tr>
<tr>
<td></td>
<td>Russia’s Objectives at the Start of the Conflict</td>
<td>288</td>
</tr>
</tbody>
</table>
Table of Contents

Ukraine’s Objectives ................................................................. 289
Russia’s New Objectives .......................................................... 290
Lessons Learned for the United States ................................. 294
Just Cause for Termination .................................................. 294
Right Intention ...................................................................... 295
Discrimination ....................................................................... 296
Legitimate Authority ............................................................ 296
Proportionality....................................................................... 297
Conclusions .......................................................................... 298
Endnotes .............................................................................. 300

18 – Lessons from Ukraine for the Future Force ................... 305
Gabriella N. Boyes, Jingyuan Chen, and Vincent R. Scauzzo

   Technology and the Changing Character of War .................. 306
   Leadership and Mission Command ..................................... 309
   The Home Front ............................................................... 312
   Conclusion ........................................................................ 315
   Endnotes .......................................................................... 316

About the Project Director ..................................................... 319
About the Chief of Staff ......................................................... 319
About the Researchers .......................................................... 319
About the Interns .................................................................... 322
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Foreword

Fifty years ago, the US Army faced a strategic inflection point after a failed counterinsurgency effort in Vietnam. In response to lessons learned from the Yom Kippur War, US Army Training and Doctrine Command was created to reorient thinking and doctrine around the conventional Soviet threat.

Five decades after the Yom Kippur War, another conflict called upon the US military to assist an ally under threat. The Russia-Ukraine War quickly became the largest conflict in Europe since World War II, and the United States again served as the arsenal of democracy in a fight against totalitarianism. Although horrific and brutal, the war also intensified the process through which armies learn lessons, and new technology (and old technology used in new ways) demonstrated the changing character of war in the information age.

A team of researchers at the US Army War College (Army officers, a US Navy civilian, a Canadian academic, a Ukrainian officer, and a State Department officer from the Air War College) spent much of the 2022–23 academic year conducting open-source research on the first 10 months of the war. The team designed its effort to derive lessons learned from the conflict and to help the US military adapt to the demands of modern warfare.

The team concluded the Army must embrace the Russia-Ukraine War as an opportunity to reorient the force into one as forward thinking and formidable as the Army that won Operation Desert Storm. This book suggests changes the Army, US Air Force, and Navy should make to enable success in multi-domain, large-scale combat operations at today’s strategic inflection point.

This book’s lessons could hardly be timelier, nor more important, as the world confronts multiple challenges that require the US military to be as ready as possible to deter war—and, if deterrence fails, to fight and win.

Dr. C. Anthony Pfaff
Interim Director, Strategic Studies Institute
and US Army War College Press
Executive Summary

The Russia-Ukraine War has given a glimpse of the future of modern warfare. Russia and Ukraine’s approaches indicate the character of modern warfare has changed, and US forces are now at a strategic inflection point. In this book, the authors analyze the Russia-Ukraine War from various angles, including warfighting functions or groups of systems commanders use to accomplish missions, domains of warfare, and history. This book identifies the US Army’s current weaknesses and the lessons it must learn from the Russia-Ukraine War as the service reexamines all aspects of its composition to prepare for future conflicts.

The narrative of conflict is a key component of modern warfare. The history surrounding who should rightfully control Ukraine has been central since the beginning of the Russia-Ukraine War, and public perception has influenced support in Ukraine. In addition, the communication of threats, or lack thereof, has played an important role in deterrence in which one power uses the threat of force to preclude an adversary’s attack. Ukraine’s experience shows how the United States can control the narrative of an ongoing war both to equip US allies and to inspire the public to assist willingly.

The war has shown how effective leadership is executed and what role it will play in future conflicts. Internationally, allies have been crucial to supplying Ukraine, and the need for more joint training and interoperability between allies is clear. Within the Ukrainian military, a leadership strategy based on newly adopted mission-command principles has seen repeated success against the hierarchical Russian army. Because commanders can take disciplined initiative, acting without orders but within commanders’ intent, Ukraine has been more effective than Russia in maneuver, fires, agility, and other areas. Ukraine’s success underscores the importance of developing mission command and risk acceptance in the US Army.

Some of the greatest changes in the character of war are technological—for example, the use of drones, electromagnetic detection, signal interception, and open-source intelligence. Drones’ surveillance implications and potential to target traditionally secure locations have changed the battlefield. Additionally, the war has shown how cyber warfare exposes military and civilian infrastructure to attack, revealing vulnerabilities in current US battlefield logistics. Ukrainians have used artificial intelligence to identify potential threats and to target with artillery more effectively.
Executive Summary

Artificial intelligence improves force integration, which is increasingly crucial as multidomain operations—the combined use of air, land, and sea defenses—play an increasing role in conflict.

Often overlooked, sustainment functions have proven crucial in the Russia-Ukraine War. Both Ukraine and Russia have struggled with equipment and manpower sustainment. In the first year of the war, Russia’s logistical unpreparedness contributed to the country’s failure to accomplish objectives. The United States would likely face similar difficulties in large-scale combat operations as a result of the country’s insufficient munitions-manufacturing capabilities and its manpower crisis.
Introduction:
Lessons from Ukraine for the Future Force

Katie Crombe and John A. Nagl
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Andrew S. Grove, the president and chief executive officer of the Intel Corporation, coined the phrase “strategic inflection point” in 1988 to describe a fundamental change in the well-being of an organization. Grove visually depicted the inflection point as the exact point where the nature of the organization changes in a subtle but profound and lasting fashion, leading to a path of growth or decline. At this juncture, adept and creative leaders recognize and accept this choice, advancing their organizations to meet the moment. Rigid, hesitant, or risk-averse leaders fail to accept this departure, leading to irrelevance and, ultimately, organizational failure.

In 1973, the US Army faced a strategic inflection point. The US intervention in Vietnam left the Army demoralized, and American leadership watched as the Soviet-equipped Egyptian Armed Forces nearly defeated the US-equipped Israeli Defense Forces in the Yom Kippur War. In response, the chief of staff of the US Army established US Army Training and Doctrine Command to reorient thinking and doctrine around the conventional Soviet threat. Chief of Staff of the US Army Creighton William Abrams Jr., selected General William E. DePuy, a revolutionary intellectual and combat leader, to spearhead the effort. DePuy’s new organization was charged with studying the Yom Kippur War of 1973 to develop concepts, drive procurement and materiel changes, and prepare the Army to fight a modern war. Secretary of Defense James R. Schlesinger, Abrams, and DePuy recognized the Army was at a critical juncture and only a monumental shift could prepare the force for the changing character of war. Fifty years would pass before the next great inflection point that suggested a need for doctrine and materiel changes had emerged.

Today, the Army faces a new strategic inflection point, a choice to alter the fundamental way the service prepares for the next fight. As the defense establishment emerges from 20 years of counterinsurgency operations and

begins to embrace a future of large-scale combat operations, the ongoing Russia-Ukraine War brings the changing character of warfare into sharp relief—a future of warfare marked by advanced autonomous weapon systems, artificial intelligence (AI), and a casualty rate the United States has not experienced since World War II.

An American Army still grappling with the lessons from the Afghanistan War must embrace the Russia-Ukraine War as an opportunity to drive progress toward the creation of a better force. The Army must also embrace strategic direction as forward thinking and formidable as the one US Army Training and Doctrine Command built for the United States ahead of Operation Desert Storm. In fall 2022, a team of faculty and students at the US Army War College assembled around this call to action. The team believed the Russia-Ukraine War unfolding in front of them was a wake-up call for the Army across the traditional warfighting functions that required a culture change across the service’s education, training, and doctrine enterprise to embrace new lessons learned and to drive change across all echelons of the Army. This book, which is the fruit of the team’s labors, is being presented in the hope it will help the Army to adapt to the requirements of the current crisis, reflecting the service’s learning from the Yom Kippur War 50 years ago.

**Education, Training, and the Roots of Training and Doctrine Command**

In his early experience in Normandy, DePuy saw his division lose 100 percent of its enlisted men and 150 percent of its officers in six weeks, providing him with a profound lesson on the ramifications of poor leadership and insufficient training. DePuy spent the rest of his career focusing on leader development—specifically, on balancing the need for training and education. DePuy saw the necessity of linking the “what” and “how” (training) with the “why” and “whether” (education) in a performance-oriented training environment.

DePuy also reoriented doctrine after the Yom Kippur War toward fighting manuals that taught combat and support soldiers how the Army would fight on a modern battlefield at every level, from weapon teams to division headquarters. The goal of the manuals was to orient soldiers and officers on practical ways to optimize the Army’s weapon systems and to minimize vulnerabilities to the enemy’s systems. DePuy wanted to bring combat development out of the ambiguous and distant future into real-time training that anticipated imminent threats. Finally, DePuy believed careful selection
and training of soldiers—including training leaders and units together—mattered in the drive for combat readiness. DePuy’s legacy lives on in two commands today. Having responsibility for transformation and innovation priorities, Army Futures Command should pay close attention to the war in Ukraine, but DePuy’s brainchild, Training and Doctrine Command, can lead the Army back to the basics of education, training, and doctrine development at the pace at which it was founded—a pace that drove ruthless prioritization and reassessment.

Why Now?

American military leadership recognizes the titanic shift in geopolitics, with General Mark A. Milley, chairman of the Joint Chiefs of Staff, calling Russia’s February 2022 invasion of Ukraine the “greatest threat to peace and security of Europe and perhaps the world” in his 42 years of uniformed service. The conflict in Europe and the arrival of AI and autonomous and hypersonic weapon systems point to fundamental changes in the character of war and the way military forces fight. As it did after the Yom Kippur War, the Army must examine the Russia-Ukraine War to derive lessons learned for doctrine, organization, training, materiel, professional military education, and Army leader development as well as integrate all these lessons into organizing, training, and equipping a force that can win future conflicts anywhere on the spectrum. At the request of Training and Doctrine Command, a small US Army War College team of faculty and students began an examination in 2023 that led to a handful of takeaways that merit further study in the areas of command and control, mission command, casualty replacement and reconstitution, AI, intelligence and deception, and multidomain operations (MDO). This introduction hits the wavetops of each area in turn.

Command and Control

Twenty years of counterinsurgency and counterterrorism operations in the Middle East enabled by air, signals, and electromagnetic dominance generated chains of command that rely on perfect, uncontested communication lines and an extraordinary and accurate common operational picture of the battlefield broadcast in real time to colocated staff in large Joint Operations Centers. The Russia-Ukraine War demonstrates the electromagnetic signature emitted from the command posts of the past 20 years cannot survive against the pace and precision of an adversary, whether state or non-state actor,
that possesses sensor-based technologies, electronic warfare, and unmanned aerial systems or has access to satellite imagery. The Army must focus on developing command-and-control systems and mobile command posts that enable continuous movement, allow distributed collaboration, and synchronize across all warfighting functions to minimize electronic signature. Ukrainian battalion command posts reportedly consist of seven soldiers who dig in and jump twice daily. Although this standard will be hard for the US Army to achieve, the standard points in a very different direction than the hardened command posts the service has been employing for two decades.⁸

**Culture Eats Strategy for Breakfast**

Perhaps more important than fielding new command-and-control systems is the culture shift required to embrace distributed command and control, more commonly known as mission command. When Milley served as chief of staff of the Army, he explained mission command through a concept of “disciplined disobedience” in which subordinates are empowered to accomplish a mission to achieve the commander’s intended purpose—even if they must disobey a specific order or task to do so. Without perfect communication, a subordinate officer or soldier must be trusted to make the right judgment call during battle, unencumbered by the need to seek approval for small adjustments.⁹

Mission command is not doctrine to be written, tested, and shelved. Rather, mission command must be lived, trained, rehearsed, and embraced as an integral part of daily operations and training in garrison and combat at every echelon. The advent of AI affords the US military the opportunity to reimagine mission command and test it with virtual simulation environments. One cannot expect a brigade that micromanages garrison tasks to execute combat operations successfully at the attrition rate incurred in modern large-scale combat operations. Disciplined disobedience requires initiative to provide and to understand the commander’s intent, end states, constraints, and restraints. Leaders and followers must be brilliant at the basics and be able to embrace change and think critically. Trust is the essential ingredient in mission command, and changing the Army’s organizational culture to encourage senior leaders to empower and support subordinates is an enormously difficult task that will require focused attention from senior Army leaders.¹⁰
Lessons from Ukraine for the Future Force

Casualties, Replacements, and Reconstitutions

The Russia-Ukraine War is exposing significant vulnerabilities in the Army’s strategic personnel depth and ability to withstand and replace casualties. Army theater medical planners may anticipate a sustained rate of roughly 3,600 casualties per day, ranging from those killed in action to those wounded in action or suffering disease or other nonbattle injuries. With a predicted 25-percent replacement rate, the personnel system will require 800 new personnel each day. For context, the United States sustained about 50,000 casualties in two decades of fighting in Iraq and Afghanistan. In large-scale combat operations, the United States could experience the same number of casualties in two weeks.

In addition to the disciplined disobedience required to execute effective mission command, the Army is facing a dire combination of a recruiting shortfall and a shrinking Individual Ready Reserve. The recruiting shortfall—nearly 50 percent in the combat-arms career management fields—is a longitudinal problem. Every infantry and armor soldier the Army does not recruit today is a strategic mobilization asset the service will not have in 2031. The Individual Ready Reserve, which stood at 700,000 in 1973 and 450,000 in 1994, stands at only 76,000 today. These numbers cannot fill the existing gaps in the active force, let alone any casualty replacement or expansion during a large-scale combat operation. The implication is the 1970s concept of an all-volunteer force has outlived its shelf life and does not align with the current operating environment. The technological revolution described below suggests the Individual Ready Reserve has reached obsolescence. Troop requirements for large-scale combat operations may well require a reconceptualization of the 1970s and 1980s volunteer force and a move toward partial conscription.

The Changing Character of War

Dramatically increased casualty rates with resulting implications for force structure and manning requirements is just one of the many dramatic changes in the character of war. The ubiquitous use of unmanned aerial vehicles, unmanned surface vehicles, satellite imagery, sensor-based technologies, smartphones, commercial data links, and open-source intelligence is fundamentally changing the way armies will fight on the land domain in much the same way unmanned aerial vehicles have changed the way air forces conduct operations in this century. These systems, coupled with
emerging AI platforms, dramatically accelerate the pace of modern war. Tools and tactics that were viewed as niche capabilities in previous conflicts are becoming primary weapon systems that require education and training to understand, exploit, and counter. Non-state actors and less-capable nation-states can now acquire and capitalize on technologies that bring David’s powers closer to Goliath’s.

Beyond the military changes, transnational corporations in the commercial sector are playing an operationally significant role in the AI and information battlespace. These private companies are exponentially increasing the effectiveness of intelligence processing, exploitation and dissemination, dynamic targeting, and fires. A public-private partnership founded on transparency is essential when preparing for, and while engaging in, conflict. This partnership should be formed in garrison, and training exercises with private companies should be incorporated into war games, planning, exercises, and experimentation to ensure soldiers are familiar with systems that may prove vital in future combat and so the private companies can gain a better understanding of the capabilities the military needs.18

**Embrace Deception and Increase Usage of Unclassified Intelligence**

The incorporation of open-source and declassified intelligence into the information space immediately proved effective at the outset of the Ukrainian conflict, shifting domestic, international, and adversary reactions upon release. This technique will play an outsized role in future conflicts, and when advantageous, open-source intelligence should be integrated into intelligence fusion to ensure expedited dissemination to the public—always while ensuring the benefit of releasing the intelligence is worth the possible risk to sources and methods inherent in any declassification efforts. Although many examples of the application of open-source information to the Russia-Ukraine War cannot be discussed in this introduction, one that can is crowdsourcing possible war crimes to enable the attribution and eventual prosecution of the perpetrators.19

Beyond the incorporation of open-source intelligence, Army professional military education and training must include basic instruction on deception operations, given the unparalleled transparency observed during operations in Ukraine. The Armed Forces of Ukraine are exceptionally skilled
at deception across the strategic, operational, and tactical levels, an effect that requires synergy and trust to integrate capabilities across domains.

**Multidomain Operations**

The Army continues to make significant headway in the development of MDO, with the service’s third MDO task force having achieved full operational capability in May 2023. These theater-specific task forces incorporate long-range precision effects, including cyber, electronic warfare, intelligence, and long-range fires, to counter hybrid threats from Russia and China. Although the MDO task forces are modernizing rapidly, the remainder of the Army must also understand and incorporate the tenets of MDO that will characterize future wars. The communication and visualization requirements for an all-knowing, all-seeing MDO task force are significant and largely immobile, meaning the smaller maneuver units must understand the capabilities of an MDO task force without necessarily having unencumbered access to it. The smaller units must anticipate gaps in enemy defenses and exploit emergent advantages. Anticipation, exploitation, and mission command do not happen organically; all require education, training, and doctrine.

Having examined MDO during the Russia-Ukraine War, the study team asserts the US Army should reassess the roles and responsibilities of headquarters at echelon to account for MDO and other emerging organizational structures, such as the Penetration Division. The Army must expand linkages between Joint exercises, division-level warfighters, and combat training rotations to teach the synchronization of convergence and combined arms within the context of MDO. DePuy’s “how to fight” manuals of the past reinvented as chat platforms fueled by generative AI knowledge bases and layered on top of National Training Center rotations, division and corps warfighter exercises, and small-unit training would serve as the ultimate convergence activity.

**So What?**

Grove believed a strategic inflection point rarely announces itself—rather, it presents as a choice to bring clarity to chaos and take a new path, one that allows the organization to meet the moment rather than follow a comfortable but dead-end road. Today’s Army is reminiscent of the Army of 1973, rife with experience, knowledge, and opportunities for change.
Training and Doctrine Command was established to transform the Army into the most effectively trained, equipped, led, and organized land power in the world. DePuy’s experiences in World War II and the Vietnam War and his study of the Yom Kippur War shaped his belief transforming the Army into a land power capable of defeating a modern enemy required an Army-wide conceptual and doctrinal overhaul. DePuy believed officers must be intellectually capable, and he placed a premium on those who could solve problems with speed and quickly institutionalize change across the organization.

The Army of 2023 faces a similar inflection point—an opportunity to reassess the professional military education soldiers and officers are receiving across the Training and Doctrine Command Centers of Excellence, soldiers and officers’ training experiences at the National Training Centers, and the daily training and education soldiers and officers receive throughout their careers. The AirLand Battle concept derived from the Yom Kippur War may now morph into AI land battle informed by the Russia-Ukraine War and a future of largely unmanned or remotely manned ground combat vehicles. The Army must look at the scaffolding of everything from the basic courses to war colleges and orient lessons on what is being learned today, incorporating real-time, wartime action into the classroom and simulated battlefields. Although modernization often focuses on the material aspect of progress, the heavy lifting occurs when integrating new material with doctrine, organization, training, leadership, personnel, and facilities. To remain relevant to the pace of the rapidly changing character of war, Training and Doctrine Command must lead this initiative now, adapting education and training in real time. Although crisis acts as a useful crucible for innovation, the Army must ensure it captures these rapid changes in a manner that can be immediately written into doctrine, implemented in training, and woven into the daily lives of soldiers in garrison and combat.

The Armed Forces of Ukraine are buying lessons with blood that preserve their freedom and can help the US Army deter and, if necessary, fight and win future wars at a lower cost of life and treasure. Not paying full attention would dishonor these soldiers’ sacrifices and the memory of General DePuy.
Endnotes


8. US Army general officer, interview by the authors, April 2023.


11. Brian Dukes, “Senior Leader Resilience and Replacement” (strategic research paper, USAWC, Carlisle, PA, 2023); and Dennis Sarmiento, “Medical Implication of the Ukrainian War” (strategic research paper, USAWC, Carlisle, PA, 2023).


27. Volodymyr Grabchak and Myra Naqvi, “Ukrainian History and Perspective” (strategic research paper, USAWC, Carlisle, PA, 2023).
Ukrainian History and Perspective

Volodymyr Grabchak and Syeda Myra Naqvi

Keywords: Ukrainian history, Ukrainian sovereignty, Ukrainization, Ukrainian independence, reform, Orange Revolution, Euromaidan, annexation

On February 24, 2022, thousands of Ukrainians woke up to the sounds of rocket explosions and aerial bombs targeting their cities. Screams, terror, tears, and the frightened eyes of children filled the spaces of the long-suffering Ukrainian land. Russia’s unprovoked, brutal war of aggression against Ukraine encapsulates the country’s age-old fight for sovereignty and the deep and contentious history of conflict between Ukraine and Russia.

That morning, under the threat of destruction, Ukrainians became united once more, and their patriotism led them to identify themselves clearly as Ukrainians and categorically dissociate themselves from “brotherly” Russia. Insight came even to those who, during the last eight years, had considered the Russians a fraternal people. Despite the devastation of the first weeks of the invasion, Ukrainians began taking their will into their own hands. Basements of buildings and underground metro stations became bomb shelters, and grocery stores and hookah lounges became places for Ukrainians to find electricity. Thousands of Ukrainians volunteered for the Territorial Defense Forces or the Armed Forces of Ukraine. These volunteers gave all their strength, savings, and property to the fight against the deadly

Acknowledgements: This chapter is dedicated to the memory of “V,” who selflessly answered the call to defend Ukraine. V was among the first to volunteer to join the Armed Forces of Ukraine. As part of his unit, V participated in the battles at the hottest points of friction in the Donetsk region: the battles for Bakhmut. Despite surviving for nearly a year, V did not return from the hellish battles alive. V’s heroic actions live on in the memories of his son and two daughters as well as in the hearts of his countrymen who continue to fight for a future in which their children can live in a free, united, independent, and prosperous Ukrainian state.
Russian onslaught, and thousands more gave their lives in the name of Ukrainian victory.

The length of the Russia-Ukraine War has both allowed the Russian military to learn from its mistakes and enabled the Russian government to continue to spread misinformation about Russo-Ukrainian relations and history. Russian President Vladimir Putin regularly proclaims Ukraine to be Russian territory with the false explanation Ukraine and Russia are historically bound to each other. As Ukraine continues to fight for its sovereignty, the world must keep its history alive to prevent Ukrainian morale from falling and the Russian misinformation campaign from prevailing.

**Ancient Ukrainian History:**

**Ukraine’s Struggle for Independence**

A millennium ago, present-day Kyiv was the heart of the Kievan Rus state. The Rus, Viking traders from Slavic, Baltic, and Finnic tribes, sailed the Dnieper River from the Baltic Sea to the Black Sea and traded with neighbors.\(^1\) Today, Putin claims Russian and Ukrainian history dates to the settlement of the Rus tribes and the shared culture of those who lived together in Kyiv, but this claim is demonstrably false. The Rus were not as Russian as Putin says they were. In fact, the Rus were more Swedish- or Western-aligned than anything else. After the Mongol conquests of 1237–41, populations abruptly shifted. Some fled northeast to Suzdal, present-day Moscow, and others moved west to Galicia, present-day Lviv.\(^2\) Although Kyiv was under the nearly direct rule of the Mongols, Lviv fell under the cultural influences of Poland. Today, Lviv continues to serve as Ukraine’s cultural center, independent of Russian influence.\(^3\)

By the late 1390s, the Polish and Catholic influence on Ukraine from Lithuania was greater than the Russian and Eastern Orthodox influence on Ukraine. In the late 1390s, no Ukrainian land Russia claims today was under medieval Moscow’s control. Rather, Ukrainian land was in Lithuania and unsettled territories.\(^4\) In 1596, the Union of Brest-Litovsk united the Roman Catholic Church with several million Ukrainian Eastern Christians living under Polish rule in Lithuania. In the centuries to follow, different groups repeatedly conquered and divided the lands of present-day Ukraine. Although Putin claims the 1654 Pereyaslav Agreement was the official union of Ukraine and Russia, the Treaty of Hadyach, signed only four years later, redivided the lands that had recently been given to Moscow.\(^5\)
Thus, Russia does not have, nor has it ever had, the influence and autonomy the country claims to have over Ukraine.

Today, many Ukrainians align themselves with the historical Kievan Rus state, and Russia maintains, though Ukrainians fell under the cultural influence of Poland and Lithuania, in reality, the true cultural traditions of Kyiv were upheld in the Grand Principality of Moscow. The belief the Kievan Rus state is either Russian or Ukrainian is inaccurate since neither modern Ukrainian nor Russian identities originate from the roots of the Kievan Rus state. Rather, the identities of Ukraine and Russia, like those of most modern states, are products of the past few centuries.

Forced Russification marked the eighteenth century in Ukraine. Catherine the Great spread serfdom throughout the vast region many called, “Little Russia.” Despite a growing sense of Ukrainian identity during the eighteenth and nineteenth centuries, Russians sought to undermine the existence of a Ukrainian nation, calling it “Southern Russia” or “Little Russia.” Russians insisted Ukrainians were ethnically Russian and even banned the teaching of the Ukrainian language in schools, limiting the impact of the Ukrainian nationalist movement and resulting in widespread illiteracy and Russification. In addition to banning the Ukrainian language, the Russian state attacked the nationalist movement by outlawing Ukrainian books, periodicals, and media. As Russians actively stamped out the Ukrainian language and replaced it with Russian, eastern Ukraine became increasingly industrialized, resulting in both ethnic and geographic stratification. In the late nineteenth century, an independent Ukrainian identity began to form. Ukrainians had their own food, customs, and local traditions. In the 1890s, the term “Ukrainian” was used for the first time as an ethnic identifier.

Ukraine’s brief independence in 1917 ended with the birth of the Soviet Union. In 1922, Ukraine signed the founding document of the Soviet Union and fell victim to re-Russification—most notably, when Soviet leader Joseph Stalin initiated a man-made famine, the Holodomor, in 1932. The famine, induced by Stalin to break the resistance of the Soviet peasantry, killed nearly five million Ukrainians. In 1937, 11.3 percent of the Ukrainian Soviet Socialist Republic was Russian, yet Russians made up 34.5 percent of the Supreme Council of Ukraine, the country’s ruling body. Despite Ukraine having developed an independent culture and identity, the Soviet Union managed to suppress nationalist movements through the forcible adoption of the Russian language, which Ukrainians had to use if they wanted social mobility. In addition to the man-made famine, Ukraine suffered purges in the 1930s that
wiped out the Ukrainian leaders of the national movement of the 1920s.\textsuperscript{13} During the 1920s, 1960s, and the years before the collapse of the Soviet Union, the Ukrainian government launched “Ukrainization” educational and state-service programs. Although Moscow reversed these programs, Ukraine’s persistence helped to preserve the Ukrainian language while the country suffered under Soviet rule.\textsuperscript{14} Although the period of Soviet rule proved to be a dark one for the people of Ukraine, this period also united most Ukrainian-speaking areas and encouraged the creation of a Ukrainian identity.

On February 19, 1954, the Crimean region was transferred from the Russian Soviet Federated Socialist Republic to the Ukrainian Soviet Socialist Republic by decree of the Presidium of the Supreme Soviet. Transfer of the Crimean region to the Ukrainian Soviet Socialist Republic was explained by the “common economy, territorial proximity, and close economic and cultural ties between the Crimean region and the Ukrainian SSR.”\textsuperscript{15} Among Russians, the myth took root Crimea was personally given to Ukraine as a gift by Nikita Khrushchev, the first secretary of the Central Committee of the Communist Party of the Soviet Union, who was closely connected with Ukraine. Khrushchev claimed the transfer of Crimea was a “‘noble act on the part of the Russian people’ to commemorate the 300th anniversary of the ‘reunification of Ukraine with Russia.’”\textsuperscript{16} But Khrushchev could not hand over Crimea on his own simply because, between 1953 and 1956, he was not and could not be the sole head of the Soviet state. In fact, between 1953 and 1956, a triumvirate existed among the chairman of the Presidium of the Supreme Soviet and formal head of state, Kliment Yefremovich Voroshilov; the chairman of the Council of People’s Commissars (an analog of the prime minister), Georgy Maksimilianovich Malenkov; and the first secretary of the Central Committee, Khrushchev. This trio and many other members of the Central Committee and the Politburo made decisions collegially. Therefore, Khrushchev could not have given a gift unilaterally.

Additionally, world leaders have scrutinized Crimea’s transfer and suggested ulterior motives were behind it. Rather than encourage the unity of Russians and Ukrainians, the transfer of Crimea to the Ukrainian Soviet Socialist Republic allowed for the fortification of Soviet control in Ukraine because 860,000 ethnic Russians living in Crimea joined the already-large Russian minority in Ukraine.\textsuperscript{17} According to the historian Mark Kramer, by increasing the share of the Russian population in Ukraine, Khrushchev undermined the basis for the development of Ukrainian nationalism.\textsuperscript{18} Additionally, the transfer of Crimea allowed for Khrushchev to gain support from Ukrainian elite Oleksy Kyrychenko in the upcoming election for the Presidium of the Central Committee against Malenkov. At the time,
the transfer of Crimea did not mean much to the Soviet Union because the Ukrainian Soviet Socialist Republic was still under the Soviet Union’s control. But since the dismantlement of the Soviet Union in 1991, Russia has insisted Crimea is a Russian land. Nevertheless, Crimea, historically inhabited by the Crimean Tatar population, became part of Russia only in 1783, and Russians became the ethnic majority in Crimea only at the end of the nineteenth century, after Crimean Tatars emigrated to Turkey in three waves.

One must not replace the legal argument with the historical one. Crimea belongs to Ukraine according to international law, which Russia confirmed under the 1997 Treaty on Friendship, Cooperation, and Partnership between Ukraine and the Russian Federation. In addition, the 2014 UN General Assembly vote unequivocally confirms the integrity of Ukraine and the international community’s recognition of the country’s right to Crimea from a political point of view.


On August 24, 1991, Leonid Kravchuk, the leader of the Ukrainian Soviet Socialist Republic and future member of the Social Democratic Party of Ukraine, declared Kyiv’s independence from Moscow and became Ukraine’s first president. Kravchuk’s declaration was an unexpected and painful event for the Russian political elite, so they immediately declared Kyiv’s independence an unfortunate historical “misunderstanding” that needed to be corrected as soon as possible. Later, Putin called this collapse “the greatest geopolitical catastrophe of the 20th century” and a failure of Russian power. Importantly, on August 27, 1991, two days after the Supreme Council of Ukraine adopted Ukraine’s declaration of independence, Russia announced its official position on relations with Ukraine: “Russia reserves the right to raise the issue of border revision.”

From the start of Ukraine’s independence, Ukrainian politicians were forced to focus on maintaining friendly relations with Russia, and President Leonid Kuchma believed in the necessity of preserving close economic relations with Russia. As Ukraine worked to establish itself as an independent nation, it had to balance its desire to work with Western entities with its economic dependence on Russia. In December of 1991, the newly independent nations of Belarus, Kazakhstan, and Ukraine inherited 5,000 strategic and tactical nuclear weapons from the Soviet Union, giving Ukraine the third-largest nuclear arsenal in the world at the time and raising concerns the Soviet Union would be surrounded by three
nuclear-weapon successor states. In response, in 1992, the United States and Russia engaged Belarus, Kazakhstan, and Ukraine in the Lisbon Protocol, prompting the three former Soviet states to return their nuclear weapons to Russia. The agreement made all five states parties to the 1991 Strategic Arms Reduction Talks I, which required the United States and Russia to cut their strategic nuclear forces from 10,000 warheads to below 6,000 warheads apiece.24

The Strategic Arms Reduction Talks I symbolized Ukraine’s agreement to remain a nonnuclear-weapon state. Kravchuk’s signing of the Lisbon Protocol was followed by criticism from Ukrainian officials, who argued in favor of keeping nuclear weapons to deter Russian encroachment.25 But many saw no point in keeping the weapons in Ukraine.26 Additionally, after the signing of the Budapest Memorandum in 1994, Russia, the United Kingdom, and the United States agreed to provide security assurances to Ukraine in exchange for it joining the Treaty on the Non-Proliferation of Nuclear Weapons as a nonnuclear state. Although such promises seemed like a good deal for Ukraine, Russia continued to violate Ukraine’s internationally recognized borders, leaving it almost defenseless. The Russia-Ukraine War may prompt world leaders to reconsider their ideas about nonproliferation and the validity of security assurances in today’s international climate.

In July of 1994, Kravchuk lost the presidential election to former Prime Minister Kuchma, who ran as an independent politician and promised economic reform and stronger relations with Russia. The Kuchma presidency represented political polarization between eastern and western Ukraine because Kuchma won significant support from the Russophone regions of eastern Ukraine and Kravchuk dominated the western region.27 The first half of Kuchma’s presidency continued Ukraine’s pro-Western policies. In 1994, Ukraine joined NATO’s Partnership for Peace program as well as the Council of Europe soon afterward.28

But the Kuchma presidency faced major economic-reform challenges because Ukraine’s economy performed poorly through the end of the 1990s and suffered from the Asian financial crisis of 1997–98, which had impacted the Russian economy. At the turn of the twenty-first century, with the help of tax-reform measures, Ukraine began to see the birth of a sufficient economy. Despite being based on democratic ideals, the 1999 presidential election brought forth uncertainties about the legitimacy of Ukrainian elections. Kuchma campaigned vigorously against Communist Party of Ukraine leader Petro Symonenko, and a strong media bias in favor of Kuchma quickly became evident.29 The margin of victory Kuchma
attained signaled voting irregularities and corruption in the newly independent nation. Kuchma’s second term witnessed threats to political stability because Ukraine sought to balance the pursuit of membership in NATO and the EU with strengthening ties with Russia. Simultaneously, newly appointed Prime Minister Viktor Yushchenko worked to bring economic reform and growth to Ukraine. In 2003, Ukraine agreed to establish economic ties with Russia, Belarus, and Kazakhstan. Ukrainian politics remained complex in the early 2000s because Ukraine struggled to balance its movement toward Western organizations with its commitment to Russia.

The 2004 presidential election between Yushchenko and Viktor Yanukovych brought the Orange Revolution, a series of peaceful protests against government corruption. Yushchenko’s campaign focused on anticorruption and centered on pro-Western ideas. Throughout the election, the Yushchenko campaign faced challenges from Yanukovych supporters and pro-Russian politicians. Yushchenko’s plane was denied landing privileges before major rallies, and the Yanukovych campaign dominated television coverage. Additionally, pro-Russian supporters harassed those who worked for the Yushchenko campaign. In September 2004, Yushchenko fell ill, and medical tests revealed he had suffered dioxin poisoning, purportedly carried out by the Security Service of Ukraine, which supported Yanukovych.

The November 2004 election resulted in a runoff, and unsurprisingly, Yanukovych was declared the winner, despite glaring voter irregularities. The Committee of Voters of Ukraine estimated 85,000 local-government officials helped to perpetrate the fraud, and more than 2.8 million ballots were rigged. The results of the runoff sparked nationwide protests in Maidan Square, located in central Kyiv. The two weeks of demonstrations—later termed the “Orange Revolution” because protestors wore orange, Yushchenko’s campaign color—resulted in the Supreme Court of Ukraine ruling the election was invalid. Following the December 26, 2004, rerun of the election, Yushchenko won 52 percent of the vote, and he was inaugurated on January 23, 2005.

The Orange Revolution was a monumental moment for Russo-Ukrainian relations. For the first time, people stood with the Ukrainian government. The call to action from everyday Ukrainians made the nation’s future appear bright, free of corruption, economically prosperous, and integrated with the Western world. But for Moscow, the Orange Revolution symbolized a united Ukraine, a nation that could break free from the Russian sphere of control and align itself with the West.
In response to the 2004 Orange Revolution in Maidan Square, Russia turned to energy politics as an avenue for exerting influence over Ukraine. Russia was no longer willing to offer Ukraine underpriced gas, nor would Russia tolerate nonpayment. Russia soon announced it would begin to sell gas to Ukraine at the market price of $230 per thousand cubic meters. But by 2006, Russia had reduced shipments to Ukraine, providing only the amount the former had agreed to sell to Western Europe. Immediately, European nations suffered a reduction in supplies of more than 40 percent, prompting nations to rethink their energy dependence on Russia. One way for Russia to mitigate another gas crisis was to diversify transit routes, thereby taking Ukraine out of the equation. The means to do so was the Nord Stream project, which runs under the Baltic Sea. Russia used the Nord Stream pipelines to cut Ukraine off from gas without similarly affecting the rest of Europe.

Although Russia’s preferred candidate lost the 2004 election, Yanukovych remained influential and worked his way into the Ukrainian government by becoming prime minister. In addition, Yanukovych enhanced his political role through a constitutional reform that took effect in 2006, a precursor to his consolidation of power in 2010. After a year of conflicting political interests between the presidency and parliament, Yushchenko organized a new round of parliamentary elections, this time bringing in Yulia Tymoshenko, the leader of one of the pro-Western Orange parties, as prime minister in December 2007.

At the 2008 Bucharest summit, NATO allies welcomed Georgia and Ukraine’s aspirations for NATO membership and encouraged democratic reforms in these states. President of the United States George W. Bush rallied for Ukrainian and Georgian membership and acknowledged the Membership Action Plan (MAP) as the next step for Ukraine in attaining NATO membership. The heads of state and government of the member countries of NATO issued a declaration the organization would begin a “period of intensive engagement with both countries at high political level to address the questions still outstanding regarding their MAP applications.” The MAP program, which involves difficult requirements for achieving NATO membership, ultimately pushed Ukraine to pursue internal political and military reforms as well as to work toward guaranteeing civil liberties. President Bush argued, “Welcoming them into the Membership Action Plan would send a signal to their citizens that if they continue on the path to democracy and reform they will be welcomed into the institutions of Europe. It would send a signal throughout the region . . . these two nations are, and will remain, sovereign and independent states.” The Bucharest
summit concluded with a compromise: Ukraine would not begin the MAP program, but NATO would keep an open-door policy to encourage Ukraine’s future membership. This decision, or lack thereof, has resulted in little progress in Ukraine’s path toward Western integration.

On August 8, 2008, Russian forces began the invasion of Georgia. Although the invasion was over within days, the conflict in South Ossetia continues to affect today’s geopolitical environment. Russia mobilized 70,000 troops against Georgia’s army of roughly 20,000 soldiers and reservists. The lack of a strong international response to Russia’s violation of internationally recognized borders encouraged the country to continue committing acts of aggression in Europe. On August 26, Russian President Dmitry Medvedev recognized Abkhazia and South Ossetia as independent countries, but Russia has since occupied the breakaway regions in violation of the cease-fire agreement.

The 2008 conflict in South Ossetia is widely recognized as the transition from the era of post-Soviet cooperation between Russia and the West to today’s Cold War climate. The conflict gave Russia the green light to conduct the same kind of assault in Ukraine. Additionally, the muted world response represents leaders’ failure to acknowledge Russia as a revisionist power—instead, emboldening Russia to continue its quest to increase its sphere of control. Internally, the Ukrainians also struggled to align themselves with the West. Despite efforts to maintain a stable administration that focused on attaining NATO membership and strengthening ties with Russia, the Orange-party coalition fell apart, and Ukrainian leadership was forced to pick up and start again. The spirit of the Orange Revolution quickly dissipated in the following years.

As Ukraine continued to battle the impending threat of Russia, another round of elections took place. The Ukrainian presidential election of 2010 led to a runoff between Yanukovych and Tymoshenko on February 7 and yielded split results, with western Ukraine in support of Tymoshenko and eastern Ukraine in favor of Yanukovych. Yanukovych, who won 48.95 percent of the vote, was inaugurated on February 25. Despite his controversial past in Ukrainian politics, Ukrainians and Yanukovych alike had high hopes for the future. Yanukovych campaigned as a moderate, reform-oriented pragmatist. Additionally, Yanukovych stressed the importance of maintaining a balance between Russia and the West. Despite his promises, Yanukovych consolidated power through the formation of a majority in parliament, a revision of the constitution, and the prosecution of Yulia Tymoshenko. The Yanukovych administration became known
for bribery, especially within law enforcement, symbolizing a sharp turn away from a more Western Ukraine. The hope the Yanukovych administration would bring Ukraine to its feet quickly dissipated with his consolidation of power.

Just as it had in 2004, Russia applied pressure on Ukraine in the energy sector. Before Yanukovych’s election, rising tensions over unpaid debts and gas prices led Russia to cut off Ukraine’s gas supplies again in 2009, resulting in shortages of gas in multiple Eastern European countries. Later that year, Russia and Ukraine agreed on a 10-year gas deal but it fell apart. After Yanukovych’s election in 2010, Ukraine extended Russia’s lease of the port at Sevastopol in exchange for a reduction in the price of Russian natural gas. To further its relations with Russia, Ukraine abandoned its goal of joining NATO and made a pivot toward Moscow.

Ukraine’s hope for a pro-European future was further disrupted in November of 2013 after Yanukovych failed to sign an agreement with the EU that would have created political and economic ties between the organization and Ukraine. Again, protests erupted in Kyiv’s Maidan Square, like during the Orange Revolution. But this time, police used violence to disrupt the large demonstrations. The protests lasted for months and turned into riots as the country called on Yanukovych to step down from office. Instead, Yanukovych signed several laws restricting citizens’ right to protest. These laws did not calm the situation; instead, protestors occupied the Ministry of Justice of Ukraine in Kyiv and seized government buildings.

The EU threatened sanctions against Ukraine if Yanukovych could not successfully de-escalate the situation. On February 20, 2014, police began to fire on crowds of protestors, leaving hundreds injured or dead. Finally, on February 21, an agreement between Yanukovych and opposition leaders called for early elections and the installation of an interim government. Additionally, the parliament approved the restoration of the 2004 resolution, which reduced the power of the presidency. All protestors were granted amnesty, and elements of the legal code that was used to prosecute Tymoshenko were decriminalized. On February 24, after he had already fled the state, Yanukovych was charged with mass murder in connection with the deaths from the Euromaidan protests. Batkivshchyna (Fatherland) party deputy leader Oleksandr Turchynov stepped in as the acting president as Ukraine’s economy struggled. The Ukrainian government as it stood was unstable, and the Ukrainian people lacked faith in its ability to act in the interest of its citizens. At the same time, Russia was preparing an operation
that would challenge the legitimacy of security assurances and internationally recognized borders.

**Annexation, Invasion, and War (2014–Present)**

In 2014, pro-Russian protestors appeared in Crimea. Groups of armed men wearing unmarked uniforms surrounded airports in the cities of Simferopol and Sevastopol and occupied the Crimean parliament building, raising a Russian flag. The sitting government was dismissed, and pro-Russian lawmakers made the leader of the Russian Unity Party, Sergey Aksyonov, Crimea's new prime minister. Although the annexation was a clear violation of Ukrainian sovereignty, Putin claimed the annexation was an effort to protect Russian citizens and assets in the region.46

In March 2014, the new Crimean parliament voted to secede from Ukraine and join the Russian Federation, scheduling a public referendum for March 16. The results showed a highly suspicious 97 percent in favor of joining Russia. Coupled with irregularities such as armed men at the polling places, the interim government in Kyiv rejected the results, and the United States and the EU froze the assets of Russian officials and Crimean parliamentary leaders. But two days later, Putin and Aksyonov signed a treaty that effectively incorporated Crimea into the Russian Federation. Russian troops quickly moved into Ukrainian bases throughout Crimea, leading to the evacuation of Ukrainian military personnel and their families. On March 21, 2014, Putin officially ratified the annexation treaty.47 Although the change of power in Ukraine in 2014 was the proximate cause of Russia’s invasion of Crimea, the crisis in Crimea and eastern Ukraine would likely not have started without the deeper set of conflicts that emerged with the collapse of the Soviet Union.

In April 2014, Putin declared yet again, Europe faced the risk of another gas shortage if Ukraine failed to pay its remaining debts, and in June, Gazprom cut off Ukraine’s gas supplies.48 Because this cutoff occurred so close to the annexation of Crimea, Ukrainian officials were confident Russia was weaponizing gas supplies in its plan to diminish Ukrainian strength and infrastructure.

After increased Russian aggression in the eastern Ukrainian cities of Donetsk, Luhansk, Horlivka, Kharkiv, and Kramatorsk, Russia began to use hard power to increase the country’s sphere of control. Pro-Russian militias began to abduct and kill pro-Western Ukrainians such
as Volodymyr Rybak, a member of Tymoshenko’s Batkivshchyna party, as well as eight members of the Organization for Security and Co-operation in Europe and numerous Ukrainian journalists. As time passed, Russia provided small separatist groups with intelligence, weapons, and money to challenge the Ukrainian government. In April 2014, Russian-backed rebels seized government buildings in the Donetsk and Luhansk regions, declaring them “people’s republics.” After a massive defeat of Ukrainian soldiers in August, Russia and Ukraine agreed upon a cease-fire, but violence commenced again after only a few months. In 2015, Minsk II was signed, obliging Ukraine to grant special status to the separatist regions. Although Minsk II helped to end full-scale violence, the situation remained tense, and Ukraine remained divided and unable to join NATO. Putin’s declaration of the separatist regions’ independence in February 2022 violated the Minsk peace agreements and, therefore, fueled Russia’s tensions with Ukraine and the West.

Like most aspects of Russo-Ukrainian relations, narratives about the conflict in the Donets Basin differ. The Ukrainian government and its Western counterparts present the conflict as a hybrid war between Ukraine and Russia, sparked by Russian military and intelligence units that led the separatist fight from the beginning. This view is not universally held throughout Ukraine. In 2015, major Western media outlets such as the British Broadcasting Corporation and the New York Times began to refer to the violence in the Donets Basin as a civil war. The Ukrainian government, which has refuted this idea, continues to present the conflict as an act of Russian aggression. In a Razumkov Centre poll, 32 percent of Ukrainians believed the war in the Donets Basin was a separatist rebellion supported by Russia, 28 percent believed the war was between Russia and Ukraine, 16 percent believed the war was a civil war, 8 percent believed the war was between Russia and the United States, and 7 percent believed the war was a fight for the independence of the Donetsk People’s Republic and Luhansk People’s Republic. These results suggest Ukrainians are divided on the war in Donets Basin.

The Russian government presents the war in the Donets Basin as a civil war that has widespread separatist backing throughout eastern and southern Ukraine. In Russia, most citizens back pro-Russian separatism in the basin and support the incorporation of these regions into Russia. Despite the violence, the Russian government continues to deny its military forces are involved in the conflict. The Russian government has even launched an investigation into the “genocide of the Russian-speaking population” in the basin.
The war has signaled the de facto breakup of Ukraine, which has increased polarization and prevented the implementation of several domestic policies.

As conflict between pro-Russian separatists and government forces continued, Ukraine prepared for another round of presidential elections. Again, voter irregularities occurred, with pro-Russian gunmen present at polling places in Luhansk and Donetsk. Businessman and billionaire Petro Poroshenko won in a landslide versus Tymoshenko and immediately proposed restoring peace in separatist-controlled regions of Ukraine. Fighting continued, and after separatist rebels shot down a transport plane flying over Luhansk, Poroshenko called a temporary truce and offered amnesty to any rebels who indicated they would surrender. Former President Kuchma collaborated with rebel leaders and eventually attained a cease-fire. Additionally, Putin rescinded an order that authorized the use of Russian troops on Ukrainian soil. In June 2014, Poroshenko signed an association agreement with the EU to pledge closer ties with Europe.

In the weeks to follow, the Ukrainian military regained the cities of Sloviansk and Kramatorsk, but separatist militias continued attacks. On July 14, a Ukrainian transport plane was shot down, and two days later, a Ukrainian fighter jet was shot down 12 miles from the Russian border. Although Russia claimed not to be involved in the attacks, Ukrainian officials believed otherwise. The regional conflict took to the global stage in July 2014 when a Malaysia Airlines Boeing 777 crashed in Donetsk, brought down by a surface-to-air missile. Although pro-Russian forces denied responsibility for the crash, they evidently controlled the crash site and cleared the ground of bodies in a matter of days. The world focused on the lives lost from the plane crash, yet fighting continued in Ukraine.

On September 5, 2014, the governments of Russia and Ukraine met separatist leaders in Minsk, Belarus, to agree to a cease-fire. But this agreement did not stop the violence: Two months later, separatists held local elections in Donetsk and Luhansk in violation of the Minsk protocol. By the start of 2015, the UN estimated over 5,000 casualties had occurred since the violence had begun. The world pressed for a resolution to the conflict. In February 2015, leaders from Ukraine, Russia, France, and Germany signed a 12-point peace plan that proclaimed the cessation of fighting, the withdrawal of heavy weapons, the release of prisoners, and the removal of troops from Ukrainian territory. Although weapons were removed, recurring treaty violations resulted in over 9,000 deaths by the end of 2015. All the while, Russia denied any involvement in the conflict and even banned the release of information on the deaths of Russian soldiers.
during “special operations.” Russia’s refusal to acknowledge the country’s involvement in the violence both created a false narrative of the conflict and allowed Russia to maintain its support and presence in the Donets Basin.

Despite the Poroshenko administration’s attempt to instill political and economic reform in Ukraine, the endemic corruption seemed endless. In April 2016, a leak of documents from the Panamanian law firm Mossack Fonseca revealed a money-laundering and tax-evasion operation that implicated Poroshenko and several other politicians around the globe. This incident caused Poroshenko’s approval rating to dip into the single digits in 2018. In November of that year, Russian naval vessels fired on Ukrainian ships sailing through the Kertch Strait. In response, Poroshenko declared martial law in 10 regions and appealed to the UN for a resolution that called on Russia to remove its forces from Crimea. Although Russia ignored the resolution, Poroshenko’s response to the incident reinstalled some faith in his administration.

A major focus of Poroshenko’s presidency as he neared the end of his term was his effort to create an independent Ukrainian Orthodox Church. From the seventeenth century until December 2018, the Orthodox churches of Ukraine were under the authority of the Russian Orthodox Church. Since Putin’s assumption of the Russian presidency, the Russian Orthodox Church and the Russian state have worked together to implement conservative policies and establish a strong Russian identity. In January 2019, the Ukrainian Orthodox Church was granted an independent status, a crucial development in its conflict with the long-dominant Russian Orthodox Church. Poroshenko’s efforts to create an independent Ukrainian Orthodox Church were motivated by pro-Russian propaganda used throughout the church. An independent church signaled to Russia Ukraine had the right to spiritual independence from Russia.

In response, the Russian Orthodox Church severed ties with Istanbul and the Ecumenical Patriarchate of Constantinople, which had granted independence to the Ukrainian church. Since Russia’s invasion of Ukraine, the leader of the Russian Orthodox Church, Kirill I, has refused to condemn the Russia-Ukraine War and has even supported Russia’s efforts to reunify Ukraine and Russia. Hours before the invasion took place in February 2022, Kirill I delivered a message proclaiming military service was “an active manifestation of evangelical love for neighbors” and “an example of fidelity to high moral ideals of truth.” The Russian Orthodox Church’s position on the war can be explained by the major blow the church’s influence took after the Ukrainian Orthodox Church was granted autocephaly in 2018,
meaning the church’s head bishop was not required to report to any higher-ranking bishop. But as the war rages on and the Russian Orthodox Church continues to back the widespread violence and crimes being committed against Eastern Christians in Ukraine, the postwar world will likely see a steep decline in support of the Russian Orthodox Church.

Although the final months of his presidency proved Poroshenko was in favor of an independent Ukraine, his efforts were not enough to defeat Volodymyr Zelensky in the 2019 presidential election. After securing more than 73 percent of the vote, Zelensky took office on May 20, 2019. Zelensky’s campaign promised lasting peace in eastern Ukraine. One of Zelensky’s first acts as president was to hold snap legislative elections, which gave an absolute parliamentary majority to his own Servant of the People party. Although Ukraine had a host of pressing issues for the new president to address, Zelensky became involved in a political scandal in the United States in 2019. President Zelensky vowed to fight for Ukraine's spiritual independence in the newly independent Ukrainian Orthodox Church. Then, in 2020, the spread of the COVID-19 pandemic disrupted the daily life and economy of Ukraine. Infrastructural damage in the Donets Basin region previously inflicted by pro-Russian rebels led to serious effects on the water supply. These challenges faced by Zelensky in the early days of his administration led to a lack of faith in his leadership. But Zelensky soon would develop into a strong and competent leader.

Two years into his presidency, Zelensky announced his vision of a Ukraine without oligarchs. Ukraine’s oligarchs consist of a small group of elite businessmen who run the state’s economic and political life. Many Ukrainian oligarchs have their own political parties and television stations. In 2021, the National Security and Defense Council of Ukraine drafted a list of oligarchs and a de-oligarchization bill that would cause many to lose a great share of assets. But government officials claim the bill would neither be successful in taking down oligarchs nor pass parliament. 63 To combat this block, Zelensky has continued to sanction well-known oligarchs like Viktor Medvedchuk and Dmytro Firtash. 64 Although removing oligarchs would allow Ukraine to continue its shift toward the West, some speculated Zelensky’s efforts merely constituted public relations efforts.

The trajectory of Zelensky’s presidency began to change on July 12, 2021, when Putin published a 5,000-word essay titled “On the Historical Unity of Russians and Ukrainians.” The essay asserts Ukrainians and Russians are “one people,” but many analysts of the text have interpreted it as a call
to arms. Putin’s words display the intersection of history and myth as it pertains to Russian nationalism. Putin denies any history of Ukraine as an independent state and, instead, defends the idea Russians, Ukrainians, and Belarusians share a common heritage: the Kievan Rus. Putin makes a series of claims throughout the essay as a pretext to justify his invasion of Ukraine in February of the following year. Putin claims the Ukrainian identity is an artificial invention, and Ukraine needs to be denazified today. The spread of misinformation has allowed Putin to garner support as well as distort the outside world’s perception of Ukraine. Although Putin’s claims seem preposterous to many, the Russian perspective is Ukraine is rightfully Russia’s. If Ukraine were to have made leaps closer to Europe and NATO, Russia would have interpreted the movement as a NATO invasion of Russia.

The publication of Putin’s essay implied Russia’s invasion was imminent, and at the beginning of October 2021, President Zelensky found himself at the forefront of the age-old conflict between Ukraine and Russia. Russia initiated a buildup of troops along the country’s border with Ukraine and began to conduct joint exercises with Belarusian soldiers. In December 2021, Putin published a list of demands, including a guarantee NATO would not expand to include Ukraine. Putin also blamed the West for the rise in tensions between Ukraine and Russia and warned the deployment of military equipment to Ukraine would cross a “red line.” By February 2022, as many as 190,000 Russian soldiers were estimated to be situated along the borders of Ukraine. All the while, Putin claimed his troops were simply conducting preplanned exercises.

On February 21, 2022, Putin recognized the independence of Donetsk and Luhansk and ordered Russian troops into Ukraine to act as “peacekeepers.” In response, Western leaders issued sanctions against Russian financial institutions, but these moves did not stop Putin from announcing a “special military operation” on the morning of February 24. Minutes after Putin’s announcement, Ukraine was hit with explosions across its major cities, beginning Russia’s full-scale invasion of Ukraine.

**Conclusion**

After the collapse of the Soviet Union, the West envisioned a “Europe whole and free,” whereas Russia envisioned “Europe as a common home.” A growing Ukrainian nation and identity prevented Russia from maintaining a sphere of control in Eastern Europe and created rifts between Russia and
Ukraine, the EU, and the West. Divisions between Ukraine and Russia were significant starting with Ukraine’s independence in 1991, as Russia sought close economic and political relations and Ukraine yearned for closer Western ties.

In addition to underlying disagreements between Ukraine and Russia, three structural constraints prohibited de-escalation between the two states: the security dilemma, democratization, and domestic politics. Following the collapse of the Soviet Union, Russia, the United States, and Ukraine took steps that made each other feel less secure. As Russia continued to make territorial claims about Ukraine, the United States turned toward NATO enlargement. In the end, Ukraine gave up its nuclear weapons for security assurances from the West and Russia, only to have Ukrainian sovereign borders violated again and again. The failures of Ukraine’s security assurances may spark debate in other countries neighboring Russia about nuclear proliferation and the validity of security assurances in a nuclear world. Although Ukraine was a young nation when it gave up its nuclear weapons, perhaps keeping them would have more effectively deterred Russia.

A second structural constraint on the relationship between Ukraine and Russia was democratization. As newly independent European nations looked to democratize, Russia felt increasingly threatened, and Putin consolidated authoritarianism in Russia. Putin feared color revolutions, like the 2004 Orange Revolution, would occur in Russia. Thus, Russia rejected the idea of Ukraine and Georgia joining NATO because such events would promote democratization in Russia’s neighboring states. Putin does not fear NATO encroachment so much as he fears democratization that would inadvertently boot him from power. Thus, to maintain a sphere of influence and control over his people, Putin continues to manipulate history to fit the narrative Ukraine has always been a part of Russia.

Last, domestic politics prevented global leaders from making policies that could have de-escalated the security dilemma. For example, before Euromaidan in 2013, Yanukovych could have agreed to a deal that would have appeased the protestors by reinstating the 2004 constitution. But Yanukovych knew doing so would hamper his pursuit of closer economic ties with Russia. Politicians who sought the consolidation of power could not implement policies that would result in poor public opinion or a loss of elite support.

As the Russia-Ukraine War has passed the one-year mark, world leaders continue to discuss ways to put an end to the violence in Ukraine without sparking a wider war. The complex and dangerous status of Russo-Ukrainian
relations has delayed diplomatic solutions and direct NATO interventions. As an aggressor who holds an emotional attachment to a falsified story more than 1,000 years old, Putin will likely pursue risky behavior to stay in power for as long as possible.

Throughout their 1,000-year history, Ukrainians have defended their land and fought for their identity, language, faith, and independence. The question of whether Ukraine merits sovereignty as a state is at the crux of the Russia-Ukraine War. The stewards of Ukraine’s land, the Ukrainians themselves, have answered this question again and again with a resounding “yes.” Despite Russia attempting for centuries to rid Ukraine’s inhabitants of their national identity, Ukrainians continue to fight for their independence, giving their lives in the name of the future of their children, who aspire to live in a free, united, independent, prosperous Ukrainian state. As the Charter of the UN states in article 1, paragraph 2, the countries that sign the charter are committed to the “self-determination of peoples,” and the Ukrainian people are determined to self-govern. Once again, many nations reaffirmed Ukraine’s right to sovereignty at the 2008 Bucharest summit. Upholding this international commitment to supporting state sovereignty is crucial to maintaining a peaceful world order.

World leaders must consider the history of Russo-Ukrainian relations when formulating the next move in resolving the war in Ukraine. As we look to the future, we must continue to draw lessons from the past. Had the international response to the invasion of Georgia, the annexation of Crimea, or the war in the Donets Basin been more aggressive, the world may have been able to prevent the full-scale assault that began in 2022. History may not repeat itself, but it does rhyme. The United States now finds itself at a strategic inflection point where the country must decide whether to learn from the mistakes of the past and take proactive measures to protect democracy and freedom or to allow authoritarian forces around the world to shape the narrative. To understand the stakes, players, and setting of the Russia-Ukraine War, a careful study of origins is essential. Therefore, we must ensure the story of Russo-Ukrainian relations is the authentic truth and not a distortion fabricated by leaders looking to win an age-old power struggle.
Endnotes

3. Qualls, “Putin’s Falsified History.”
4. Qualls, “Putin’s Falsified History.”
5. Qualls, “Putin’s Falsified History.”
8. Lieven, Ukraine & Russia, 3.
10. Qualls, “Putin’s Falsified History.”
11. Qualls, “Putin’s Falsified History.”
13. Lieven, Ukraine & Russia, 31.
14. Lieven, Ukraine & Russia, 52.
23. Lieven, Ukraine & Russia, 43.

27. D’Anieri, *Ukraine and Russia*.


29. D’Anieri, *Ukraine and Russia*.


31. D’Anieri, *Ukraine and Russia*.

32. D’Anieri, *Ukraine and Russia*.


34. D’Anieri, *Ukraine and Russia*.


37. D’Anieri, *Ukraine and Russia*.


42. “Ten Years Ago.”

43. D’Anieri, *Ukraine and Russia*.


45. D’Anieri, *Ukraine and Russia*.


49. D’Anieri, *Ukraine and Russia*.


55. D’Anieri, *Ukraine and Russia*.
56. D’Anieri, *Ukraine and Russia*.


61. Palikot, “Orthodox Church Conflict.”


70. “Lisbon Protocol.”

71. UN Charter art. 1, para. 2.

The story of Ukrainian resistance to the Russian invasion of February 2022 that has become familiar to the West is that of an underdog Ukraine taking on and defeating a bullying Russia thanks to Ukrainian courage and Western military assistance. But when one looks at the security assistance the West has provided Ukraine, the issue becomes more complicated. The United States and other Western donor nations have been working with Ukraine’s military since 1991. The United States’ security cooperation with Ukraine can be broken down into three periods: 1991–2014, 2014–August 2021, and August 2021–present. The United States’ policy goals for security cooperation in Ukraine shifted dramatically within and between these three periods. Shifting US policy goals impacted security cooperation and exacerbated a lack of accountability for the results of Ukraine’s spending. But the 30 years of US-Ukrainian security cooperation before August 2021 did not result in a Ukrainian military that was markedly better able to defend the country’s territory or sovereignty. Indeed, if the United States had not provided large amounts of equipment and intelligence starting in August 2021, Ukrainian courage and willpower alone likely would not have prevented Russia from defeating Ukraine. The impressive achievement of arming Ukraine post-August 2021 shows US security cooperation can create lethal partners on the battlefield when the United States aims to do so. If the United States is to have meaningful security cooperation with Ukraine and other allies, both parties must desire action, and implementation must be centered around practical effectiveness.
Definitions and Authorities

Before looking at US legal authorities for security cooperation, one must define security cooperation and security assistance as well as capability and capacity. As defined in Joint Publication 1-02, a capability is “the ability to execute a specified course of action.” Capacity is the amount of a task the country can perform or the amount of an item the country can produce. The National Defense Authorization Act for Fiscal Year 2017 defines security cooperation as the following.

[A]ny program, activity (including an exercise), or interaction of the Department of Defense with the security establishment of a foreign country to achieve a purpose as follows:

(A) To build and develop allied and friendly security capabilities for self-defense and multinational operations.

(B) To provide the armed forces with access to the foreign country during peacetime or a contingency operation.

(C) To build relationships that promote specific United States security interests.

Security-cooperation activities range from military-to-military engagements to training and education and exercises. Security assistance is a group of programs through which the US government provides defense articles, military education and training, and other defense-related services to eligible foreign governments by grant, loan, credit, cash sale, or lease. A more inclusive concept than security assistance, security cooperation has a primary goal of increasing a partner’s self-defense capability or ability to take part in multinational operations. The Department of Defense (DoD) can conduct both security cooperation and security assistance, but certain security-assistance programs are only administered by the Department of State (DOS).

Both DoD and DOS funds are primarily policy tools that aim to further US security interests. Funds from the Department of Defense exist first and foremost to create military capabilities in a partner nation that help to increase its self-defense capabilities. The intent of DOS funds is to help to implement US policy and improve the partner nation’s political climate.
Like DoD funds, DOS funds can be—and often are—used to create capabilities. Unlike DoD funds, DOS funds have purposes other than building capabilities. The United States can use DOS funds to set conditions for political liberty or to improve collective security with the goal of creating an economically, socially, and politically stronger partner. A tool of US policy implementation, DOS funds may shift focus as US policy changes, whereas DoD funds must build capabilities regardless of whether policy changes.

Several distinct US security-cooperation policies can be observed from the 31-year period from 1991 to 2022. The first period started with post–Cold War counterproliferation concerns and the attendant disarmament. The second period encompassed the war on terrorism, in which territorial defense in Europe received little attention. The final period focused on the return of great-power competition. Each of these historical periods had a distinct US policy focus, beginning with the counterproliferation of nuclear weapons after the collapse of the Soviet Union in 1991.

**1991–2014**

Ukraine was one of three former Soviet republics that surrendered its nuclear weapons and delivery methods, either back to Russia for safekeeping or to the United States for destruction. This achievement was the result of extremely focused as well as remarkable, high-level efforts that involved the president of the United States, several cabinet secretaries, and respected members of the Senate. The existential threat these nuclear weapons posed to the United States helped to focus and drive US efforts. With the signing of the Budapest Memorandum in 1994 and the gradual eradication of the weapons and their delivery systems, the United States had removed an existential threat, but the country had also removed the driving force behind US-Ukrainian security-cooperation efforts.

At the time, the relationship between the United States and Russia was warmer and more trusting than the relationship between the United States and Ukraine. The United States treated its relationship with Russia as the most important among the former Soviet states. This treatment led to the instrumentalization of US-Ukrainian relations as a function of US-Russian relations and drove US security cooperation with Ukraine for most of the next 15 years.
In 1994, at the same time the United States was pushing denuclearization, NATO launched the Partnership for Peace (PfP) program. On February 8, 1994, Ukraine became the third country to join NATO’s PfP. In the PfP program, each country could set and implement individual goals with NATO. The PfP itself focused on fostering transparency and interoperability, rather than a specific battlefield capability. Ukraine, despite being one of the first members of the PfP program, did little to transition the Ukrainian military away from a Soviet model or to improve and develop the military along the lines of a Soviet model, resulting in an increasingly hollow force.

The decade from 2000 to 2010 yielded little that aided Ukraine’s ability to defend its territory. Following the September 11 attacks on the United States, United States European Command focused on helping European countries to send forces to Iraq and Afghanistan. Russia’s ability and willingness to facilitate US basing in Central Asia and to allow NATO forces to ship supplies across Russian territory was more important to the United States than the development of Ukraine’s military. Ukraine played a small-enough part in the operations in Iraq and Afghanistan not to attract much US attention.

Interest in Ukraine surged as the Orange Revolution took place in Kyiv in 2004, bringing a Western-oriented government to Ukraine. But the United States proved unable to resource the desired transformational change for the Ukrainians in a timely manner, neither substantially increasing the amount of security-assistance funds nor increasing the speed with which the United States delivered equipment. Not until 2010 did the equipment purchased with security-assistance funds in 2004 begin to arrive. The equipment consisted of radios for one battalion in the Ukrainian Army. In the end, the Orange Revolution did little to help Ukraine domestically or to change US policy toward Ukraine.

The 2008 Bucharest NATO summit promised both Ukraine and Georgia would “become a member of NATO,” and NATO would “begin a period of intensive engagement with both at a high political level to address the questions still outstanding pertaining to their MAP applications.” On the US side, following an initial expectation Ukraine would reform and develop along Western lines, patience wore out and “Ukraine fatigue” took hold. As the Barack Obama administration began governing in 2009, US support for Ukraine became tepid, and a US policy of “not no, but not now” came to predominate US security cooperation with Ukraine. President Obama famously yet unsuccessfully
attempted to reset relations with Moscow in an effort to defuse rising US-Russian tensions. The focus of US policy shifted off Ukraine and back to Russia as a result.

2014–August 2021

Russia’s invasion of Ukraine in 2014 began a transition in US security cooperation with Ukraine and—more broadly—US perspectives on Russia and United States European Command’s mission. For the command and its service components, the invasion marked an abrupt shift from preparing the United States and allied and partner nations to serve in Iraq and Afghanistan to preparing to face Russia.

Starting in 2014, US security cooperation intensified but continued to focus on nonbattlefield capabilities: Ukraine’s NATO aspirations and nonlethal assistance. American policy also focused on preventing an escalation of the ongoing Russian invasion of Ukraine. As a result, the United States was more concerned with Russia’s reaction to potential security assistance than the security assistance itself. Thus, although US and Ukrainian interests aligned against Russia, the two countries rarely agreed on the means that should be used to achieve those interests.

Established in 2016, the Ukraine Security Assistance Initiative (USAI) was a milestone in US security cooperation with Ukraine. Title 10 funds financed the creation of the USAI, meaning the initiative needed to result in a partner that was better able to defend itself. When it passed in 2016, the bill included measures embedded to ensure the funds would be used effectively. Congress included conditionality to incentivize Ukraine to make institutional military developments. Initially, the United States packaged the aid for Ukraine as two tranches of money per fiscal year. In 2019, the United States lengthened the fiscal timeline and authorized part of the allocated money for disbursement over two years. Thus, theoretically, money could be disbursed over two fiscal years in separate tranches, with the second tranche dependent upon Ukraine meeting certain goals that would require US certification. But even with disbursement occurring over two years, the fiscal timeline allowed little time to check on implementation, rendering the accountability measures ineffective.

To address some of the coordination failures, Ukraine and the donor nations established the Multinational Joint Commission on Defense Reform and Security Cooperation with Ukraine to help to develop the
former’s military institutions by transparently directing foreign assistance. Starting with just the United States, the United Kingdom, Canada, and Ukraine, the commission eventually included Denmark, Sweden, Poland, and Lithuania. The commission functioned as a clearinghouse to prevent overlap, with different nations coordinating assistance activities. These activities were limited to training, except for those the United States provided.²² As part of this effort, the United States attempted to provide high-level, senior, retired US military officers as advisers to the Ukrainian minister of defense. Coordination remained an issue, and though the US Embassy in Ukraine controlled the relevant resources, the senior US advisers often spoke with high-ranking Ukrainian officials as though the advisers controlled the resources, creating confusion. Although well intentioned, the effort produced few concrete achievements and, at times, seemed to work at cross-purposes to other efforts.

**August 2021–Present**

The impetus for security cooperation shifted dramatically in August 2021 with the first use of the Presidential Drawdown Authority before Euromaidan in 2013.²³ The initial presidential drawdown (PD) proposals were created by the US Office of Defense Cooperation in Kyiv; United States European Command Plans, Policy, Strategy, and Capabilities Directorate personnel; Defense Security Cooperation Agency personnel; and Ukrainians to identify needs for the Office of the Secretary of Defense and the interagency process to review.²⁴ The initial lists of equipment, which consisted of simple equipment or equipment Ukraine already possessed, would have been suitable for use in a resistance or resilience scenario.²⁵ The lists would then be passed up to the Office of the Under Secretary of Defense for Policy and the Joint Staff for approval and action. After four or five PDs had been processed, the locus of activity shifted from the Office of Defense Cooperation and the United States European Command Plans, Policy, Strategy, and Capabilities Directorate to direct conversations between DoD leadership and Ministry of Defense of Ukraine leadership. Leadership on both sides discussed the equipment Ukraine needed, and then US leaders began the process of providing this equipment. As Ukraine showed resolve in the face of Russian aggression and the conflict dragged on, the United States started sending more complex equipment and weaponry.²⁶
The locus of PD creation eventually shifted back to the lower levels to create proposals for the leadership to approve.\textsuperscript{27} The Defense Security Cooperation Agency also ran the PDs through the Office of the Under Secretary of Defense for Policy, the Defense Technology Security Administration, and the Joint Staff. When all organizations had approved the equipment for transfer to Ukraine, the Defense Security Cooperation Agency wrote an execution order to implement the PD.\textsuperscript{28} Although US aid has proven instrumental in the last two years, the inability to build a better Ukrainian defense infrastructure before being faced with an imminent threat is a cause for concern for future conflicts.

**Lessons Learned and Way Forward**

To a degree, US security cooperation with Ukraine is bookended by two success stories: denuclearization and the arming of Ukraine against Russia. Both success stories share the focused involvement of senior US leadership; commitment to a specific, measurable goal; and shared interests with Ukraine. During the intervening years, shifting US policy priorities, a lack of overlap between US and Ukrainian interests, and a tendency to view Ukraine through the lens of US-Russian relations did little to improve Ukrainian battlefield effectiveness, nor was such improvement the aim of security cooperation until August 2021.

Lessons can be derived from working with Ukraine beyond the observation high-level US involvement makes security cooperation move more quickly. Attempting a transformational change with a partner that is not interested in the change is not a good idea. If a partner does not want to implement the change, inducing or threatening the partner to do so is difficult. The Eastern European countries that eventually joined NATO after 1991 were internally motivated to change to meet NATO standards. The United States and other NATO countries were able to help Eastern European countries where they needed help. Ukraine’s government and military were comfortable with the Soviet military system and had no desire to change to meet NATO standards. Even after Russia invaded Ukraine in 2014, the Ukrainian government and military were predominantly focused on fighting the Russians, not changing the Ukrainian military. Today, some signs indicate senior Ukrainian military leaders are interested in developing certain aspects of the military, but the culture of the military still bears strong ties to its Soviet roots.
Ukrainian military leaders’ expressed interest would not have been possible without the beginning of a change in 2014. To borrow a phrase from Winston Churchill, 2014 was not the end or even the beginning of the end of the Soviet influence on the Ukrainian military, but that year was the end of the beginning. Even today, senior Ukrainian commanders who were raised, trained, and educated in a Soviet military system struggle to employ Western-supplied weapon systems in the same manner a Western officer would employ them. But having already begun, the change toward a Western military approach will continue. By no means is Ukraine's transition to a Western-style military certain, but the beginning of this ongoing transition lies in the Russian invasion of 2014. Ukrainian military leaders’ interest in change and the training many Ukrainian junior and noncommissioned officers have received from their US counterparts over the past 10 years provide the momentum and the foundation, respectively, with which the transition can continue.

Although conditionality attempts to overcome issues by incentivizing US allies to make necessary changes, as in the case of the USAI, this well-intentioned idea has some functional problems. The way the USAI was written, the time after the award of tranche one was inadequate for observing implementation sufficiently. The accountability of the USAI was to some degree unenforceable based on US government fiscal timelines. Even more broadly, conditionality does not work in current practice. A classic example is US aid to Pakistan: The United States cut off aid to Pakistan and then restored it years later because the former perceived its equities were losing more than they were gaining by stopping aid, not because the latter bent to the former's will. The amount of US security cooperation offered is not large enough to induce or compel change by provision or withdrawal, respectively. For Title 10 funds that are intended to create capability, the military and Congress must hold partners accountable and focus on creating the capability, rather than making funds conditional on larger aspects of the relationship that may have other externalities.

Although the successful effort to arm the Ukrainians from August 2021 to present has shown the best of the US security-cooperation enterprise, the effort has not demonstrated the enterprise’s normal operational state. Ukraine is without doubt a far more lethal force now than the country was in August 2021. The fate of security cooperation in Ukraine after the Russian invasion fails will depend on the degree to which US and Ukrainian interests overlap. To promote advancement, those who have the best understanding of the needs of the Ukrainian military must
be empowered to implement training and furnish supplies where needed through open channels of communication.

Success will be contingent upon whether the aid the United States offers is in a form Ukraine is prepared to implement. Cooperation depends on both parties making a concerted effort toward a common goal. As the history of US-Ukrainian security cooperation has shown, when cooperation happens, the United States and its allies benefit.
Endnotes


3. Office of the Secretary of Defense, *President’s Budget*.


15. Gresh, interview by the author.


17. Gresh, interview by the author.

18. Steven Chu, interview by the author, November 9, 2022; and Tigran Mikaelian, interview by the author, December 16, 2022.


22. Miller, interview by the author.

23. Wright, interview by the author.

24. Miller, interview by the author.


26. Miller, interview by the author.

27. Haynes, interview by the author.

The Case of Ukraine: Deterrence by Resilience

Larry D. Caswell Jr.

Keywords: extended deterrence, NATO, partner, Russia, Ukraine

The 1964 classic noir *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* describes the cornerstone of alliances—multiple countries bound together that an adversary must carefully consider attacking. As an international organization, NATO, which boasts a military force over one million strong, has demonstrated the ability to deploy coordinated, lethal force anywhere in the world. NATO warned Russia there would be consequences for attacking their partner, Ukraine. In February 2022, Russia attacked anyway. Did NATO and the United States fail to implement a strategy of deterrence properly? Did Russia deter NATO when the country used brute force to impose Russia’s will on Ukraine? World stability is built on deterrence, so understanding this breakdown is key to maintaining peace and order.

Examining the Russia-Ukraine War through the lens of deterrence theory provides a framework for assessing a cornerstone of US and NATO strategy that has been in place for the past 75 years. As the international community exits a unipolar environment and resumes great-power competition, the war validates requirements for implementing a strategy of deterrence effectively, demonstrating deterrence’s effectiveness, and increasing deterrence’s future effectiveness. Close examination demonstrates deterrence is effective, and extended deterrence, although ineffective in Ukraine, can become effective through increasing partner resilience.

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What Is Deterrence?

In practice, deterrence takes two forms: punishment and denial.\(^1\) In deterrence by punishment, the protagonist threatens military force to punish an antagonist if it takes a specific action; if the antagonist does not act, the protagonist does not punish the antagonist. In deterrence by denial, a protagonist threatens to use military force to keep an antagonist from achieving its desired outcomes or to make the antagonist’s desired outcomes so expensive, trying to achieve them is not worth the effort. Again, if the antagonist does not act, the protagonist does not use force.

The policies of NATO contain two examples of deterrence. The organization maintains nuclear weapons as a cornerstone of defense. An attack on the core interest of allies’ sovereignty could result in a nuclear response.\(^2\) The threat of an overwhelming response to punish aggression and the ambiguous threshold between eliciting a conventional response and eliciting a nuclear one deter aggression against NATO. The organization also maintains over 40,000 troops at a high readiness level. The troops are prepared to respond within 15 days of activation, and as of 2022, NATO plans to increase the number of troops to 300,000.\(^3\) This force could block aggression against NATO and keep an aggressor from meeting the goals of its military offensive. In both of these examples, NATO seeks to change aggressors’ cost-benefit calculations.

According to deterrence theory, threats of punishment and denial alone are insufficient to impact an aggressor’s cost-benefit calculation. To be effective, the protagonist’s threat must be capable, credible, and effectively communicated.\(^4\) The protagonist must have the means to impose the threat, possess the will to commit the blood and treasure necessary to carry out the threat, and be able to communicate the intention to follow through on the threat. Absent these three components, a threat will not adjust the aggressor’s calculations, nor will the threat deter an action.

Implementing the three components brings separate challenges. Capability is the most straightforward component to determine. Capability is an assessment of NATO’s capacity to take military action across the air, cyber, land, sea, and space domains compared with Russia’s ability to defend in these domains. Credibility, which is less mathematical, assesses whether the 30 members of NATO can agree to unified military action. Can one member carry NATO forward, or does NATO have to pull a member along? What do history and the current political environment suggest? Finally, communication can offer the biggest challenge.
Cross-cultural communication about the consequences of action, the assurance no threat will result from inaction, opportunities to avert conflict, and the capability and credibility to use force if Russia acts must take different forms. Public statements, diplomacy, and military mobilization are forms of communication that must be understood to be effective. If the protagonist and antagonist do not have similar understandings of capability, credibility, and communication, deterrence will not be effective.  

Implementing Deterrence

The modern environment continues to make successfully implementing deterrence as a strategy more complex. For instance, an actor (or group of actors) can offer extended deterrence, which involves the protagonist offering a threat to an antagonist to deter actions against a protégé. When associated with a nuclear threat, extended deterrence usually has an elevated credibility challenge because the protagonist must convince the antagonist the former would go to war for the protégé. The intervening protagonist has many levers through which to deter action, including reassuring the protégé of its protection against the antagonist, accommodating the antagonist to promote a level of peace, restraining the protégé’s threats, or using deterrent threats to stop the antagonist. Ukraine’s innovative use of technology and potential targeting inside Russia demonstrate in extended deterrence, the protégé’s actions and resilience can be impactful as well. Even before the Ukraine crisis of 2013–14, NATO tried to bolster the effectiveness of extended deterrence through deterrence by resilience.

Similar to game theorist Thomas C. Schelling’s concept of deterrent defense, NATO’s deterrence by resilience relies on states (both allies and partners) hardening their ability to resist offensive action to deny the aggressor’s objectives or giving NATO time to mobilize a response to deny or punish the aggressor. By 2022, NATO had established the Resilience Committee, observing, “Resilience is both a national responsibility and a collective commitment.” The committee sets priorities and maintains baseline requirements, including continuity of government services, energy-supply resiliency, displaced-personnel management, food and water security, and communications-network resiliency.
On the opposite side of the discussion, Russia maintains its distinct perception of deterrence. Since the Soviet Union’s collapse and the turn of the century, Russia has developed the concept of strategic deterrence to address the American military’s technological overmatch, nonmilitary threats to economic and political security, and the availability of nonmilitary tools in conflict. Russia’s concept of strategic deterrence is distinct from the Western concept because Russian strategic deterrence is “a comprehensive Russian approach to achieving its policy goals through the coordinated use of different means.” Similar to Western deterrence, strategic deterrence considers the world to be bipolar: Russia against the US-led world order. Russia looks to strategic deterrence to act continuously across the spectrum of conflict, using all domains and elements of national power to blend deterrence and compellence, a form of coercion, against state or coalition leadership or populations to stabilize “the military-political situation.” Russia views strategic deterrence as primarily a defensive strategy to prevent conflict or control escalation if conflict begins. Of particular note, when executing strategic deterrence, Russia could use armed forces to escalate conflict and to gain a position of advantage, and then de-escalate the conflict, having secured an advantage. But in practice, blending tools ranging from energy supplies and economics to cyberattacks and nuclear weapons to escalate and de-escalate conflict, stabilize the situation, and achieve objectives risks miscommunication and significant unintended consequences.

At first look, strategic deterrence appears similar to the concept of integrated deterrence promulgated in the 2022 US National Security Strategy, but three important differences are evident. First, strategic deterrence considers escalating and de-escalating the spectrum of conflict a stabilizing effort that enables gaining and securing advantages, but the status quo is not an option for integrated deterrence. The second difference is integrated deterrence requires overwhelming international support to be effective. Strategic deterrence suggests unilateral action will be effective and Russia alone will choose when to escalate levers of power to stabilize the political environment. Finally, the National Security Strategy’s concept of integrated deterrence seeks to protect core US interests. Russian strategic deterrence, which is not as discriminating, advocates using a combination of nuclear, conventional, and nonmilitary assets to respond to all types of security threats. The willingness to escalate to armed conflict, the propensity for unilateral action, and the use of all national assets across the spectrum of conflict make Russia’s strategic deterrence distinctly different from integrated deterrence.
Russia, Ukraine, and NATO

Before examining Russia’s decision to invade Ukraine, understanding the fundamentals of NATO is important. Signed in 1949, NATO’s founding document, the North Atlantic Treaty, outlines NATO’s enduring purpose, which is to achieve collective defense for the preservation of peace and security. The alliance’s core interest is to safeguard members’ sovereignty through deterrence and collective response. The security and stability of NATO’s neighbors is of strong interest to the organization. The founding treaty specifically states the defensive agreement protects treaty allies, and to enjoy protection, a state must join NATO.

Russia, Ukraine, and NATO have been tied together since 1994, when Ukraine—heir to the world’s third-largest nuclear arsenal—signed the Budapest Memorandum. Through this document, also signed by Russia, the United Kingdom, and the United States, Ukraine pledged to end its nuclear-weapon program and to transfer all highly enriched uranium to Russia. In exchange, signatories affirmed—not guaranteed—they would “respect the independence and sovereignty and existing borders of Ukraine” and “refrain from the threat or use of force” against the country. More than a decade later, in 2008, Ukraine demonstrated its intention to secure an even greater partnership with NATO as the country became a contributing nation to the NATO-led International Security Assistance Force. The same year, NATO reaffirmed its commitment to states’ right to self-determination of alliances and started the Annual National Programme for Ukraine, publicly recognizing the country would become a NATO member.

Ukraine’s goal of joining NATO directly clashed with Russia’s sense of security. As early as 1990, when NATO sought to bring a unified Germany into the alliance, Russia sought assurances NATO would not expand further east. In February 2014, following the Euromaidan protest movement, Russia disregarded its commitment to respecting Ukrainian sovereignty and seized Crimea, increasing Ukraine’s resolve to join NATO. After 2014, NATO and individual members of the organization sought to build Ukrainian capacity in key areas across 13 support measures, including capacity and institution building, logistics and standardization, cyber defense, and medical rehabilitation.
Continuing to progress toward NATO membership, in 2020, President Volodymyr Zelensky approved the *National Security Strategy of Ukraine*, which outlined an enhanced partnership with NATO. The alliance publicly supported Ukraine’s goal of membership and lauded Ukraine’s progress in Annual National Programme reporting. In December 2021, Russia’s concern about NATO’s expansion into Ukraine came to a head as troops massed on the Ukrainian border. President Vladimir Putin demanded formal agreements from NATO members Ukraine would not be able to join the organization, stating, “The ball is in their court. They must answer us something.”

### Analyzing the Deterrent Threats

In deterrence, initiative belongs to the antagonist, who chooses whether and when to attack. With Ukraine still a partner, not a NATO member, Russia likely considered several deterrent threats when deciding to act. Tools for evaluating Russian assessments are limited, but comparing conditions in 2014 and 2022 is useful.

#### Capability

In 2022, as in 2014, NATO’s conventional and nuclear capacities were unrivaled. Drawing on the resources of 30 countries, NATO possessed the military capability to punish and deny objectives. But NATO has limitations. In 2013, the United States redeployed its last forward-stationed armored unit from Europe. The deployment of an armored battalion in 2014 allowed for combined-arms training and signaled the US military, a significant contributor of combat forces, would not immediately contribute significant combat force to a NATO response to any aggression. When Russia seized Crimea in 2014, Ukraine faced significant challenges in responding. Without any formal defensive agreements with other nations, Ukraine’s armed forces were the only available response. Outnumbering the Ukrainian Army by more than four to one, Russia had a significant overmatch in equipment and personnel. At the same time, a combination of laws prohibiting the use of the army, political corruption, and lack of trust between the people and the government significantly hindered the Ukrainian response to Russian aggression.
In the seven years after Russia commenced its attack on Ukraine, the Ukrainian armed forces became more capable with NATO assistance. Leader training, combat training, and support missions with the International Security Assistance Force developed resilience in the armed forces. In a 2019 assessment, NATO found Ukraine’s armed forces had progressed from a 150,000-strong force that could only muster one brigade capable of combat operations to a capable force comprising 250,000 service members, many of whom had benefitted from NATO training missions and were equipped with limited numbers of advanced NATO weapons. Ukraine also reduced corruption, with NATO estimating corruption reforms between 2016 and 2018 saved the country $2 billion.

Russia likely considered its own military strengths when weighing advances in Ukrainian capability. Beginning in 2008, the New Look reforms transitioned the Russian army from a five-million-man force based on conscription to a leaner force that balanced conscripted and professional soldiers in a brigade structure. The 2014 occupation of Ukraine, subsequent engagements, and operational deployments to Syria confirmed the efficacy of New Look modernizations to Russian officials. Operations in Syria also enabled Russia to integrate private armies, such as the Wagner Group.

Credibility

Ahead of Russia’s annexation of Crimea in May 2014, NATO had many competing claims for its attention. Due to the Arab Spring movement, the euro-zone debt crisis, the Afghanistan War, and the disruption to intelligence sharing in the wake of the Snowden leaks, NATO could not dedicate its full attention to Ukraine. Against this backdrop of domestic and international turmoil, NATO did not respond militarily to the fait accompli of a partner nation’s territory being annexed; the organization merely used sanctions to attempt to coerce Russia to withdraw.

Before the 2022 attack on Ukraine, NATO countries were even more internally focused due to the COVID-19 pandemic and containment measures, market disruptions, and Brexit. The withdrawal of US troops from Afghanistan in August 2021 caused a mass refugee migration out of Afghanistan. The United States also expended trillions of dollars to mitigate the impacts of the pandemic and started to see significant inflation from a demand-driven market.
In considering 2014 and 2022, Russia could estimate an attack on a NATO partner in early 2022 would not bring a military response from NATO. Despite developing closer ties to Ukraine through training, NATO was still not committed to a military response to Russian aggression in Ukraine. Russia likely understood an attack on a NATO ally would result in punishment and denial, but an assault on a country that was not an ally would not result in military retaliation. Even if Russia were to escalate to a nuclear war, the chances of NATO responding in kind over Ukraine are contested. The alliance also substantially relies on the US nuclear umbrella. Doubts about the United States’ willingness to engage in nuclear war over Europe and the lack of tactical nuclear weapons on the continent could drive NATO to a conventional response to a nuclear event. These hesitations created a window of opportunity for Russia to act.

Communication

The most observable way of communicating threat is through the movement of forces. Following the Russian annexation of Crimea in 2014, NATO communicated two messages. At its 2014 Wales summit, NATO agreed to deploy a rotational, multinational force to Baltic allies and Poland. In addition, NATO further committed to working with its partner of distinction, Ukraine, with a mission “designed to enhance Ukraine’s ability to provide for its own security” through “substantial new programmes with a focus on command, control and communications, logistics and standardisation, cyber defence, military career transition, and strategic communications.” Agreements resulted in rotational battalions in Baltic states and Poland and NATO members (primarily the United States) investing over $4 billion in Ukrainian resilience. The clear message was NATO reserves military presence for allies but will assist its partners in developing resilience to deny Russian victory.

In the buildup to Russia’s 2022 invasion, NATO reinforced this message. The 2021 Brussels summit highlighted NATO’s preparedness for mutual defense if Russia were to attack a NATO state. The conference also highlighted “[r]esilience is essential for credible deterrence and defence,” and NATO would help partners enhance their resilience. Consistent with messaging from other NATO allies, the United States clearly communicated it would not deploy troops to defend Ukraine. At the same time, Zelensky met with NATO Secretary-General Jens Stoltenberg, seeking security commitments to help to deter a renewed Russian invasion that was predicted to be just weeks away. As he did in earlier engagements, Stoltenberg committed
to Ukraine’s future path to joining NATO and severe economic punishment for Russia if it attacked, but the secretary-general stopped short of committing to military support. 42

When to Act?

For Russia to decide to attack, the perceived benefit of the action would need to exceed the risk from the deterrent threats. Since the fall of the Soviet Union, Russia has viewed NATO expansion and the Westernization of border states as a significant security threat. An attack on a NATO ally would almost certainly result in significant military, political, and economic punishment as well as the likely denial of any military objectives; NATO clearly communicated the likely results of an attack, had the capacity to enforce its policy, and had the credibility to confirm the organization would act. Further military action in Ukraine could finally halt eastward expansion of NATO and EU membership and reestablish overwhelming influence in Ukraine. The benefits of military action in Ukraine must overcome two threats: a NATO threat of extended deterrence through punishment and a Ukrainian threat to deny military and political objectives.

Statements from NATO, President Joe Biden, and Stoltenberg clearly communicated a military response was not forthcoming. 43 Ukraine’s threat of denial was equally ineffective. In 2014, Ukraine could only muster 6,000 troops to conduct operations; at this rate of readiness, Russia could easily overcome even a larger Ukrainian Army. 44 Training and equipment from NATO and its members would improve Ukraine’s performance, but Russia could overcome Ukraine’s limited weapon systems through sheer mass. Russia also perceived if the Ukrainian military stood to fight, the government would likely flee. The shortfalls in deterrent threats from both NATO and Ukraine did not outweigh the potential benefits for Russia.
Observations and Implications

Denial by Resilience Can Work

Since 2014 and the rise of Russian aggression in Europe, NATO has focused on enhancing national resilience for both allies and partners. Ukraine’s ability to survive the initial invasion with adequate government, military, and civil systems in place provided an opportunity for the international community to support the country. Ukraine’s initial survival is particularly key because the NATO 2022 Strategic Concept maintains minimal forces in a Very High Readiness state, with the bulk of forces providing reinforcement within 10 to 30 days.\textsuperscript{45} This observation also adds credibility to the threat of deterrence by resilience (denial), requiring a state to analyze the fragility of an opposing state before taking military action.

The International Community Can Reinforce Resilience without Nuclear Escalation

The Ukraine crisis of 2013–14 and the Russia-Ukraine War demonstrate NATO can help to build and reinforce a partner nation’s capability to fight while avoiding decisive engagement. The effectiveness of the NATO Comprehensive Assistance Package in building capacity and NATO’s ability to reinforce Ukraine’s materiel requirements exemplify the organization’s approach to building capability without decisive engagement. The alliance can provide conventional support to Ukraine without a nuclear response from Russia. Conventional support increases the capacity and credibility of the partner’s threat of denial. In other words, the capability to provide conventional support without decisive engagement provides NATO a means to extend the deterrent umbrella and not rely on coercive threats to support partners.

Signaling Nuclear Escalation Remains an Effective Deterrent against NATO

Since the beginning of the 2022 offensive, Russia has leveraged its strategic deterrence concept to threaten nuclear retaliation to deter support for Ukraine. In addition to using energy as a weapon for blackmail, Russia has suggested NATO intervention could escalate the Russia-Ukraine War from a conventional war to a nuclear one. To add credibility and further
communicate the threat of escalation, Russia announced in October 2022 the annexed states were part of Russia, and efforts to retake the states were attacks on Russia’s core interests.\textsuperscript{46} Faced with a capable, communicated threat with some credibility, Russia’s threat is a likely cause of NATO’s choice to limit the range and effectiveness of systems provided to Ukraine.

Russia has also demonstrated credibility is perishable. Despite threats, NATO has trained and supplied Ukraine with troops since the beginning of the Russia-Ukraine War without a response. China and India have both publicly stated the use of nuclear weapons is unacceptable. Because these countries are trading partners and economic lifelines around NATO-led sanctions, Russia is very unlikely to defy these powers. As inaction and international disapproval erode Russia’s credibility, deterrence plays a lesser role in NATO’s decisions, as demonstrated through the organization supplying more advanced, longer-range systems to Ukraine. But should NATO miscalculate and overlook a redline, nuclear escalation could emerge. Because of the risk of nuclear escalation, NATO must continue to assess the situation to determine appropriate forms of intervention.

**The Credibility of NATO in Extended Deterrence Is a Vulnerability**

Structured on a defensive treaty, NATO remains challenged to extend the deterrence umbrella. The \textit{NATO 2022 Strategic Concept} demonstrates the organization’s commitment to defense, highlighting the three core missions are to “ensure the collective defence and security of all Allies.”\textsuperscript{47} Recently, NATO has demonstrated at least three options to help to assure partners and to deter aggressors during this vulnerable period. The most promising option is expedited membership, demonstrated by efforts to fast-track NATO membership for Sweden and Finland. Unfortunately, NATO has demonstrated the fast track to concurrence from 30 sovereign states is not fast. Another option would be tripwire forces, such as the Enhanced Forward Presence troops deployed to the Baltic states. This option assures allies and partners of NATO’s intentions, while posing a deterrent dilemma for an aggressor state considering attacking member forces. The third option is increasing the resilience of the aspiring member, as demonstrated in Ukraine. As Ukraine met conditions for the NATO Comprehensive Assistance Package, the country increased the resilience of the Ukrainian government, including military and civilian response forces. Members of NATO also contributed billions
of dollars to improve Ukrainian military capability. The investment in an aspiring partner did not prove effective in deterring Russian aggression, but the investment did prove effective in realizing denial of Russian victory. Of the three options for mitigating the risk to aspiring partners, only NATO members’ investment in resiliency proves effective in bolstering the capability of a deterrent threat.

**Integrated Deterrence Will Rely on Compellence and Resilience to Be Effective**

The Russia-Ukraine War demonstrates without a security guarantee or threat to core interests, the military component of integrated deterrence lacks credibility. Russia also demonstrates without a military threat, other levers of national power are ineffective in deterrence. This observation is especially true when other great powers may provide relief, such as when non-Western markets reduce the economic impacts of sanctions. The influence of like-minded autocratic states and Russia’s UN Security Council veto further dampen political threats. Since such hurdles mean acts of aggression are still likely to occur, the United States and its allies must be willing to play the long game. As Schelling notes, “[C]oercive pressure exercised over an extended period of time, allowed to accumulate its own momentum, is a common and effective technique of bypassing somebody’s commitment.” 48 Schelling implies, and we may observe in Russia, nonmilitary levers will have an impact, but as a compellent force, nonmilitary levers are not a deterrent threat. In practice, the supported state must be resilient enough to survive the aggressor’s first offensive attack and to endure subsequent attacks until political and economic levers compel the aggressor to change its actions if no binding guarantees of military support emerge.

**Implications for Deterrence**

The Russia-Ukraine War has tested the limits of extended deterrence and the vulnerability of aspiring states that seek admission into NATO. The core interest of NATO as a defensive alliance remains protected. Escalation from conventional weapons to nuclear ones remains deterred, as of June 2023. From the Russian perspective, NATO has not directly intervened on Ukraine’s behalf, nor has the organization supplied weapons that would alter the strategic environment against Russia. The capability, capacity, and communication of threat exceed the potential benefit of action. Although deterrence failed to alter Russia’s aggression, the Russia-Ukraine
War has demonstrated NATO can effectively reinforce a state’s resilience to enable deterrence by denial. The war also verifies Schelling’s theory deterrence can effectively stop escalation between levels of weapons from conventional to nuclear. A major implication for NATO policy is extended deterrence for nonmember states requires costlier signaling than the organization can provide by money and training alone, and when extended deterrence fails, the amount of money and training required to impose high costs on an aggressor is significantly higher.
Endnotes


29. NATO, Comprehensive Assistance Package for Ukraine (Brussels: NATO, July 2016).


35. Cordy, Ukraine.


44. Cordy, Ukraine.

45. Takacs, “Ukraine’s Deterrence Failure,” 5.


47. NATO, Strategic Concept, 3.

48. Schelling, Arms and Influence, 69.
Operational Art in the Russia-Ukraine War of 2022

Rebecca W. Jensen

Keywords: operational art, campaign planning, deception, Kherson, Kyiv counteroffensive, preparation

The 1986 iteration of Field Manual 100-5, *Operations*, which was the first US policy document to define “operational art,” defines it as “the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations.”¹ This definition makes clear operational art is concerned with the conceptual, planning, and execution elements of a campaign. Current US Joint doctrine defines operational art as “the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, means, and risks.”² In its conduct, operational art could be described as the confluence of four elements: strategy, campaigning, force flow, and logistics.³ Ukraine’s conduct of war thus far indicates both competence and adaptability in managing the planning and execution of the four elements of operational art.

One difficulty in evaluating the linkage of tactics with strategy in the Russia-Ukraine War is the strategic objectives of both parties are not clear to external analysts. The government of Ukraine’s publicly stated objective is restoring sovereignty over the country’s internationally recognized borders, which include areas occupied in 2014 as well as in 2022.⁴ Prudence would dictate planning for more modest and achievable goals in the near term, but discussing such goals publicly could weaken both Ukraine’s position in any negotiation as well as morale. In broad terms, the goal of current
operations is to liberate as much territory from Russian occupation as possible and defensible.

Discerning Russia’s goals is harder. The ostensible goal of the special military operation was to “denazify” Ukraine, but Vladimir Putin has also spoken of the fundamental unity of the Ukrainian and Russian peoples, which suggests maximalist goals in the Ukrainian theater. Another analysis suggests the Russia-Ukraine War might be merely one axis in a longer-term Russian plan to take military action against Belarus, Moldova, or the Baltic states. Whatever the ultimate goal of military action might be, success is hard to ascribe to a campaign that may have yielded over 200,000 Russian casualties and destroyed 40 percent of Russia’s tanks.

Operational art connects tactical capabilities with theater-strategic goals. Tactics without strategy may be “the noise before defeat”; tactics that are not orchestrated in support of strategy make the strategy irrelevant. Orchestrating tactics in particular has been a challenge for NATO states, which have seldom been defeated in tactical engagements but equally seldom succeed in coordinating tactical victories to achieve the goals for which the organization deploys forces. Since February 2022, the conventional war between Ukraine and Russia has provided some insight into how both parties are currently practicing operational art. The adaptation of the Armed Forces of Ukraine in operational art suggests directions in which NATO militaries should consider evolving their own theory and praxis.

Leading Up to the Conflict

In the wake of the Russian occupation of Crimea and the Donets Basin in 2014 but before the 2022 invasion, Ukraine aimed its military reforms at both the modernization and, above all, the Westernization of platforms and structure. Multiple NATO countries, including the United States, were providing training in a range of spheres, from tactics to the philosophy of command.

During the same period, Russia was in the midst of a series of reforms that included digitizing and centralizing command-and-control infrastructure across military and security organizations under the National Defense Control Center. Western strategists perceived the prevailing school of thought in the Russian military to be new-generation warfare, the paradigm under which Russia used a range of tools to achieve the country’s security goals (of which, overt military power was only one).
At the end of 2021, when the military buildup of Russian forces in Belarus was underway, the Russian Armed Forces had a total strength of 900,000, whereas the Ukrainian armed forces were slightly under 200,000. In the latter half of that year, estimates indicated between 25 percent and 33 percent of deployable Russian forces were on the Ukrainian border and in Crimea. Despite a 2020 cease-fire, skirmishes between Ukrainian and Russian forces in eastern Ukraine and Crimea increased throughout 2021.

**Operational Art and Outcomes of the Initial Attack**

The initial Russian concept seems to have been a coup de main on Kyiv, after which Russia would replace the Ukrainian government, combined with an occupation force moving in from the east and south. The combination of the seizure of Hostomel Airport (which would allow the rapid movement of troops directly into the capital) and the decapitation of the government (which may have included plans to assassinate the president) would dislocate national leadership and prevent the Armed Forces of Ukraine from effectively coordinating its remaining troops. Thanks in part to counterintelligence, Ukraine foiled multiple assassination attempts. The initial Russian assault on Hostomel Airport met with early success, but more opposition than anticipated, combined with logistical failures, prevented Russia from seizing Kyiv. By the end of March 2022, Russian forces had retreated from the Kyiv axis and were consolidating in eastern Ukraine.

In accordance with the respective Russian and Ukrainian strategies, conventional fighting in the east of Ukraine characterized much of the subsequent year of the war. Although both sides achieved some goals while sustaining significant losses, two cases particularly illustrate sophisticated operational art on the part of the Armed Forces of Ukraine. In the fall of 2022, deception and effective allocation of resources enabled Ukraine to recapture Kharkiv and subsequently Kherson. In early 2023, Ukraine fixed Russian forces in the fighting around Bakhmut as the Armed Forces of Ukraine prepared for a spring counteroffensive.

**Deception and Prioritization: Kharkiv and Kherson**

Kharkiv, the second-largest city in Ukraine, has significant symbolic power in both Russia and Ukraine. Kharkiv, which is the closest Ukrainian city to the Russian border, was briefly the capital of the Ukrainian Soviet Socialist Republic. In 2014 and 2015, support for Russian-linked separatists was
higher in Kharkiv than in any part of Ukraine, other than the Donets Basin, and Ukrainian security forces put down an attempt to establish the Kharkiv People’s Republic in 2014. Given this political context and Kharkiv’s role as a cultural center for Ukraine since the nineteenth century, control of the city is politically and symbolically important. Beyond the importance of control, though, the city’s universities, previously strong economy, and industrial base—particularly, in military manufacturing—make Kharkiv an important urban center through which to develop the Ukrainian economy and rebuild when the current situation stabilizes.21

Russia attempted to seize Kharkiv in the first days of the war. When the initial push failed to accomplish Russia’s objective, the country began heavily shelling the city from the northeast.22 At the end of the first week, when Russia had captured Kherson, Russia continued to move forces toward Kharkiv.23 From early March until early April, tens of thousands of residents evacuated Kharkiv as the city suffered repeated artillery, missile, and air strikes. During April and early May, while these attacks continued, Russian troops began to shift south, and Ukrainian forces recaptured villages in Kharkiv oblast, near Kharkiv city.24 By May 13, a Ukrainian counteroffensive had pushed Russian troops several kilometers further from the city, and the United Kingdom Ministry of Defence assessed Russia had lost the battle of Kharkiv.25 Throughout the summer, the Russian military occupied the northeastern corner of Kharkiv oblast and continued striking Kharkiv city, at times inflicting substantial civilian casualties as well as infrastructure damage.26

Kherson, close to Crimea, is a much smaller city that has historically had less pro-Russian sentiment. But Kherson’s symbolic and strategic significance still makes the city a valuable target for Russia. In the first week of the war, Kherson was the first provincial capital in Ukraine to fall to Russian control.27 Control of Kherson is geographically important because the city provides access to both Russian-occupied Crimea and the Ukrainian cities on the Black Sea to the west. Kherson is within long-range artillery distance from Crimea, and control of the region around Kherson city is vital for the land bridge to Crimea and Russian-captured territory further west.28 Kherson is also close to the Nova Kakhovka dam and reservoir, which are crucial to power generation, irrigation, and coolant for the nearby Zaporizhzhya nuclear power plant. This reservoir also provides drinking water to occupied Crimea.29 In light of these factors, Kherson is clearly a decisive point from a doctrinal standpoint and key terrain that enables a commander to gain a marked advantage over an enemy or contributes materially to achieving success.30
By April 2022, the Ukrainian Army had demonstrated competence in large-scale maneuver warfare and exploited multiple Russian weaknesses in the Kyiv counteroffensive. The Ukrainian Army’s success resulted in the liberation of 50,000 square kilometers (19,305 square miles) of occupied territory and the expulsion of Russian forces across Ukraine’s borders with Russia and Belarus. Throughout the summer of 2022, Ukrainian officials and analysts spoke of their preparations for a coming counteroffensive against a backdrop of general stalemate characterized by indecisive engagements, the shelling of Ukrainian cities, and resistance likely supported by the Ukrainian Special Operations Forces. Western training of Ukrainian forces began in the aftermath of the 2014 occupation of Crimea and the Donets Basin, then paused briefly after the February 2022 invasion. Western training resumed in the spring and escalated steadily. Materiel aid, which took the form of ammunition at first, also started flowing to Ukraine in the aftermath of the invasion.

Over the summer, statements by President Volodymyr Zelensky and members of his government stressed Kherson’s importance to Ukraine. These statements were accompanied by newly arrived long-range rockets Ukraine used against strategic targets in the region, including bridges and ammunition supplies. Western media amplified Ukraine’s message, with coverage discussing the impending Ukrainian counterattack and the Russian buildup Ukraine would face in Kherson.

American sources even spoke about war games that projected high costs for a more ambitious counteroffensive, and US officials counseled Ukraine to set more modest goals. As a result of this information operation, Russia withdrew much of its occupying force from Kharkiv oblast and redeployed the force south to Kherson. On August 29, Ukrainian troops broke through Russian defensive lines in Kherson, seemingly signaling the start of the anticipated counteroffensive.

**Advancement into Kharkiv**

With the attention of much of the Russian force now directed toward Kherson, Ukrainian forces moved into Kharkiv oblast with little resistance. On September 6, the Ukrainians attacked Russian positions. Within a week, Ukraine had retaken the major Russian military hub of Izium, as well as a nearby railhead and forced the withdrawal of Russian forces from nearly the entire Kharkiv oblast. By the end of September, Ukraine had
Jensen

retaken a further 12,000 square kilometers (4,633 square miles) of territory, liberating hundreds of villages around Kharkiv oblast in the process.\(^{41}\)

From a strategic standpoint, the liberation of Kharkiv both directly served Kyiv’s geographical aims and provided a substantial boost in the moral domain of warfare. With Ukraine’s success in Kharkiv, after being under threat and under periodic attack for nine months with limited gains, the country demonstrated the capability of the Ukrainian military to both domestic and international audiences, which are vital to continued cohesion and material support, respectively.

The aftermath led to increased infighting among Russian leadership, with the most visible evidence yet of dissent and tension among the best-known figures in Russia’s military and political establishment.\(^{42}\) In the wake of sham referenda, Putin declared Russia was annexing territory in the Luhansk, Donetsk, Zaporizhzhya, and Kherson oblasts, part of a rhetorical response designed to mask the defeat in Kharkiv for Putin’s internal audience.\(^{43}\) With their morale crushed by the enemy’s success, Russian soldiers abandoned a substantial quantity of weapons and ammunition in their retreat, and Ukrainian forces subsequently captured Russia’s materiel.\(^{44}\) Meanwhile, fighting in Kherson intensified in the wake of the successful Kharkiv counteroffensive. In mid-October, shelling and ground maneuvers toward Kherson increased as Russian looting and evacuations hastened across the Dnieper River.\(^{45}\) Russia maintained a defensive posture to provide cover for a withdrawal, and observers believed Russian forces were preparing for urban fighting in the city as well as an attack on the Nova Kakhovka dam (which did not materialize during the fall 2022 campaign, though Russia later destroyed the dam on June 6, 2023).\(^{46}\) By the end of October, Russia had begun preparing fallback positions and fortifications on the eastern bank of the Dnieper River.\(^{47}\)

On November 10, Russia announced a withdrawal from Kherson. Russia described its withdrawal as a measure for preserving fighting power, though Ukrainians, who considered the announcement might be a trap, initially met the declaration with suspicion.\(^{48}\) Although unexploded ordnance, booby traps, and substantial damage to infrastructure became significant challenges in the liberation of the city, the recapture of Kherson constituted a major setback for Russia and a major victory for Ukraine.\(^{49}\) Perhaps more importantly, observers informally considered Ukrainian forces’ ability to recapture Kherson and push through to the Dnieper River to be a signal of whether Ukraine was able to succeed with the materiel, money, and intelligence the country was receiving from the United States and other
partner nations and, implicitly, whether the United States and partner nations ought to sustain or even boost support.\textsuperscript{50}

Emerging commentary has described Ukraine’s approach to Kharkiv and Kherson in the fall of 2022 as a feint. To the extent a feint is an attempt to telegraph an attack that will not occur to distract from one that will, this characterization is mistaken: Kherson’s importance to controlling the Dnieper River and supply lines to Crimea and the West as well as the necessity of demonstrating capability to retain allied support meant liberating the city and Kherson oblast west of the river was always a high priority.\textsuperscript{51} Rather, Ukraine’s counteroffensive illustrates misdirection through information operations, the effective allocation of forces and acceptance of risk, and the creation of a dilemma for the enemy—all long understood to be essential elements of operational art. The Ukrainian leadership’s gamble was Russia would reallocate forces from Kharkiv to the southern front, creating a path for the relatively quick, dramatic liberation of Kharkiv oblast.\textsuperscript{52} Ukraine’s gamble was worthwhile. Had the gamble not paid off, Russian resources still would have been divided between the Kharkiv and Kherson counteroffensives, and Ukrainian forces would have enjoyed interior lines of communication and better situational awareness. In exploiting these advantages and demonstrating skill in the use of combined arms, Ukraine established it was capable of both effective defense and harassment of occupying forces as well as conventional offensive action against a well-prepared enemy, all of which were vital to the country’s credibility as the recipient of increasingly sophisticated capabilities and Western support.\textsuperscript{53}

\textbf{The Buildup to the New Bakhmut Counteroffensive}

Bakhmut is located close to the portion of Donetsk oblast Russia annexed in 2014. Ukrainian forces have been defending Bakhmut since May 2022; as of May 2023, Ukrainian forces have begun their counterattack against Russian forces.\textsuperscript{54} Western leaders have increasingly questioned the strategic value of Ukraine’s continued commitment to defending Bakhmut; for example, senior US leaders have indicated ambiguity about the merits of the Ukrainian approach.\textsuperscript{55} Zelensky has publicly affirmed his intention to continue to hold and retake Bakhmut, citing the unanimous support of the General Staff of the Armed Forces of Ukraine.\textsuperscript{56}

Underlying Western leaders’ argument is the assertion Bakhmut has no intrinsic strategic or logistical value. But Bakhmut has symbolic
relevance to both sides. After almost a year of fighting, Russia still had not taken Bakhmut, and this failure had become an existential threat to the Wagner Group’s reputation in particular. For Ukraine, rhetoric has contributed to the city’s prominence, with Zelensky presenting a Bakhmut flag to Congress when he spoke in Washington, DC, in December 2022. Whether Bakhmut’s symbolic value alone justifies sustained attrition is a valid question, but the city’s intrinsic value is not the only important issue. The larger context of the war and the strategy Western leaders assume Ukraine is advancing (and, in some cases, the strategy Ukraine has stated) change the calculus around the decision whether to continue to defend Bakhmut.

The broader context involves three major points. The first is Russia is still signaling maximalist goals for the war. Ceding Bakhmut would not stop Russia’s attempt to push further west along this axis. Although not crucial in the way Kherson is to supply lines in Crimea, for instance, Bakhmut stands between Russian forces and the larger, still-populated cities of Sloviansk and Kramatorsk. Additionally, Bakhmut has underground caves and tunnels as well as fortifications Ukraine would have to build anew if its forces retreated. Withdrawing from Bakhmut would then require Ukrainian forces to defend at a site further to the west. A more favorable location is unlikely to be found nearby. Bakhmut also provides Ukraine with the advantages of urban fighting, which is usually understood to provide a defensive advantage—particularly, when the city is not encircled or cut off from resupply. With more small units and a lack of civilians to worry about, Ukraine has a great advantage against Russia in urban combat in Bakhmut.

If holding Bakhmut is part of the current defense of Ukraine’s eastern front, then the second point is holding the city also furthers the planned spring counteroffensive. Unlike Ukraine, which must choose between defending Bakhmut, falling back to an inferior position nearby, or ceding substantial territory, Russia could create a dilemma for Ukraine by withdrawing some or all forces in the city and attacking at a point where Ukraine is less prepared. By failing to create a dilemma for Ukraine, Russia has given Ukraine an opportunity to exploit the former’s error by engaging with the Russian military and Wagner Group forces in an area where the defenders have a comparative advantage, preventing further gains for the former while the latter continues to build up its own forces in preparation for the counteroffensive. In addition, the urgency of the counteroffensive increased in the first months of 2023 as Western partners continued to seek tangible demonstrations of Ukrainian success amid fears of a protracted
Operational Art in the Russia-Ukraine War of 2022

Chapter 4

To the extent Ukraine would be jeopardizing a successful counteroffensive by either ceding territory to Russia or conducting a costly Ukrainian defense in Bakhmut, the General Staff of the Armed Forces of Ukraine has calculated holding the city represents an effective economy-of-effort approach to enable the country’s ambitious operation in the first half of 2023.

The General Staff of the Armed Forces of Ukraine has made this calculation in part due to the third point: the ratio of casualties suffered in the fighting around Bakhmut. The Ukrainian minister of defense has stated Russia is taking seven casualties for every one of Ukraine’s. According to NATO, the number is closer to five. Although Russia’s use of Wagner Group mercenaries (which have included convicts to create mass) complicates the calculus, the ratio of casualties is sustainable for Ukraine in the short term because the country’s strategy depends at least partly upon attrition.

Attrition is a particularly useful approach to warfighting in defensive engagements, in which the goal is to avoid escalation, and when imposing costs on the enemy is part of the theory of victory. Lawrence Freedman’s definition of attrition is “the progressive erosion of enemy capacity,” which leads to military defeats and can “undermine political will.” One reason the US military embraced maneuver is in the wake of the Vietnam War, leaders came to view attritional warfare as an inferior strategy. But a strategy of attrition that focuses on degrading the enemy is a defensible choice for Ukraine in this phase of the war.

So far, Russian casualties have exceeded combined casualties from all Soviet and Russian wars since 1945, with monthly casualties 35 times higher than the Soviet Union suffered in Afghanistan, in which case domestic frustration with the war and its toll became a factor in the Soviet withdrawal and subsequent regime collapse. More tellingly, combat attrition in airborne, naval infantry, and Spetsnaz forces was so severe in the first several months of the war, these Russian losses have been effectively irreplaceable during the current conflict. Reconstituting Russia’s units will take years, and the skills of the current Russian conventional-force infantry are inferior to those of their predecessors.

But limits exist. Although attrition seems to favor the side with existential stakes—and, therefore, Ukraine—we still do not know the extent of Russia’s commitment to the war. If Putin sees a victory in Ukraine, however construed, as a matter of regime survival, he may be willing to commit significantly more time, troops, and resources than if he perceived the conflict to be a Russian
war of choice. Rhetorically, Putin and Russian spokesmen have characterized victory in Ukraine as crucial to Russia’s survival.\textsuperscript{73}

In the long term, attrition is untenable for Ukraine, not least because it has a smaller population and is much more sensitive to casualties than Russia.\textsuperscript{74} But in the short term, attriting Russian forces while the Ukrainian military prepares for a counteroffensive is effective. Ukraine has so far held Bakhmut by allocating only the bare minimum of troops and ammunition. Training volume outside the country has increased, as has the level of NATO equipment and ammunition upon which the Armed Forces of Ukraine can draw. Ukrainian planners accepted both higher risk and greater casualties by drawing on Territorial Defense Forces and volunteer defense units to hold Bakhmut on the rationale preserving more expert, Western-trained, better-equipped forces for the much more challenging offensive would be worthwhile.\textsuperscript{75} Defending “Fortress Bakhmut” as a way to bleed Russia in advance of the counteroffensive only works if Ukraine ensures its combat power is not attrited at the same level Russia’s has been, and so far, the General Staff of the Armed Forces of Ukraine has had the discipline to maintain this balance.\textsuperscript{76}

**Operational Art**

Considering the four major elements of operational art—strategy, campaigning, force flow, and logistics—the recapture of Kharkiv and Kherson and the defense of Bakhmut both show a high degree of competence in operational art on the part of the General Staff of the Armed Forces of Ukraine and Ukrainian planners. Although the public domain provides limited visibility into the details of Ukrainian strategy, in broad terms, the events of the first year of the war indicate after an urgent and somewhat ad hoc defense against the initial Russian invasion, Ukraine’s strategy is to restore its sovereignty over as much territory as possible while preserving combat power for later phases of the war and eventual deterrence against further attacks. Also crucial to this strategy is the maintenance of domestic cohesion and morale, the confidence of Ukraine’s international partners, and an adequate logistical base.

In terms of campaigning, the phased approach to Kharkiv and Kherson demonstrates deception remains relevant, even in the age of mass media and abundant information. If the intent was to divert Russian troops from the northeast to allow a relatively quick victory for Ukraine before a redoubled effort in Kherson, any decision on Russia’s part would still have resulted
in divided forces between two fronts. In this sense, the campaign plan created a dilemma for the Russians in which any decision would lend itself to exploitation by Ukraine.

Similarly, the Russian propensity to double down rather than consider a withdrawal created an opportunity that the defense of Bakhmut exploited. Withdrawal in Russian military doctrine and culture requires permission at the most senior level. For the General Staff of the Armed Forces of the Russian Federation, military doctrine hinders timely adaptation to experiences in contact. The tendency to scapegoat commanders associated with failure further hampers theater commanders’ ability to withdraw in the interests of a larger strategy. Infighting among senior military leaders seems to intensify the problem of scapegoating. By holding Bakhmut while conserving troops and ammunition, despite knowing, in the short term, Ukraine would sustain relatively high casualties for little obvious and immediate benefit, the General Staff of the Armed Forces of Ukraine has demonstrated both restraint and risk acceptance in defense of Bakhmut.

These two examples illustrate an awareness of the centrality of force flow and logistical support. The initial, haphazard Ukrainian mobilization of the first days of the war quickly yielded a formal and organized conscript army that was generating new units and increasingly training its personnel, both inside and outside Ukraine. As partner nations donated platforms and, equally importantly, provided training in how to operate and maintain the platforms, time became critical in the development of both tactical competence and the ability to carry out sustained all-arms maneuvers. The balance between deploying enough troops to defend and retake territory and carrying out sufficient training of individuals has forced difficult choices Ukrainian planners seem to have adjudicated in the first year of the war.

Holding off Russian forces also provides sufficient time to improve logistics, which are more complicated than usual in Ukraine—in part, due to the diversity of platforms with which the Armed Forces of Ukraine fights. In terms of tanks alone, donations include US M1 Abrams, United Kingdom FV4034 Challenger 2 tanks, and many variants of the Leopard tank. In addition, Ukraine has the range of equipment the country fielded before the war as well as the Russian tanks Ukraine has captured. Each of these tanks has different requirements for spare parts, ammunition, and maintenance. The other donated hardware also include a variety of platforms, with similarly diverse maintenance and logistical requirements. Furthermore, Ukrainian planners have grasped the importance of logistics to Russia, and Ukraine’s successful attacks
on Russian logistical nodes and lines suggest an effects-based approach to targeting that has significantly impaired Russian military effectiveness.83

Lessons Learned

The first year of the war yields a range of other insights that should fuel the United States and NATO to reevaluate how to deter and plan for interstate, conventional conflict. Western militaries in general and the United States in particular have moved away from conscription as a viable strategy for generating military power.84 Even after the Russian invasion of Ukraine in 2022, many Ukrainian leaders resisted mass mobilization on political grounds and on the basis mobilization would not substantially increase military capabilities, at least in the absence of other reforms.85 The heavy reliance on conscripts in both Russia and Ukraine indicates the utility of quickly raised and trained citizen armies hinges on other factors, not least of which are morale and leadership. The Ukrainian Army leads its conscripts well and they consistently well motivated, and the opposite is true for the Russian army.86

Another question the invasion raises is why Russian doctrine has failed. In one sense, the invasion represented a rejection of a successful and low-cost approach to advancing Russian strategic goals. Since Putin became president in 2012, and to some extent before that, Russia had been consistently using new-generation warfare. Under this concept, Russia uses informational, economic, and diplomatic efforts to weaken governance in the region in question. In addition, no-fly zones and the selective use of irregular warfare shaped the environment for subsequent operations. Officials at all levels of government were targeted through blackmail, bribery, or simply violence. After electronic warfare, information operations, and reconnaissance have been conducted, a small force carries out conventional military operations, which conclude quickly.87 The template of new-generation warfare was successful in the occupation of Crimea and the Donets Basin in 2014, but either Russia did not adhere to its doctrine or the country failed to implement new-generation warfare in 2022. Faulty assessments of both Russian and Ukrainian capabilities undoubtedly contributed to Russia’s decision. But significantly, Russia has been more successful when it uses conventional military force as a supporting, rather than supported, element of power. Ongoing attacks on Ukrainian infrastructure are an element of new-generation warfare, but Ukraine has proven to be resilient against them.88 Nevertheless, despite its many operational failures since February 2022,
Russia has been developing a more sophisticated doctrine, and the country will learn from the war. Not accounting for these lessons would be a mistake.

A final area in which Russia and Ukraine provide useful contrasts is the appointment of senior military leaders. Historians have noted the institutional reluctance of the US Army to relieve general officers for battlefield performance. Neither Ukraine nor Russia has demonstrated such reluctance in the Russia-Ukraine War. Although the details will remain unknown for some time, the drivers for relieving general officers appear to differ between the two countries. With the exception of two Ukrainian generals being publicly relieved of command on suspicions of disloyalty in the first weeks after the invasion, Ukraine’s dismissals of senior staff seem linked to the country’s performance in the war, rather than internal politics. In Russia, by contrast, internal politics drive the relieving of senior officers as much as performance on the battlefield does. For example, General Sergei Surovikin had modest success in late 2022, but Putin replaced Surovikin with the less-competent political insider General Valery Gerasimov. The broader context in Moscow characteristically includes tensions and jockeying for power between different factions of the military as well as leaders of Wagner Group and Chechen forces. The US military must examine the Ukrainian model to maximize the potential for proper officer dismissal while in combat.

Conclusion

As they did with many other fields of military thought, counterinsurgency and irregular warfare preoccupied operational art in the first two decades of the twenty-first century. Maneuvering divisions or larger formations was not relevant in the contexts of counterinsurgency and irregular warfare, and modern militaries protected their supply lines comparatively well. Air supremacy and the absence of enemy capabilities such as counterfires created an environment in which support functions, including logistics, casualty evacuation, and movements, seldom faced major threats. But these conditions have changed.

As Ukraine showed in the counteroffensives in Kharkiv and Kherson and the defense of Bakhmut, the emplacement and movement of large units, the deployment of reserves, and logistics at every level are closely tied to military effectiveness in large-scale operations. Indeed, certain older elements of operational art—the orchestration of tactical actions in time, space, and purpose at the division level and higher—once thought
to have been consigned to the history books, have become relevant again. Deception, the creation of dilemmas, and the balance between risk acceptance and restraint are just as important now as they were in conflicts preceding those in the Global War on Terror. At the same time, the range of activities and domains with which operational art must be concerned has increased, as has the range of tactical capabilities. In the Russia-Ukraine War, trenches and city sieges exist alongside remotely piloted aircraft used for intelligence, surveillance, reconnaissance, and attack. In addition, algorithms process data to make targeting faster and more accurate than ever before.94 Alongside conventional and irregular warfare, both Ukraine and Russia are negotiating the particulars of trade through contested waters and carrying out information operations on social media.95

Already, many observers are interested in how the US military and others can learn from innovation and change in the Russia-Ukraine War. Equally important is the question of how skills and activities understood to be central in earlier decades, then somewhat neglected in the first conflicts of the twenty-first century, are once again profoundly pertinent to modern combat. Just as the United States had to pivot to counterinsurgency in the twenty-first century, so now must the country leverage this strategic inflection point and prepare to engage in large-scale combat operations with peer and near-peer adversaries.
Endnotes


4. Dmytro Kuleba, “Statement by H. E. Mr. Dmytro Kuleba, Minister of Foreign Affairs of Ukraine, at the UN Security Council Meeting” (speech, UN Conference Building, New York, NY, February 24, 2023).


Chapter 4  Operational Art in the Russia-Ukraine War of 2022


53. Dickinson, “Entire Ukraine Invasion.”


59. Landale, “Ukraine War.”


66. Landale, “Ukraine War.”


Intelligence

Clay M. Huffman

Keywords: intelligence, Security Service of Ukraine, Defense Intelligence of the Ministry of Defense of Ukraine, military intelligence, open-source intelligence (OSINT), artificial intelligence (AI), interoperability, weaponizing intelligence, sensor-agnostic, declassification

The Russian invasion of Ukraine represents a watershed moment for US military intelligence. The Russia-Ukraine War highlights the increasing importance of open-source intelligence (OSINT); the benefits of weaponizing intelligence to wage information warfare; and the criticality of multisensor intelligence processing, exploitation, and dissemination (PED) supported by artificial intelligence (AI). Additionally, the Russia-Ukraine War emphasizes the need to adopt shared intelligence standards and practices preconflict and emphasizes the importance of understanding corporations’ independence in the intelligence and information environment. Ukraine’s intelligence adaptations following the breakup of the Soviet Union in 1991 provided mixed results. Ukrainian national-intelligence agencies such as the Security Service of Ukraine, often referred to as “the SSU,” resisted reforms. But Ukraine found success in the gradual implementation of anticorruption measures, the adoption of NATO intelligence standards, and post-2014 practices within Defense Intelligence of the Ministry of Defense of Ukraine, often referred to as “the GUR.” By analyzing the Russian invasion of Ukraine for intelligence lessons learned, US military-intelligence professionals can better adapt to rapid advancements in intelligence processes and procedures to prepare for future military operations across the competition continuum.
Soviet Roots: The Security Service of Ukraine

Following the breakup of the Soviet Union in 1991, the Security Service of Ukraine, which was closely modeled on the Soviet Committee for State Security (often referred to as “the KGB”) and had nearly identical regional structure and leadership, grew out of the organization’s Soviet roots and into the primary national-intelligence service supporting Ukraine. Similar to the ways the Committee for State Security functioned as the security arm of the Communist Party of the Soviet Union, the Security Service of Ukraine initially focused on serving as the protective body and security arm of the Ukrainian president. The missions of the new Security Service of Ukraine included counterintelligence, counterterrorism, combating organized crime, and combating corruption. But the organization also took advantage of the lack of democratic oversight and assumed another role well outside the norms of a traditional intelligence service in a liberal democracy: the preservation of the ruling government. In support of this additional role, Security Service of Ukraine activities included attempting to influence elections, conducting mass surveillance on the Ukrainian people, threatening journalists and media personalities, and violating human rights to assist the Ukrainian presidency in preserving power. The Security Service of Ukraine also developed a militaristic, heavily guarded structure that was equipped with military ranks that operated with little democratic oversight and heavily bloated personnel roles. These flaws made the Security Service of Ukraine susceptible to corruption and prevented Ukrainian intelligence from establishing critical connections to the larger Euro-Atlantic intelligence family.

In late 2013, Euromaidan, the transition of power to a more democratic government, and the subsequent 2014 crisis in Crimea and the Donets Basin finally created pressure for change within the Security Service of Ukraine that led to positive reforms. But the obstacles to change were significant, and the Security Service’s reform remained a work in progress all the way up to the Russia-Ukraine War.

Defense Intelligence and Military-Intelligence Reform

Although the Security Service of Ukraine continued to resist reforms, leading to poor performance before the Russian invasions of Ukraine in 2014 and 2022, Defense Intelligence of the Ministry of Defense of Ukraine embraced reform and was much more effective than the
Security Service. Unlike the service, Defense Intelligence’s sole focus on supporting defense intelligence—that is, intelligence on external threats—meant the organization was not pulled into the internal political corruption to the same degree the Security Service was. The lack of political corruption in Defense Intelligence allowed for a much higher degree of support from Western allies and partners, which, in turn, helped to facilitate significant improvements in effectiveness.

Although the founders of Defense Intelligence maintained backgrounds in Committee for State Security military counterintelligence and the Soviet Chief Intelligence Office, Ukraine lost much of the structure provided by the office. The lack of structure forced Defense Intelligence’s founders to create the organization under a redefined purpose and mission that focused on the organization’s role as a military-intelligence agency with far fewer structures. Unlike the US Defense Intelligence Agency, which does not maintain command of military-intelligence units in the field, Defense Intelligence of the Ministry of Defense of Ukraine both acts as the defense-intelligence proponent for the Ministry of Defense of Ukraine and maintains command and control over intelligence units that contain military-intelligence, special-forces, and reconnaissance capabilities at the strategic level and below. Because of its command structure and organic special-forces capabilities, Defense Intelligence more closely resembles the Russian Chief Intelligence Office that evolved from the Soviet Chief Intelligence Office. Although Defense Intelligence suffered from issues from its inception in 1991 until 2014, knowledge of these issues rarely escalated outside the Ukrainian intelligence community, and, thus, Defense Intelligence is trusted internationally.

The Ukraine crisis of 2013–14 showcased the need for critical reforms in Defense Intelligence. A lack of human-intelligence networks provided an impetus for Defense Intelligence to refocus on developing human-intelligence capabilities more effectively to support operations against an occupying military force. In addition, Ukrainian military intelligence focused on acquiring more sophisticated intelligence, surveillance, and reconnaissance (ISR) assets and integrating these new technologies from the tactical level of warfare to the strategic level.

From 2017 to 2020, Ukrainian military-intelligence units underwent significant reforms to expand intelligence capability development and to unite organizational structures. Additionally, Ukrainian military intelligence implemented NATO intelligence procedures and developed processes, such as preparing the operational environment to enable intelligence fusion.
Ukrainian military intelligence modernized both intelligence-management systems to feed the larger Armed Forces of Ukraine’s information-management system and critical intelligence equipment.¹⁹

Ukraine’s intelligence reforms ultimately improved intelligence-collection capabilities, enhanced the command and control of military-intelligence units, and produced more capable intelligence units that were equipped with improved technological intelligence-collection platforms. Furthermore, Ukraine’s intelligence reforms enabled the creation of a joint staff intelligence officer on the General Staff of the Armed Forces of Ukraine and focused Ukrainian military-intelligence training on NATO intelligence standards.²⁰ In 2021, Defense Intelligence Chief Major General Krylo Budanov stated, “Ukrainian intelligence is the headliner in adopting Western standards and integrating into the Western system.”²¹ As discussed previously, Budanov’s comments seem to apply to reforms in Defense Intelligence. But the Security Service of Ukraine lagged significantly. As a result of other agencies’ shortcomings, in 2020, the Supreme Council of Ukraine passed Ukraine Law No. 912-IX, which formally established Defense Intelligence as the main entity responsible for intelligence collection in joint operations in the Donets Basin. The law also included provisions that allowed for Defense Intelligence to perform intelligence responsibilities in nearly all defense-related matters, military construction, military-technical cooperation, and cybersecurity. Despite Ukraine’s intelligence changes, in 2021, the US 81st Stryker Brigade Combat Team, part of the Joint Multinational Training Group–Ukraine, found intelligence to be the most underdeveloped warfighting function in Ukraine. Many of the Ukrainian units marginalized the role of intelligence officers, with the commander assuming much of the responsibility for information collection.²²

As a result of Ukraine’s intelligence flaws, in 2022, Ukrainian military intelligence, led by Defense Intelligence, predicted another invasion of the Donets Basin to be Russian forces’ most likely course of action.²³ But the prediction was proved partially wrong in that Russia’s subsequent invasion focused on the seizure of a much wider area than the Donets Basin. Ukrainian military intelligence’s assessment was likely because of Defense Intelligence’s predominant focus on supporting ongoing combat operations in the Donets Basin. Had the reforms to the Ukrainian system taken place earlier, Defense Intelligence may have provided a more complete intelligence picture that showcased the vulnerability of Kyiv and other parts of Ukraine west of the Donets Basin. Given Defense Intelligence’s focus on intelligence collection in the Donets Basin and the relative
ineffectiveness of the Security Service of Ukraine, which was responsible for Kyiv, Ukrainian leadership unsurprisingly did not believe Russia would launch a full-scale invasion focused on seizing Kyiv. Although Ukrainian military intelligence made great strides in adopting NATO standards and implementing processes to receive new and modernized intelligence equipment, Ukrainian intelligence still lagged behind Western military-intelligence practices.

**Technical Innovation under Fire**

The impact of OSINT collected from publicly and commercially available information has proven to be a dynamic factor in the Russia-Ukraine War. The 2014 crisis in Crimea and eastern Ukraine showcased any electronic device capable of passing information could be employed on the battlefield to spread messaging, propaganda, disinformation, and deception and to provide a signature capable of being collected, manipulated, and even targeted. The number of electronic devices used in the 2022 Russian invasion was exponentially greater than the number used during the Ukraine crisis of 2013–14, and the majority of the devices used in the 2022 invasion operated on public, commercial platforms, allowing intelligence to be collected from the devices through open sources. Although the intelligence community has long relied on intelligence collected from classified sources, whether human or technical, some estimates suggest up to 80 percent of the intelligence required by a leader or military commander today comes from publicly and commercially available information.

In the Russia-Ukraine War, commercial-satellite imagery, social-media posts, YouTube videos, and genetic databases have provided information to both Ukraine and Russia on military personnel, troop locations, key-leader locations, morale, and battle-damage estimates. Social media played a major role in identifying the movements of Russian forces up to the Ukrainian border and within Crimea, providing indications and warnings of imminent attack.

General Jim Hockenhull, commander of the United Kingdom’s Strategic Command, highlighted Ukraine used OSINT to develop anticipatory intelligence; shift public sentiment; counter Russian propaganda; provide a platform on which the population could participate actively in passing battlefield information; offer alternative views through the crowdsourcing of information; and deliver missing pieces, likely corroborating intelligence collected from sensitive sources.
One example of Ukraine employing OSINT centers on the crowdsourcing of information to support ISR efforts. Recent Russian employment of armed Iranian unmanned aerial systems (UASs) posed detection challenges for the Ukrainians because Russia’s numerous UASs overwhelmed military detection platforms. Given the UASs fly low and slow and make a distinct noise, everyday Ukrainian citizens identified UASs, passed information directly to Ukrainian military forces, and shared information over social media to inform the government, thereby answering government crowdsourcing calls to identify UASs for countertargeting. Ukraine has innovated to allow its population to participate actively in collecting and sharing information to feed intelligence analysis that supports the military. In one of the first uses of commercial technology for a foreign-war effort, US-based Maxar Technologies used its satellites to inform the Ukrainian public of the impact of Russia’s munitions. Even though the Russian military maintains the capabilities necessary to enable secure communications through devices like R-187 Azart encrypted radios, many of the Russian military’s units resorted to using commercial cell phones and unencrypted radios to communicate. As a result of failed communications and poor discipline, Russian soldiers and even leaders have resorted to communicating on unsecured radio lines and Ukrainian cellular networks and phones. Russia’s use of unsecured communication methods allowed the Ukrainians to collect intelligence on Russian calls, geolocate Russian personnel, and target them with lethal munitions, resulting in the deaths of numerous Russian senior tactical leaders and general officers.

Artificial Intelligence in Use

The use of new AI capabilities remains one of the most significant intelligence innovations that have resulted from the Russia-Ukraine War. The Ukrainians effectively used AI to provide facial recognition through Clearview AI and to provide voice-recognition, transcription, and translation services through the company PrimerAI. Reports suggest Ukraine used Clearview AI to identify potential Russian operatives, combat disinformation, identify Russian soldiers killed during combat, and evaluate potential persons of interest at vehicle checkpoints. Through PrimerAI’s voice recognition, translation, and transcription, the Ukrainians greatly reduced the amount of time required to process and exploit collected communications by letting PrimerAI algorithms do much of the work, thereby giving Ukrainian forces a critical advantage over Russian forces. The Ukrainian military’s use of AI tools allowed intelligence analysts to process collected information

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Huffman
from across the battlefield with fewer personnel, often removing the need for information to be sent to linguists and translators for exploitation.

Ukraine required a method of cataloging information to enable the analysis of information for intelligence purposes to drive future military decisions and operations. To fill this need, Ukraine turned to Palantir Technologies Inc., a US corporation specializing in tools that manage and enable intelligence analysis as well as expedite the intelligence process. As an example, through a Palantir Technologies software tool named MetaConstellation, Ukrainian intelligence analysts can rapidly access commercial-satellite data from all available means in an AI-assisted search when and where the information is needed in a fraction of the time this process required in previous conflicts with fewer personnel and at lower echelons.\textsuperscript{36} Through MetaConstellation, Ukrainian military-intelligence analysts were provided access to traditional optical pictures, synthetic-aperture radar, and thermal imagery that directly contributed to the targeting process.\textsuperscript{37} The scale and scope of Palantir Technologies’ support to Ukraine is significant, and the chief executive officer of the corporation claims its software is “responsible for most of the targeting in Ukraine.”\textsuperscript{38}

Another critical intelligence innovation arising from the Russia-Ukraine War is the wholesale use of UASs as a replacement for manned airpower in conducting aerial ISR. In previous conflicts, UASs supplemented manned airpower, but in Ukraine, tactical UASs make up the majority of aerial-based ISR platforms. Tactical UASs offer capabilities uniquely suited for urban terrain: They can fly low and slowly, loiter on target in a defined area, and provide detailed pattern-of-life assessments required for intelligence analysis.\textsuperscript{39} In Ukraine, the military innovated by organizing Territorial Defense Forces around commercially purchased tactical UASs, allowing units to receive intelligence tasks while employing these units to achieve desired effects, directly influencing future targeting.\textsuperscript{40} Like the use of commercial cellular networks and radios, the use of commercial UASs presents challenges for units. If captured by the enemy, commercial UASs geolocate the team flying the aircraft and store previous route information that can give adversaries a glimpse into intelligence-collection plans—similar liabilities to the Russians’ use of unencrypted communication.\textsuperscript{41} But with limited aerial ISR assets, Ukraine’s use of commercial UASs presents a case study on the ways commercial UASs may supplement the battlefield in the future.

As of January 2023, the United States has contributed more than 1,800 Aevex Phoenix Ghost tactical UASs and more than 700 AeroVironment
Switchblade UASs to the Ukrainian military. Although commercially available UASs contribute ISR capabilities to the fight, the Phoenix Ghost and Switchblade UASs provide ISR and serve as one-way loitering munitions that can remain airborne for extended periods, collecting data before the UASs crash into targets as explosive munitions when opportunities arise. These tactical UASs link sensor to shooter in a small platform, can be carried in a backpack, and are relatively inexpensive to replace if destroyed by an adversary on the battlefield. These UASs represent a possible revolution in the role of UASs on the battlefield, and their use will likely continue to increase as the Russia-Ukraine War persists.

Although Ukraine’s use of UASs displayed measurable success, it is likely only temporary as Russia and other nations learn how to counter UASs. Like Ukraine’s use of inexpensive Turkish UASs, the Russians now employ the Iranian Shahed-136 UAS to link ISR sensor and shooter capabilities, as seen through the recent targeting of Ukrainian civilian infrastructure, military infrastructure, commercial-shipping ports, and civilians. Future battlefields will likely not display the same ISR and targeting advantages for one combatant because both sides of the conflict will likely develop means to counter UASs while employing UASs in similarly devastating ways against one another. The collection of ISR must focus on identifying enemy UASs at all echelons on the battlefield due to UASs’ destructiveness, effectiveness, and ability to penetrate deep behind forward lines.

**Weaponizing Intelligence with Information Operations**

Although the Ukrainian intelligence reforms, centered on the Security Service of Ukraine and Defense Intelligence, offered mixed results before the Russia-Ukraine War, US and NATO efforts to declassify and weaponize intelligence in a strategic information-operations campaign represent a critical success in countering Russian propaganda and disinformation. Due to Russia’s significant disinformation campaigns in both the United States and Ukraine in the years preceding the Russia-Ukraine War, many assumed Russia could again win the information-warfare fight. The Kremlin frequently contrived intelligence about adversaries, after which the Russian government would use false flags to justify invasions.

But the United States and NATO countered Russian disinformation efforts by declassifying intelligence on Russian troop movements and positions and telegraphed the Russian military’s future moves before they occurred.
Perhaps more effectively than at any time since the Cuban missile crisis, US policymakers successfully released classified intelligence to the public about planned aggression, including the following.

- Russia’s massing of forces on the Russo-Ukrainian border beginning in late 2021
- Vladimir Putin’s discussion with Xi Jinping about a future invasion of Ukraine during the Beijing 2022 Olympic Winter Games
- Russian attempts to create perceptions of Ukrainian aggression against ethnic Russians to justify the invasion
- Russian movement of large, armored formations once fighting commenced

The United States’ released intelligence was highly effective in shaping and influencing public perception, both at home and abroad.47

The strategic release of intelligence in a coordinated information-operations campaign by the United States was widely successful in shaping public perception. The United States’ success occurred despite Russia using commercial social-media platforms to conduct a significant disinformation campaign that portrayed the Ukrainians as Nazi supporters conducting genocide against Russians in Ukraine.48 The United States both released intelligence to shape public perception and used intelligence to build a global coalition against Russian aggression, support the need for further sanctions, and compel European nations to take actions against Russia in spite of the negative impacts on the nations’ economies.49 The strategic release of intelligence to support information operations provided real-time updates before and during the Russian invasion. This release of intelligence was strategically more important than keeping it confined behind classification barriers.

Similar to the United States’ successful use of intelligence as a core component of a strategic information-operations campaign, Ukrainian leadership successfully incorporated intelligence into information-operations campaigns at the strategic, operational, and tactical levels. Strategically, President Volodymyr Zelensky effectively uses social media, engagements with global leaders, and addresses to foreign houses of parliament to wage information warfare against Putin and Russia and to garner sanctions, arms, funding, equipment, and emotional support.
from large swaths of the global citizenry. At both the strategic and operational levels, Defense Intelligence regularly releases intelligence collected from the battlefield via social media and the organization’s website to shape the information environment. For instance, Defense Intelligence intercepted enemy communications and posted a video on YouTube of Russians discussing sending disabled citizens to fight in the war. Defense Intelligence also frequently uses its public-facing website to communicate intelligence on Russia to the general public.

At the tactical level, in an attempt to inspire Russian resistance movements against the Russia-Ukraine War, the Ukrainian military filmed Russian soldiers calling home and saying they were being cared for, yet describing an environment in which they were lied to by Russian forces and misled by superior officers about their mission in Ukraine.

Although waging information warfare appeals to Zelensky’s strengths, his ability and that of the Ukrainian government to conceal information also suggests Ukraine’s ability to defend information is just as effective as the country’s ability to wage offensive information warfare. Due to increased difficulties conducting clandestine operations as a result of biometric controls at borders, poor concealment of covert agents abroad, increasingly brash intelligence operations, corruption among midlevel officials, and confirmation bias stemming from pro-Russian Ukrainian sources representing a minority pro-Russian sentiment, the Russian Federal Security Service intelligence apparatus failed to discern Ukraine’s military preparations and address them upon invasion. Although Russia overrelied on intelligence to meet Putin’s objectives, Zelensky and Ukraine’s ability to protect information, especially after the Security Service of Ukraine maintained a large number of Russian spies no less than a decade ago, presents clear advantages in Ukraine’s information-warfare plans against Russia.

Like Russia, the United States and NATO did not understand Ukraine’s ability to defend its homeland, leading many senior leaders and intelligence agencies to assess Ukraine would fall quickly to the Russian invasion. Before the Russia-Ukraine War, the US intelligence community overestimated the effectiveness of the Russian military, perhaps relying too much on personnel and equipment overmatch and too little on the effectiveness of Zelensky and the Ukrainian military. Likely impacted by the failure to use intelligence to predict the actions of Afghanistan’s senior leadership and military at the end of the Afghanistan War, the US intelligence community failed to recognize the impact of the will to fight in both Afghanistan and Ukraine. Out of the 18 agencies in the
US intelligence community, only the Department of State’s (DOS’s) Bureau of Intelligence and Research dissented from the opinion Ukraine would fall quickly, basing this assessment on significant anti-Russian sentiments captured by recent Ukrainian public-polling data. Had the importance of the will to fight been recognized, the immediate collapse of Afghanistan could have been prevented. Furthermore, an understanding of the will to fight could have led to more trust in Zelensky and the Ukrainian military, contributing to more actions in late 2021 to deter the eventual Russian invasion.

**Lessons for the US Army in the Future**

**Open-Source Intelligence Is Highly Valuable and Enables Intelligence Sharing**

The use of OSINT derived from publicly and commercially available information coupled with social-media interactions has been a critical component of Ukrainian success in the Russia-Ukraine War. The United States must increase its use of this realm of information in future conflicts. Although the United States’ use of OSINT increased gradually during the Iraq War and the Afghanistan War, the Russia-Ukraine War suggests the vast information environment of publicly and commercially available intelligence is a tremendous untapped opportunity. Despite incorporating OSINT to a limited degree, the US intelligence community today still operates in classified environments and collects information from classified sources. But relying on classified information makes sharing with allies and the public difficult. In the future, OSINT could account for the preponderance of information that feeds intelligence collection and analysis.

Although intelligence analysts can take courses on and specialize in OSINT, it remains an intelligence niche, and most of the training on intelligence analysis and collection focuses on classified sources and methods. As the US Army prepares for large-scale combat operations (LSCOs), OSINT training must play a major role in preparing for potential contingency operations.

Given the vast amount of information available via open-source methods, OSINT provides intelligence analysts with highly useful information and creates an environment for intelligence sharing with
partners and allies because OSINT is publicly and commercially available and, thus, unclassified. In many cases, OSINT can corroborate classified intelligence, thereby allowing the intelligence community to share OSINT (corroborated by classified sources and methods) more easily while protecting important sources and collection methods from identification. As commercially available sensors enhance their capabilities and data already available on the Internet becomes easier to search and filter, the trend of using OSINT to bridge the sharing gap between allies and partners should increase, and OSINT can become exceedingly important on the future battlefield.58

Although the role of OSINT increased exponentially during the Russia-Ukraine War, searching publicly available news, records, and other information can be highly difficult and laborious due to a lack of infrastructure within the government. Although the CIA maintains the Open Source Enterprise—the successor to the Foreign Broadcast Information Service, which ended in 2014—critiques suggest the intelligence community values open-source information less than classified sources, as evidenced by continued budget cuts to the Open Source Enterprise. Current systems and processes, including the inability of classified networks to access open-source information, make OSINT analysis harder.59 Critics of the current system further suggest devaluing open-source information caused the United States to miss critical open-source information before the COVID-19 pandemic and the US government may lack the open-source tools needed to compete with competitors like China.60

When looking for solutions to enable searching the extremely large pool of publicly and commercially available information, the Army may want to look toward systems like those developed by university libraries. As an example, multiple Washington, DC–based universities recently created comprehensive database systems to sift through vast quantities of publicly available information, developing intuitive search systems that yielded highly successful search results for topical issues pertaining to national security.61 Outside the creation of an intelligence agency focused on OSINT, the systems and methods used by public universities could enable the US military to prepare intelligence analysts more effectively for future issues, ranging from pandemics to LSCOs.
Sensor-Agnostic Intelligence PED Supported by Artificial Intelligence Is Critical in Conflict

Intelligence PED should move away from the present system of tying specific analysts to specific platforms. Rather, intelligence PED must become sensor agnostic. Intelligence analysts need the AI-enabled ability to tap into any Joint or combined intelligence-collection platform to support an increasingly expedited and lethal targeting cycle across the competition continuum.

The Russia-Ukraine War has shown one of the main issues will be how to sift through classified intelligence and OSINT from a wide variety of sensors and push the intelligence into the targeting cycle quickly. To address this requirement, the Army needs an AI-augmented system to expedite the intelligence sensor-to-shooter interaction. Recently, the Army invested in the Tactical Intelligence Targeting Access Node, which is enabled by AI and machine learning. This tactical ground station seeks “to process sensor data received from Space, High Altitude, Aerial and Terrestrial layers” to “provide intelligence support to targeting and situational awareness and understanding, ultimately reducing the sensor-to-shooter timeline.”

Similarly, the US Air Force is moving toward a sensor-agnostic system to compete on the future battlefield. Through the Converged Air Force Enterprise Mission framework, which focuses on the 16th Air Force, the service seeks to shift from intelligence analysis tied to specific ISR platforms to a new model that centers on the federation of intelligence analysis across geographic boundaries, units of assignment, and components. The new model will connect analysts working on similar problem sets, developing a reporting standard shared by all units and personnel and creating a network that can address personnel shortages or capability gaps.

Although the Air Force is centering the Converged Air Force Enterprise Mission on cryptological intelligence analysis for the time being, this model will likely expand to include other sensors and intelligence disciplines.

Given the importance of shortening the AI-enabled sensor-to-shooter timeline in future conflicts, the Army should prioritize the Tactical Intelligence Targeting Access Node as a critical modernization effort. Currently, the 2021 Army Modernization Strategy outlines the Army network as a critical modernization priority that focuses on commanding and controlling forces in multiple domains in a large operating area while ensuring situational understanding in multi-domain operations (MDOs).
Although building solutions takes time, the Army likely needs to expedite the current timeline for Tactical Intelligence Targeting Access Node implementation and to invest significant resources to achieve overmatch over potential adversaries in future conflicts and to maintain parity with other services. The ability of systems such as the Tactical Intelligence Targeting Access Node and the Converged Air Force Enterprise Mission to communicate and be interoperable, which is extremely vital, feeds the Department of Defense’s (DoD’s) overarching Joint All-Domain Command and Control system.

**Increasing Impact of Corporations on Intelligence and the Information Environment**

In Ukraine, transnational corporations, like Maxar Technologies and Palantir Technologies, will play a major role, sometimes unilaterally, in picking winners and losers by enabling intelligence operations and influencing the battlefield outside the confines of traditional warfare between nation-states. In Ukraine, transnational companies have often made independent decisions to support the country and frequently operated in front of nation-states. Because much of the support from transnational companies has impacted intelligence operations and the information environment, the Army needs to prepare for future conflict that will be flooded with commercial assets that may be new to the battlefield. Just as commercial UASs and satellites support Ukrainian intelligence on Russian movements, the future battlefield will likely see similar uses.

Although transnational corporate support disproportionately benefited the Ukrainians, many transnational corporations are opportunistic and may support adversaries of the United States in the future if the corporations are able to profit from the conflict. Even in the current Russia-Ukraine War, a discovery was made in January 2023 Russia had employed Iranian UASs with technology from 12 different US and Western corporations, demonstrating corporations can heavily influence the future battlefield in ways both beneficial and detrimental to the US military."3" In turn, Army intelligence must develop technical intelligence methods to identify US- and Western-based components in captured enemy equipment to detect, deter, and prevent corporations from supporting potential or actual adversaries.
Weaponizing Intelligence Enables Information Advantage in Information Warfare

Releasing intelligence that details future adversarial action (most prominently, predicting Russia’s invasion of Ukraine), highlighting plans to conduct false-flag operations, and documenting adversaries’ war crimes in a coordinated information-operations campaign were essential to the United States and Ukraine winning European and international support. Integrating the release of intelligence into information operations will similarly be critical in the future operational and informational environments at all echelons. As shown by Ukraine, information warfare in the modern era operates best when focused on the speed and accuracy of information. When adversaries are unencumbered by accuracy, they often operate faster than the United States. The United States must gain the information advantage early in conflicts and often, before events even occur. By changing some doctrines and structures, the Army may be better poised to integrate military-intelligence, cyber, signal, and information operations to increase the speed at which the service can analyze information for accuracy while protecting sources to enable offensive information warfare against future enemy actions before the actions occur.

Current foreign-disclosure practices may also inhibit the Army’s ability to gain the information advantage and to operate with partners and allies on the future battlefield. National Security Decision Memorandum 119, issued by Henry Kissinger in 1971, states classified military information must be treated as a national-security asset and should only be shared with foreign governments and organizations when the United States stands to benefit. Although the memorandum offers broad guidance for the Department of Defense and the services to interpret, the bureaucracy surrounding foreign disclosure is too cumbersome and inhibits the Army’s ability to weaponize intelligence fully to gain an advantage.

In addition to reexamining current disclosure practices, the Army must address problems resulting from the overclassification of information. Director of National Intelligence Avril Haines stated at the beginning of 2022 the US intelligence community’s current approach toward classifying information is so inherently flawed, the approach prevents the United States from sharing information with allies and partners, creates distrust between the public and the government, and consequently hurts US national security.
Furthermore, the continued overclassification of information prevents the United States from gaining an informational advantage. By holding on to certain information due to overclassification rather than releasing and weaponizing information, the Army may allow adversaries to strike first in information warfare. Overclassification also places additional burdens on limited foreign disclosure officers.

A possible solution to overclassification is to make single-source reporting releasable to allies and partners by default and to develop a system in which supervisors and foreign disclosure officers review information and limit its release. This system would make overclassifying intelligence harder and cut down on the workload of foreign disclosure officers, because they would be reviewing intelligence to limit release rather than to enable it. Intelligence reporting could also develop a default system in which unclassified analyses and summaries are developed for specific classified intelligence topics and focus areas—removing sources and methods—to weaponize the use of classified intelligence in information warfare campaigns. To implement this approach, the Army would need to provide more training on foreign-disclosure practices and empower foreign-disclosure release authority at lower echelons.

The Adoption of NATO Standards Enabled Intelligence Sharing

The efforts of Ukrainian military intelligence, centered on Defense Intelligence of the Ministry of Defense of Ukraine, to adopt NATO standards from 2014 to 2022 developed trust that facilitated evidence sharing between Ukraine and the United States and other NATO states, both before and following the Russian invasion. Although Defense Intelligence’s structure differs from that of US military intelligence, the former’s ability to adopt NATO standards following the Ukraine crisis of 2013–14 sufficiently prepared the former to achieve immediate successes in targeting Russian units and leadership. This pattern will almost certainly be repeated in the future because many US allies and partners will maintain different organizational designs.

As the US military-intelligence community prepares for LSCOs, it must share common practices and systems with partners and allies via training to ensure future success if conflict erupts. The United States must integrate information into training well before conflict erupts to mitigate the significant challenge of developing systems after the shooting starts. Sharing information with partners and allies early should be a critical element in efforts to increase integrated deterrence, a key concept for the Department of Defense detailed
in the 2022 *National Defense Strategy of the United States of America*, which seeks to use “every tool at the Department’s disposal, in close collaboration with our counterparts across the US Government and with Allies and partners, to ensure that potential foes understand the folly of aggression.”

Integrated deterrence, by definition, must take place before an adversary acts in an effort to deter further acts of aggression higher on the competition continuum. Although NATO provided a commonly understood set of standards and practices that was transferable to Ukraine, a non-NATO member, the lack of a larger organizational body like NATO may present challenges in the Indo-Pacific region as the United States increases training and exercises with partners and allies. As a result, the Army must develop and maintain a common system of practices and standards for intelligence training to enable intelligence sharing should a conflict escalate in which the United States is fighting by, with, and through multiple partners and allies in the Indo-Pacific.

**Conclusion**

The evolving conflict leading to the large-scale Russian invasion of Ukraine has provided a glimpse into the future of warfare between two developed nation-states. Although the United States cannot expect the future battlefield to look the same as the Ukrainian battlefield, many intelligence lessons learned from the Russia-Ukraine War can prepare Army military intelligence for LSCOs and other military operations across the competition continuum. Some central lessons learned from the Russia-Ukraine War are weaponizing intelligence facilitates informational advantage; OSINT, which is critical, enables intelligence sharing; sensor-agnostic intelligence PED supported by AI will be critical to future modernization efforts; preconflict training on shared intelligence standards and practices with partners and allies yields highly positive results; and corporations often operate as independent actors in both the intelligence domain and the information environment. Instilling these lessons learned in the force will ready the Army for the new and ever-evolving operational environments of the future.
Endnotes


8. Bugriy, “Ukraine’s Security Sector Reform, 72, 78.


18. Abdalla et al., “Intelligence.”


32. Christopher Bronk, Gabriel Collins, and Dan Wallach, *Cyber and Information Warfare in Ukraine: What Do We Know Seven Months In?* (Houston: Rice University’s Baker Institute for Public Policy, September 6, 2022).


34. Dave and Dastin, “Exclusive.”

35. Knight, “As Russia Plots.”


41. Beaubien, “Russia-Ukraine War.”


43. Arabia, Bowen, and Welt, *Security Assistance to Ukraine*. 

45. Meaker, “Ukraine Enters.”


51. 4TheRecord, GUR Intercept Call – the Russians Send Their Disabled to Fight in Ukraine (English Translation) (United Kingdom: 4TheRecord, November 29, 2022), YouTube video, https://www.youtube.com/watch?v=i6bNJJVYrA8.


60. Merchant, “Congress.”


64. Castillo, “Air Force Cryptologic Office.”


70. Corbett and Danoy, “Beyond NOFORN.”


72. DoD, 2022 National Defense Strategy, IV.
As the Russia-Ukraine War rages in Eastern Europe, scholars and strategists continue to study how the war’s conduct and termination will shape the future character of war. This conflict presents an opportunity to influence current military modernization that is similar to the US Army’s development following the Arab-Israeli Yom Kippur War in 1973. Six years after the Six-Day War in 1967, a coalition of Arab states launched a surprise attack against Israel on two fronts, from the west through the Sinai Peninsula and from the north into the Golan Heights. The Arab armies penetrated and began overwhelming Israeli defenses through surprise and overwhelming force. Israel displayed an unprecedented response in mobilizing all national instruments of power to halt the Arab armies’ advances quickly as well as launch a devastating counterattack to repel the invaders. In 19 short days, the conflict terminated through a ceasefire brokered by the UN.

October 1973 was a watershed moment for the US Army as it emerged from protracted counterinsurgency in Vietnam. The Arab–Israeli wars exposed several areas of importance the US Army critically needed to address, such as Manning, training, systems, and doctrine, which had atrophied while the United States focused on Vietnam. The ongoing Russia-Ukraine War is an extraordinarily similar opportunity to the one presented in 1973. The conflict in Ukraine offers strenuous battlefield testing of US systems, equipment, and innovation by proxy. This battlefield laboratory will shape
the United States’ understanding of its capability gaps and the emergent character of war in large-scale combat operations (LSCOs).

The Army’s observations in 1973 shaped critical service modernization efforts and launched Army concepts and programs for the next 30 years. In the same way, the Army must recognize the Russia-Ukraine War as a moment of opportunity to innovate and influence the service’s modernization priorities based on the events in Eastern Europe. Ukraine offers insights into how to increase the Army’s lethality today through artillery reform, reequipping, and targeting. Information from Ukraine should influence the Army’s thinking about protection against indirect fires. The performance of both the Russian and Ukrainian artilleries provides valuable insights into how the United States should adapt its fires warfighting doctrine.

The Russian Way of Artillery and Its Failures

Russia’s multipronged invasion consisted of over 100 battalion tactical groups, casting doubt on Ukraine’s ability to withstand such a deluge of forces pouring across the country’s borders. All initial indications led analysts to assess Ukraine’s situation as perilous, with many projecting Kyiv might withstand the Russian onslaught for just 72 hours. The Russian military relied on its genuine belief in fires-centric operations supported by its new battalion tactical group concepts. But Russian elements slugged their way toward Kyiv under systemic failures.

Russia has demonstrated when it cannot integrate maneuver in support of fires (that is, combined arms), the country targets civilians, regardless of world condemnation. If Russia’s mass and volume of artillery fire fail to achieve effects and Russian sustainment falters, the country turns to an artillery strategy of mass and volume, which exponentially increases the incidence of maintenance failures.

Predictable Fires-Centric Operations

Russian fires doctrine has, for the most part, remained unchanged since World War II, with minimal adjustment beyond assigning artillery assets to a direct support role within the country’s battalion tactical groups and introducing newer technologies. The Russian belief in artillery has been nearly fanatical since Peter I reconstituted his artillery following defeat at the hands of the Swedes by smelting church
bells to be cast as cannons, earning reverence in Russian operational doctrine. The Russian artillery dogma in its purest form is to pummel enemy positions through mass and volume and then maneuver in support. Russia has historically emphasized mass-fire offensive strategies through the concentrated use of artillery and rocket artillery as the core tenet of Russian military doctrine. Tactical success in World War II, Chechnya, Ukraine (in 2013–14), and Syria reinforced Russian doctrine’s reliance on fires.

Russia’s implementation of barrage fires draws on the following four factors.

1. “dumb” projectiles, which are inexpensive compared to technologically complex precision-guided munitions (PGMs)

2. stockpiles of ammunition amassed from decades of mass production

3. legacy projectiles that are not susceptible to electronic warfare threats

4. relentless fires, which have a high mathematical probability of achieving effects

As the Russian offensive stalled and then was repelled and Ukraine began a counteroffensive, Russian failures mounted, and Russia returned to relying on barrage fires, volume, and mass fires as elements of siege warfare to break the Ukrainians’ will and force capitulation. Russia’s original plan to conquer Ukraine rapidly has deteriorated to siege tactics as the former strives to establish defensible lines, break the Ukrainian will, and encourage the latter’s allies to pressure it to seek termination. Whether in offense, mobile defense, or siege, Russia has used, and will continue to use, its artillery—independently, if needed—to hammer military and civilian targets to break the will of the country’s opposition.

**Failure to Attain Combined Arms and Modernization Backslide**

Historical Russian tactics consisted of a deluge of artillery followed by armor and mechanized infantry to support the artillery fires and gain victory. Following Russia’s success in the Donets Basin in 2014 and, later, in Syria, the assumption was Russia could execute combined arms at echelons above the battalion tactical group. But in Ukraine in 2022, Russia failed
to synchronize maneuver, artillery, and other combat elements. Russia could not execute its combined-arms operations at echelons above the battalion tactical group. The disparity between Russia’s organizational structure and how the country task-organizes for combat decreases Russian effectiveness in Ukraine.\textsuperscript{11}

Russia’s ineffectiveness is surprising given the Russian artillery modernization of 2007, which integrated new weapon systems and technology, automated command-and-control (C2) systems, refurbished legacy systems as a cost-saving measure, and introduced doctrinal changes that decentralized artillery by integrating four battalions into brigade-level task groups.\textsuperscript{12} Although Russia attempted to adopt a fires system in the image of Western militaries by leveraging sensors and organizing artillery systems in direct support of battalions, these efforts failed. The lack of adequate and responsive C2 systems and processes has impeded efforts to execute operations. Russia, which lacks secure lines of communication, has opted to use commercial cell phones, enabling the Ukrainian military to exploit this security weakness to counter combined-arms efforts.\textsuperscript{13} The resulting challenges prompted Russia to abandon attempts to consolidate its fires assets into artillery tactical groups, undermining responsiveness by slowing the kill chain and reducing effectiveness as more senior artillery echelons restricted control.\textsuperscript{14}

The minor, limited nature of conflict in the Donets Basin in 2014 as well as in Syria hid the battalion tactical groups’ lack of the requisite artillery to execute fires to support a more expansive fight like the one in Ukraine. Although artillery tactical groups and brigade and division levels of command have retained the preponderance of artillery systems, they have mainly gone untested in combat until the Russia-Ukraine War. In training, Russia has focused on the battalion tactical group, but in Ukraine, Russia is attempting to fight at the theater level.\textsuperscript{15} Artillery tactical groups notably lack the critical integration of communication systems to enhance C2 and influence the scale of the fight Ukraine has presented.

The centralized nature of the command structure, which requires generals to be nearer to combat to direct operations, and Russia’s increased casualty rates have increasingly stymied its ability to execute combined arms. A key limitation is the draconian nature of Russia’s fires process: Senior leaders withhold decision-making authority and absolute commitment to operational plans, preventing them from adapting to reflect operational realities.
Maintenance and Sustainment

Some (mainly logisticians) say if logistics were easy, it would be called “tactics.” This saying is most readily apparent in the case of Russia in Ukraine, where Russia has confronted systemic sustainment, logistics, and maintenance issues that are affecting its ability to execute fires. Maintenance failures are compounding depleting ammunition stocks, crippling Russia’s ability to gain any operational advantage or momentum while the country employs barrage fires that are laying siege to the Ukrainian infrastructure and people. Furthermore, Ukraine has successfully employed its newly acquired long-range artillery assets to interdict Russian access to ammunition and replacement parts.

The Russian doctrinal reliance on volume of fires equates to an increased rate of fire, longer sustained firing, and more munitions pumping through Russian cannons, which ultimately increases stress and wear. In November 2022, a senior US defense official estimated Russia was firing a staggering 20,000 artillery rounds daily, whereas Ukraine was firing between 4,000 and 7,000 rounds per day. Inexperienced gunners often increase the wear and tear on systems. Wear and tear has become an increasingly prevalent issue as Russia has exhausted its pool of experienced operators and drawn upon conscripts who lack the technical experience to maintain complicated weapon systems. A high volume of fire contributes to systems’ catastrophic failures, as observed in Russian artillery pieces’ continual depletion.

Contributing to weapon systems’ failures was Russia’s choice to refurbish legacy systems rather than purchase new systems during the country’s 2009 modernization. Although refurbished assets deliver more “bang for the buck,” Russia struggles with rampant corruption and failures in its military-industrial complex, which further diminishes the performance of Russian artillery.

Ukraine has isolated and targeted Russian sustainment functions that operate with extended lines of communication in eastern Ukraine. Consequently, Russian units are finding delivering their required barrage of fires more challenging as Ukrainian Global Positioning System–guided rockets blow up more and more ammunition-supply dumps. As a result, artillery units lack ammunition, parts, and fuel, and sustainment elements must move supply depots further out of the range of Ukrainian High Mobility Artillery Rocket Systems (HIMARS) and Multiple Launch Rocket Systems. Extended lines of communication delay resupply times, increasing the targeting risk to sustainment elements. Challenges in sustainment and requirements
for executing a sustained campaign of barrage fires have converged upon Russia. This pressure has pushed Russia to cast aside laws of war and to choose unchecked, primordial violence, indiscriminately targeting civilians.

**Targeting Civilians**

Russia continues its campaign of siege warfare, despite being unable to achieve effects on military targets. Previously, Russia tactically employed fires to strike civilians in Chechnya and Syria; indeed, targeting civilians appears to be an unwritten part of Russian doctrine. With blatant disregard for cultural norms and in violation of the laws of war, Russia continues to use its artillery to target civilians and vital civilian infrastructure, inflicting needless suffering upon the Ukrainian people. Over the years, Russia has repeatedly denied accusations its forces indiscriminately attack civilians, but it is clearly applying mass and volume of fires against civilians to break the people’s will and undermine the Ukrainian government. Russia’s decision to target the people of Ukraine galvanizes the Ukrainian will to fight, strengthens Europeans’ will to endure a cold winter, and reinforces NATO’s institutional solidarity in arming Ukraine.

**The Ukrainian Approach**

Russia’s annexation of Crimea and the eastern Donets Basin in 2014 set the conditions for subsequent, ongoing armed conflict and signaled Russia’s objective to conquer all of Ukraine. The annexation galvanized the Ukrainian will to modernize and prepare for the impending fight to expel the Russians. When Russia launched its multipronged invasion of Ukraine in February 2022, the former anticipated it would incur little resistance from the same disorganized and depleted armed forces the former met during the 2014 annexation of the latter. The Russian army instead met an organized, equipped, and committed force that had significantly modernized its defense establishment.

The Armed Forces of Ukraine successfully integrated long-range precision fires due to the rapid equipping and training Ukraine’s partners gave its forces. Ukraine’s post-2014 reforms spurred new technology and responsive decision making, streamlining the targeting process. Ukraine’s competitive advantage comes from the country’s employment of mission command—the nation’s empowerment of junior leaders to exercise disciplined initiative in real time, making decisive choices with lethal effects on the battlefield.
Throughout the Russia-Ukraine War, Ukraine’s military operations have continued to highlight Ukrainian capability, capacity, competence, and will as well as the country’s ability to achieve results in LSCO’s. Although new NATO-based systems have come with challenges in sustaining the necessary volume of munitions as well as maintenance challenges due to wear, Ukraine continues demonstrating its resiliency, adaptability, and tenacity in repelling Russia’s special military operation from the former’s sovereign borders.

**Conditions of Artillery in February 2022**

Before 2022, Ukraine had amassed the second-largest concentration of artillery in Europe, organizing 1,176 howitzers and 1,680 rocket platforms into artillery brigades and regiments that supported both ground and naval forces. Following the decimating effects of Russian artillery in 2014, Ukraine sought to reorganize and equip its artillery formations in anticipation of further Russian aggression. The Armed Forces of Ukraine increased the number of artillery brigades and regiments across its ground forces while introducing artillery battalions to tank, mechanized, and infantry brigades in a direct-support role. Additionally, naval forces received an artillery brigade and regiment to support the forces’ marine elements. Filling its formations with artillery, Ukraine turned to procuring legacy Soviet howitzer, rocket, and missile systems. Furthermore, Ukraine modified its approach to fix forces with maneuver and destroy them through barrage fires.

**Equipping While in the Fight**

Following Crimea’s annexation in 2014, Ukraine confronted the tactical and technical issues it experienced due to ineffective and inaccurate artillery systems, outdated maps, and unreliable geospatial intelligence. Ukraine required a system for revolutionizing the country’s artillery complex given the shortfalls Ukraine faced with its rusted, Soviet-based legacy equipment. As Ukraine began its reform and modernization process, the country confronted complex fiscal challenges, struggling to balance operational sustainment and reform programs. Ukraine began implementing technical solutions, increasing the accuracy of current legacy weapon systems as the country sought long-term weapon solutions, such as the Ukrainian-developed 2S22 Bohdana 155-millimeter howitzer. Unfortunately, Ukraine was only capable of producing and introducing
to operations a single 2S22.\textsuperscript{28} The 2S22’s versatility and mobility represent a missed opportunity—a failure in Ukraine’s prioritization of artillery reforms.

Following the Ukraine crisis of 2013–14, the United States and Ukraine expanded their partnership through engagement, training, and military aid. The United States provided $3.2 billion in aid throughout the seven years after the crisis.\textsuperscript{29} Security cooperation with Ukraine originally aimed to deter Russian influence, then transitioned from nonlethal to lethal equipment in 2017, a symbolic shift in the US-Ukrainian partnership.\textsuperscript{30} American policy on military aid to Ukraine evolved as Russia massed troops along Ukraine’s eastern border in 2021 and changed massively as Russia invaded.

At the onset of the war, Ukraine struggled due to its dated, Soviet-based artillery systems and limited supplies of ammunition, which it quickly depleted as it defended its territory. Following 2014, Russia targeted Ukrainian ammunition storage facilities while simultaneously implementing steps to limit Ukrainian access to munitions.\textsuperscript{31} The loss of stockpiled ammunition between 2014 and 2018 due to explosions meant, based on consumption rates, Ukraine possessed enough ammunition to sustain only six weeks of combat at the start of the conflict in February 2022.\textsuperscript{32} The overreliance on abundant Soviet-based systems, constraints in lethal aid from 2014 to 2017, and the targeting of ammunition stockpiles left Ukraine’s artillery depleted and outgunned. Ultimately, aside from expanding formations and equipping artillery with additional Soviet legacy systems, Ukrainian artillery modernization was minimal. Ukraine’s ability to deliver fires and fight was at risk.

A now-famous quote from Ukrainian President Volodymyr Zelensky exemplified the Ukrainian will to fight and highlighted the lack of Ukrainian means to sustain operations: “The fight is here; I need ammunition, not a ride.”\textsuperscript{33} Two days into the Russia-Ukraine War, Ukraine’s partners sought to aid the country in its fight. The United States responded to Ukraine’s need, and on February 26, 2022, President Joe Biden authorized a presidential drawdown (PD) of $350 million in military aid, 70 percent of which took a mere five days to reach Ukraine.\textsuperscript{34} By April 2022, the United States and NATO partners had established training for Ukrainians in Germany on key NATO-based artillery systems, such as the M777, a 155-millimeter towed artillery piece, and the M142 HIMARS, a wheeled, multiple-launch rocket variant.\textsuperscript{35} American and NATO familiarization training events developed Ukrainian soldiers’ ability to integrate combat systems into the fight as quickly as possible, increasing Ukrainian lethality on the battlefield. As Ukraine fielded its first HIMARS, Ukrainian troops
trained for three weeks, entering combat shortly thereafter.\textsuperscript{36} In comparison, the US Army can sometimes take several months to conduct new-equipment training, including inventory, accountability, and instruction programs for familiarization, training, and certification on systems and their components. Ukrainians, who did not receive a full training package, were hastily sent into the fight, impacting operations and maintenance.\textsuperscript{37}

The United States and NATO have not directly participated in combat against Russia, which would further expand the conflict, and have sought instead to enable Ukraine’s operations through sharing intelligence, equipping, and providing training on key systems that would devastate Russia on the battlefield. The United States continues to send substantial artillery and mortar systems and ammunition to Ukraine to build its capacity to provide indirect fires. The United States has also provided firefinders, which are counterfire radars capable of sensing artillery, mortar, and rocket fires from Russian elements, enhancing counterbattery capabilities. Ukraine’s supporters continue to enable Ukrainian precision-strike success through intelligence sharing and precision target mensuration.\textsuperscript{38}

To date, Ukraine’s success has depended on the collective efforts of the country’s global supporters; Ukraine’s partners have provided over $21 billion in military aid since February 2022.\textsuperscript{39} Although its partners and allies fund this costly fight in treasure, Ukraine continues to pay the cost of defeating Russia’s senseless aggression in blood.\textsuperscript{40}

**The Ukrainian Path to Success**

Ukraine’s military continued to resemble the Russian legacy structure until post-2014 organizational structure reforms were complete. Ukraine expanded its artillery force structure to increase brigades and regiments. The development of junior leaders in the Armed Forces of Ukraine spurred agility and responsiveness, stirring junior leaders’ disciplined initiative at the tactical level and frustrating Russia’s ability to anticipate, react, and execute operations. Ukraine’s ability to make decisions at the lowest level has yielded increased success. Ukraine’s new adoption of mission command and the introduction of responsive C2 systems and applications have enhanced the country’s ability to deliver PGMs and eliminate high-payoff targets. These efforts are crippling Russia’s ability to execute and sustain operations.
Russians have been increasingly frustrated by the empowerment of Ukrainian leaders while the Russian leaders’ operations are constrained. The Ukrainian Rocket Forces and Artillery supports ground forces with 10 artillery brigades and one regiment that consists of howitzers, rockets, and missiles. Additionally, Rocket Forces and Artillery supports the Ukrainian marines under navy forces with one brigade and one regiment of mixed artillery. Ukraine’s approach, which is similar to US combined arms, has proven invaluable when countering Russian attacks. The brigades and regiments operate independently because Ukraine does not implement operational control through divisions or corps. Ukraine's approach is different from NATO command structures, but Ukraine has found success despite the lack of battle staff responsible for integrating airspace, deep fires, logistics, intelligence, and higher-level C2. Ukraine’s regional commands operated responsively and decisively, repelling the Russian invasion. But although the regional commands were successful, they lacked centralized control for the coordination of more significant efforts at the operational and strategic levels, such as counterbattery fires, which may be crucial after Russia’s withdrawal to the east bank of the Dnieper River. To achieve further progress, Ukraine may need to establish force field-artillery headquarters or a theater fires command similar to US elements.

Ukrainian artillery demonstrated responsive adaptation, quickly overcoming challenges with systems and ammunition at the onset of the war. Leadership seized the opportunity to incorporate abandoned Russian equipment and ammunition to deliver fires early in the conflict. Ukrainian leaders’ initiative sustained Ukraine’s ability to influence maneuver through mass and volume of fires. Ukraine has demonstrated an innate ability to adapt under intense pressure during the conflict, and the country’s fielding of PGMs, 155-millimeter rocket-assisted projectiles, Multiple Launch Rocket Systems, and HIMARS has altered battlefield dynamics and geometries in the Russia-Ukraine War.

Precision-guided munitions (PGMs) offer Ukraine the ability to target key, high-payoff Russian capabilities precisely, achieving effects with minimal expenditure of munitions. The combination of new artillery and PGMs allows Ukraine to mitigate the 10-to-one artillery advantage Russia amplifies through high rates of inaccurate fire. Retired Lieutenant General Ben Hodges, former commander of US Army Europe and Africa, stated HIMARS and PGMs eliminate Russia’s numerical advantage in Ukraine through these systems’ superior ability to achieve the same effects with less ammunition. Using precision strikes, Ukraine inflicts damage upon Russian C2, sustainment lines, and ammunition stores, achieving effects that further frustrate
Russia’s operational goals. If Ukraine’s partners continue to provide it with PGMs, the country will continue to devastate Russia with precision.

The most significant artillery modernization Ukraine has implemented is its homegrown ballistic calculator application, which integrates with handheld devices such as Android phones and tablets. This application increased the functionality, accuracy, and response times of Ukraine’s legacy artillery systems with software that resembles rideshare applications found commonly on smartphones, earning it the moniker “Uber for artillery.” Ukraine’s artillery applications, Geographic Information System of Artillery and Kropyva, have proliferated across Ukrainian lines. Soldiers with Android tablets can responsively deliver fires, capitalizing on targets of opportunity and shaping the deep fight. Ukraine’s frugally practical applications provide a real-time, handheld common operational picture that includes battlefield intelligence, which enhances responsive targeting. Forward observers equipped with an Android smartphone and unmanned aerial systems (UASs) use an encrypted network to input enemy targets that are transmitted and seen simultaneously, not sequentially, at all levels of command and coordination for approval.

At the same time, artillery units within range of the target can select and execute technical firing solutions and service the target. Ukraine’s Uber for artillery flattens and expedites approving fires and helps to achieve “any sensor, best shooter,” a concept that is expounded upon later in this chapter. The functionality and responsiveness of this C2 system streamlines tactical and technical fire-direction processes to provide Ukraine a competitive advantage. Resourced outside the military procurement process and open to updates, these applications give Ukraine a technical advantage in delivering responsive fires as well as show versatility as the Armed Forces of Ukraine’s current common-operational-picture platform.

**Setbacks or Considerations**

Ukraine continues to manage four considerations that impact its ability to deliver fires—many systems, maintenance challenges, lack of munitions, and evolving doctrine—all of which are due to the rapid transformation of the fires complex into Western-based systems. Ukraine’s ability to adapt to NATO-based systems is necessary due to limited stockpiles of munitions and parts for the country’s legacy Soviet systems. Fortunately, Ukraine’s sustainment enterprise is evolving rapidly, given Western equipment consumes different fuels and requires different equipment, a different standard applies
to Western supply-chain replenishment, and even the maintenance tools Ukraine must use are based on the imperial system instead of the metric system.⁴⁷ Ukraine is adopting new standards that require additional maintenance and repair time, impacting the country’s ability to return artillery equipment to the fight quickly.

Vladimir Putin’s invasion has broadened Ukraine’s relationship with NATO, resulting in Ukraine receiving an influx of Western systems in addition to the Soviet systems that were in place at the beginning of the conflict. As the Ukrainian fires complex rapidly updates to include newer systems, technology, and PGMs, the complex is starting to shed some of its old tendencies. Ukrainian artillery has adopted a blended approach, conservatively employing PGMs to achieve effects and, at times, using mass and volume to shape the battlefield and attrit formations. The return on firing a PGM must be worth the cost; if not, barrage fires will work. As innovation occurs, the procurement, sustainment, and maintenance contracts created by Ukraine’s adoption of Western weapon systems will lead to long-term partnerships between the country and NATO members that will continue after the conflict ends.⁴⁸

As Ukraine implements new technology, excessive use of NATO-based systems is becoming apparent. Suffering from increased signs of wear, one-third of the US-provided M777 155-millimeter howitzers must be evacuated to Poland, where NATO elements execute maintenance and sustainment functions.⁴⁹ Ukraine’s struggle to sustain continuous fires and fulfill ammunition requirements has forced the country to use 155-millimeter shells and propellants supplied by other countries, which were previously untested on US equipment.⁵⁰ Ukraine must use ammunition from other countries in US systems given the volume of fires and consumption of existing stockpiles. Unfortunately, other ammunition and propellant characteristics are untested and likely to increase wear on the systems. In addition, the characteristics and ballistics of non-US-supplied munitions are unknown, affecting the accuracy of fires Ukraine delivers. As Ukraine balances limited precision ammunition stockpiles and absorbs the impact of transitioning sustainment and maintenance processes, the country must carefully mitigate impacts on operations due to the volume of fires required. Time and in-depth training at the doctrinal and organizational levels are required for Ukraine to develop a sustainment and maintenance enterprise that can sustain its emergent changes. The Armed Forces of Ukraine has proven to be a formidable foe that, under pressure, is adaptive and possesses the will to fight as long as the military has the means.
Recommendations for US Fires

Ongoing operations in Ukraine offer the following seven key takeaways to influence ongoing US Army fires modernization.

1. Attain a balance of precision and volume through strategic leaders.

2. Increase production and stockpile munitions now.

3. Modernize dynamic-targeting processes while leveraging deliberate targeting to create opportunities.

4. Adapt existing support relationships to attain “any sensor, best shooter.”

5. Integrate artificial intelligence (AI) with humans on the loop to enhance targeting and airspace management.

6. Leverage intuitive and agile software to optimize existing systems and migrate to applications and the cloud.

7. Implement advanced fires training to prepare for LSCO mass fires, like those seen in Ukraine; this training must be made available earlier in officers’ careers.

These lessons are not epiphanies; rather, they are reinforcements of principles the Army must continue to implement to be prepared to fight and win on the modern battlefield.

Precision and Volume

Future conflicts will not see the unilateral use of artillery delivering PGMs alone. Without a doubt, PGMs are an essential part of the formula for achieving lethal effects. Precision will destroy critical capabilities, and volume and mass will deny the enemy freedom of maneuver, attrit large formations, and deny the enemy the ability to seize terrain in LSCOs. Ukraine’s success in achieving effects is derived from executing precision fires to target critical capabilities while delivering high volumes of fires to decimate Russian forces, destroying maneuver elements and shaping the battlefield.
The United States must reinvigorate its planning and sustainment of artillery’s capacity to deliver both significant volumes of fires and the capability to mass fires at the battalion level. Additionally, the Army may have an ongoing opportunity to augment long-range precision fires modernization across artillery to improve the impact and volume of midrange and hypersonic capabilities. Modernizing and increasing quantities of available equipment, including munitions, will ensure the United States maintains the capacity to target and deliver effects at the scale seen in Ukraine. Current anti-access/area-denial threats US competitors possess necessitate the development of long-range-strike capability to attain overmatch in range. Precision-strike missile and extended-range cannon artillery increase the range of existing platforms. Emergent midrange capabilities such as the US Navy’s Standard Missile-6 and the Tomahawk Land Attack Missile modernize existing Navy capabilities, expanding US fires’ capability to attain overmatch and to develop opportunities to influence strategic targets previously allocated to air and maritime domain assets. Where Ukraine has failed to follow through in its modernization of artillery platforms, the United States must continue to resource the Ukrainian development to total operational capacity. Fires must attain a balance of precision and volume.

Production

As a result of PD authorizations, the United States must quickly recoup the systems and munitions it provides to Ukraine through the procurement process. Ammunition and equipment to support US requirements must be produced with urgency and in the quantities necessary to sustain anticipated levels of fires in LSCOs. Future stockpile requirements must also anticipate expanded security force-assistance opportunities. The United States must urgently produce ammunition and equipment to continue to aid Ukraine while returning US stockpiles to prewar levels—or higher, given the ammunition expenditure rates seen in Ukraine. The employment of artillery in Ukraine indicates ammunition expenditures—the volume of fires—in LSCOs will be higher than previously anticipated and will employ both PGMs and standard munitions.

The success of fires in Ukraine has increased global demand for HIMARS, and recent Foreign Military Sales agreements with the Danish and Polish militaries have further stressed HIMARS production. As the industry increases production to fulfill emergent requirements, the US Army must
evaluate the baseline ammunition projections it anticipates will be required to achieve effects during future LSCO fights. When analyzing the consumption rates of PGMs and legacy projectiles in Ukraine, evaluating quality rather than quantity will be key. The United States must carefully manage the modernization effort, force-design update, and transformation of HIMARS units to 3x9 battalions, given the increased demand for HIMARS. The United States must also continue to assess the broad array and variance of systems, propellants, and projectiles, considering US partners’ vastly different production processes and requirements and ensuring the United States mitigates challenges with interoperability.

Additionally, a study identifying the ballistic characteristics of projectiles and propellants across NATO partners would capture firing-data variations, improving precision when NATO partners share material—for example, when two NATO partners exchange 155-millimeter projectiles and propellants. When the United States augments its partners’ fires capabilities, it strengthens interoperability and enhances future security cooperation opportunities. Equipping partners is a vital part of security cooperation; the United States must anticipate and resource security cooperation opportunities in current requirements documents. American munition stockpiles must attain balance and the ability to meet US-specific requirements while supporting US partners. Understanding munition specifications by caliber and propellant would enhance versatility, precision, and sustainment resiliency when partners face similar ammunition shortfalls to those seen in Ukraine. The United States must deliberately review existing ammunition requirements to support LSCOs with urgency to increase ammunition stockpiles.

Although completely standardizing ammunition production characteristics across NATO or multinational partnerships is likely not feasible, attaining shared understanding of ballistics through interoperability or compatibility assessments is helpful. Understanding and sharing ammunition data would inform NATO partners’ interoperability of propellants and projectiles if requirements necessitate cross-leveling in extremis, thereby informing accuracy and reducing maintenance impacts. The United States must not fail to modernize before potential future conflict. American artillery modernization, increased stockpiles, and interoperability will ensure US artillery units achieve overmatch and have a competitive advantage.
Dynamic and Deliberate Targeting

The speed of future LSCOs will require artillery elements to exercise rapid and responsive C2 through systems and processes. This principle is not new. But the integration of technology to enhance efficient processes must promulgate through the force. Increases in dynamic targeting given the proliferation of real-time, actionable intelligence will overwhelm current processes, such as the traditional 72-hour air-tasking-order cycle. Ukraine’s targeting process throughout the war has remained veiled in secrecy, but Ukraine’s success implies dynamic targeting in LSCOs will most likely exceed the capacity and speed associated with legacy deliberate targeting. Executing deliberate targeting while rapidly creating opportunities in near real time will be critical. The speed of information will likely outpace targeting boards and the air-tasking-order process. Targeteers must adapt and develop the ability to harness targeting in near real time to achieve effects. Fires must both balance dynamic-targeting requirements and ensure deliberate targeting converges effects to create windows of opportunities for maneuver commanders to exploit.

Additionally, artillery units must attain equipment to maintain continuous connectivity and exercise fire mission processing on the move. The persistent threat of counterbattery fires will require proactive battlefield calculus to evaluate risk and minimize survivability move requirements. Continual survivability moves are necessary given the increased prevalence of sensors, such as drones and quadcopters, and the reporting of activities through social media. This heightened risk will increase the probability of enemy acquisition; speed and frequency of movement will provide security in future conflicts.

The expanded number of sensors across the battlefield greatly enhances Ukraine’s ability to acquire and deliver effects onto static and slow-moving formations rapidly. American artillery assets must remain mobile, practice executing artillery raids and hip shoots, and avoid static detection. The implications of fires in Ukraine signal a shift in fires from the deliberate targeting process to predominantly dynamic, on-call requirements. This shift is having reverberating effects across targeting processes, systems, sustainment functions, and airspace management. American artillery-targeting proponents must improve the United States’ efficiency in executing targeting in both deliberate and dynamic environments.
Artillery must expand joint, multinational-partner training exercises to include combined targeting and airspace management processes to enhance the synchronization and interoperability of systems across partners. Standardizing the process of dynamic targeting and airspace management is essential to reducing risk. Training teams can evaluate multinational headquarters, corps, and staff at all levels through virtual simulations, developing speed and agility and increasing thresholds for acceptable risk. Additionally, training teams can integrate AI tools to enhance airspace management training, developing leaders’ understanding of and comfort with trusting technology to enhance airspace management in conjunction with dynamic targeting. Targeting experts must gain training and experience to thrive in dynamic environments while continuing to master converging assets to achieve effects and create windows of opportunity for maneuver commanders.

Any Sensor, Best Shooter

In 2021, US Army Futures Command produced its Army Futures Command Concept for Fires 2028, which identifies future capabilities and concepts the service will require to dominate peer adversaries in conflict. The document describes the components of echeloned-fires capabilities; enhanced sensor-to-shooter linkages; multi-domain targeting; and Joint, intergovernmental, interagency, and multinational capabilities integrated into multi-domain operations (MDOs) that will help the Army achieve integrated lethal and nonlethal effects across the battlefield. The targeting process must incorporate AI, autonomous solutions, redundant communication capabilities, and permissive control measures to deliver effects that match the speed of LSCOIs efficiently.

American artillery must modernize the roles of artillery to enhance responsiveness and increase interconnectedness, attaining “any sensor, best shooter.” Reforming legacy support relationships of direct support, reinforcing, general support, and general support reinforcing will reduce the time and challenges involved in the coordination and servicing of targets and motivate US fires to attain an “Uber for artillery” construct for commanders.

Current US artillery systems can attain a high level of responsiveness but must advance their understanding and agility to shift between supporting or supported roles. Traditional roles create perceived barriers and linkages that often constrain targeting. For the future demands and
speed of targeting in LSCO\textsuperscript{s} or in support of MDO\textsuperscript{s}, the artillery must develop comfort and agility in ambiguous supporting roles that enhance the speed and flexibility “any sensor, best shooter” requires. Combined Joint All-Domain Command and Control provides the linkage, authorities, real-time situational awareness, and interoperability to synchronize fires and sensors, converging effects across domains. Relationships and authorities will expedite this process to real time, assuming redundant communication systems are in place.

If artillery elements service targets outside their artillery support relationship and execute targets based on capability and availability, US commanders will achieve responsive fires. Targeting advancements that leverage AI remain in development and testing. But for fires, the decisive point is the intersection of targeting and AI in the Army’s ability to facilitate airspace management, ensure permissive control measures, and achieve responsive risk management.

\textbf{Artificial Intelligence and Airspace Management}

The United States must prioritize dynamic fires and incorporate AI to deliver effects while safeguarding US and ally aircraft. As the dynamic-targeting process evolves, the complexity of airspace management requires the introduction of AI. In addition to introducing AI to facilitate targeting and airspace management processes, the United States must invest in enhancing the synchronization and interoperability of systems with our partners who will share the complex operating environment. Failing to master airspace management results in airspace deconfliction, reduces responsiveness, and jeopardizes the ability to achieve effects.

Ukraine measures sensor-to-shooter times in seconds, and these times routinely fall under a minute. The United States can attain Ukraine’s time standard via several different opportunities. First, the United States should resolve the ongoing discussions about attacking targets forward of the fire-support coordination line. As the likely area of MDO\textsuperscript{s}, attacking targets forward of the fire-support coordination line shapes the deep fight. The Army must adopt permissive practices that incorporate AI to enhance the integration of precision and massed fires through a complex airspace management process. The anticipated pace and tempo of LSCO\textsuperscript{s} and MDO\textsuperscript{s} require responsive fire-support coordination enhanced by AI-assisted methods. The Army must continue to develop and refine AI and autonomous capabilities that facilitate
the near-real-time, continuous, dynamic targeting and airspace management required in Joint warfighting.

The United States must incorporate all tools to advance its targeting processes and enable responsive effects deliberately and dynamically. Artificial intelligence (AI) will enhance the real-time dynamic-targeting and airspace management requirements of Joint warfighting. Additionally, the United States must seek versatility in its ability to execute fire mission processing and targeting on the move, commensurate with the anticipated speed of LSCOs. Integrating AI-enabled systems and processes into “Joint kill webs” would overwhelm human capacity and expose the limitations of traditional fire-support methods bound by human cognition and decision making. With human oversight (that is, having a “human on the loop”), targeting guidance, and database management defining permissive and restrictive requirements, AI can enhance the rapid convergence of data and facilitate the emergent “any sensor, best shooter” methodology. Dynamic targeting in LSCOs and the introduction of AI challenge previous targeting methods and practices. The United States must broadly introduce a new, AI-enhanced targeting and fires system to artillery elements to develop understanding of the opportunity such a system provides in LSCOs.

Corps will require the capabilities and authorities to control airspace beyond subordinate division boundaries in the corps deep area, where corps can converge effects and shape the deep fight. Airspace control is essential, but not all partners have the capability to control the airspace. Corps must be able to facilitate airspace control for their deep areas beyond the division forward boundary to their fire support coordination lines and for their subordinate multinational-partner divisions that lack airspace-control capability. The US artillery must continue modernizing to deliver lethal fires through all echelons, from tactical to strategic, with the effectiveness, speed, and range necessary to defeat the enemy.

**Improving System Use**

The artillery elements of the US Army must use equipment to their full potential. Current systems, such as the Android Team Awareness Kit and the Advanced Field Artillery Tactical Data System, provide near-peer functionality similar to Ukraine’s Geographic Information System of Artillery and Kropyva. The current challenge is users do not use US equipment to its utmost potential. The fires enterprise must avoid repetitive sourcing of new systems and instead
use the enterprise’s existing capabilities that possess the same unused functions. Artillery must gain the agility to adapt and modify existing systems quickly by updating software to improve artillery’s functionality as well as transition to applications on handheld devices that incorporate the cloud and expand artillery’s ability to process digital fire missions on the move.

Two options for improving functionality through end-user feedback to programmers and end users’ understanding of application management are available. First, software programmers’ ability to ingest end-user feedback to improve operations in real time outside approvals, contract modification, or increased funding is vital. Improving functionality or consolidating working groups can encourage reachback from end users. Software engineers and programs must provide an interface opportunity. Improving operations in function and execution would increase the responsiveness of fires in LSCOs. The speed of LSCOs and the requirement for applications and technology to exceed this speed in their ability to adapt to user requirements will require an understanding of technology’s potential as well as changes in the management of applications, software, and systems.

**Training**

Developing a breadth of experience and understanding earlier in field-artillery leaders’ careers is essential. Adjustments to field-artillery professional military education, including the officer basic course and the captains’ career course, must incorporate instruction and exercises with deliberate and dynamic targeting at the division, corps, and theater levels. Additionally, operational fires positions in warfighting headquarters increase the opportunities for field-artillery officers to learn deep-targeting requirements and systems, such as HIMARS and Multiple Launch Rocket Systems’ operational planning and airspace management capabilities. Finally, artillery leaders must have increased opportunities to attend critical courses, such as the Joint Firepower Course, Joint Targeting Staff Course, and Joint Operational Fires and Effects Course. Educational opportunities introduce fires professionals to Joint fires.

To mitigate attrition, artillery training and education must develop redundancy in their ranks to ensure subordinate echelons ascend and assume the responsibilities and roles of higher echelons in LSCOs. Through the execution of simulations and exercises, including multinational exercises, entities at multiple echelons can integrate training opportunities,
enabling the entities to exercise operations at higher echelons if the entities must assume responsibilities with no notice. The “next man up” mentality and the understanding of targeting from the tactical level to the strategic level include fire support, sustainment, and airspace management expertise. This level of understanding exceeds existing professional military education standards in the artillery profession, which typically only provide limited touchpoints at the operational and strategic levels. Artillery professional education must seize the opportunity to develop competence at the operational and strategic levels earlier in the professional timelines of young leaders. Additional opportunities and the availability of crucial targeting courses, such as the Joint Firepower Course, Joint Operational Fires and Effects Course, and Joint targeting curriculum, are essential to understanding operational targeting. Large-scale combat operations (LSCOs) and MDOs are predominantly division and corps fires-centric fights, and young leaders receive little exposure to these levels. The Army must expand training opportunities to develop an understanding of critical strategic-fires and targeting concepts earlier in professional timelines, creating broader expertise and redundancy across the artillery profession.

Conclusion

History often rhymes, and, like the Army’s observations following the Yom Kippur War in 1973, Army modernization efforts and concepts are leveraging the Russia-Ukraine War by proxy to test systems and inform future concepts. The Army must recognize the ongoing conflict in Ukraine as a strategic inflection point to gauge the service’s continued modernization efforts. Ukraine’s reform, equipping, and targeting capabilities in the fires warfighting function have increased the country’s ability to deliver fires, shape the battlefield, and achieve decisive effects. The fires complex in Ukraine continues to destroy Russian capabilities, which will lead to increased pressure and Russia’s ultimate defeat. Ukraine’s effectiveness in achieving battlefield success will translate to learning opportunities for increasing the US Army’s lethality and success in future conflicts.
Endnotes


13. Fox, “Reflections.”


15. Fox, “Reflections.”


23. Collins, “‘Decrepit’ Ukrainian Army.”


32. Zabrodskyi et al., *Preliminary Lessons*.

33. Embassy of Ukraine to the United Kingdom (@UkrEmbLondon), “‘The fight is here; I need ammunition, not a ride.’ – @ZelenskyUa on the US evacuation offer. Ukrainians are proud of their President.” X, February 26, 2022, 4:37 a.m., https://twitter.com/UkrEmbLondon/status/1497506134692970499.


41. Zabrodskyi et al., *Preliminary Lessons*. 
Bradley

42. Zabrodskyi et al., *Preliminary Lessons*.


46. Bruno, “‘Uber for Artillery.”


54. AFC, *Concept for Fires 2028*. 

114
Mission Command: An Essential Component in Ukraine’s Fight against Russia

Jamon K. Junius

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The Russia-Ukraine War highlights the importance of mission command in large-scale combat operations (LSCOs). The distributed nature and scale of LSCOs, potential casualty rates, and reliance on command-and-control (C2) systems to synchronize operations in a contested environment require proficient mission command.¹ The ability to employ forces effectively in a decentralized manner has been a critical advantage in Ukraine’s defense against Russia.² Although Ukraine has not officially adopted mission command in doctrine and throughout army formations, the Armed Forces of Ukraine’s employment of mission-command principles is evident.³ Conversely, Russia’s numerous challenges and operational failures are attributable to the country’s absence of mission command, which reinforces the importance of mission-command proficiency. An evaluation of Ukraine’s use of mission-command principles and the country’s reform efforts starting in 2014 contrasted with Russia’s centralized leadership doctrine, which is virtually devoid of mission-command principles, highlights the importance of mission-command proficiency.

What Is Mission Command?

Mission command is similar to a computer’s operating system: When mission command is functioning as designed, everything is seamless, but when mission command is not functioning as designed, catastrophic
results can occur. The concept of mission command gained traction after
the French army at Auerstedt defeated the Prussian army due to the junior
officers’ ability to take initiative without detailed orders. As a result,
Prussia revised its approach from rigid inflexibility in the execution of orders
to an established understanding of intent and the importance of initiative
at the leadership level.

The US military can trace the employment of mission command back
at least as far as the Civil War. Mission command became doctrine in 2003
with the US Army’s publication of Field Manual 6-0. The most recent
publication of Army Doctrine Publication 6-0 defines mission command
as “the Army’s approach to command and control that empowers
subordinate decision making and decentralized execution appropriate
to the situation.” The principles of mission command—competence, mutual
trust, shared understanding, commander’s intent, mission orders, disciplined
initiative, and risk acceptance—enable relationships between leaders,
the empowerment of subordinate decision making, and the decentralized
execution of the mission.

Competence at all levels is expected for an organization to be successful
and achieved by providing opportunities to increase knowledge on the
subject, train, and gain experience. Tactical and technical competence
are also key parts of the foundation for successful mission command. Additionally, mutual trust in which commanders and their subordinates
have confidence in each other and believe each person is competent at his
or her job is essential to implementing mission command. Trust must
be developed over time as members work together on a team. The most
significant effect of mutual trust is the promotion of initiative on the part
of subordinates, but this promotion is contingent on the commander’s trust
and willingness to accept and be supportive of subordinates’ decisions and
the resulting outcomes.

Shared understanding of the environment, commander’s intent,
and freedom to adapt are key factors in implementing mission command.
Achieving shared understanding enables decentralized execution and permits
quickly organized units to be more effective. Two principles of mission
command, commander’s intent and mission orders, contribute to shared
understanding and run in parallel to each other. Effective commander’s
intent provides units and subordinate leaders with a clear and understandable
purpose and defines success. The key factor for mission orders is effectively
balancing what must be done with subordinates and not micromanaging
how it must be done (beyond that which is necessary to synchronize
operations). Mission orders give leaders the freedom to adapt and to exercise discretion. The goal is to give units an objective to enable timely decision making rather than micromanaging.

Disciplined initiative requires subordinate leaders to demonstrate initiative while adhering to the guidelines in the commander’s intent to accomplish the mission without having to seek permission or additional guidance.

Perhaps the greatest challenge for leaders when exercising mission command is defining and accepting risk. Risk is inherent to operations. Commanders attempt to mitigate it as much as possible but must accept all risk cannot be removed. Commanders must be capable of assessing the situation and weighing the risks of delegation and the payoffs of initiative to determine how to empower their subordinates.

On the surface, mission-command principles are intuitive: Commanders provide clear mission orders with defined intent, objectives, and acceptable risk to empower subordinate leaders to make decisions appropriate for the situation and to accomplish the mission. As intuitive as these mission-command principles may seem, mission command can be a challenge for US military leaders. According to Army officer L. Burton Brender, this challenge stems from the following factors.

1. concern about subordinates potentially making mistakes
2. leaders risking their careers due to mistakes
3. lack of control making senior leaders uneasy

Mission command has played a key role in the successes and failures of Russia’s invasion of Ukraine, and understanding the factors that led to these outcomes provides valuable insights into modern combat.

Ukraine and Mission Command

A Brief History of Mission Command in Ukraine

An overview of the Armed Forces of Ukraine’s mission-command path is necessary to demonstrate the importance of doctrine, training, professional military education (PME), and budget.
The Armed Forces of Ukraine’s employment of mission-command principles is a result of the reform efforts that began in earnest following Russia’s annexation of Crimea in 2014. But Ukraine’s acceptance and employment of mission command is far from perfect due to Ukraine’s history with the former Soviet Union—a history that still influences the centralized leadership style of senior Ukrainian leaders. Experts from NATO described the Armed Forces of Ukraine’s execution of operations as similar to the Soviets’, a conclusion drawn from the former’s exorbitant consumption of artillery and ammunition. This conclusion points to the effect of a deeply ingrained historical culture that is often difficult to change.

The period from Ukraine’s independence in 1991 to Russia’s annexation of Crimea in 2014 was a tenuous time for Ukraine’s military, which suffered from a lack of investment; the military’s average budget amounted to 1 percent of Ukraine’s gross domestic product. Professional military education (PME) was assessed as having “no strategy,” and a Soviet mindset was prominent in military academic environments. The latter still affects Armed Forces of Ukraine leaders today, hampering mission-command efforts. Ukraine’s military training was insufficient, with no significant training exercises having been conducted in several years. These factors challenged reform and the development of a force that could understand, adopt, and proficiently employ mission-command principles.

In 2012, NATO accepted the Ukraine minister of national defense’s request to help to improve NATO’s military education and incorporated Ukraine’s military education into NATO’s Defense Enhancement Education Programme. According to NATO, this program is “a vehicle for reform, providing tailored practical support to individual countries in developing and reforming their professional military education institutions. . . . NATO’s DEEP programme fosters defence capacity and institution building.” The program began in March 2013. Unfortunately, a year later, Russia invaded and annexed Crimea easily. At the time of Russia’s invasion of Crimea, Ukraine’s military was not properly manned, trained, or equipped due to numerous issues it faced after the country achieved independence in 1991.

The annexation of Crimea was not the only challenge Ukraine faced. In March 2014, separatists in the Donets Basin, backed by Russia, clashed with Ukrainian forces, and struggles in eastern Ukraine against the separatists endured. This moment was Ukraine’s strategic inflection point for reforming the country’s armed forces and improving their capabilities.
The goal of the Armed Forces of Ukraine’s reform was to meet NATO standards—an aggressive aspiration, given the challenges the force had experienced since Ukraine’s independence in 1991. Signed in 2016, the Strategic Defense Bulletin codified Ukraine’s plan and direction to reform the country’s armed forces using NATO principles as guidelines for the professionalization of the Armed Forces of Ukraine and improvement of their capabilities and combat readiness.

Assessments of the effectiveness of the US-NATO partnership and training of the Armed Forces of Ukraine vary. The author believes the partnership and training have been an instrumental part of the Armed Forces of Ukraine’s reform efforts, introducing Ukraine to the concept of mission command and contributing to the country’s determined response to the Russian invasion. The focus on professionalism, leadership (including nascent attempts to develop Ukraine’s noncommissioned officer corps), the achievement of NATO standards, and Ukraine's combat experience in the Donets Basin have prepared the country to defend its sovereignty. Although mission command is not part of Ukraine’s doctrine, the essence of mission-command principles is highly discussed and promoted by some prominent, senior Ukrainian leaders, such as General Valery Zaluzhny, the commander-in-chief of the Armed Forces of Ukraine, who is widely credited for the reform efforts and Ukraine’s success defending against Russian aggression.

Mission Command in Action: The War in Ukraine

Assessments of Ukraine’s reform efforts and training with NATO share a common theme that indicates the former was on the path of adopting mission command or at least understood the purpose of mission command before the invasion. Among a new generation of Ukrainian leaders, Zaluzhny’s efforts and Ukrainian collaboration with NATO-trained Ukrainian officers on Western standards promoted “a decentralized, empowered, more agile way of warfare than the Russian model.”

Ukrainian Defense Minister Oleksiy Reznikov’s discussion of Ukraine’s early success reclaiming territory held by the Russians promoted the importance of mission-command principles. Reznikov noted a key component was having decision-making abilities at every level in the army, which led to responses that were faster than the Russians. Ukraine’s successful operations retaking territory from Russia in the northeast and south were attributed to the former’s ability to exploit Russian weaknesses rapidly, which resulted from a flexible command structure. Jeffrey Edmonds, a former National Security Council
director for Russia, gave the Armed Forces of Ukraine credit for their ability to conduct distributed operations and noted their superior distributed tactical-level operations.\textsuperscript{36} The Royal United Services Institute’s assessment of Ukraine’s performance at the beginning of the war states the Ukrainian Armed Forces “were competitive against their adversaries not because of superior equipment in the early phases of the war but because they were adaptable—especially at the tactical level—and rapidly innovated new capabilities and concepts of employment to address specific areas of vulnerability where the Russians had achieved overmatch.”\textsuperscript{37}

Although these assessments of Ukraine’s performance are not direct descriptions of mission command, the assessments have strong correlations with mission-command principles. Ukraine’s ability to adapt and innovate “new capabilities and concepts” demonstrates initiative, trust, shared understanding, and acceptable risk.\textsuperscript{38}

The Armed Forces of Ukraine’s resilience, success, and apparent commitment to defending Ukraine no matter the cost indicate the forces have established a mutual trust and shared understanding. Despite the petition for recruiting transparency earlier in the war, a 2023 survey of Ukrainians who were not part of Russian-occupied or active-combat areas showed trust for the Armed Forces of Ukraine was at nearly 96 percent, compared to 68 percent in 2021.\textsuperscript{39} Although these survey results are encouraging, public trust does not meet Army Doctrine Publication 6-0’s definition of mutual trust. Nevertheless, inferring mutual trust resides within the ranks of the Armed Forces of Ukraine is reasonable. In the absence of firsthand accounts of trust within the Armed Forces of Ukraine’s ranks, other indications of trust are the foreign volunteers who joined Ukraine’s ranks to fight as part of the International Legion for the Defence of Ukraine as well as the formation of storm brigades, which used social-media campaigns to attract volunteers, a year into the war.\textsuperscript{40} Broad support both at home and within the ranks has helped to create a culture that supports mission command within the Armed Forces of Ukraine.

As the war presses on and casualties accumulate, Ukraine’s momentum and the country’s ability and willingness to employ mission command could be challenged. Due to the nature of LSCO, both Ukraine and Russia can expect to accumulate more casualties. As Ukraine loses experienced fighters, some worry the quality of the Armed Forces of Ukraine may be diminished.\textsuperscript{41} With the potential for increased personnel losses, the importance of mission command can become very evident if a subordinate is thrown into a situation in which he or she must make decisions but does not have the tools (that is,
Mission Command principles) to be successful.\textsuperscript{42} In all operations, subordinates must be ready to continue the mission, and leaders must prepare their subordinates to lead the mission in the event the commander or leader is no longer able to do so.\textsuperscript{43} 

The level of acceptance and employment of mission command throughout the Armed Forces of Ukraine’s formations is undetermined. With the long history between Ukraine and Russia, expecting Ukrainian military leaders and soldiers who served under the Soviet/Russian system to maintain or revert to that system—even after Ukraine’s reform efforts in 2014—is reasonable.\textsuperscript{44} 

Franz-Stefan Gady and his team of Western military experts on Russia conducted a research visit to Ukraine and argued the impact of Ukraine’s history with Russia is impeding the former’s potential performance on the battlefield. Gady’s findings support the author’s position: The Armed Forces of Ukraine’s close ties to Soviet military culture are limiting the forces’ will to accept and promulgate the principles of mission command. Although some army officers adopted mission-command philosophies, other officers—frequently of senior rank—still prefer strict operational orders. The presence of a rigid, centralized style of conducting operations is evidenced by Ukraine’s reliance on, and high consumption rate of, artillery as well as the country’s sequential execution of operations.\textsuperscript{45} Furthermore, the impact of senior leaders stuck on Soviet-style leadership within the Armed Forces of Ukraine can make developing trust and a shared understanding and commanders’ ability to establish acceptable risk in support of disciplined initiatives difficult. Gady also argues mission command would produce more effective fires: “If junior officers had the authority to exploit opportunities as they arose, mounting coordinated attacks from infantry and armoured vehicles, supported by short but pinpoint barrages of precision-guided artillery, this would drastically reduce the number of shells needed.”\textsuperscript{46} This observation illustrates the enduring challenge of leaders not willing to allow subordinates to make timely decisions based on the situation, an issue that needs to be kept in focus within US Army ranks.

Command-and-control (C2) systems can be an impediment to mission-command principles. Specifically, the ability of senior commanders to direct operations from afar rather than entrusting the commanders who are executing the mission to assess the situation and make decisions in real time impedes function. Understandably, this rigidity can cause frustration. In light of this reality, a few Ukrainian junior officers have decided to disregard orders as a type of self-imposed mission command.\textsuperscript{47} This observation is critical because it illustrates the impact of Western training during the Armed Forces of
Ukraine’s reform efforts and demonstrates the potential for change with continued training and cooperation.

The ability of leaders to accept risk appears to be one of the most persistent hurdles when implementing mission command. But Ukraine’s method of defining acceptable risk may be both determined by mission command and driven by circumstance—that is, Ukraine, which is fighting against a great power, may be willing to accept risk because Ukrainian sovereignty is at stake. Irrespective of Ukraine’s means of determining acceptable risk, the main point is the imperativeness for leaders to define acceptable risk and allow subordinate leaders to exercise mission command and be confident in the decisions the subordinate leaders make.

**Russia and Mission Command**

Russia’s operational challenges and failures to achieve its objectives can be attributed to the Russian army’s strict adherence to orders and its lack of flexibility to deviate from them. Oleksiy Melynk, an officer in the Ukrainian Air Force who served a decade under the command of the Soviets, described the mindset of Russian officers as such in the Financial Times: “For a Russian infantry officer the risk of being punished by his commander is much more significant than the risk of losing his men or being killed himself.” In other words, Russian officers are not permitted to exercise disciplined initiative. The following excerpt, which describes operations at Mykolaiv and Chernihiv, is an example of shortfalls resulting from Russian leadership’s strict adherence to original orders, unless a countermanding order is received. This style of leadership has been a recurring issue, as analysts note.

Russian units had been ordered to bypass resistance to reach their objectives. The orders made clear that resistance was expected to be light. When this assumption was demonstrated to be false, however, Russian commanders continued to seek to bypass strongpoints, even when it degraded their tactical position, exposed their flanks, and diluted their combat power by spreading concentrated forces over a long frontage in contact with Ukrainian troops.

These effects could also be a result of unreliable C2 systems and commanders’ inability to obtain the permission needed to deviate from their current orders. Based on reports from experts, the Russian Armed Forces
and their C2 network were undertrained on coordinating multiple operations across axes. This lack of training disrupts the coherence of Russian C2.\textsuperscript{52} The reliance on C2 systems should bring more attention to the importance of mission command, especially due to the potential contested availability of these systems. Russia’s response to C2 challenges was to send senior officers to the front line, which led to three officers being killed by Ukrainian forces.\textsuperscript{53}

The ad hoc organization of Russia’s battalion tactical groups used earlier in the war, which also hindered any prospect of promoting mission command, demonstrates the challenges an organization faces when it lacks shared understanding and trust.\textsuperscript{54} A lack of familiarity among multiple units and their commanders leads to a lack of confidence, which results in an inability to delegate and allow junior officers to handle incomplete orders.\textsuperscript{55} If Russia’s doctrine included mission command and the country was proficient at mission command, this method of forming battalion tactical groups would not be a problem because units that have a shared understanding are able to operate effectively, even if they were organized hastily.\textsuperscript{56}

Russia’s military incompetence has been blamed for the country’s setbacks and its inability to achieve objectives in the war.\textsuperscript{57} Russia’s military has questionable competence and lacks mutual trust. Soldiers in Russia’s formations did not know they were going into battle against Ukraine until nearly the onset of the invasion.\textsuperscript{58} A Russian lieutenant colonel claimed “his men had been duped into believing they were rescuing the country from Nazis and were surprised to be met with a fight.”\textsuperscript{59} Russia has sustained significant losses, including senior military leaders.\textsuperscript{60} Russia’s mobilization plan has appeared desperate and insufficient, with some Russians who were qualified to serve reportedly attempting to flee the country.\textsuperscript{61} Additionally, Russia has relied on conscripts and even the Wagner Group’s mercenaries, which a year into the war include recruited convicts who received minimal training before joining the front lines to fight.\textsuperscript{62}

Although the Wagner Group is not officially a part of Russian forces in the traditional sense, as “mercenary forces are technically illegal in Russia,” addressing the group is a worthy undertaking due to the operations the group is conducting in Ukraine and the potential for this type of force in a future conflict with an adversary.\textsuperscript{63}

The Wagner Group comprises members with various levels of military experience.\textsuperscript{64} The group’s approach is promoting a war of attrition. The former convicts who volunteer hope to survive and be pardoned after their six-month terms with the group have been completed.\textsuperscript{65} According to
Junius

CNN, two former Wagner Group mercenaries said they thought the group’s “task was to hold the defense on the second line. . . . We thought we’d be fighting Poles and various mercenaries. Germans. We didn’t think anyone was left in the Ukrainian army there. . . . No one really thought that the AFU would actually fight for their own country.”66 Based on the mercenaries’ apparent disregard for casualties, the threat of death if the mercenaries do not adhere to orders, and the “brief and basic” nature of the mercenaries’ training, mission command does not exist in this organization.67

Russia’s strict adherence to traditional, centralized execution of mission orders is negatively impacting operations. A force that was initially better equipped than and outnumbered its opponent has struggled to achieve significant gains. The apparent lack of trust, competence, shared understanding, and—most importantly—disciplined initiative within Russia’s leadership and formations illustrates and reinforces the importance of mission command.

Lessons Learned and Recommendations

The US Army and Risk Acceptance

Looking inward, the US Army is not immune to the struggles the Russians and Ukrainians face—particularly, the difficulty posed by risk aversion. Army officer L. Burton Brender introduced three factors as potential causes for risk aversion: “fear of subordinates making mistakes, the discomfort of superiors feeling out of control, and the angst of leaders chancing their careers on others’ mistakes.”68 Subordinates are also concerned unfavorable results due to their decisions could negatively impact their careers. Commanders must be comfortable with acceptable risk and ensure subordinates are empowered to make decisions.

Overcoming these concerns must start from the top of the chain of command and be promulgated down to the team leader. Leaders need to be self-aware of their approaches to risk and determine whether their approaches are facilitating or inhibiting mission command.69 If the approaches are an impediment, steps to promote the delegation of responsibilities from leaders to subordinates should be taken. All levels must have continuous discussions about risk, and senior leaders must ensure mission command is positive for the organization, leaders, and soldiers.70 All should understand mistakes made within the commander’s intent can happen without overt fear of retribution.71 Mission command must be rehearsed, trained, and executed regularly; it must be part of the service culture.72
Professional Military Education and Training on Mission Command Matter

Ukraine’s decision to transform the country’s military in 2014 and pursue Western/NATO training and PME prepared Ukraine to defend against and counter Russia’s invasion. Although Ukraine’s level of mission-command proficiency is undetermined, the country’s application of mission-command principles is evident. Well-designed and executed PME and training on mission command are important for facilitating successful operations—especially, contested, distributed combat operations like those seen in LSCOs. The United States should review PME programs to assess whether the quality of the mission-command training is sufficient.

Superior Command-and-Control Systems May Make Implementing Mission Command More Difficult

The rich, data-driven environment and real-time information C2 systems provide could be counterproductive to mission command. Senior commanders may continue to make decisions naturally that should be made by subordinate leaders. Assessing the reliance on C2 systems and the effects of this reliance on decision making/mission command while balancing the complexity of the synchronization of operations should be emphasized.

Professionalism, Unit Cohesion, and Experience Are Essential to Mission Command

Ukrainian forces’ operational achievements can be attributed in part to training, officer professionalism, and—to a limited extent—the decision to develop a professional noncommissioned officer corps. Conversely, Russia’s battalion tactical groups lack unit cohesion, impacting their effectiveness. Additionally, the mobilization and training efforts are deficient and clearly impacting operations.

Mission Command Is the Operating System of Large-Scale Combat Operations; We Must Take Action

The absence of mission command can lead to indecision or, in the case of Russia’s invasion of Ukraine, poor decisions, such as the former’s decision to adhere to original mission orders, despite the situation requiring different
actions for the achievement of mission objectives. Preparing, planning, and executing mission-command training at the unit level (that is, the company level and higher) should be as important as conducting live-fire exercises. Additionally, mission-command narratives should be incorporated into unit quarterly and semiannual training briefings.

Unlike assessing the effectiveness of fires, maneuver operations, sustainment operations, and even C2, assessing the effectiveness of mission command is not intuitive. No quantitative formula or predictive model can be used to determine the effects or impact of mission-command principles on operations before execution. Mission command is an art that requires continuous repetition and attention to become innate.

**Conclusion**

Ukraine’s limited use of mission-command principles has enabled the Armed Forces of Ukraine to sustain the fight against Russian aggression, despite being outnumbered. Russia’s lack of trust, disciplined initiative, and competence jeopardize the country’s potential to achieve objectives. If Russia maintains its current approach and Ukraine learns to promulgate mission-command principles further throughout its armed forces’ formations, the advantage could shift more in favor of the latter. This shift is heavily contingent upon the United States and partner nations continuing to provide security assistance packages and aid as well as Ukraine continuing to conduct successful mobilization efforts.

The synergy of mission-command principles is essential to successful operations because each principle supports the others. When mission command is applied, disciplined initiative separates the Armed Forces of Ukraine from Russia. Disciplined initiative can have a significant impact toward achieving objectives. The vignettes presented in this chapter demonstrate the power of junior leaders exercising mission-command principles. The vignettes also reveal the consequences of junior leaders fearing taking the initiative and instead sticking to orders, resulting in a failure to make progress. To instill disciplined initiative within subordinate leaders, commanders at all levels must empower junior leaders through establishing mutual trust; shared understanding; and most importantly, acceptable risk.
Endnotes


8. HQDA, Mission Command, x, 1-6–1-14.


22. Gady, “Ukraine’s Army.”


30. Akimenko, “Ukraine’s Toughest Fight.”

31. “Ukrainian President.”


34. Shuster and Bergengruen, “Inside the Ukrainian Counterstrike”; and Herszenhorn and McLeary, “Ukraine’s ‘Iron General.’”

35. Shuster and Bergengruen, “Inside the Ukrainian Counterstrike.”

36. Shuster and Bergengruen, “Inside the Ukrainian Counterstrike.”


38. Zahrodtski et al., *Preliminary Lessons*. 


42. HQDA, Mission Command, 2-21–2-23 and 4-3.

43. HQDA, Mission Command, 4-3.

44. Gady, “Ukraine’s Army.”

45. Gady, “Ukraine’s Army.”

46. Gady, “Ukraine’s Army.”

47. Gady, “Ukraine’s Army.”


49. Hall, “Military Briefing.”

50. Zabrodski et al., Preliminary Lessons, 47.

51. Zabrodski et al., Preliminary Lessons, 47.


53. Ripley, “Ukraine Conflict.”


66. Lister and Pleitgen, “‘Just to Survive.’”

67. Lister and Pleitgen, “‘Just to Survive.’”
68. Brender, “Problem of Mission Command.”
71. HQDA, Mission Command, 1-12, 2-7.
72. Orsi and Mundell, “New Doctrine.”
73. Zabrodski et al., Preliminary Lessons.
Sustaining Effective Combat Leadership: Observations from the Russia-Ukraine War

Brian A. Dukes and Vincent R. Scauzzo

Keywords: command posts, General Zaluzhny, General Syrsky, education, replacement, experience, communication, trust

What in the nature of modern, large-scale, multidomain combat operations could lead General Valery Zaluzhny, a distinguished graduate of operational and strategic training and an internationally regarded military officer, to proclaim he knew nothing about war until he had experienced it? Modern warfare is exceedingly complex, based on multidomain operations (MDOs), has expansive scale, reckons with the blistering speed of information, and is fueled by rapidly evolving technology. These new dynamics undoubtedly strain the limitations of combat leaders and challenge the advantages gained through training and experiences.

The Russia-Ukraine War provides a unique opportunity to assess modern warfare because of the war’s distinction as a large-scale combat operation (LSCO) among near-peers that carry out MDOs. Within this environment, faced with the harsh realities of managing risk and sustaining resiliency despite significant combat losses, combat leaders are pushed beyond their training and experience in the complexity of contested MDOs in large-scale combat, the size of which, in recent decades, has only been exercised in simulated environments. This chapter examines aspects of senior leadership—personality traits, physical requirements, and logistical support—and compares current US Army practices to those seen in the war in Ukraine so US military leadership can survive and function in future LSCOs.
Leadership in the Army

Chapter 8 of Army Field Manual 3-0, Operations, explains how leaders should behave, what leaders should say, and when leaders should say it and identifies the personality traits necessary for being an effective leader in combat. This chapter, which deserves close examination by those seeking a clearer understanding of the requirements for being a leader in the Army, lists many of the same leadership traits scholars have poetically and romantically attributed to some of history’s greatest military front men. For example, Pericles, Lucius Quinctius Cincinnatus, Henry V, and General George Washington possessed the traits necessary to be victorious.

Many of the attributes listed in the field manual are not easily taught. The best way someone can acquire these traits—confidence, understanding risk, having good judgment, carrying the appropriate presence, and possessing an overall sense of virtuous, intellectual, and moral excellence—is through experience. Although one can study the art of leadership in a classroom and practice the art in a training exercise, much leadership skill comes from time on the front line—something the Army has not experienced (at least in terms of LSCOs) in quite some time.

Being a Leader: Your People and You

Currently, the US military relies heavily on command and control (C2) to carry out operations in combat. Command and control (C2) allows leaders of smaller groups at lower echelons to carry out the priorities and missions of upper-echelon leaders without the encumbrances that slow down and burden those at the front lines, all while maintaining a line of communication. The Army is supposed to embody the mission-command philosophy in addition to adhering to the C2 warfighting function; as such, the service must allow leaders at all echelons to share the burden of leadership. Sharing the burden comes only through a leadership culture that demands disciplined initiative. In battle, leadership burden sharing often appears in the form of bold actions taken by leaders who have the initiative to act without direct orders and whose superiors trust them to pursue the ultimate goal.

Building a sense of trust requires certain skills and attributes—especially, when operating within a C2 system in which lower-echelon leaders possess significant autonomy. In addition to the intangible traits listed above, effective leaders must be physically fit and willing to serve in line with their troops. To be merely mentally enthusiastic and bold in plan
is not enough; one must have the proper physical vim to carry out such daring feats. Leaders can more easily inspire people when they can participate in the mission alongside their leaders.\textsuperscript{4} This requirement creates both an outlet for greatness and a check on incompetence. On the one hand, great leaders will become more confident in themselves and should continue in the same way. Simultaneously, inept leaders—that is, those who fail to match their troops in energy and enthusiasm—will fall behind quickly and lose the respect of their soldiers, allowing a better leader to take charge.

Having physical fitness coincides with the larger mandate for leaders in the military to be present on the battlefield. Leaders of all ranks must lead by personal example and communicate directly with their colleagues and subordinates.\textsuperscript{5} If more leaders remain present in combat and communicate with their colleagues and subordinates who are also engaged in combat, then the leaders can make more informed decisions about what to do next and see firsthand how other, lower-level leaders are handling their roles.\textsuperscript{6} Additionally, showing a willingness to brave dangerous battle conditions can motivate subordinates and inspire courage in lower-level leaders. Multiple factors can determine where exactly a leader should place herself, and a leader should be mindful of certain risks that come with being present in combat. Some military scholars have deemed openness—a trait that “embraces complexity, intellectual debate, and curiosity” and that can be taught—to be a worthy trait of a leader.\textsuperscript{7} If a great leader knows her people well and trusts them, and her people trust her, then she should be able to delegate responsibilities, resulting in an entire force that efficiently engages in combat without unnecessary logistical hurdles, all while maintaining unity of effort and a shared goal.

**Being a Leader: Being a Student**

Like Zaluzhny, one can read military history books and practice exercises, experience LSCOs, and still feel unprepared for combat. But education and critical analysis of tactics and strategy allow armed forces to improve. Aspiring leaders should develop a deep knowledge of past events, failed and successful strategies, and important figures as much as possible.\textsuperscript{8} If aspiring leaders do not know what great leaders looked like in the past, then identifying a goal for leadership in the present becomes very difficult. Once a leader has studied different role models and methods, she can then apply her own style to these learned principles in exercises and combat.\textsuperscript{9} In addition to the benefits of studying history, senior leaders must be the educators and mentors themselves. In becoming educators and mentors, future senior leaders will
be able to analyze their past experiences and apply their newfound knowledge about fighting and leading to future wars, passing the knowledge down to the next generation in the process.

Leadership in the Armed Forces of Ukraine

The first year of the war in Ukraine has revealed multiple leaders to whom the Army can look to determine how to maximize preparation for future LSCOs. The Armed Forces of Ukraine have undergone a renaissance in the last 10 years. No longer do the Armed Forces of Ukraine rely on antiquated methods of a post-Soviet era. Instead, the forces seek to emulate their Western allies and employ their superior tactical, logistical, and strategic methods to prepare for conflict more effectively. As much as one can accredit the success of the Ukrainian effort so far to the heart of the people and the bravery of the soldiery—both are noble—the leadership of the Ukrainian fighting force is worthy of analysis because leadership comprises the leaders of the nation who are able to harness unbridled patriotism and grit to peak efficacy.

General Zaluzhny

With the nickname “Iron General,” Zaluzhny has already forged his legacy as one of the toughest, most steadfast, most resilient leaders of the twenty-first century. Zaluzhny’s journey to the rank of commander-in-chief of the Armed Forces of Ukraine (only one rank below the highest-ranking supreme commander-in-chief, President Volodymyr Zelensky) might be unorthodox, but the journey serves as a symbol of that which makes the current Armed Forces of Ukraine effective against the Russians.

In 1973, Zaluzhny was born in northern Ukraine on a Soviet military garrison. Zaluzhny wanted to grow up to become a comedian, but eventually joined the service like the rest of his family had, though his sense of humor never left him. Zaluzhny attended the Odesa Institute of the Land Forces and the National Defense University of Ukraine in the 1990s during the collapse of the Soviet Union. Attending the institute and academy provided Zaluzhny with a unique opportunity. On the one hand, Zaluzhny became familiar with the Soviet-era methods of combat and leadership, which the Russians would continue to use after the Soviet Union’s dissolution. Zaluzhny remains a sincere admirer of Russian Chief of Staff General Valery Gerasimov. But Zaluzhny also studied the US military and eventually wrote a master’s thesis
comparing the Western nation’s way of doing things with the contemporary Ukrainian system.\textsuperscript{13} Zaluzhny found the Ukrainians did many things well, but the critical area of leader development was lacking.\textsuperscript{14}

By the time Zaluzhny had graduated from more schooling at the National Defense University in 2014, Russia was invading Crimea. As a brigade commander on the eastern front, Zaluzhny began to alter the way the Ukrainian military system carried out combat operations.\textsuperscript{15} Zaluzhny worked closely with the United States and NATO to improve Ukraine’s training model for noncommissioned officers and to allow more leaders at lower levels to take initiative.\textsuperscript{16} No longer would the Armed Forces of Ukraine use lower-ranking officers as scapegoats when missions failed and troops were lost, nor would officers be blind subordinates to their commander.\textsuperscript{17} Instead, the officers would remain in communication with their superiors, follow their orders, and have the ability to act using their own judgment in the moment. This practice—the management of people—Zaluzhny treated as a “religion” while serving as a senior leader in the crisis in Crimea.\textsuperscript{18} In 2021, President Zelensky promoted Zaluzhny to his current position, skipping over other candidates who were senior in both age and rank to him.

Since the war’s commencement, the greatest advantage the Armed Forces of Ukraine have had against the Russians has been the “freedom to make decisions at every level.”\textsuperscript{19} Because of the operational changes initiated by Zaluzhny in 2014, the Armed Forces of Ukraine had been able to practice Western/US methods for years before the start of the current war. The Armed Forces of Ukraine have been able to develop junior leaders so feelings of trust and respect are felt throughout the force.\textsuperscript{20} Zaluzhny wants all Armed Forces of Ukraine leaders to think in this way, which is why he has appointed certain senior leaders to different ranks where the leaders can be role models to lower-level leaders and why he fired 10 of his generals who, as he says, “were not up to” the task.\textsuperscript{21}

In addition to being a modern-thinking, combat-proven, sometimes-brutal general, Zaluzhny has retained his humility. Zaluzhny treats privates with the same respect as lieutenant colonels and respects the intelligence of the younger generations of commanders who have more training and knowledge in language, technology, and texts than officers of the same rank did when he was advancing in his career.\textsuperscript{22} Zaluzhny knows he is not the smartest or most informed person at all times and he must rely on lower-ranking leaders in the field for insight and information.\textsuperscript{23}
Although Zaluzhny might be an exceptional leader, he is still only one man, and one man cannot determine the performance of an entire army. In this way, Ukrainian Minister of Defense Oleksy Reznikov’s comment about Ukraine’s military success so far is most fitting: “It’s not a story of one star, but a constellation of our military elite.”

Colonel General Oleksandr Syrsky

When General Oleksandr Syrsky was attending Moscow Higher Combined Arms Command School, St. Petersburg was still called Leningrad. Like Zaluzhny, Syrsky was raised and educated in Soviet cultural and military traditions. In the Ukraine crisis of 2013–14, Syrsky was a ground commander in the Donets Basin region and lauded for his “exceptional duty in defense of state sovereignty and state security.” As chief of staff of the Antiterrorist Operation, Syrsky was able to observe closely the battle tactics and strategies the Russians were using. After spending time in Brussels in 2013 with members of NATO to discuss how to modernize the Armed Forces of Ukraine, Syrsky became a staunch proponent of Western decentralized command. In the time between the two conflicts, Syrsky worked hard to transform the C2 system in the Ukrainian Ground Forces so individuals’ skills could be maximized and the entire army could function more efficiently. The morale of Syrsky’s troops is his highest priority, and he believes regular interaction and engagement with them in the field is necessary to “feel the spirit of the army.”

The changes instituted by Syrsky have allowed him to be an exceptional commander of the Ukrainian Ground Forces in the field of the current war, where he can use his knowledge of Western military tactics and strategy to defeat Russian military plans, with which he is very familiar. Nevertheless, although Syrsky might be known as a “military officer who plans for all contingencies,” he admits he did not predict the Russians attacking Kyiv straightaway. Nevertheless, Syrsky was able to contrive a solution quickly, employing a system from the NATO playbook.

First, Syrksy arranged his men in two rings around Kyiv—one in the immediate vicinity of the capital and the other as far from downtown as possible to stave off advancing enemy fire. Then, Syrsky split the region into small sections and assigned each section a general from the nearby military education centers. Also from these centers, Syrsky mobilized battalions and deployed training artillery because “only one mechanized brigade was able to defend the capital.” This distribution and delegation created an ideal chain
of command that allowed Syrsky to remain informed while letting individual commanders make their own decisions freely in combat.\textsuperscript{30}

Later in September, Syrsky had been stationed in the Kharkiv region and was preparing for the counterattack. Syrsky anticipated his bold plan to attack in the middle of where a high volume of Russian forces was located—some in Izium, some in Russian Belgorod—would not seem possible in the minds of the enemy. Simultaneously, Syrsky intended for other Ukrainian forces to draw Russian forces south toward Kherson, creating a break in the line of Russian defense. In an interview with the \textit{Washington Post}, reflecting on his plan, the general said, “In the history of wars, there have been many cases when an attack on a diversionary axis—that is, on a secondary axis—turns into the main axis. The prospects were all there, because . . . the enemy absolutely didn’t expect that we would attack in the exact place where we delivered the main blow.”\textsuperscript{31} Even though some Russians sensed the Ukrainians were up to something (because of the inefficient, cumbersome nature of Russian chain of command), word of an impending attack was never relayed anywhere important. When Syrsky approached Zaluzhny with the idea for the attack, Zaluzhny trusted Syrsky and gave him all the necessary firepower for the risky endeavor. More than a week early, the Armed Forces of Ukraine took advantage of the dispersed Russian force and successfully drove them out of the region—a remarkable accomplishment for a thinly stretched Ukrainian force.\textsuperscript{32}

Creative thinking, trust in one’s resources and people, and personal initiative allowed Syrsky to be successful in these two battles. Without the current structure and modus operandi of the Ukrainian military, which Syrsky helped to implement, neither of these battles likely would have had a fortunate outcome.

\textbf{Instances of Leadership Replacement}

Ukraine has not released much information about the replacement of officers who are wounded or killed in battle. But leadership change has occurred on the basis of suitability. Major General Hryhoriy Halahan had been leading the units in the Donetsk and Luhansk regions since August 2020 as the commander of the Special Operations Forces of the Armed Forces of Ukraine. After major territorial losses, on July 25, 2022, President Zelensky replaced him with Major General Viktor Horenko, retiring Halahan to deputy head of the Counter-Terrorist Centre.\textsuperscript{33}
Another instance of replacement occurred when Ukraine was preparing to recapture Kherson before November 2022. At the time, Major General Andriy Kovalchuk—raised similarly to Zaluzhny and Syrsky and being familiar with both Soviet and Western military methods—was leading 100,000 troops in the south. An honored veteran of the Ukraine crisis of 2013–14, Kovalchuk had been a successful leader up to that point in the war. But even with his accolades and experience, his plan for the counterattack on the Kherson front was one of prolonged patience and intense deliberation. As a result of Kovalchuk’s excessive hesitation, Kyiv switched him out with Brigadier General Oleksandr Tarnavsky, who was more suited for the role of commander in this instance.

Examining (and Reexamining) the Russian Model

“Russia cannot be known by the mind nor measured by the common mile: Her status is unique, without kind—Russia can only be believed in.” The logic-defying nature of Russian politics has mystified Western analysts for decades. The almighty General Staff of the Armed Forces of the Russian Federation, the power and prestige of which surpasses any single role in the US military and government, administers the nation’s armed endeavors with equal attention toward political gain as well as military victory. To administer the nation’s armed endeavors in this manner, the structure of the Russian system is extremely centralized and top-down. Whereas the United States and many Western countries employ complex check-and-balance systems to disperse authority within the countries’ militaries, Russia’s centralized system seeks to rid the country’s military of deliberation and qualms. But Russia’s system also rids the country’s military of flexibility. The General Staff foresees all necessary material needs and determines the course of action for war at the strategic level. At the tactical level, senior commanders must correctly assess the situation and disseminate orders to junior officers, who have little to no room for deliberation or individual initiative. With no system of bottom-up feedback and strict specialization within roles, the Russian system forces superiors to micromanage, thereby putting enormous pressure on them because any initiative taken by subordinates would be the superiors’ responsibility.

The rigidity and systemic distrust within the Russian military has perhaps caused it to falter in Ukraine where many thought it would succeed. In the early stages of the war, many Western news outlets reported the Ukrainian Army was killing Russian generals and other senior officers at a rate not seen since World War II. These reports were based off Ukrainian intelligence.
Although these accounts were surprising, based on the top-down nature of Russian military command, many found them plausible. The presence of senior officers in Russian forward positioning is a reasonable expectation within Russian military doctrine and culture. The poor performance of Russian forces in the early phases of the war likely necessitated the presence of the most senior officers at the front lines. Another possibility is senior leaders moved far forward to avoid the risk of detection while using electronic communications.

In addition, Russia still employs the same large, high-tech, easily identifiable command-post (CP) design the country has been using since the Ukraine crisis of 2013–14—a design Ukraine also employed in that conflict. At the time, Russian drones were able to locate the positions of Ukrainian CPs. Next, special forces would jam Ukrainian radios and corrupt their networks, causing the brigades to lose their ability to communicate with their leadership. Then, Russia attacked the brigades of these CPs and destroyed them, killing commanders in the process. But whereas Russia continues to use its old CP design in the Russia-Ukraine War, Ukraine has modernized the design, using lessons learned from the previous war.

Military analysts and political scientists have written countless pieces about how the stubborn, rigid, naturally distrustful Russian chain of command has led to the deaths of many Russian generals. The analysts and scientists have shown how a combination of this unique Russian attitude, a failure in the initial stages of the war, and an apparently outdated CP design led to about a dozen Russian generals being killed in the first few months of the war, according to Ukrainian officials.

But as the war has progressed and analysts have been able to look back on these claims of high fatalities among Russian generals with new intelligence, a new story has surfaced. The number of Russian generals killed in the early stages of the war was much lower than initially reported. Instead of 12 or more generals being killed in the first stages of the war, as was initially reported, as of December 2023, the consensus is seven generals have been killed in the entirety of the war, with only four being killed during the first year.

Based on recent reporting and research, the four Russian generals who died during the first year of the war can be identified. On February 28, 2022, Major General Andrey Sukhovetsky was shot down while trying to land at the airport in Hostomel outside of Kyiv. In mid-April, Major General Vladimir Frolov was killed in combat, though the exact circumstances of his death are unknown. Then, in late May, Major General Kanamat
Botashev was shot down while flying his Sukoi Su-25 fighter jet over the Luhansk region. Finally, in early June, Major General Roman Kutuzov was killed while leading an assault on a Ukrainian settlement in the Donets Basin region. Not until June of 2023, during the summer counteroffensive, would another Russian general die in combat. Aside from the two air-related incidents, no clear pattern emerges showing how these men were killed. Critically, nothing about these deaths clearly points to a flaw in leadership doctrine.

The initial intelligence about Russian generals’ deaths in combat in the early stages of the war was wrong. The high numbers the Ukrainians reported were likely an attempt to control the narrative of the war and boost morale domestically and among allies. A reexamination of the early stages of the war might only raise more questions than answers about Russia’s senior leadership experience so far, and military analysts likely will not know the full scale of the losses of the Russian army until the war is over, if ever. For the moment, fewer generals having died shows the Russian style of military leadership with its top-down, limited C2 capability might deserve more credit than has been given. As much as the Russian way of fighting seems to put generals in high-risk scenarios and as poor as the start of the war was for the Russians, they have managed to hang on with this same leadership style or, perhaps, with an unknown, adapted one. With only a handful of generals lost in the war so far, Russia likely has had very little difficulty finding replacements from the reported 1,300-officer-strong body of generals. Additionally, some question to what extent killing Russian generals negatively affects the performance of the Russian army—indeed, doing so might have the reverse effect. At the very least, one should not be so quick to dismiss the capabilities of Russian leadership methods, given the lack of evidence against them.

Senior leadership is not the only determinant of whether a war is won. But senior leadership is a vital component of an effective force, and at this stage in the conflict, identifying the strategies that have and have not worked for Russian senior leadership is difficult. Initial reporting on the deaths of Russian generals made the Russian way of leadership seem vastly inferior to the more initiative-based Western style of leadership. But based on the West’s current knowledge about the deaths of Russian generals and the overall stagnant state of the war, the West should be careful to make such swift judgments. Nevertheless, Ukraine would not necessarily be better off today if it were still using the Soviet-era, top-down leadership style. Imagining the Ukrainians being successful with this method is difficult. But just because something is difficult to imagine does not mean it is impossible. As stated,
the Russian way of military leadership is mysterious to many. Military analysts will need to study this style of leadership deeply as the Russia-Ukraine War continues and long after the war has concluded.

**Current US Command Post Theory**

Even before the Russia-Ukraine War, US Army personnel had expressed their concern over and displeasure with current Army CP logistics. With the modernization of warfare technology and the prevalence of MDOs in combat, the traditional CP is now an outdated and dangerous place to be for anyone—especially, senior leaders. In LSCOs where the philosophy of mission command is in place and the warfighting function C2 is employed, CPs are critical for providing a space in which leaders can delegate tasks and process information from the battlefield. The Army has emphasized CPs exist to “assist commanders in the exercise of mission command.” Today, CPs are filled with computers and other equipment that is able to monitor different elements of MDOs. The increase in specialized hardware has made CPs much more effective at managing the battle, but this hardware has also grown the CPs, making them more susceptible to attack. Compounded with a 20-year period of CP evolution for counterinsurgency, an extremely technically advanced yet fat and ponderous structure remains that is ideal for micromanaging operations against forces that do not have the means to target the structure. But a structure of this type is not good for LSCOs.

**Key Takeaways for Future Leaders in Large-Scale Combat Operations**

**Leadership in Action**

The Ukrainian effort in the war so far has been inspirational and has provided transferable insights for US tactics and strategy. Ukrainian senior leadership has a unique advantage the United States and NATO nations could never have, unless they were to turn against one other: extreme familiarity with the enemy’s military methods. Many of the senior leaders currently serving in the Armed Forces of Ukraine were trained to fight and lead in the Soviet style during the leaders’ time in higher education. Some of the leaders even studied at military institutions in Moscow. This knowledge gives the Ukrainian forces a clear reference point for improving their efforts.
and great insight into how the Russian military carries out its operations. Additionally, Ukraine has recently engaged in an LSCO against Russia that gave the former time to develop new Western tactics and practice their implementation in real combat. Although the US Army has not fought in an LSCO in recent years, as the senior leaders this chapter has referenced have emphasized, the Army can still study history. The modern general is a student, and he or she must understand all aspects of an enemy’s military, including its culture and attitudes, to fight against the enemy effectively. If the United States is concerned about a future war with China or another adversary, the United States should be as fluent in the methods of the adversary as the Ukrainians are in the methods of the Russians.

Although the United States and NATO have not employed the LSCO leadership methods the Armed Forces of Ukraine have adopted over the last nine years, the United States and NATO can still be encouraged by Ukrainian success so far: Ukraine’s methods work. Zaluzhny, Syrsky, and other generals who have adopted and implemented the Western decentralized-command and mission-command philosophies with eagerness stress their importance to the maximization of the Ukrainian military’s limited resources. This type of military system can only function if the leaders at the top can command with the right skills, and Zaluzhny and Syrsky have proven to be highly capable at guiding their staffs and subordinate leaders through all the elements of LSCO fighting. Military institutions rarely have such effective linear communication. With this bottom-up and top-down communication comes trust, and with trust comes an increase in individual initiative. Zaluzhny has admitted he is not “the smartest one here,” but he trusts his generals and lets them have operational command at the front lines. Former Joint Chiefs of Staff Chairman Mark Milley acknowledged a general’s leadership style is one that successfully creates outlets for initiative. The challenge for the US Army will be to employ an effective C2 system without micromanaging.

An old-fashioned leadership philosophy, failures in tactical communication systems, and effective targeting and precision fires from the enemy represent more of a Russian anomaly than a general expectation in modern, large-scale combat. Nevertheless, history will confirm losses in the senior ranks are a forgotten fact of large-scale combat, dissimilar to US experiences in the last two decades of counterinsurgency. The combination of precision fires and electronic and cyber warfare will result in a greater risk to all formations in the LSCO theater and beyond. The formations and locations that produce the largest electronic and cyber indicators will be most likely to be targeted; thus, all forces will have to implement greater mitigation measures,
including the reduction of indicators and greater disbursement at critical sites to increase survivability.

The Ukrainian generals mentioned in this chapter as well as many others serving on the front lines possess the personal traits US Army texts identify as necessary leadership qualities. But the Ukrainians have adapted an additional art—the art of saying the right thing at the right time in the right way—with an attribute unique to them: humor.68

Not every person is naturally funny, so this strategy for morale and interechelon chemistry might not work for each leader. At the same time, a leader should not show he or she is too relaxed by excessively joking because such behavior may decrease the sense of trust and authority. The leader must balance humor with the seriousness and sadness of war. Journalists covering the war have characterized Zaluzhny and Kovalchuk as witty and clever, even in times of extreme crisis.69 By strategically using humor, a leader appears humble and approachable to lower-ranking leaders and soldiers.70 Strategic humor can release tension and keep people calm, including the leader himself or herself, allowing him or her to stay steady in high-stress scenarios.

Leadership Logistics

To fix the CP problem, which the Army has already acknowledged in the Army Techniques Publication 6-0.5, CPs must adhere to the tenets of agility, convergence, endurance, and depth.71 To optimize CPs, the Army must make them less dependent on physical size, increase their dependence on data, and maximize the human dimension (that is, maximize leadership in the CPs and avoid having too many personnel stationed at each one). Since C2 and mission command rely on trust between the leader and the subordinate, leaders must be present at the battles for the reasons previously cited. Communication combined with leadership by example helps to instill trust; thus, modern CPs must have redundant forms of communication to create a sense of closeness between leaders and their subordinates.72

Physical space will likely be the most difficult problem for the Army to solve. As operating in C2 becomes more sophisticated in more domains, more tools are required to ensure a constant stream of information to and from the CP. Command posts (CPs) produce radio signals and have tall antennas and other accessories, making them easy targets for jamming and location tracking. One solution to the size problem would be to move most of the information processing equipment far from the battlefield and to use a satellite CP that is able to access all necessary data and intelligence from
the cloud. Another, more radical option would be to use virtual reality, allowing commanders to interact with their CP groups without risking leaving a smaller, safer location. Of course, the downside of this option is the commander would not experience the real conditions of the battlefield in person.\textsuperscript{73} Whatever change the Army ends up making, the change needs to occur soon because the Armed Forces of Ukraine are showing the CP model the Russians use, which is not too dissimilar to the one the United States uses, is not sustainable in modern, multidomain LSCOs.

Conclusion

Army Techniques Publication 6-0.5 describes command as being more art than science.\textsuperscript{74} The elements a great leader must possess might be quantifiable in theory. In practice, however, their implementation and use in combat are executed with subjectivity. Only in the moment of greatest necessity in combat will these traits and virtues become defined and courage assume an obvious form. Only in this moment will determination, compassion, dignity, and honor reveal themselves. Only in this moment will the arrangement of a CP be effective—or not—and in the next moment, these definitions will change.

The current moment—the strategic inflection point of the Russia-Ukraine War—is providing military analysts a virtually infinite amount of material upon which to base their decisions in future combat. Some leadership methodologies will not change much, whereas others will change drastically. Then again, great leaders stand out because of their ability to adapt quickly to each new development. These leaders’ employment of training and use of resources and personnel distinguish the leaders from their colleagues.

The Russia-Ukraine War has shown the most important job of a leader in combat is to establish trust. As a result of trust, each member of the Armed Forces of Ukraine has the confidence to fight in battle. The more leaders communicate with soldiers, and the more soldiers listen to and obey highly skilled leaders, the more trust and the likelihood of victory will increase.
Endnotes


3. HQDA, Operations, 8-15–8-16.


5. HQDA, Operations, 8-8.

6. HQDA, Operations, 8-11.


8. HQDA, Operations, 8-3; and Allen and Bullis, “Developing Senior Leaders.”


11. Shuster and Bergengruen, “Ukrainian Counterstrike.”

12. Shuster and Bergengruen, “Ukrainian Counterstrike.”

13. Shuster and Bergengruen, “Ukrainian Counterstrike.”


18. “General Valery Zaluzhny.”

19. Shuster and Bergengruen, “Ukrainian Counterstrike.”


21. Shuster and Bergengruen, “Ukrainian Counterstrike.”


23. “General Valery Zaluzhny.”

24. Shuster and Bergengruen, “Ukrainian Counterstrike.”


27. Semenova, “Exclusive.”


35. Khurshudyan et al., “Ukrainian Counteroffensive.”


38. Alexis A. Blanc et al., The Russian General Staff: Understanding the Military’s Decisionmaking Role in a “Besieged Fortress” (Santa Monica, CA: RAND Corporation, 2023).


40. Blanc et al., Russian General Staff.


43. Grau and Bartles, Russian Way of War.


60. Beagle, Slider, and Arrol, “Graveyard of Command Posts.”


63. “General Valery Zaluzhny.”

64. Shuster and Bergengruen, “Ukrainian Counterstrike.”

65. Beagle, Slider, and Arrol, “Graveyard of Command Posts.”

66. Shinkman, “Pentagon Downplays Reports.”


70. Bigman, “It's Churchillian.”


72. Beagle, Slider, and Arrol, “Graveyard of Command Posts.”


Sustainment: Logistics

Darrick L. Wesson

Keywords: sustainment, logistics, railway, supply depot, transport, supply chain, echelon, stockpile, production, industrial base

On February 24, 2022, in true blitzkrieg fashion, Russian president Vladimir Putin invaded Ukraine following a preparatory special military operation, confident his military could deliver a quick, decisive victory at minimal cost. But 20 months later, the international community continues to witness Russia’s failed attempts to seize control. Russia’s lack of logistical preparedness, coupled with US and NATO support to Ukraine, has drastically changed the expected trajectory of the Russia-Ukraine War.

Military sustainment provides the support necessary to ensure operations continue until mission accomplishment. Russia planned its so-called “special military operation” in Ukraine around a swift, large-scale incursion that failed to consider fierce Ukrainian resistance. Russian military preparation did not include plans for a prolonged war requiring reconstitution operations to replace significant losses of weapon systems’ platforms and supplies. The consumption rate of artillery pieces and ammunition during the Ukraine invasion was very high.

The failure of Russia’s offensive attack in Ukraine is attributable to failing logistics in addition to failures in leadership, doctrine, and flexibility of movement and maneuver. Russia initiated the war on two fronts with two apparently completely different operational objectives: to seize Kyiv in the northwest and to establish a land corridor between the Donets Basin and Crimea in the east and southeast. Furthermore, Russia underestimated the time required to conquer Ukraine and failed to plan the requisite logistics and sustainment support. The United States must adapt its industrial bases,
stockpile maintenance capabilities, and supply-line and infrastructure security to prepare for future large-scale combat operations (LSCOs) of equal or greater magnitude.

**Sustainment and Logistics Issues on the Russia-Ukraine Battlefield**

Putin’s overconfidence in his military may have led to deficiencies before the invasion began. Initially, Putin was confident he could achieve a quick and decisive victory at minimal cost with his supposedly modernized military. But Putin overestimated his military’s readiness for a protracted war. As a result, before the invasion, Russia deployed logistical units early, with preparatory activities already taking place in July and August of 2021. But Putin did not anticipate Ukraine’s ability to defend itself and mobilize a counterattack. A large-scale invasion would have required logistical and supply-chain planning for which Russia was woefully unprepared. Putin may have received poor intelligence about Ukrainian military capabilities, or his advisors may have provided strategic miscalculations. Either way, a range of political, military, and economic factors influenced Russia’s lack of preparation for an invasion of Ukraine.

When transitioning from exercise to war, the conditions and dynamics of logistics change because a full-scale war includes casualties and destroyed equipment, leading to increased demands for transportation. Russia, aiming to dominate Ukraine quickly, faced several obstacles, including increased resistance, compounded by a lack of strategic preparedness. Two months of extended field exercises magnified supply-chain deficiencies as Russian soldiers rolled off the exercise and onto the battlefield without essential equipment maintenance. To maintain its aggressive stance, Russia should have adjusted its offensive strategy. The lack of a contingency plan, especially in the areas of supply and sustainment, made the shift to the battlefield insurmountable.

**Overreliance on Railways and Trucks**

Russia’s supply issues began with an overreliance on troops and supplies being transported and delivered by rail and trucks. Historically, Russia had invested heavily in the rail system for both strategic and supply purposes. Like no other army, the Russian army has an auxiliary service known as the Railway Troops (zheleznodorozhniye voiska) that consists of 10 brigades.
These brigades, which are attached to military districts, protect and maintain the railway services during combat.\(^9\) The Railway Troops help to build, maintain, and protect railway lines that are essential for the Russian military.\(^10\) Russia overtly used railway infrastructure months ahead of the invasion of Ukraine, proving both the critical importance of the railways and Russia’s dependence on them in the country’s wartime strategy.

Russia’s heavy reliance on railways for transport and the country’s lack of alternative options have created several problems for Russia. Because of the limitations of the railways and the resulting reliance on trucks, which are often improperly maintained, Russia struggles to supply bases properly beyond 90 miles from a railway supply depot.\(^11\) Compounding Russia’s overreliance on the railways was the Ukrainian targeting of the rail system. On February 26, 2022, Ukrainian Railways confirmed all rail links between Russia and Ukraine had been destroyed. Since then, apparent logistical deficiencies have plagued Russia.\(^12\) These deficiencies affected both personnel (due to the inability to transport troops efficiently) and supplies (including fuel).

As a result, the Russian supply chain became stretched thin as Russians scrambled to use other operational vehicles. Therefore, Russia had to transition from using railways to distribute supplies to using motor transportation units for land-surface movements through Ukraine, resulting in massive supply-chain failures.

The resulting demand for trucks exposed corruption in equipment maintenance plagued the Russian army before the invasion. The US military assessed possibly one-third of deployed Russian vehicles failed due to unenforced maintenance practices before the war.\(^13\) Corruption and reliance on civilian vehicles and parts have contributed to continual tire and other mechanical failures, hindering Russia’s ability to provide logistical supplies forward.\(^14\) Consequently, Russia began to depend on civilian vehicles to move supplies. Nevertheless, civilian vehicles, too, were breaking down, and repairing the various vehicles was even more challenging because of their unique parts. As a result of overreliance on railways and trucks, Russia experienced distribution failures.

**Issues within the Supply-Chain Structure**

Russia’s poor logistical performance is a significant reason the country has failed to achieve its objectives. Supply chains and logistics must work in unison to meet wartime demands. Russia’s ineffective strategy for resupplying echelons is responsible for the interrupted and inconsistent
supply failures. Logistical support forces were inflexible and underequipped, leading to decreased combat effectiveness and hindering the achievement of military objectives.

Therefore, improving the efficiency of the echelon resupply system and ensuring support forces have the necessary resources and equipment are critical for enhancing Russia’s military capabilities. Russia’s supply echelons refer to the levels, such as regiment, battalion, company, and platoon, at which supplies and resources are made available to military forces. The echelon resupply system aims to ensure frontline troops have access to the necessary supplies, equipment, and resources to complete missions effectively. Typically, the supply echelons in Russia include the central supply depots, intermediate depots, and forward supply points. The goal of the echelon system is to ensure a steady and reliable flow of supplies from the rear to the front lines.

Most Western militaries operate on a pull-based logistics system in which forces request resupply when needed based on changing ground conditions. But the Russian military works on a push-based system in which supplies are distributed based on estimated timescales determined by leadership.15 Experts note, “A Russian campaign following the echelon principle would have a logistics concept based on the same principle: to supply and refurbish one echelon at the time, and to use the railway and pipelines to move supplies to the tactical logistics bases.”16 But deploying one echelon at a time before fresh forces replace the echelon only works well if the force structure includes more than one echelon.17 The Russian military’s supply system means material resupply occurs at the strategic decision-making level instead of the tactical decision-making level, potentially resulting in prioritization errors.

Maintaining sufficient stockpiles of equipment and ammunition is essential. When logistical support is deficient, battles are “lost early and often.”18 Heavy equipment losses early on, coupled with logistical issues such as the inability to procure needed supplies or parts, have hindered Russia in seizing control of Ukraine.

**Industrial Challenges to Maintaining Adequate Levels of Production**

Recent reporting indicates Russia has sustained losses of more than 8,600 armored combat vehicles, including over 3,000 tanks. Some of the tanks were generations old, including a Soviet-era tank that first entered production more than 50 years ago.19 Another source cites similar findings, stating, “Russia has suffered significant equipment losses, including tanks, armored
fighting vehicles, and artillery systems. These losses have forced Russia to pull older systems out of storage and deploy them to the battlefield.” 20 Russia has even been using aged ammunition, which is unreliable and results in a substantial number of undetonated explosives. 21 Russia was simply unprepared to match the frontline demand for munitions. Manufacturing delays and procurement deficits were also significant contributors to Russia’s munitions challenge. 22

Western sanctions partly drove industrial challenges. Experts concur, “Russia is in worse shape when it comes to guided missile production because Russia depended on Western suppliers for key components, and those have been cut off by sanctions from Russia’s 2022 invasion of Ukraine.” 23 But to the dismay of Ukraine and its Western allies, Russia continues to find ways around global economic sanctions. Andrew Bowen notes, “Captured and destroyed Russian weaponry have demonstrated the extent to which Russia has circumvented export controls and sanctions, as well as the extent to which it has adapted civilian technology for military use.” 24 Currently, Russia is attempting to increase domestic military production while acquiring weapons from foreign nations such as Iran and North Korea to offset the challenges of the Russian industrial complex’s inability to replenish stocks. For example, Iran has provided its Shahed-136 drones and, potentially, its Fateh-110 ballistic missiles, along with 1,000 additional unspecified weapons to assist Russia in its aerial campaign. 25 Likewise, North Korea has potentially provided millions of artillery shells and rockets to support Russia’s ground campaign. 26 Although sanctions have constrained Russia’s ability to gather resources, the country’s allies have ensured these economic measures do not have a choke hold on Russia’s military.

Lessons Learned

Building a Strong Industrial Base

The Russia-Ukraine War has highlighted the importance of having a strong industrial base to ensure a reliable supply of materials and resources to military forces. Nations must maintain stockpiles at a level that is significant enough to sustain a long-term war; therefore, to sustain its capability to produce the required supplies, the military must depend on industry. Although necessities like food may be readily available, other wartime essentials can take months, if not years, to acquire. According to Thomas Ekström, “military-specific supply items limit the number of potential suppliers quite significantly, and
may involve lead times ranging from months, or even years, for ammunition, mines and explosives (Class V items), to several years for major equipment (Class VII items).” The chief executive officer of the Raytheon Company, Gregory Hayes, expressed concern about the expenditure pace of Stinger and Javelin munitions in Ukraine. Hayes said Ukraine’s armed forces used 13 years’ worth of Stinger production and five years’ worth of Javelin production in the first 10 months of the war.

In light of the war in Ukraine, the United States is expanding manufacturing facilities. For instance, according to a report published on October 27, 2022, the production of Guided Multiple Launch Rocket System missiles was about 420 missiles per month. Doubling this production would not happen until 2023. The same report indicates the ability to replenish Javelin missiles is even worse: Ukraine has already received 8,500 Javelin missiles, and current production is only about 90 missiles per month. Furthermore, Stinger missile production stopped in 2020, and a significant number of new Stingers will not be available for several months. The United States has transferred more than one million 155-millimeter standard artillery shells to Ukraine, but US production capacity is only 93,000 rounds per year. Even if the United States increased capacity, it would still not be enough to support the current usage. To make up for the shortage of 155-millimeter artillery shells, the United States plans to buy 100,000 rounds from South Korea.

Although Ukraine appears to be scrambling for replacements, Russia has major obstacles to overcome as well. Russia’ guided-missile production is in worse shape because Western suppliers have stopped providing key components. The lack of materiel supplies can result in several perils, such as decreased combat effectiveness, where frontline troops do not have access to the necessary supplies, equipment, and resources to conduct their missions effectively; hindered military operations, where a lack of supplies prolongs a military operation or preemptively or prematurely ends an offensive attack; and, as seen by both Russia and Ukraine, a dependence on foreign sources to provide needed supplies. Therefore, maintaining a solid defense industrial base is crucial for ensuring the reliable supply of materiel and resources to military forces and avoiding the perils associated with a lack of supplies.
Maintaining Adequate Stockpiles of Ammunition and Equipment

The basic concept is to maintain adequate stockpiles of ammunition and equipment for use against a large, well-equipped force in a war. These stockpiles, referred to as the “war reserve,” are large quantities of munitions stockpiled to supply troops during the initial months of fighting until production increases to sustain the fighting. These stockpiles must contain the most-consumed munitions and other supplies, and militaries must position stockpiles so they can be quickly available to the combat zones. As alluded to earlier, “[w]ithout adequate logistics, as in the right supplies delivered in time, wars or at least battles, are often lost early and often.” $^{35}$ Russia is experiencing the effects of not maintaining a large-enough war reserve or production capability to support the country’s troops.

The United States has committed more than one million 155-millimeter artillery rounds and over 14,000 precision-guided or Remote Anti-Armor Mine System, 155-millimeter rounds to the war in Ukraine.$^{36}$ American assistance to Ukraine has depleted the stocks of some types of weapon systems and munitions, such as Stinger missiles, 155-millimeter artillery shells, and Javelin antitank missiles. In January 2023, the US Army announced a $2 billion investment to expand and boost production.$^{37}$ In addition, the West has announced its plan to send Ukraine advanced battle tanks, which will provide more mobility to fight. But Western assistance will also create more logistical concerns about being able to supply the munitions, parts, and fuel needed to maintain the tanks. Furthermore, dozens of countries besides the United States provide Ukraine with tanks and military assistance. This variety leads to additional logistical complexities in maintaining, sustaining, supporting, and deploying the combat-power capability of each platform and donor country.$^{38}$

Protecting Supply Chains, Ammunition Storage, and Supply Dumps

Arguably one of the most important logistical lessons learned from the Russia-Ukraine War is the critical importance of supply-chain protection. The Russian military’s organizational failures contributed to its inability to protect resupply convoys and supply chains. Convoys stalled for reasons ranging from vehicle maintenance failures to lack of fuel and poor communication between leaders, leaving the convoys highly vulnerable to attack. Ukraine’s military took advantage of the unprotected supply lines and effectively destroyed thousands of pieces of equipment, changing both the Russian rate of advance and the trajectory of the war itself.
Further analysis illustrates Russia significantly miscalculated the acquisition and maintenance of supplies because the Russian military expected to seize major airports for use very soon after H-hour. Unlike Russia, Ukraine was able to protect its supply lines with air-defense fire, resulting in heavy losses to the Russian Aerospace Forces as they attempted to strike deep into the rear Ukrainian areas. Without the threat of air strikes, the Ukrainian military excelled in sending uninterrupted supplies to the front lines in support of offensive attacks. Ukraine’s impressive organization highlights the importance of air-defense capabilities along with supply-chain maintenance in maintaining an effective wartime posture.

Intelligence, surveillance, and reconnaissance (ISR); kinetic attacks; and artillery targeting by unmanned systems in the Russia-Ukraine War also create additional challenges for protecting supply lines. For example, a series of night ambushes by less than three dozen Ukrainian special forces and drone operators halted a 40-mile mechanized convoy of Russian armored vehicles and supply trucks heading south toward Kyiv. Using drones, Ukraine’s elite unit destroyed several vehicles that were leading the convoy, causing it to halt for several days. Although the Russians divided the convoy into smaller columns, the same Ukrainian unit attacked the Russian supply depot, prohibiting its advance. In another instance, Ukrainian forces effectively used the Turkish-made Bayraktar TB2 to strike Russian armor, and Russia used Iranian Shahed-136 drones to hit Ukrainian targets.

Ukraine destroyed several Russian munition depots using High Mobility Artillery Rocket Systems (HIMARS). But Russia has learned to distribute its ammunition storage better, making it harder to find and destroy. Additionally, Russia has begun to use air defense to counter Ukrainian reconnaissance drones and missiles effectively. Likewise, using missile barrages, Russia has virtually destroyed Ukraine’s military production facilities. Taking lessons from Russia’s adaptation, the United States must be ready to protect its supply lines and infrastructure from more advanced attacks at a higher intensity in future LSCO.

Anticipating and Reevaluating Logistical Planning at the Magnitude of Large-Scale Combat Operations

Another key lesson from the war is acknowledging LSCO are extraordinarily resource dependent and prone to outpacing key logistical assets. The US Army should reevaluate its logistical planning assumptions and capabilities to ensure it does not make the same mistakes it did during
the Persian Gulf War, when the Army failed to keep units adequately supplied to continue fighting during rapid advances. Likewise, the Army can learn from Russia's current failures: The Russians grossly underestimated the amount of time capturing Ukraine would take. If not carefully planned, supplying logistical support for a prolonged period is likely to be unsustainable. After the collapse of the Soviet Union, many countries believed another large war in Europe requiring the use of tanks and artillery and leading to a dearth in arsenal stockpiles would not occur. To compound the lack of available heavy artillery, the Afghanistan War required a different type of military force and equipment that used a lighter and more expeditionary force that did not depend on the type of artillery and ammunition required to defend Ukraine. Therefore, the United States transitioned from manufacturing heavy munitions to manufacturing light munitions, resulting in the country's currently depleted stockpile. Now, as Russia and Ukraine expend weaponry and ammunition at a pace not seen since World War II, the competition to keep arsenals stocked has become critical to Ukraine's effort. The United States has been vigorously attempting to supply Ukraine with that which it needs while replenishing NATO stockpiles. The United States has purchased equipment from countries such as Morocco that use Soviet-era equipment. In addition, the United States has purchased spare parts and T-72B main battle tanks. Indeed, NATO is even looking into old factories in Czechia, Slovakia, and Bulgaria for the manufacture of Soviet-era shells for Ukraine, whose armory comprises Soviet-era munitions. With supplies dwindling, both Russia and Ukraine are looking to outside sources for Soviet-era equipment and ammunition. If nothing else, the Russia-Ukraine War has exposed the true costs of not maintaining sufficient stockpiles of weapons and munitions.

Sustaining stockpiles requires a nation to have an adequate industrial base. The United States has not been involved in a large-scale conflict against a peer competitor since World War II; therefore, no recent examples of the system failing to meet demand exist. If the nation's industrial base fails to resupply vital components during periods of heightened operational tempo, the United States could find itself in the same predicament as Russia: possibly encountering significant difficulty in sustaining wartime demands. Just as the Russia-Ukraine War revealed how NATO underestimated the need to stockpile sufficient munitions, the war also highlighted how the United States and NATO deprioritized industrial-to-military manufacturing of critical weapons, including the amount of time achieving wartime production levels takes. Factors such as the type and nature of the war and the availability of supplies from domestic and foreign sources can
impact the forecasting of munition requirements. The United States can learn from Russia’s mistakes related to the calculation of munition attrition and on-hand stockpiles. Russia has failed to support the front line logistically during the initial offensive and to plan for a drawn-out war.

In summer 2022 in the Donets Basin, the Ukrainians fired 6,000 to 7,000 artillery rounds daily, whereas the Russians fired 40,000 to 50,000 rounds daily.51 The United States only produced 15,000 rounds monthly. At this rate, sustaining Ukraine’s defensive capabilities poses a great challenge, not to mention the toll on Ukrainian weapon systems and platforms. The war has evolved into one of attrition, leading to a high rate of munition use throughout an industrial war that has become protracted. Working with Congress, the Department of Defense should consider new methods of streamlining and improving munition production, acquisition, and replenishment to support an LSCO war.

**Conclusion**

Throughout the Russia-Ukraine War, the Russian military has struggled with moving equipment around the battlefield, protecting convoy and supply dumps, and resupplying forward units.52 Russia’s forces demonstrated early in the war their inability to support ongoing offensive operations without logistical pauses to reset the forces’ sustainment infrastructure. The Ukrainian Army effectively allowed the Russian military to overextend itself and targeted Russia’s logistics and transportation infrastructure, causing it to halt and regress. The Russian military’s overextension highlighted its overreliance on transporting and delivering supplies by rail. This overextension further exposed the corruption that resulted in failing tires and axles on Russia’s supply trucks.

Additionally, Russia needed help protecting the country’s advancing supply chains. Supply-chain protection, among other reasons, prolonged the war, resulting in munition attrition. This attrition stresses the industrial complex’s ability to replenish stocks, which could take months or longer, depending on the type of munition or equipment needed. The West has been able to replenish munitions and equipment for the Ukrainian Army; otherwise, the latter could not have maintained a prolonged war because Russia has destroyed the latter’s munition facilities. Whether the convergence of Russia’s inability to provide logistical support and the West’s ongoing military support to Ukraine can create enough stability for Ukraine to maintain its sovereignty remains to be seen. The United States should heed the lessons of the
Russia-Ukraine War to evaluate how to increase munition production when needed, understand the maintenance level of munition and equipment stockpiles required to sustain a long-term war, and evaluate the importance of protecting supply-chain capabilities and security.
Endnotes


5. Skoglund, Listou, and Ekström, “Russian Logistics.”


10. Ferris, “Russia’s Military.”


15. Skoglund, Listou, and Ekström, “Russian Logistics.”


17. Skoglund, Listou, and Ekström, “Russian Logistics.”


23. “Logistics.”


29. “Logistics.”
30. “Logistics.”
31. “Logistics.”


34. “Logistics.”
35. “Logistics.”


43. “New Phase.”
44. Aris, “Running Out of Ammo.”


47. “Logistics.”
50. “Logistics.”
52. Eversden, “5 Lessons.”
Paper TigIRR:  
The Army’s Diminished Strategic Personnel Reserve in an Era of Great-Power Competition

Stephen K. Trynosky

Keywords: Individual Ready Reserve, mobilization, draft, Selective Service System, manpower, recruiting, all-volunteer force, large-scale combat operations, great-power competition

Russia’s military actions since February 2022 have upended many long-held assumptions about the US Army’s capacity to engage decisively in prolonged large-scale combat operations (LSCOs) against a great power. Despite the Russian military’s unexpectedly poor operational performance in the initial invasion of Ukraine, the military continues to learn from its severe early setbacks and adapt in ways that still surprise Western observers. Russia’s ability to mobilize, train, and employ more than 300,000 inactive reserve personnel as well as more than 80,000 new volunteers in less than five months showcases an underappreciated strategic-manpower capacity with profound implications for the United States and NATO allies. Simply put, Russia demonstrates mass still matters in twenty-first-century warfare. A nation’s ability to mobilize is one of the most important methods of conveying resolve to both allies and adversaries.

Note: An earlier version of this chapter was presented as “What’s Old Is New: The Unexpected Return of Mass and National Mobilization as Decisive Principles in the Russo-Ukrainian War and Possible Implications for the NATO Alliance” at the 2023 Telos-Paul Piccone Institute Conference in New York City on March 31, 2023. This research was again presented as “Paper TigIRR: The Army’s Diminished Strategic Personnel Reserve in an Era of Great Power Competition” at the US Army War College Civil-Military Relations Center conference Military and Society: The All-Volunteer Force Turns 50 in Carlisle, Pennsylvania, on May 6, 2023.
The United States is now at a strategic crossroads, facing both an expanded Russian military with additional mobilization capacity in reserve as well as China’s formidable People’s Liberation Army. In early 2022, estimates indicated Russia had over two million soldiers in its version of the Individual Ready Reserve (IRR), the mobilization human resource.\(^5\) Although media and political attention over the health of the United States’ defense industrial base is growing, comparatively little focus is being given to the Army’s current strategic-manpower depth and the service’s precarious ability to mobilize and sustain adequate personnel for conflicts with peer or near-peer competitors.\(^6\) The Russia-Ukraine War highlights the intensity and staggering personnel requirements of LSCO.\(^7\) Current US Army sustainment doctrine explicitly states that in LSCO theater medical planners may anticipate a sustained daily casualty rate of 3,600, with a daily casualty replacement requirement of around 800.\(^8\) The reality of these conditions must spur long-overdue discussions about how the Army can expand and reconstitute units in scenarios with daily casualty estimates in the thousands that disproportionately impact seasoned leaders.

Fifty years ago, at the dawn of the all-volunteer force, the Army launched a series of transformative doctrinal and procurement initiatives to capitalize on the lessons learned from the 1973 Yom Kippur War between Israel and an Arab coalition force.\(^9\) This unusual, deep organizational introspection following a foreign conflict marked an inflection point that required adaptation and change to prevail in future wars.\(^10\) The year 1973 arguably marked the last great inflection point for the Army, and the enterprise-wide innovation that followed remains highly influential.\(^11\) Likewise, the Russia-Ukraine War may represent a turning point in the evolution of warfare.\(^12\) One of the most important observations from the battlefields of Ukraine is the value of maintaining a deep pool of previously trained military manpower to fill existing vacancies, replace casualties, and expand force structure in an emergency.\(^13\)

For a variety of reasons, the Army allowed its strategic-manpower reserve to dwindle to today’s dangerously low level. This alarming shortfall is compounded by a persistent recruiting crisis across all three components that guarantees an even smaller strategic reserve without corrective intervention to arrest the decline.\(^14\) As a necessary first step, Army senior leaders and civilian policymakers must recognize the magnitude of this problem and its dire implications for national security.
To frame the growing strategic-manpower dilemma the United States faces, this chapter briefly familiarizes readers with the Army’s Individual Ready Reserve. The introductory overview is followed by a summary of six high-level findings on the Army’s current strategic-personnel depth that were identified through extensive research during the 2022–23 academic year. Finally, this chapter presents key recommendations for revitalizing the Individual Ready Reserve and deepening the Army’s strategic-personnel depth in an uncertain era of great-power competition.

The Return of Attrition Warfare in the Russia-Ukraine War

The Russia-Ukraine War presents the US Army with a stark reminder of the staggering casualty rates in LSCO. Both Russian and Ukrainian forces were forced to rapidly adapt rapidly under combat conditions following the loss of hard-to-replace capabilities and experienced personnel. In Ukraine, Russia has suffered the country’s worst combat casualty rates since World War II, and some observers now contend Ukrainian casualty rates are approaching those seen on World War I’s Western Front. Analysts with the Center for Strategic and International Studies estimate Moscow’s total combat fatalities during the first year of the Russia-Ukraine War exceeded the 13,000 to 25,000 deaths Russia experienced during the intermittent, 15-year-long conflicts in Chechnya and the 14,000 to 16,000 deaths suffered throughout Russia’s decade-long presence in Afghanistan. Although exact casualty figures are widely disputed, Russia’s combat losses in Ukraine are significantly higher than in any of the country’s post–World War II conflicts. Russia’s casualty figures highlight the alarming lethality of high-intensity twenty-first-century warfare against a peer or near-peer opponent. The United States must revitalize its strategic-personnel depth for similar future conflicts in the face of the reality of modern warfare.

Reassessment and Revitalization of the Individual Ready Reserve

The Individual Ready Reserve is the primary strategic-manpower pool the United States uses to fill understrength units in the early phases of mobilization and to provide replacements for casualties until new volunteers or draftees inducted through the Selective Service System can be trained and deployed. In an earlier era of great strategic uncertainty,
the 1982 *Military Manpower Task Force* report called the Individual Ready Reserve the “most important category” of pretrained military manpower.\textsuperscript{19} Despite common misunderstandings about the Individual Ready Reserve within today’s Army, IRR soldiers remain among the most experienced and readily available pretrained personnel for augmenting active-duty or Reserve Component units in a national emergency.\textsuperscript{20} In other words, this month’s new IRR soldier was last month’s highly trained and proficient, active-duty soldier.\textsuperscript{21}

Most IRR soldiers have at least three years of prior active-duty experience and have honorably completed their contractual terms of service in the Regular Army, Army National Guard, or Army Reserve but have not fulfilled their statutory, eight-year military-service obligation.\textsuperscript{22} Some soldiers who have completed their military-service obligation voluntarily elect to remain in the Individual Ready Reserve to continue their Army careers in a highly flexible program with few mandatory requirements.\textsuperscript{23} Current Army doctrine explicitly states that IRR personnel are considered the principal source of pretrained individual manpower for filling active-duty vacancies and providing casualty replacements.\textsuperscript{24} The Individual Ready Reserve’s critical role in future LSCO scenarios was reiterated to the Total Army in a March 18, 2021, All Army Activities message.\textsuperscript{25}

Despite its vital strategic role in a range of potential future conflicts, the Individual Ready Reserve has long suffered from the Army enterprise’s “calculated neglect.”\textsuperscript{26} This neglect contrasts sharply with the US Marine Corps policy of allocating significant human and financial resources to maintain a comparatively high level of IRR readiness.\textsuperscript{27} Since the end of the Cold War, no military component or personnel category has experienced as steep a drawdown as the Army’s Individual Ready Reserve, which in March 2023 stood at less than 17 percent of its 1994 size.\textsuperscript{28} Because its ranks overwhelmingly comprise junior enlisted soldiers and company-grade officers who see their military service as behind them, the Individual Ready Reserve lacks a natural constituency within the Army to fight for an appropriate share of resources and a seat at the table in a rapidly shifting strategic environment.\textsuperscript{29} The current security threats Russia and China pose demand a reassessment and revitalization of the Individual Ready Reserve to meet anticipated LSCO personnel requirements, demonstrate US military resolve credibly, and mitigate a persistent recruiting drought. Furthermore, the Army’s long-standing expectations for the IRR must also be revised to ensure they align with the service’s far smaller and declining end strength.
Research Findings: The Army’s Strategic-Personnel Depth in 2023

The massive scale and scope of the Russia-Ukraine War has exposed significant shortfalls in the US Army’s strategic-personnel depth for full mobilization and LSCO. This exposure presents an acute vulnerability that requires the prioritization of study and action. The following findings are the result of extensive research conducted between August 2022 and April 2023; attendance at four conferences and panels that focused on mobilization topics; participation in the US Army War College’s Ukraine integrated research project; and correspondence with a variety of experts in government, academia, and policy-oriented think tanks.

Large-Scale Combat Operations Will Exhaust the Army’s Pool of Trained Manpower

The Army has growing personnel shortages across the existing force structure in all three components. The Individual Ready Reserve and Retired Reserve are the only strategic sources of significant, trained manpower for filling individual vacancies, replacing combat casualties, and providing personnel for both force-structure and training-base expansion. Field Manual 4-0 states sustainment planners should anticipate a steady combat casualty replacement requirement of 800 soldiers per day in LSCO environments.

Brigadier General Hope Rampy, the Army’s director of military personnel management, recently observed, “The speed and lethality of LSCO” will produce “thousands of casualties and a corresponding need for thousands of replacements.” Rampy further forecasted most active-duty forces would deploy in the opening weeks of a conflict, leaving a limited pool of available replacements within the Active Component. Such a scenario would present the Army with an individual replacement challenge at a scale unseen since at least the Korean War and, possibly, World War II. Paradoxically, today’s available pool of replacement and expansion manpower is smaller than at any point since 1940—before President Franklin D. Roosevelt signed the Selective Training and Service Act.
No Army personnel category has shrunk as severely as the Individual Ready Reserve, and many enduring strategic-personnel policies were enacted when the Individual Ready Reserve was more robust. In 1973, the Army Individual Ready Reserve stood at 759,000 soldiers at the dawn of the all-volunteer force; in 1994, the Individual Ready Reserve had roughly 450,000 soldiers when the Department of Defense (DoD) revised its Selective Service System planning guidance for initial inductee delivery from 13 days after congressional authorization to resume the draft (M+13) to 193 days after authorization (M+193). Today’s Individual Ready Reserve cannot keep pace with the growing vacancies in numerous combat-arms career management fields (CMFs), leaving nothing for casualty replacement or expansion. To put this vulnerability in context, the current 75,830 soldier Individual Ready Reserve cannot fill Arrowhead Stadium, the home of the Kansas City Chiefs. Training and Doctrine Command estimates only 65 percent of all IRR personnel (about 49,300) are available for deployment; these personnel would not be able to fill Dodger Stadium, home of the Los Angeles Dodgers.

In January 2023, US Army Training and Doctrine Command estimated a mobilization would yield the following numbers of IRR personnel for critical military occupational specialties: infantryman (11B), 6,180; cannon crew member (13B), 830; fire support specialist (13F), 630; and combat engineer (12B) 1,105. At the same time, the Army National Guard reported the following vacancies in its authorized force structure: 11B, 6,846; 13B, 1,865; 13F, 1,267; and 12B, 1,246. The Army Reserve reported 767 additional vacant, 12B positions. In each of these specialties, the Reserve Component vacancies alone exceed the estimated available IRR strength for mobilization.

Acute Combat-Arms Recruiting Shortages

Although the Total Army faces a significant recruiting crisis, the consequences are most acute across the combat-arms CMFs. The Army missed the fiscal year 2022 enlisted recruiting target for CMF 11 (infantry) by more than 50 percent and barely achieved 50 percent of the enlisted recruiting goal for CMF 19 (armor/cavalry). In many combat-arms formations, these recruitment numbers practically translate into one new soldier arriving to replace every two soldiers departing
service. The Army’s reliance on the Individual Ready Reserve for many contingencies grows daily, but Training and Doctrine Command estimates posit only a minimal bench in the enlisted combat-arms CMFs can be generated: CMF 11 (about 6,960); CMF 19 (about 1,840); and CMF 13 (artillery in MOS 13B, 13D, and 13F) (about 1,795). Recent conflicts demonstrate these CMFs will generate the highest casualty replacement requirements. Data from 2008 showed 91–95 percent of all casualties in brigade combat teams were combat military occupational specialties, and 3–5 percent were medics. Missed combat-arms recruiting goals must be viewed longitudinally across a soldier’s statutory, eight-year military-service obligation because accession shortfalls in 2023 and 2024 will result in a further-diminished IRR pool for contingencies in 2031 and 2032.

Cross-Leveling Units Is Inappropriate for Large-Scale Combat Operations Mobilization

Great-power competition with the escalatory potential for LSCO cannot rely on the predictable “patch chart” unit-rotation policy practiced in Iraq and Afghanistan because readiness must be maintained throughout the depth of the Army force structure. Cross-leveling individual replacements from Army National Guard or Army Reserve units would degrade the readiness of required follow-on forces in an expanded mobilization of unknown duration. Cross-leveling would further introduce an extended mobilization delay before the reinforcing or donor units could be rebuilt with individual replacements and retrained. In LSCO, the Individual Ready Reserve and Retired Reserve must fill the doctrinal role they were designed for: the provision of trained manpower to fill vacancies, replace casualties, and provide expansion cadres. Only the Individual Ready Reserve can provide substantial replacements for junior enlisted and company-grade officers without jeopardizing the readiness of supporting units.

Furthermore, a large contractor presence cannot be assumed in a contested, nonpermissive LSCO environment due to security considerations that demand dispersion, concealment, and rapid movement. With a reduced contractor footprint, military personnel will perform many logistics tasks that uniformed personnel did not widely execute during the wars in Iraq and Afghanistan, which enabled policymakers to minimize the total number of deployed soldiers. The Russia-Ukraine War provides the Army with a window into the type of future conflict the service may be called to fight and sustain logistically. In the era of the war on terrorism, the Army mortgaged much of the logistics
structure that permitted the widespread presence of contract personnel.49 But today’s Individual Ready Reserve cannot provide sufficient support personnel to cover the massive vacancies in the current sustainment force structure, let alone expand force capacity for LSCO considerations.

The Individual Ready Reserve is presently unable to provide sufficient sustainment soldiers to cover vacancies in the authorized force structure. In January 2023, Training and Doctrine Command estimated mobilization will yield the following numbers of IRR personnel for critical sustainment specialties: motor transport operator (88M), 1,560; wheeled vehicle mechanic (91B), 1,850; culinary specialist (92G), 795; and petroleum supply specialist (92F), 725. At the same time, the Army National Guard reported the following vacancies in the authorized force structure: 88M, 4,155; 91B, 2,277; 92G, 3,147; and 92F, 1,597. The Army Reserve reported additional vacancies in the same specialties: 88M, 4,993; 91B, 1,600; 92G, 1,439; and 92F, 2,822. The Reserve Component sustainment vacancies vastly exceed the estimated IRR strength available for mobilization.50

The Department of Defense’s Guidance Does Not Reflect Today’s Environment

Following the collapse of the Soviet Union, the Department of Defense revised its Selective Service System planning guidance. In 1994, the department changed the initial delivery date for inductees into the Selective Service System from M+13 to M+193.51 The Army’s Individual Ready Reserve stood at roughly 450,000 when the department decided to change its guidance, and no great-power competition was on the horizon. Today’s IRR is less than 20 percent of its 1994 size and must still serve as a strategic “thin green line” for LSCO scenarios until the first trained, entry-level personnel inducted via the Selective Service System can deploy at approximately M+270.

Mobilization and Expansion Timelines for LSCO Must Be Aggressively Shortened

The Army’s current personnel mobilization and expansion timeline is inadequate for a contingency like the Russia-Ukraine War. The Individual Ready Reserve cannot currently fill existing force-structure vacancies, let alone provide sufficient casualty replacements to meet baseline LSCO planning assumptions. The Department of Defense’s current guidance is for the Selective Service System to provide initial inductees at M+193 is 29 years old,
creating a 270-day “valley of death” in which the Individual Ready Reserve and Retired Reserve are the only strategic sources of trained manpower until the first trained draftees are available for assignment to units. In 2018, the US Army Human Resources Command estimated in a full-mobilization scenario wherein the Selective Service System was statutorily activated, the initial trained soldiers inducted through the system would be available for deployment 277 days following the activation of the system.52 The mobilization and expansion timeline must be shortened. This shortening can be accomplished through a suite of feasible policy changes: increasing and revitalizing the Individual Ready Reserve; restoring the Selective Service System’s pre-1994 initial delivery date for inductees to M+13; and strengthening the management of the Category I Retired Reserve, which includes nondisabled retirees under the age of 60 who have been retired for less than five years.53

**Recommendation:**

**A Critical Investment to Prepare for an Uncertain Era**  

During the Cold War, a much larger Individual Ready Reserve was expected to serve as a short-term personnel bridge through full mobilization and activation of the draft.54 Although the evidentiary justification for the Department of Defense’s 1994 decision to revise the Selective Service System inductee-delivery guidance is limited, the department made the justification at a time when the Individual Ready Reserve had about 450,000 soldiers.55 Under current Army mobilization-planning assumptions, today’s far-smaller Individual Ready Reserve of less than 76,000 soldiers is still expected to fill the breach as a strategic-manpower reserve for about 270 days (M+270) until the first trained soldiers inducted through the Selective Service System reach their units.56 Many experts believe even the Army’s extended timeline is wildly optimistic, given the Selective Service System operates with a skeleton full-time staff and has not inducted anyone since 1973.57

Considering developments in Ukraine and Russia’s successful partial mobilization, post–Cold War planning assumptions from 1994 are no longer valid for an era of great-power competition. Today’s Individual Ready Reserve is simply too small both to fill the growing number of unit vacancies exacerbated by an unending recruiting crisis across all Army components and still provide the steady stream of casualty replacements expected in the first 270 days of a LSCO conflict. Furthermore, the preferred method of filling individual unit vacancies for deployments to Iraq and Afghanistan through the cross-leveling of personnel assigned to other units
is inapplicable to full-mobilization scenarios because the method degrades the capability of follow-on units, which must also prepare for deployment.\textsuperscript{58}

To face the personnel challenges likely to emerge in full mobilization and LSCO, the Army must look to the past and restore the strategic depth and redundancy the service maintained before 1994. These actions cannot wait because the ongoing recruiting crisis shows no signs of abating, and recruiting shortfalls heavily impact the combat-arms specialties that will disproportionately require individual augmentees, fillers, and replacements in a manpower-intensive LSCO conflict with a peer or near-peer power.\textsuperscript{59}

**Conclusion**

The 2022 *National Security Strategy* explicitly states, “[T]he post-Cold War era is definitively over and a competition is underway between the major powers to shape what comes next.”\textsuperscript{60} In accordance with this pronouncement, the time for the Department of Defense to reevaluate many of the foundational mobilization assumptions that originated during the early 1990s has come. A series of decisions driven by the 1993 Bottom-Up Review dismantled much of the US military’s mobilization infrastructure, divested redundant force-structure capabilities deemed obsolete at the time, and more than doubled the timeline for force expansion in a full-mobilization contingency.\textsuperscript{61} The Russia-Ukraine War demonstrates the renewed relevance of many long-neglected, Cold War–era mobilization and personnel processes in twenty-first-century conflicts.\textsuperscript{62}

Despite its history of achievement and resilience on the battlefield, the all-volunteer force has never confronted a great power or been stressed by more than a partial mobilization.\textsuperscript{63} With rising competition from China and Russia, a full mobilization is more probable than at any time since the Cold War.\textsuperscript{64} Significant actions are underway to expand the capacity of the defense industrial base, but no corresponding discussions to stabilize strategic-personnel depth have been held.\textsuperscript{65} The failure to confront the growing gap between potential operational requirements and available manpower could have serious repercussions in a future conflict with peer or near-peer adversaries.

Adversaries may simply attempt to outmaneuver ossified strategic mobilization timelines that cannot generate a steady flow of additional military manpower in less than nine months.\textsuperscript{66} All LSCO planning assumptions to defeat peer or near-peer adversaries require the simultaneous employment
of substantial portions of the Total Army. But serious and growing manpower
gaps exist throughout today’s Total Army. The long-overlooked Individual
Ready Reserve will play an indispensable role in full-mobilization scenarios,
but the Individual Ready Reserve is excluded from key mobilization exercises.
If realistic national resource assessments do not inform operational plans,
they cannot provide senior strategic and policy-level decisionmakers with
a complete picture of the trade-offs and risks inherent in the plans’ execution.

The Individual Ready Reserve, which was an integral part of US
defense planning throughout the Cold War, must be viewed the same way in
today’s environment of renewed great-power competition. In an earlier era,
Army and National Guard senior leaders astutely recognized the importance
of a healthy and robust IRR to generate sufficient contingency manpower
in a time of great peril. The Army is at a similar juncture today, but the
United States now has different adversaries. The manpower capabilities are
growing, while the Army’s declines. Current Army senior leaders must step
forward to ensure a robust Individual Ready Reserve is resourced to close the
widening gap in the service’s capability to mobilize for LSCOs.
Endnotes


32. HQDA, Sustainment Operations, 4-4.


43. Duffer, “IRR Training Information”; and “IRR Population.”

44. Patrick M. Rice, “Transforming the Army’s Wartime Replacement System” (strategic research paper, USAWC, Carlisle, PA, 2008), 41–42.


50. Duffer, “IRR Training Information”; and National Guard Bureau, ARNG Auth.


54. GAO, Individual Reserves.


56. “Replacement, Reconstitution, and Rotation.”


63. Olen Chad Bridges and Andree Navarro, “Mobilizing for Major War,” Parameters 47, no. 2 (Summer 2017): 88–89.

64. Bridges and Navarro, “Mobilizing for Major War,” 88–89.


Russia-Ukraine War Lessons on Maneuver

Jason R. Lojka and Jason Du

Keywords: maneuver, command and control, speed, numerical superiority, terrain, mission command, multidomain operations

The Russian invasion of Ukraine demonstrated a smaller, better-trained, and better-equipped army can defeat a much larger one. Applying the principles of maneuver warfare was one of the keys to the success of the Ukrainian defense forces in 2022, and the same principles will likely play a significant role in the remainder of the conflict, as Ukrainian forces continue their efforts to clear occupied Ukrainian territory of Russian invaders.

Most experts expected a quick Russian victory at the war’s outbreak due to Russian advantages in force size and fielded-weapon technology. But in the first year after the invasion, Russia failed to achieve its goal of seizing Kyiv and struggled to hold early territorial gains in eastern Ukraine. This chapter analyzes how Ukrainians successfully executed maneuver warfare in the defense of Kyiv and in the Kharkiv counterattack and how the Russians failed to follow maneuver-warfare principles. But before evaluating the Russia-Ukraine War, the chapter briefly analyzes the reforms the Ukrainian Army made after the Ukraine crisis of 2013–14, with a focus on the changes that enabled Ukrainian use of maneuver-warfare principles.

Historical Background

Ukraine was poorly prepared to conduct maneuver warfare—or any kind of warfare—on the eve of the Russian invasion in 2014. Ukraine only had around 130,000 soldiers and 800 tanks, and only a few tanks were operational
when the Russians invaded Crimea—as few as a dozen, according to one well-placed advisor to the Ukrainian military at the time.\(^3\) Even worse, a significant number of Ukrainian military officers and government officials held pro-Russian beliefs before the invasion, decreasing the effectiveness of prewar training and preparation for war.\(^4\)

After the losses of 2014–15, Ukrainian President Petro Poroshenko, who was determined to improve Ukrainian defense capability, asked the West for assistance in the effort.\(^5\) Starting in 2016, Poroshenko directed reforms in five categories: command and control (C2), planning, operations, medical and logistics, and professional development of the force.\(^6\) The reform in C2—particularly, embracing decentralization of authority by encouraging “disciplined initiatives” and allowing flexible decision making by junior leaders once a battle begins—was arguably the most crucial of the five changes.\(^7\) Adopting a Western approach to doctrine and training that allowed freedom of action and disciplined initiative gave more autonomy in decision making to lower-level Ukrainian leaders, such as lieutenants and captains—an essential factor underlying Ukrainian success in maneuver warfare, which depends heavily on shock, surprise, and speed.

Western aid and changes in C2 structure improved the quality of the Ukrainian fighting force.\(^8\) Another important factor that contributed to the Ukrainian force’s transformation should not be overlooked: the formation of a volunteer army in addition to the professional one.\(^9\) Compared to the professionally trained Ukrainian Army, rapidly recruited Ukrainian volunteers might lack training, but their patriotic spirit helped to create units with high morale that were dedicated to—and willing to take both personal and career risks for—the defense of the nation, a crucial aspect of successful maneuver warfare.

Improvement came from both Western military doctrine and Ukrainian patriotism as well as Western aid, which included many weapons more advanced than the Soviet-era equipment the Ukrainian Army possessed in 2014.\(^10\) The most significant improvement has been the transformation of artillery and antitank weapons. In 2014, Ukrainian antitank missiles could not penetrate Russian T-90 tanks’ armor because of the missiles’ outdated design.\(^11\) To solve the lack of capacity in Ukraine’s antitank defense, the United States authorized sales of the Javelin infantry antitank missile to Ukraine starting in 2017, with the first sale made in 2018.\(^12\) Javelin missiles (and their equivalents from other countries) played a significant role in defending Kyiv from the initial blitzkrieg the Russians attempted
in February 2022. By May 2022, Russia had lost about 664 tanks and close to 3,000 armored vehicles and heavy equipment pieces.\(^{13}\)

Javelin missiles were not the only weaponry improvement Ukraine made after 2014. Artillery modernization also took place with the help of Western states. Ukraine emphasized the development of the Vilkha precision multiple-launch rocket system. Since the invasion, Ukraine has acquired an increasing number of other technologies, such as counterbattery radars, Humvees, sniper rifles, and drones, that help to provide more effective forward observation of the battlefield.\(^{14}\) Understanding and visualizing the battlefield is critical to maneuver warfare, and the United States most likely provided intelligence that was crucial to Ukraine's battlefield success, though the impact of this potential collaboration is difficult to assess or discuss in an unclassified format.\(^{15}\)

The change in command structure, the volunteer army, and the supply of advanced weapons from the West made possible the transformation of the undermanned, undertrained, and unorganized Ukrainian military into a modern army with advanced technologies and doctrines that is capable of conducting offensive and defensive maneuver warfare. The Ukrainian military's transformation proved crucial in the defense of Kyiv and in the Kharkiv counteroffensive in 2022.

**The Evolution of an Idea: Maneuver Warfare**

Maneuver warfare often relies upon exploiting enemy mistakes on the battlefield with concentrated attacks while avoiding the enemy's main force. Designed to unhinge the enemy and cause it to collapse, maneuver warfare does not require the physical destruction of all enemy forces in a battle of attrition. Success comes from shattering the enemy's cohesion, decreasing the enemy's morale, and reducing the enemy's will to continue fighting. Prussian tactician Carl von Clausewitz wrote the following in his book *On War*.

In its ordinary meaning the term maneuver carries the idea of an effect created out of nothing, so to speak—that is to say, out of a state of equilibrium—by using the mistakes into which the enemy can be lured. It can be compared to the opening gambits in a game of chess. It is, in fact, a play of balanced forces whose aim is to bring about favorable conditions for success and then to use them to gain an advantage over the enemy.\(^{16}\)
One of the most successful early adopters of the principles of modern maneuver warfare was Frederick II of Prussia. As a military commander, Frederick II was known for using maneuver to achieve victory in battle. Frederick II’s tactic, which he called the “oblique order,” involves a commander concentrating the forces in one wing of his or her army to target the enemy flank and ordering a smaller force to occupy the attention of the main enemy force, preventing it from aiding the targeted side. By launching the oblique order, Frederick II demonstrated one principle of maneuver warfare: attacking small enemy troops with superior forces. According to Christopher Duffy, Frederick II mastered his maneuver technique at the Battle of Leuthen when he used the Prussian advantage in mobility and morale to defeat a larger Austrian army. Besides implementing his oblique order, Frederick II also used an early form of combined arms by using infantry to hold the main Austrian force and cavalry to shock the enemy flank.17

Another Prussian was a forerunner of the modern doctrine of combined-arms maneuver. German General Heinz Guderian thought hard about the application of internal combustion engines both on the ground and in the air to create the theory of blitzkrieg, understanding how offensive maneuver and combined arms should function to defeat the power of the machine gun in defense. Guderian emphasized the importance of speed, shock, and the ability to exploit opportunities rapidly through mission command and boldness.18 The application of combined arms and mission command created the conditions for success. (The authors are grateful to Colonel Chase Metcalf, US Army, for emphasizing this point during his review of this chapter.) Hence, Guderian was known for his tactics of making armed vehicles—primarily, tanks supported by airpower—the leading forces in a division, though he also emphasized the importance of having other types of units in a panzer division to take advantage of the emerging principles of combined-arms warfare.19

Through the development of even more lethal weapons and the application of digitized information in modern C2 systems after the second Industrial Revolution, the character of war has changed dramatically.20 Modern precision fires; improved intelligence, surveillance, and reconnaissance (ISR); and artificial intelligence–enabled (AI-enabled) decision making can enhance maneuver-warfare tactics, but technological advances that allow persistent observation make conducting attacks at unexpected times and locations—the very essence of maneuver warfare—even more challenging. Integrating and applying capabilities is key to success in maneuver warfare.21
Open, rolling terrain—tank country—is not a prerequisite for maneuver warfare but is helpful. Mountains, obstacles like minefields, and urban terrain complicate maneuver warfare, making rapid breakthroughs into the enemy rear more difficult. Amos C. Fox argues to maximize the advantage of maneuver, a force needs both mobility and quick decision-making cycles. The Ukrainians demonstrated both during the first year of the Russia-Ukraine War.

Maneuver Warfare on the Ukrainian Battlefield

Although the character of war has evolved, the principles of maneuver warfare still apply to the Ukrainian battlefield, as demonstrated both in Ukraine’s successful defense of Kyiv in the opening days of the war and, later, during the Kharkiv counteroffensive. To provide the prerequisites for successful maneuver on the modern battlefield, Ukrainians focused on the basics of warfare: small-unit tactics; soldier skills; antitank marksmanship; and small-element operations, which are harder to detect. Ukraine’s efforts paid off both in defense and, after Ukraine had turned back the initial Russian offensive, in the Kharkiv counteroffensive.

Defense of Kyiv

The Russians attempted to use maneuver warfare to dislocate the initial defense of Kyiv but failed to dominate the battlefield through combat and maneuver techniques that win the battle psychologically. For example, maneuvering to flank an enemy force can produce a large psychological impact on a defense force that believes itself outnumbered or outmatched. Russia attempted a coup de main against Kyiv with airborne and air-assault forces, but Russia failed to seize the critical airfield that enabled the country’s attack. Flanking an enemy force increases the chance of a defensive force retreating because if it stays in combat, the defensive force will be more likely to estimate its fate negatively. Indeed, the Russians were outflanked in Kyiv and forced to retreat.

Kharkiv Counteroffensive

In the Kharkiv counteroffensive, the Ukrainians created an area of relative numerical strength to maneuver against an enemy with overall numerical superiority. The Ukrainians broke through a Russian defense line that was stretched thin at the point of attack, giving the
Ukrainian offense a perfect chance to concentrate force in conjunction with small-unit, dismounted-infantry tactics. The Ukrainians failed to replicate the Kharkiv rapid advance in Kherson. Unlike the thinly stretched defense line composed of low-quality units in Kharkiv, Russia’s Kherson defensive lines were organized in depth and better prepared. Another reason for Ukraine’s relatively effective counterattack in Kharkiv was Russia concentrated most of its divisions on attacking the towns in Sloviansk. Once Russia started its offense against towns in Bakhmut, the country committed to costly and slow urban combat, degrading Russia’s ability to defend Kharkiv.

Even more detrimental was the Russian failure to hold vital towns near Kharkiv. Ukraine managed to capture the towns of Kupiansk and Izium successfully, boosting the Ukrainians’ morale. Ukraine’s success in seizing urban areas is comparable to the US capture of Baghdad in 2003, the Islamic State of Iraq and Syria capture of Mosul in 2014, and the Azerbaijani capture of Shusha City in 2021, all of which involved rapid breakthroughs using maneuver-warfare principles against poor-quality opposition.

The Ukraine counteroffensive in Kharkiv demonstrated when properly applied, maneuver-warfare principles can still produce success in the face of technological advances that appear to give an advantage to the defense. Conversely, the Ukrainian failure to clear the remainder of the Kherson oblast on the left bank of the Dnieper River after the Russian withdrawal from Kherson city indicated offensive maneuvers will not always succeed in the face of prepared defenses on challenging terrain, even against less-capable opposition.

The Kharkiv counteroffensive provides two examples of conditions that make success in offensive maneuver more likely. The first condition is when an army faces a shallow, thinly stretched defense line, like Russia’s in Kharkiv. Properly integrating combined arms—especially, the use of long-range weapons and sensors—makes the shallow defense line vulnerable. The second condition that mitigates the defensive advantages of close terrain, such as cities or mountains, occurs when a defensive force does not have the numerical and qualitative capacity to match the offense’s mass at a particular location and time. Both conditions applied in the Kharkiv counteroffensive.
Lessons Learned

Since the Russian offensive started in February 2022, Ukraine has conducted combined-arms maneuvers against a numerically and supposedly technologically superior opponent. The Ukrainian Army achieved its success in two ways: using the terrain to the service’s advantage and countering the Russian offensive with the appropriate combined-arms tactics. While facing Russian tanks, the Ukrainian antiarmor infantry would follow—and sometimes lure—the tanks into urban or wooded areas, where the terrain restrains the tanks’ mobility. With a clear understanding of combined-arms doctrine and well-established, decentralized C2, Ukraine forced the Russian forces to abandon their blitzkrieg on Kyiv and retreat from Kharkiv.

In contrast to the Ukrainian doctrine that allows subordinates to take the initiative and practice disciplined disobedience to orders (in support of the commander’s intent), the Russian army focused on following orders, even if they were no longer appropriate, on a rapidly changing battlefield. The Russian force fought as battalion tactical groups—forces of about 750 soldiers capable of fighting with combined arms. Although battalion tactical groups were successful during the crisis in Crimea and the Donets Basin in 2014–15, the groups have not been as capable in the larger fight of the Russia-Ukraine War against a better-prepared, better-coordinated Ukrainian force. In the 2014–15 Donets Basin campaign, Russians enjoyed the advantages of a small theater that allowed troops to communicate and react quickly and received support from pro-Russian insurgents in Donetsk and Luhansk. But in 2022, the Russian battalion tactical groups found reacting in relatively larger theaters such as Kyiv difficult. At least some of the groups’ problems may have stemmed from being undermanned.

Russia does not have the high-quality C2 required to coordinate the country’s efforts to achieve operational and strategic objectives in the current war. Lacking a single operational commander with authority over the entire Ukrainian theater, Russian forces have relied on a byzantine C2 network that cannot effectively combine arms at the joint-force level to take advantage of fleeting opportunities, such as sprinting around a Ukrainian flank and encircling a Ukrainian force before it can slip into unfavorable terrain. Russia’s initial attempts to seize Kyiv and Kharkiv demonstrate the weakness of Russian C2.

The Ukrainians outperformed the Russians in C2 and prevented Russia from achieving air superiority, with huge consequences for the success of the country’s offensive operations. Modern combined-arms warfare relies
heavily on incorporating airpower into land-force maneuver. In Ukraine, Russia failed to achieve air superiority for several reasons; this book’s chapter on airpower discusses this topic more fully. According to the Kyiv Independent, as of September 7, 2022, Ukrainian forces had shot down 237 Russian airplanes, 208 helicopters, and 880 unmanned aerial vehicles.\textsuperscript{38} Ukraine also used lethal drones such as Turkish Bayraktar TB2s to counter Russian land targets.\textsuperscript{39} The influence of manned and unmanned airpower (and its absence) in the Russia-Ukraine War indicates another vital lesson modern maneuver tacticians need to learn beyond simply applying combined arms: Multidomain operations (MDOs) are critical to success on the modern battlefield.

The concept of MDOs on the modern battlefield refers to the combination of land, maritime, and air warfare as well as the cyber and space domains. Informational warfare waged through cyberattacks plays a huge role in combat in the modern context. As with combined arms, MDOs play an essential role in maneuver because they maximize one of the advantages of maneuver: exploiting the mistakes of enemies and confronting them with dilemmas, sometimes referred to as “wicked problems,” the enemies cannot resolve. As noted by General David G. Perkins, US Army retired, when an enemy tries to counteract one capability in one domain, the enemy becomes vulnerable to another capability in another domain.\textsuperscript{40}

The integration of land and air warfare was a critical development in maneuver warfare, as noted by the development of the US Army AirLand Battle doctrine (another Army Training and Doctrine Command contribution that was spurred in part by years of analysis of the 1973 Yom Kippur War). Increasingly, the space domain provides a new high ground to enable maneuver. To execute a successful maneuver offense or defend against a hostile maneuver attack, accurately spotting the enemy’s position and movement is essential.\textsuperscript{41} Modern satellite technology allows Ukrainians to observe the advancement of the Russian army, even on Ukrainian smartphones. Along with unmanned aircraft, Ukraine has become a battlefield where no target can hide, increasing opportunities for successful maneuver.

Another vital factor that contributes to the maneuvers’ success is decentralized C2, which current US Army doctrine refers to as “mission command.” A decentralized C2 system does not mean removing a central operational commander from the army, which has been one of the major Russian mistakes in the Russia-Ukraine War. Rather, such a system allows junior commanders to operate with disciplined autonomy to accomplish the commander’s intent. As part of its post-2015 reforms, Ukraine adopted some
of the principles of mission command, which helped the country to achieve maneuver success by operating in smaller units tied together with good communications and a shared understanding of the commander’s intent. Instead of all information moving up the chain of command, being analyzed by high-ranking officers, and then being disseminated back down the chain, Ukraine relied upon widespread, dispersed communication, using tablets and radios to make the decision-making process more efficient and to harden signals against Russian disruption. Maneuver warfare relies on multiple integrated domains to enable success.

Operating in small groups linked by satellite communications made identifying and locating Ukrainian forces harder for the Russians, allowing the Ukrainian Army to launch multiple surprise attacks on their enemy. The operations of Ukrainian antiaircraft units thoroughly reflected the surprise element in maneuver, as small groups used hit-and-run tactics, making targeting dispersed groups of Ukrainian infantry difficult for the Russian armored forces. Indeed, antitank weapons in combined-arms maneuvers proved critical to Ukrainian efforts in the first year of the war. The Ukrainian Army used Javelins and similar systems to counter Russian tanks in urban and wooded areas successfully.

Recommendations

Flowing directly from the observations in the previous section, policy recommendations for the US Army include a continued emphasis on the importance of proficiency in maneuver warfare and a focus on mastering the basics of modern maneuver principles in both tactical maneuver formations and logistical and command nodes. Mission command enables troop units to maneuver in small groups with decentralized C2. In the midterm, the Army must further develop critical weapon systems, such as Javelin missiles, Stingers, and Bayraktar TB2 drones, the service can employ to defeat current and future threats as well as start to send Ukraine advanced tanks, such as the Leopard 2 tank, to ensure the country’s superiority of fire over Russia. Training on combined arms to mass and concentrate fires is also vital to battlefield success. Combined-arms training includes the use of infantry, armor, and indirect fire. Clear commander’s intent and guidance provide subordinate commanders the flexibility to operate within the intent and execute disciplined initiative to achieve a decisive advantage. Leaders need to understand the importance of integrating operations in multiple domains to maximize leaders’ chances of success.
The first year of the Russia-Ukraine War demonstrated maneuver is still critical on the current battlefield, even when facing terrain and information warfare challenges. Combined-arms warfare is necessary for success, and operating in small, decentralized C2 nodes prevents the loss of essential command infrastructure that guides subordinate units while allowing freedom of action to maneuver on enemy units when the opportunity arises or is created by subordinate leaders following the principles of mission command. Finally, understanding the importance of the integration of capabilities across all domains (MDOs) enables maneuver, thereby realizing a distinct advantage on the battlefields of the future.
Endnotes

7. Collins, “‘Decrepit’ Ukrainian Army.”
11. Collins, “‘Decrepit’ Ukrainian Army.”


27. Maguire, “Manoeuvre Is Alive.”


29. King, “Is Manoeuvre Alive?”


31. Guderian, Achtung-Panzer!


33. Fox, “Reflections.”


35. Biddle, “Ukraine.”


37. Keith Crane, Olga Oliker, and Brian Nichiporuk, Trends in Russia’s Armed Forces: An Overview of Budgets and Capabilities (Santa Monica, CA: RAND Corporation, 2019), 9; and Fox, “Reflections.”

38. Fox, “Reflections.”


41. Perkins, “Multi-Domain Battle.”


43. Osborn, “Ukraine’s Decentralized Command.”

44. Osborn, “Ukraine’s Decentralized Command.”

Protection:  
Electronic, Air, Civilian, and Infrastructure  
Matthew S. Holbrook  

Keywords: protection, cyber, electromagnetic, command post, unmanned aerial systems, supply lines, bridges

The need to protect and preserve the force has been a critical aspect of success in combat throughout history. The Russian invasion of Ukraine has been no exception. Russia’s virtually unconstrained barbarity, heavy targeting of civilian infrastructure (and, in many cases, civilians themselves), and incorporation of domains not heavily challenged in prior conflict have provided a glimpse of the type of warfare that may await the United States and its allies in twenty-first-century large-scale combat operations (LSCOs). With its longest war, the Afghanistan War, having come to an end, the United States should study the valuable lessons Ukraine’s experience has provided because the former faces the potential for a very different future conflict. Retired Lieutenant General David Barno and his colleague Nora Bensahel aptly point out the following.

Today, nearly every mid-grade leader in the US Army and Marine Corps has significant experience battling insurgents and conducting combat operations in complex and demanding irregular warfare environments. Yet, virtually none of those leaders have been under massive, sustained artillery, mortar, or rocket fire. None have been attacked with precision strikes from guided missiles or bombs. No Army or Marine unit was struck with chemical weapons during the recent wars, or faced fallout from a nuclear blast. Few have dealt with jamming or serious disruption of tactical
communications networks, and none have faced air attacks from enemy fighters, cruise missiles, or drones. Protecting the force against these deadly threats has rightfully not been a priority when the main threats to US forces have come from roadside bombs, small arms fire, and suicide attackers. But that priority must now change—and change quickly.¹

In April 2021, US Army Futures Command published *Army Futures Command Concept for Protection 2028*, which attempted to prepare leaders for “the ever-changing operational environment.”² In this pamphlet, Army Futures Command identifies key “gaps and seams” in traditional protection elements.³ Several of the gaps have proven to be exceptionally challenging and deadly in the current conflict in Ukraine. This chapter examines the concept for protection through examples of successes and failures of Russian and Ukrainian forces. Although the United States still has much to learn, the Russia-Ukraine War is demonstrating the United States should be prepared to engage in a very different kind of conflict than the country has experienced over the past two decades. The United States faces a strategic inflection point that places new demands on force protection across multiple domains of emerging importance. To keep pace with the evolving challenges of protection in LSCO, the United States must focus on cyberspace and the electromagnetic spectrum; air and missile defense; and critical infrastructure, both civilian and military.

**The Emerging Cyber and Electromagnetic Threat**

As the morning of February 24, 2022, dawned, California-based telecommunications company Viasat began to experience widespread disruptions in Internet services and hardware located in Ukraine. Malware pummeled thousands of systems throughout the country and beyond Ukrainian borders. Breaching the system via a virtual private network, the attack rapidly spread internally, affected satellite modems, pushed a command that interrupted connection to the Internet, and blocked reconnection.⁴ At the time, the company reported, “Tens of thousands of terminals have been damaged, made inoperable and cannot be repaired.”⁵ Although it primarily targeted the Ukrainian defense forces, the outage quickly spread throughout Europe, knocking the remote monitoring of 5,800 windmills offline in Germany as well as removing 9,000 French customers and several thousand civilians in five other European countries from the web.⁶ Barely an hour later, a massive column of conventional Russian forces
rolled into Ukraine from the north and east.\textsuperscript{7} Ukrainian cybersecurity expert Victor Zhora described the impact of the attack on Ukraine’s defenses as having created “a really huge loss in communications in the very beginning of war.”\textsuperscript{8} Russia had just coordinated an attack on the synthetic cyber domain to prepare a physical battlefield for a concurrent conventional attack in the first force-on-force instance of LSCO of the twenty-first century.

This preinvasion cyberattack was not unexpected, but it does provide valuable confirmation of Russian techniques. Ukraine has been subject to relentless Russian cyberwar for several years, including an attack in which Russia switched off a power station in the middle of winter.\textsuperscript{9} Throughout the first 10 months of the war, Russian attacks occurred at a frenetic rate, sometimes exploiting the same target multiple times and destroying physical devices while maintaining covert access to networks.\textsuperscript{10}

The massive volume of attacks has proven largely ineffective in causing significant military damage, potentially for two different reasons. The first, according to a report by the Center for Strategic and International Studies, is “cyberattacks are overrated,” and “it takes real effort to make a cyberattack more than a dramatic annoyance.”\textsuperscript{11} The other potential reason is the US-Ukrainian partnership in cyber defense before the onset of the major attack. United States Cyber Command deployed soldiers to Ukraine in December of 2021 and immediately began a technique the command referred to as “hunting” for Russian attacks online.\textsuperscript{12} The soldiers spent two months in Ukraine working with and training Ukrainian operatives to detect Russian online attacks before they could cause damage.\textsuperscript{13} Similar practices caught on, and NATO cybersecurity elements have taken action, gathering recently in Estonia to conduct an exercise like the training the hunting team provided to Ukraine.\textsuperscript{14}

Russia has demonstrated a willingness to prepare the conventional battlefield by conducting cyberattacks on both military and nonmilitary targets. Many of these cyberattacks have affected banking, energy, and communications, potentially having a greater impact on civilians than on military forces. Although Russia is the focus of this study, it is not the only threat with cyber capabilities. China, North Korea, or any actor with a computer and connectivity is a threat. This threat is transregional; America’s oceans can no longer protect the US homeland in the event of foreign military engagement, making Americans more vulnerable. From now on, cyberwarfare will remain a feature of the competition continuum. Properly resourcing and training countercyber forces and institutions will be a key component to allied success.
Another aspect of this warfare, which we can call “invisible warfare,” is the electromagnetic spectrum. In its protection concept, Army Futures Command identifies the electromagnetic spectrum as a potential “gap” or “seam” the Russian forces in Ukraine are capable of exploiting. In the United States’ most recent wars, soldiers were unconcerned about their electromagnetic footprint. Soldiers operated on forward operating bases carrying personal cell phones and laptops and were complacent about excessive radio transmissions and the potential for them to be tapped. In a future war, this type of behavior could prove deadly. Russia and Ukraine use electromagnetic signature–detecting unmanned aerial vehicles (UAVs) to pinpoint troop positions and ground-base systems to conduct Global Positioning System, satellite, and radio-communication jamming. One advantage the Ukrainians have the United States would not enjoy during a conflict with Russia is both current combatants use the same type of satellite communications, making jamming Ukrainian capabilities without jamming its own hard for Russia.

American companies have already had to overcome Russian jamming. In March 2022, when Russia jammed a Starlink signal, SpaceX immediately responded with additional code that broke the jamming within 24 hours. This type of resilience, rapid reaction, and civil-military partnership across the cyber domain and the electromagnetic spectrum will be critical for military satellites during peer and near-peer competition.

Training for a contested electromagnetic environment will be critical for leaders in preparation for modern war. Training scouts and forward observers to treat direct electronic warfare vehicles as high-priority targets will be vitally important to mission success. A more expensive method would be to prioritize the completion of the US Air Force’s EC-37B Compass Call to develop the capability to jam enemy electronic warfare systems at the outset of future wars. Developing and maintaining resilient systems with operators capable of rapidly reacting to evolving enemy threats would allow forces to maintain US technological superiority.

Finally—and perhaps, most importantly—if the technological systems soldiers have become accustomed to using are removed or degraded by the enemy, soldiers must be prepared to function in the blind. Presumably, any peer or near-peer adversary is capable of multi-domain operations (MDOs). Interdictory threats to the electromagnetic spectrum and the space domain, such as the jamming of communications, signals intelligence, and Global Positioning System navigation, are a probability. An enemy operating in these domains threatens the technological advantage the US military has
enjoyed over the last several generations. Soldiers must be capable of operating across a dispersed and tactical footprint in an analog world with only a map, compass, and commander’s intent in the event of degraded or compromised communications or satellites.

**Unmanned Aerial Systems and Air and Missile Defense**

A squad of Russian soldiers crouches in the eastern Ukrainian woods late in the evening. Suddenly, a buzz overhead sends four soldiers running, while three remain stationary. A Ukrainian soldier at an unknown distance watches the scene through a screen, beamed back to him in infrared from the drone that has spotted the Russian troops. Zooming in on the three stationary soldiers, the Ukrainian drone stabilizes and drops a small munition into their midst. The Ukrainian military would later report all three Russian soldiers had been killed.  

Scenes like this have played out countless times on both sides of the current conflict in Ukraine. The United States and its allies are well practiced at delivering strikes from large UAVs circling high above the battlefield, but this scenario is different. Smaller, lighter, faster, cheaper, disposable, reconfigurable on a kitchen table, and readily accessible on electronic store shelves, this new version of the threat poses a challenge the United States has not seen previously. Export restrictions around unmanned aerial systems (UASs) have been relaxed, and the market has expanded, meaning UASs are not just the tools of advanced militaries. For over 20 years in Iraq and Afghanistan, the US military lived on forward operating bases with large dining facilities and noisy generator light sets; the enemy knew where the Army was and had only relatively inaccurate and small-scale means to act on this information. In modern LSCO, units that consolidate or operate in anything other than very small groups create a prime target for enemy drone pilots, and large combat tactical operations centers are likely to be things of the past.

The UAS could be described as the improvised explosive device (IED) of the current conflict—and perhaps the next as well. The proliferation of technology has enabled both state and nonstate actors to develop small, inexpensive, and increasingly lethal UASs. These systems allow a relatively untrained aggressor to attack a more lethal force from a safe distance. Much like the IED evolution and adaptation cycle of the war on terrorism, the adaptive use of UASs could pose a lethal threat in the next conflict. In locations like Iraq and Afghanistan, IEDs originally targeted the sides of vehicles, which resulted in “up-armoring.” Then, IEDs targeted the undersides of vehicles,
resulting in the Mine Resistant Ambush Protected vehicle. This third epoch of the UAS-IED threat will target the tops of vehicles and attack personnel from a higher position. Personnel and vehicle operators unprepared for this eventuality will quickly become casualties, even in areas traditionally viewed as rear echelons of the battlefield. Currently, Ukrainian forces use UASs to attack undisciplined Russian troops and vehicles, inflicting casualties and materiel costs at levels disproportionate to the costs of the weapons themselves.

The broad spectrum of available UAV and drone configurations creates a challenge in defending against them. Many of the United States’ adversaries possess these new weapons. China recently became the number-one exporter of military drones in the world. A future conflict will likely involve both large and small drones and the potentially very difficult-to-defeat drone swarms, which will pose a grave danger to soldiers and equipment. Larger drones include the Russian Orlan-10 UAV, which has a nearly 10-foot wingspan, six-foot length, and top range of 370 miles, and the Iranian Shahed-136 loitering munition, which has an eight-foot wingspan and 11-foot length. Ukrainian air defenses can target these larger drones with a moderate degree of success. But smaller drones can be very difficult to locate on radar and even escape visual notice by a soldier on the ground. One can easily imagine a future war in which an adversary launches a small, cheap, iPhone-controlled drone the adversary purchased from a local store to spot a platoon of enemy tanks. The tanks would not be able to hear the buzz of the small drone that has spotted them, and the spotter could call in a Shahed-136, which would be mistaken on radar as a flock of birds due to the munition’s speed. These relatively cheap drones can destroy a multimillion-dollar tank in seconds. The war in Ukraine is demonstrating in modern war, UAVs that have evaded forward defenses could potentially even challenge areas behind the forward line of own troops.

Another challenge for the United States and its allies will be protecting the force through the air and missile defense fight. The United States possesses a very capable yet untested Air Defense Artillery (ADA) branch. This branch is small and likely to be pushed to its maximum capacity in a future fight—especially, an extended future fight across a large geographic area. Although contested airspace is a condition American soldiers are unaccustomed to operating under, Ukraine has shown remarkable success using American Stinger missiles to prevent Russian air supremacy, which many presumed to be inevitable. Indeed, as of the first week of November 2022, at least 117 manned Russian aircraft had been downed.
As a result, Russia has changed tactics from local air operations to firing ballistic missiles from outside Ukrainian airspace. During an early December 2022 attack, for example, Russia fired missiles at Ukrainian infrastructure from MiG-31s over Belarus and Tu-95 strategic bombers over Russia. The MiG-31 is also capable of delivering a new threat not used in previous conflicts, the Kh-47M2 Kinzhal hypersonic missile, which will challenge even the most advanced air defense systems. Ukraine has struggled under the sheer volume of Russian missiles being fired into the country. But some US systems are showing remarkable success. An article about a briefing Secretary of Defense Lloyd Austin recently provided states, “US-provided NASAMS air defense systems have had a 100% success rate in Ukraine intercepting Russian missiles.”

But the ADA branch is just beginning to reequip after a decade of downsizing. According to the Modern War Institute at West Point, between 2002 and 2014, the Active Component had almost completely divested vehicles from its short-range air defense inventory, having moved these vehicles to the National Guard, and the service had not ordered Stingers since 2005. In response to the Ukraine crisis of 2013–14, leaders introduced a new sense of urgency on behalf of the ADA branch, and the Army ordered a new mobile short-range air defense system. The Army has begun to field this system, which is based on the Stryker combat vehicle, and 144 vehicles are scheduled for delivery by 2025. This timeline leaves the United States with a steep learning curve leading up to a potential conflict with a peer or near-peer adversary that could challenge for air superiority and threaten the force with missiles or UAV threats. Russia has proven willing to fire at both military and nonmilitary targets indiscriminately. Given the current size and composition of ADA units and equipment, a great-power conflict would quickly tax ADA assets. The Army should thoroughly review the force composition of the ADA branch considering the capabilities Russia is currently demonstrating in Ukraine.

Ukraine is achieving a great deal of success in its ability to intercept and destroy most UAV attacks. But references to the Ukrainian success rate defending against missiles and UAVs are based on Ukrainian sources and are difficult to verify externally. To achieve maximum effectiveness, the United States should invest in frontline anti-UAV tools such as the DroneDefender, and additional tools such as the Mossberg 500 shotgun could be used for direct fire. (The US counterdrone company Dedrone claims its DroneDefender has the ability to scan the typical frequencies for off-the-shelf UAS technology and then notify a receiver. Once alerted, the carrier of the defender can jam a UAS via a direct-line-of-sight handheld
device, bringing the vehicle down for destruction or capture. The Mossberg 500 shotgun is already in the Army inventory. Typically used to breach doors, the shotgun could be used as a direct-fire weapon against drones, though the effect could be somewhat limited and would require live-fire training to perfect.) United States Central Command recently announced its intention to open a new testing location to develop defense capabilities against UAVs. This type of facility could pay huge dividends in a future conflict if resourced and implemented rapidly. Training such as a return to basics on cover, concealment, and personal and vehicular camouflage should be implemented for antidrone security. Additionally, ADA units should use lessons learned in Ukraine to recognize UAV radar signatures.

As the ADA branch continues to modernize, the United States should take steps to refamiliarize maneuver and support units with the protection and integration of maneuver short-range air defense weaponry and detachments. These vehicles will become high-value targets in conflict, and training should include maximizing their protection. Finally, ADA units need to be expanded or prepared to expand rapidly upon the outbreak of hostilities. As currently organized, ADA personnel and systems would quickly become overtasked as the threat will likely range across the operating area’s width and depth.

Protecting Civilians and Civilian Infrastructure

A family huddles together against the cold in a dark apartment. Under normal circumstances, the children would be doing homework around the kitchen table while mom or dad makes dinner. But explosions knocked out the power days ago, depriving the family of electricity and heat. Doctors and nurses down the street triage victims of yet more explosions in a dimly lit basement powered by a generator. The country is at war, but these patients are not soldiers—they are grandmothers and children. The setting is not World War II London, where unguided bombs destroyed entire neighborhoods indiscriminately; rather, the setting is 2022 Kyiv, where missiles and drones deliberately destroy entire neighborhoods and civilian power infrastructure. The intent is the same 82 years later: destroy the will to fight of the enemy civilian population and bomb it into submission.

In Ukraine, Russia has proven the United States and its allies may not be able to protect traditional civilian targets such as schools, hospitals, and apartment buildings when fighting an adversary that does not share the same values. This sort of targeting could cause issues for American forces fighting
in a friendly nation. Leaders would have to decide what, if any, resources to devote to protecting civilians and infrastructure; this protection would stretch ADA assets even further. Commanders would have to balance defending urban areas with ensuring the areas do not become legitimate military targets by using them for military operations.

Data for determining the true impact of the damage to Ukrainian public infrastructure will likely not be obtained until after the cessation of hostilities, if ever, but data publicly available as of September 2022 listed the cost of the damage at over $127 billion (US dollars). As of December 16, 2023, a more sobering statistic states $50 billion of that damage was to residential buildings, $4 billion to educational facilities, $11 billion to energy, and $2 billion to water and sanitation infrastructure. Notably, Russia’s deliberate targeting of energy infrastructure did not begin in earnest until after this data was compiled. In fact, on December 16, 2022, Russia launched 76 missiles at civilian infrastructure in four cities and destroyed nine energy facilities in Kharkiv alone. This example should also serve as a reminder postconflict reconstruction in friendly or occupied areas bears a significant financial impact. The precedent set by military drones striking civilian targets is concerning. As one defense expert related, “It is a parallel to the German use of V-1 missiles towards the end of World War II. A nation hoping a new technology will make up for its losses on the battlefield, by terrorizing the home-front.”

Protecting Supply Lines and Military Infrastructure

At 5:30 a.m., a night watchman in Kalininets, Russia, a town in the Moscow oblast, absent-mindedly does his rounds at a warehouse supporting the Russian military. The watchman is nearly 500 kilometers (310 miles) from the border of Ukraine, and the conflict there seems little more than fodder for debates between the talking heads on the evening news. The watchman is well outside the range of Ukrainian artillery, and because the Russian Air Force has total control of the sky, he is not worried. Suddenly, artillery fire rings out, and two drones targeting his facility fall from the sky. Small and versatile UASs have just demonstrated an expanding range and the ability to evade radar or to be launched from within territory otherwise considered safe.

On a future battlefield, protecting logistical supply chains from attacks from the ground, air, and sea will be exceptionally challenging but vitally important. American sustainment forces must recognize they are likely to be under constant surveillance by the enemy and will require survivability
techniques to preserve the force. The United States has not faced the prospect of a supply line that is contested across all domains since World War II. Thus, logistics leaders and planners need to develop contingency plans now to be prepared for a contested logistics environment, especially across the vast Pacific domain.

Roads and bridges are a subset of critical capabilities, assets, and activities that will be exceptionally important for ground lines of communication. Roads and bridges, which are legitimate targets, have always been vulnerable. Russia has consistently targeted infrastructure in Ukraine, and successful attacks have succeeded in slowing the momentum of offensive forces, limiting humanitarian assistance and evacuation and disrupting logistical resupply. According to the Ukravtodor, the state road department of Ukraine, between the February 24 start of the invasion and April 3, an astounding 23,000 kilometers of roadway and 273 bridges had been destroyed in just 38 days of fighting. 39 Many of these bridges and roads were destroyed by the Ukrainians themselves as they looked to blunt the initial shock of the Russian invasion. By September, the number of destroyed bridges had risen to 320, with only 53 temporarily rebuilt. 40

Presumably, bridges will be targeted at the outset of and throughout any LSCO in the future. Whether these bridges are destroyed by a friendly force trading space for time, hoping for reinforcement, or they are destroyed by an enemy shock-and-awe campaign, they would need to be replaced for counterattacks. Commanders will face this challenge on many potential battlefields.

Rapid military bridging will be essential for movement and maneuver, the protection of forces as they trade space for time, and rear-area logistics. But these temporary bridges may be a limited asset, and reasonable estimates assume a great deal of bridging material may be needed rapidly. The US Army’s bridging engineers are limited in number. In fact, a large portion of bridging and road-repair engineers reside within the Army Reserve and Army National Guard. These forces might require a long premobilization period before they arrive in a combat theater. Additionally, large gap crossings, required on many of the main rivers of the world, would necessitate multiple bridge companies’ worth of equipment and would require engineers to be exposed for extremely long periods. Furthermore, these units have a unique equipment footprint and operate in generally stationary positions while conducting their operations; thus, the enemy could easily pretarget the units’ locations. Such operational necessities make these units vulnerable to drone attacks and surveillance,
like the logistical nodes referenced previously. This vulnerability poses a serious risk to a very limited set of human and equipment assets.

The Army has taken action to modernize its dry-gap bridging. But serious studies should be conducted to determine whether enough bridging would be available within the Army inventory based on a Ukraine-like scenario. Additionally, the Army should review engineer distribution and numbers among the Active Component, the National Guard, and the Reserve Components to ensure the correct mix of engineering capabilities are available for rapid power projection. Bridging and horizontal construction engineer commanders and their soldiers should be prepared to operate in an environment that is contested by surveillance and vulnerable to fires. These units must take action to protect themselves effectively in a threat environment.

With the threat of drones and accurate artillery, the role of dirt in combat has proven to have staying power. Russian forces in eastern Ukraine have revisited the time-honored tradition of trench warfare to protect supply lines and critical road junctures every five miles along the highways leading to Crimea.41 Defense in depth could be key in future conflict as smaller forces look to defend against larger attackers. Built rapidly to protect against frontline breakthrough, the complex survivability positions and trench lines the Russians constructed in Ukraine could be formidable to breach. These fortifications would likely be very effective in protecting a force in direct contact.

But engineers and maneuver forces must take special care to provide overhead cover for forces that are defending the trench line. Small, kamikaze-type drones like the US-made Switchblade could simply be flown over the trench, negating the protection of earthen walls. Likewise, individual, crew-served, and vehicle-fighting positions that will be manned for any length of time must also take overhead cover into consideration.

Additionally, the flaws in Russian defenses highlight the need to have a comprehensive approach to defense that incorporates natural-terrain advantages. Observers note of Russian defensive positions, “Instead of connecting communication lines across the battlefield, the positions appear more like ‘elaborate roadblocks’ that don’t stray too far from the roads or into the fields.”42 Such configurations would potentially allow for a bypass. A rapidly moving force capable of offroad movement would be able to exploit gaps in the line and either attack the positions from the rear
or besiege the occupants. Such flaws highlight the importance of thorough coverage in an age of easily accessible aerial surveillance.

With the wide array of emerging and evolving threats to the force, the mastery of traditional methods of individual protection will be critical. Personal, vehicle, and equipment camouflage will become important once again. Especially critical will be the dispersal of individual soldiers and vehicles. Formations of soldiers will likely make individuals feel safer, but dispersed soldiers will present a less enticing target for enemy indirect fire. Soldiers must be trained on how to be mutually supportive with fires when outside arm’s reach of battle buddies. This dispersive mindset is key for mitigating the risk of precision strikes.

**Conclusion**

The ongoing war in Ukraine has ushered in a new method of warfare in which the strongest belligerent may not necessarily be the best suited for victory. Advances in various technologies and their proliferation are creating a need for protective warfighting functions to evolve. Army Futures Command has presented the force with recommendations for improvement, and the Russia-Ukraine War has daily demonstrated the need for these improvements. The United States will be challenged in the cyber and electronic domains with the ever-present UAV and missile threats as well as with requirements to establish protective positions and secure critical capabilities, assets, and activities.

This chapter has attempted to outline some examples of the need to refocus learning and training for soldiers and their leaders on these tasks through the lens of the successes and failures of Russian and Ukrainian forces in the ongoing conflict. The recommendations were made based on open-source information from a rapidly evolving event. Although the US Army remains the world’s preeminent Landpower force, it should begin to prepare to face threats much different than those that have manifested over the last 20 years.

The United States must be proactive and vigilant against cyberwarfare operations that target both the military and civilians. The importance of the development of leaders and soldiers who can operate in an analog world with only a map, compass, and commander’s intent in the event of communications or satellite degradation cannot be understated. Equipping soldiers with technology that combats small UASs and developing the ADA skill set to detect and destroy even the smallest threats will
be existential survival requirements. Additionally, plans for balancing the safeguarding of civilians and civilian infrastructure with the safeguarding of military personnel and equipment while operating with a small, overtasked, and modernizing ADA force should be developed now. When in combat, American forces should prioritize the protection of critical military bridging and horizontal-construction assets and personnel in a complex, contested space where soldiers are often required to operate in the open and in a deliberate manner. Furthermore, a complete examination of the composition and size of engineer forces across the three components and the number of bridging assets in the inventory is critical. Enabling forces to train in protective position construction while concentrating on the speed of emplacement and overhead cover is also important. Critically, soldiers must train on having a more dispersed and tactical footprint in a potential theater of operations.

War is a constantly evolving endeavor in which the most adaptable and prepared have the upper hand. As Italian Air Marshal Giulio Douhet famously said upon the dawn of airpower, “Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.” Although predicting the exact nature of the next war is difficult, one can be confident another war will present itself. With the insights from the Russia-Ukraine War, the United States stands at a strategic inflection point the military must rise to the challenge of adapting to modern warfare. Today’s military leaders must prepare to protect tomorrow’s force so it can fight outnumbered and win, as the valiant Ukrainians have done in the years since Russia’s full-scale invasion began.
Endnotes


2. US Army Futures Command (AFC), Army Futures Command Concept for Protection 2028, AFC Pamphlet 71-20-7 (Austin: AFC, 2021), v.

3. AFC, Concept for Protection, 7.


12. Corera, “Cyber Team’s Defence.”

13. Corera, “Cyber Team’s Defence.”


15. AFC, Concept for Protection, 7.


19. Losey, “SpaceX.”


34. Kyiv School of Economics Institute, Assessment of Damages in Ukraine Due to Russia’s Military Aggression as of September 1, 2022 (Kyiv: Kyiv School of Economics, 2022).


43. AFC, *Concept for Protection*.

Military Medical Adaptation in the Russia-Ukraine War

Dennis M. Sarmiento

Keywords: military medicine, battlefield adaptation, trauma, stabilization, portable hospital

“All war presupposes human weakness and seeks to exploit it.”¹ Often cited in reference to the physical and psychological impacts of war, this Carl von Clausewitz quote describes the unforgiving friction that can make the simplest thing difficult, hasten individual mortality, and erode collective effectiveness. Since the Russian incursion on February 24, 2022, Ukrainian armed forces and civilians alike have fought through the friction Clausewitz describes. Demonstrating resolve and resilience at echelon, Ukrainian military and civilian medical systems have adapted to save lives and, at scale, to sustain combat power. In accordance with observations from over two centuries of armed conflict, military medicine continues to enable military effectiveness.²

Lessons observed one year into the Russia-Ukraine War have validated the assertion military medicine enables military effectiveness. Historical accounts and open sources have exposed a stark contrast between Russian failure and documented Ukrainian success in large-scale combat operations (LSCOs). Comparing Russian and Ukrainian approaches to organizing military medical forces, managing medical systems, providing training, administering treatment, and evacuating casualties reveals significant differences.³ Russia and Ukraine’s differences in medical support did not emerge overnight, nor did Ukraine’s advantage in capability and capacity manifest without assistance. Conserving combat power, sustaining unit cohesion, and contributing to troop morale, Ukrainian battlefield adaptation in medical
support has conferred a relative advantage in the transition from hybrid warfare to LSCO.

In the context of organizing capability, managing capacity, and training at scale, Ukraine’s medical forces have demonstrated effective adaptation can offset the LSCO-associated friction that frustrates good medicine in bad places. Thus, this chapter intends to describe Ukrainian military medical efforts to reform, transform, and adapt at echelon; distill LSCO lessons learned within the medical warfighting functions; and reconcile Ukrainian adaptation with ongoing US Army medical efforts to adapt, innovate, and modernize.

Reform

Understanding the conceptual underpinnings of the Ukrainian medical structure and policy can help to characterize and contextualize challenges to transformation and opportunities for adaptation. The Ukrainian medical structure, function, and doctrine, which were Soviet in origin, have remained relatively unchanged from the Semashko model since 1918. With much of the healthcare infrastructure destroyed at the end of World War I, Nikolai Semashko, who was the people’s commissioner of health, introduced universal Soviet healthcare. This concept declared state responsibility for healthcare coverage, high-quality care, and disease prevention. Moscow strictly controlled the civilian and nascent military health systems in Ukraine. Features of these systems included the highly centralized planning of resources and personnel and the denial of autonomy for regional governments. During World War II, Ukraine lost much of its medical capability and capacity due to battle damage to the country’s infrastructure. Soviet leaders intended the post–World War II rebuilding and expansion of the healthcare systems to reestablish universal health care.

When Ukraine gained its independence from the Soviet Union in 1991, economic restructuring and social instability led to resource constraints that significantly limited healthcare capacity. In the early 2000s, under a reorganized Ministry of Health of Ukraine, socialized health services expanded to meet recently ratified constitutional requirements to provide healthcare to all permanent residents in Ukraine. Decentralized management expanded access, and the Ministry of Health began requiring authorities, resourcing, and standardization within parallel private sector and public health systems at the regional (oblast) level to meet clinical quality standards. Intended to identify and address community needs more effectively, decentralization can enable more efficient and effective delivery of local
healthcare services. Notably, the Semashko influence persisted in the parallel private sector and public health systems, which focused on primary care, prevention, and health surveillance nested within each oblast.

The Military Medical System

The parallel system within the Ministry of Defense of Ukraine reflected both centralized resourcing and decentralized execution. Additionally, military medical efforts to observe, apply, and integrate best practices from NATO started shortly after the 1991 disintegration of the Soviet Union, and Ukraine made deliberate efforts to assess the organizational structure and management of military medical support. Before 2017, the Ukrainian healthcare system remained essentially a Russian facsimile.

A 2016 presidential directive impelled reform, and strategic defense bulletins documented the persistent gaps in defense capability and capacity—especially, the gaps that had been further exposed during hybrid conflict since 2014. Gap-driven efforts to transform structure and process highlighted challenges with standardization, sustainment, command and control (C2), and the “efficiency of the medical support system of the defense forces.” After years of hybrid warfare with Russia, Ukraine reformed its medical warfighting functions. Driven by strategic defense bulletins and informed by NATO standards, these reforms have enhanced military effectiveness.

As a road map for overarching defense reform, medical requirements describe the regulation and establishment of a medical support system that is based on Euro-Atlantic experience. Medical requirements include the introduction of effective and qualified medical care, medical evacuation, medical rehabilitation and recovery of military personnel, and an integrated medical-logistics support system that can support all components of the armed forces. Furthermore, reform must develop in accordance with NATO standards; contribute to interoperable medical capabilities during joint operations with NATO; and nest within the capabilities of the national healthcare system in the provision of medical assistance, treatment, and rehabilitation to the injured within a common medical framework.

In the context of current Ukrainian military medical operations—especially in Kyiv and eastern Ukraine—early efforts to improve region-to-region interoperability continue.
The 2016 strategic defense bulletin described requirements to establish medical-subspecialty depth in a Semashko system that historically focused on supporting primary care at scale. Ukraine has a medical rehabilitation system, but it lacks capacity at scale. The system, which is cognizant of the sequelae of combat trauma, supports physical, psychological, and social recovery. However, the system lacks sufficient resources. Likewise, Ukraine has a training and retraining system for Armed Forces of Ukraine medical personnel, but beyond the Ukrainian Military Medical Academy in Kyiv, the system has little capacity to support requirements that are unique to the armed forces or the anticipated volume of combat-related injuries.

In the last 20 years, Ukraine’s efforts to reform the civilian and military health system have set the conditions for transformation to provide universal health care, as required by national law; to develop the care-delivery quality enabled by standardization across oblasts; and to improve access to high-quality care. Since 2014, Ukraine has accelerated reforms, especially addressing corruption and inefficiencies, driven in part by the hybrid conflict in the Donets Basin since the Russian annexation of Crimea. Ukrainian law and regulations that aimed to increase transparency and accountability supported accelerated reform efforts, especially in the procurement of medical equipment and pharmaceuticals. Another key reform was the 2017 introduction of a new financing system for health care that has helped to increase the level of healthcare funding and to shift focus to prevention and primary health care. Efforts led by the Ministry of Health established new standards for medical education and training, including paramedic training, and the accreditation of healthcare organizations, including a system for monitoring and evaluating quality. Lastly, Ukrainian partnerships with international organizations and medical institutions, including the World Health Organization, the US Agency for International Development, the EU, and NATO enable ongoing reform efforts.

In the context of reform efforts since 2000, the Ukrainian military medical system has undergone a significant transformation due to the conflict with Russia, which highlighted the urgent need for modernization and development. The Ministry of Defense and the Ministry of Health have made considerable efforts to reform the organization, system, and partnerships that are critical to rapid development and enduring changes in military medicine. The Armed Forces of Ukraine’s partnerships with the United States, manifested in the Army National Guard’s State Partnership Program and Joint Multinational Training Group-Ukraine, as well as with
NATO have only accelerated the transformation of doctrine, organization, training, and infrastructure.

Initially drafted in 2015 and revised in 2021, the Military Medical Doctrine of Ukraine (MMD) is “one of the main documents of strategic health planning in the State and is a system of officially accepted views on the state public health and army medical support” in “preparation” for and “during” conflict.\(^\text{17}\) The draft MMD notes, “Medical service of the Armed Forces of Ukraine and civil health care operate in a single medical space through the unified state legislation regarding health care, compliance with national health standards, clinical protocols and military medical standards of care delivery.”\(^\text{18}\) The doctrine dictates organizing principles, organizational structures and functions, relationships with the civilian sector, readiness requirements, and expectations for development. In doing so, the MMD also provides a framework that promotes cooperation, collaboration, and adaptation.

In describing the scope, scale, roles, and authorities up front, the MMD establishes a platform for standardization at scale as well as developing relationships among military and civilian health-care institutions to enable readiness and promote unity of effort in “health protection of individuals, society and the state in case of internal and external military threats, involving the use of force or threat of force and the ability to resist.”\(^\text{19}\) Of note, the MMD documents uniquely military aspects that inform the organization of units, capabilities, and support during peacetime, humanitarian response operations, disasters, and wartime. Concepts in the MMD mirror US Army doctrine contained in Field Manual 4-02, *Army Health System*. The two policy documents contain many of the same medical warfighting functions, including medical command and control (C2), the four health service support functions (treatment, hospitalization, evacuation, and logistics), and the five force health protection functions (laboratory services, veterinary services, combat and operational stress control, preventive medicine services, and dental services).

A persistent focus on prehospital care and treatment, evacuation, prevention and protection, and logistics has enabled an adaptable and capable system of Armed Forces of Ukraine medical support. Coordination between military and civilian personnel provides area-based medical support. Healthcare facilities and health services of the Armed Forces of Ukraine, other state security institutions, and civil health systems enjoy tax and other benefits provided by the law.

Implementing the MMD makes creating common national medical areas and increasing the efficiency of the military medical support system
in peacetime possible. During wartime, the MMD ensures public access to health care, supports the medical component of combat readiness, enables logistical solutions, and aids the mobilization needs of the Armed Forces of Ukraine Medical Service and other security structures. The provisions of the MMD may be revised and supplemented when creating and implementing state policy in the field of national security and defense. During hostilities, the following principles guide the Medical Service.

- develop a common understanding of the emergence and course of pathological processes in the wounded and sick
- enable common views on the treatment and prevention of complications and staged treatment with evacuation as prescribed
- standardize timeliness, continuity, sequencing, and strict regulation of treatment and evacuation measures at the stage of medical evacuation
- maintain a single, regulated, clear, concise, and informative medical documentation system
- enable legal and physical protection of medical-service personnel
- be prepared to support compulsory provision of medical assistance to civilians

One of the two key organizational developments in Ukraine’s military medical system was the introduction of a centralized military medical directorate. Established in 2015 in accordance with emerging Ukrainian military medical doctrine, the medical command is responsible for coordinating medical support for the Armed Forces of Ukraine. The centralized medical command has improved the efficiency and effectiveness of Ukraine’s military healthcare system, allowing for better coordination and management of medical resources.

The other key organizational development was the military-wide reform of the hierarchical relationships and staffing among officers and enlisted personnel, which extended benefits to military medical forces. The middle levels lacked leadership skills, due to the Ukrainian military’s Soviet roots, and this gap in expertise and initiative likely contributed to the military’s performance in Crimea in 2014. In 2022, Ukraine revised the Concept of Developing a Professional Sergeant Corps the Armed Forces
of Ukraine, replacing a 2016 edition of the policy, in a reform intended to advance professional training, certification, and NATO interoperability.\textsuperscript{22}

To ensure the Armed Forces of Ukraine’s Medical Service and civilian medical workforces are well trained and capable, Ukraine has invested in training programs for medical personnel, including doctors; nurses; medics; and, in the last eight years, paramedics. Training occurred through global health engagement and security-cooperation investments in subject-matter-expert exchanges at the tactical level. At the operational level, Ukraine has also collaborated with international partners to improve its military medical system. Since 2016, multiple comprehensive assistance packages have facilitated continued NATO support to Ukraine, including efforts to improve medical-rehabilitation care and services through joint training and subject-matter-expert exchanges. Similarly, the 2015 establishment of the Joint Multinational Training Group-Ukraine enabled enduring training support, and since 2019, US-Ukrainian collaboration through United States European Command–supported military medical training and materiel (capital and Class VII) investments has focused on improving tactical combat casualty care (TC3), trauma surgery, emergency medicine, and rehabilitative care.\textsuperscript{23}

Another significant development that has impacted both civilian and military medical infrastructure has been the expansion of medical facilities, including the construction of new hospitals and clinics, and the integration of newer medical technologies. In particular, the Ukrainian military has worked to renovate and modernize facilities, such as the Main Military Clinical Hospital in Kyiv, which the Department of Defense (DoD) helped to renovate, equip with modern equipment, and provide with increased capacity to treat combat injuries.\textsuperscript{24} Telemedicine and electronic medical records have improved access to medical data.\textsuperscript{25} Enabled by standardization efforts in accordance with nascent military medical doctrine, the expansion of medical facilities has enabled more efficient medical support in wartime among the Medical Service, other institutions in the state security sector, and civilian healthcare institutions. The benefits have been realized through the integration of Medical Service capability with civilian medical capacity.\textsuperscript{26}

Overall, the transformation of Ukraine’s military medical system is a complex and ongoing process that focuses on improving the efficiency and effectiveness of medical support for the Armed Forces of Ukraine. Although Ukraine has made progress in doctrine development, infrastructure, and training, many challenges remain for continued modernization and infrastructure investments to offset capabilities and capacity that are unavailable due to battle damage. In response to these challenges, which have
been violently imposed since February 2022, Ukrainian medical forces have exploited the opportunities made possible by reform and transformation efforts.

Adaptation to War

“We are currently doing our best in a difficult situation, preserving humanity and valuing every human life,” stated Dr. Oleksandr Sokolov, a vascular surgeon from Dnipro, in October 2022. Sokolov does not plan on leaving his location anytime soon: He emphasized, “I feel that I am needed right here, today.” Sokolov’s comments epitomize the spirit of medical professionals who are working through clinical and tactical problems throughout Ukraine. To paraphrase Williamson Murray in *Military Adaptation in War with Fear of Change*, effective adaptation answers the right problem in the setting of friction-constrained resources and time. Data on casualties, battle injuries, and disease nonbattle injuries are among the best measures of effectiveness in assessing the objective benefit of adaptation efforts, but a paucity of data exists, primarily due to operational security requirements. Scraping open sources and accessing recent conference presentations have yielded some data.

Many Ukrainian military medical forces have adapted to the challenges of operating in an LSCO environment, including facing artillery barrages, strikes on critical infrastructure, and difficult weather (especially in the winter); assisting civilians, including migrants; and supporting such a large operation. Ukraine’s Medical Forces Command has promoted and promulgated adaptive solutions, unifying the efforts of the Ministry of Health, the medical facilities of the Armed Forces of Ukraine, other private and public sector medical facilities, and the National Academy of Medical Sciences of Ukraine. Reviewing adaptations in competition, crisis, and conflict can help to isolate relevant findings and lessons learned for potential generalizability.

In competition, improvements in organizing echelons of care, from point of injury (POI) to definitive care and training at scale, have contributed to military effectiveness. Between 2014 and 2022, efforts to expand access to medical training and to exercise available treatment and evacuation capabilities underwent objective study. Specifically, assessments of the Ministry of Defense’s alignment with NATO standards spanning 2014 to 2016 reviewed qualitative and quantitative morbidity and mortality data from combat-related activity. These assessments concluded although the evacuation chain demonstrated improvement, hybrid-warfare conditions that precluded timely evacuation revealed gaps in prolonged field care (PFC) and
TC3. Since 2018, collaboration with United States European Command, US Army Europe (now known as US Army Europe and Africa), Regional Health Command Europe (now known as Medical Readiness Command, Europe), the State Partnership Program of the California Army National Guard, and the Committee of Chiefs of Military Medical Services in NATO have supported TC3 and PFC training and conducted assessments on Ukraine's Role 1 capability.

Training on hemorrhage control extended to the Territorial Defense Forces and the general Ukrainian civilian population, rather than being limited to military medics and paramedics. The STOP THE BLEED campaign, administered by the American College of Surgeons Committee on Trauma, has provided online and in-person training to citizens on the basics of stopping bleeding. The availability of expendable Class VIII medical supplies—especially bandages, dressings, tape, and tourniquets—for training improves the quality of TC3 and PFC training. Before the current distribution of multinational, nonlethal aid packages to Ukraine, US Army Europe and Africa provided medical supplies and training through consistent global health engagement. Of note, with the advent of additive manufacturing and increased access to three-dimensional printing, homegrown and international efforts have generated thousands of tourniquets for Ukraine. When aggregated, these capabilities benefit collective survival at scale.

Throughout competition, hybrid warfare, and conflict, the increasing volume of survivable injuries has required more efficient management within the NATO four-tier (Role 1 through Role 4) healthcare system. This management has translated into the necessary integration of Ukraine’s Role 2 (first-level hospital) capability and capacity into civilian medical infrastructure within Ukraine’s interior lines and near front lines and POIs. Typical Role 2 employment would entail mobilization and emplacement of a mobile military hospital, but as US and NATO experience has shown, Role 2 employment is a significant logistical operation. Mobile Role 2 capability, likely staffed with medical professionals who work full time in civilian hospitals, has a physically large footprint that can take at least 10 days to collapse, move, and reestablish. Moving resuscitative and surgical capability and capacity forward enables more effective damage control at scale and requires Role 3 and 4 hospitals to be ready to receive a higher volume of surgical patients from Role 1 and 2 stabilization sites. According to surgical literature, Ukraine experienced reduced morbidity and mortality for patients with extremity gunshot wounds following the integration of Role 2 forward and the consolidation of Roles 3 and 4 at the Main Military Clinical Hospital in Kyiv. Thus far in the second year of the Russia-Ukraine War,
Ukraine’s adaptation of available Role 2–4 capabilities has demonstrated flexibility in balancing economy of effort and effectiveness.

Improvements in the evacuation chain and local protection efforts have contributed to the survivability of patients and the four-tier healthcare system, respectively. Absent robust air medical evacuation capability, the so-called “golden hour” standard implemented during United States Central Command operations was not applicable to cover all Ukrainian battlefields. Ground ambulances, tracked and wheeled, represent the primary means of moving patients from Role 1 through Role 4, but serviceable quantities did not exist to provide support at scale. Alternatively, any wheeled, tracked, or rail-bound means of conveyance with appropriate modifications can become a casualty-evacuation platform. Ukraine has modified wheeled and rail-bound modes of travel to support safe patient movement. Open-source descriptions include a small fleet of Spanish taxis that traveled 2,000 miles to assist in Ukraine; paramedic buses stocked with monitors, ventilators, and oxygen tanks; and the Doctors without Borders medical train moving over 2,000 patients since the start of the war.35

The protection of medical capability and capacity within the four-tier system also manifested out of the necessity for survival. As in previous LSCO environments, fortifying existing civilian and military medical infrastructure with sandbags, scrap metal, plywood, and any available barrier material improved survivability, especially in urban settings. Developing redundancy for electric-power generation, heat, running water, and sewage improved reliability and sanitary conditions for stabilization sites. Relocating patients from above to below ground was the norm in areas that had been hit hard by indirect fire, and any stable urban structure, including but not limited to churches, schools, gyms, dormitories, and hotels, could function as a stabilization site or Role 1 site with some patient-holding capacity.36 Civilian hospital staff, military medical personnel, hospitalists, paramedics, and volunteers (trained and untrained) contributed to efforts to harden and conceal medical sites, including by removing the Red Cross and Red Crescent insignia from structures, signs, and uniforms. Given Russian and Wagner Group targeting tactics, moving patients in vehicles to stabilization sites and Role 1 and 2 facilities without conspicuous Red Cross and Red Crescent markings may have been protective.37

In conflict, improvements in clinical approach enhanced access to damage-control surgery, critical care medicine, and treatments at Role 2 and above. Improvements in clinical approach enhanced access and reduced morbidity and mortality for polytrauma, but this benefit did not present until
two to three months into the conflict as injury patterns and care-consumption data began to pinpoint the areas of greatest need. General observations of actions on the ground highlighted the benefits of damage-control surgery close to the POI and deferring definitive care to higher echelons of care; early use of whole blood in resuscitation and damage control, when possible; and aggressive approaches to prevent hypothermia, acidosis, and coagulopathy.

In Ukraine, most practicing clinicians and collaborators from academic medicine united to face the emergency the Russian incursion caused. Many civil hospitals with previously limited experience in trauma and military medicine became frontline hospitals. To share their expertise and offer practical help, many physicians who worked in academic hospitals far from the war zone shifted focus and even changed work sites to civil and military frontline hospitals. To close the gap in military medical knowledge and extend the reach of clinical expertise, education via YouTube, social media, and academic-focused platforms complemented expert teleconsultation by virtual audiovisual means. At the very beginning of March, among many international medical societies, one of the first to allow access to online webinars and other educational resources for Ukrainian intensivists was the European Society of Intensive Care Medicine.38

As the war continues, more observations will highlight optimal organization, efficient management, effective field craft, and best clinical practices. But this chapter’s intent is to identify early lessons from Ukraine’s LSCO experience to inform the US military’s efforts to adapt. The following five lessons do not represent an exhaustive list of recommended activities and investments, but given the potential benefit generalizable to multiple theaters, the top five lessons may have the highest yield. Of note, these top five lessons are consistent with the concepts and content related to medical warfighting functions presented in Army Futures Command Concept for Medical 2028.

**Lessons Learned**

**Lesson 1: Large-Scale Combat Operations Require Greater Medical Capability and Capacity Forward**

Treatment capability and hospital holding capacity enable emergency and critical care resuscitation at or near the POI, en route during casualty evacuation, or in a traditional Role 1 facility. Forward-distributed capability and capacity, which reduce morbidity and mortality, can hasten return to duty.
Forward damage-control capability improves outcomes for complex injuries because it bridges Role 1 and 2 capability and enhances Role 2 capacity.

World War II and recent operations offer analogous examples. To meet a discrete need that had been identified in the US Army Forces in the Far East in early 1942, then-Colonel Percy J. Carroll, the chief surgeon in that area of operation, experimented with surgical capability and field hospitals’ capacity to address immediate medical and surgical needs when the established evacuation chain contained a gap. Carroll’s solution was a light, highly portable, self-contained medical unit that could act as a small station hospital that could be deployed into combat with the troops. A US Army Medical Corps captain or major commanded these portable hospitals, which included 25 beds and were staffed by four medical officers, including three general surgeons and one general surgeon/anesthetist, and 25 enlisted men, including two surgical technicians and 11 medical technicians. The key difference between Carroll’s portable hospital and its predecessors was all equipment, medical and surgical supplies, and rations were limited to that which 29 men could transport. After rapid approval by the surgeon general of the United States, one portable surgical hospital was allocated per infantry regiment and three per division. As a demonstration of the hospitals’ utility, portable employment occurred throughout the theater.

More recently, United States Special Operations Command’s Golden Hour Offset Surgical Treatment Teams’ development arose from a similarly discrete need: bridging an identified gap in the evacuation chain with a capable but light, forward surgical capability. Due to the large footprint of the standard Army 20-person forward surgical team, maintaining a golden hour for United States Special Operations Command units during Operation Freedom’s Sentinel required adaptations to forward-surgical-team training, configuration, personnel, equipment, and employment. In response, the deployed forward surgical team experimented with Golden Hour Offset Surgical Treatment Teams in two configurations: a light, six-person team and a heavy, seven-person team with the capability to perform two surgeries simultaneously; perform five surgeries before resupply; fit all equipment, including power, on one or two utility vehicles; and fit all personnel and equipment into a single Boeing CH-47 Chinook.

Regardless of the force design analyzed, the process of identifying a discrete need, generating LSCO solutions, and validating appropriate scale through experimentation should inform future force design at the division echelon and above.
Lesson 2: Specific Medical Training at Scale Improves Survival in Austere Large-Scale Combat Operations

Consistent with US experience in two decades of United States Central Command operations, TC3, PFC, and early use of whole blood improved survival for Ukrainian casualties. Training and equipping in support of TC3 and PFC widely distribute frontline, prehospital benefits, especially for hemorrhage control and hypothermia. At Roles 2 and 3, Ukraine’s focus on damage-control surgery, early massive transfusion, and aggressive warming has the demonstrated benefit of stabilizing patients for transport to Role 4 facilities.

With the advancements in hospital care and evacuation techniques as well as the development of the Joint Trauma System, the US military and its coalition partners now have the best definitive-care and evacuation capabilities in history for managing combat trauma. The validated, ongoing role of TC3 is to ensure casualties get to the hospital alive so they can benefit from definitive care.

Tactical combat casualty care (TC3) has helped combat units achieve unprecedented casualty survival rates when combat units train all combatant personnel in TC3 techniques to optimize POI care. By extension, Ukraine’s experience thus far further validates the benefit at scale. If integrated into common-task training for all military occupational specialties, TC3 may help to offset LSCO casualty projections.

Enhanced telemedicine sets or kits with secure connectivity augment PFC with specialty and subspecialty consultation, and investments in standardized training of operators and the fielding of portable, durable equipment better prepare soldiers for the volume and complexity of casualties in LSCO.

Lesson 3: Casualty Evacuation in Large-Scale Combat Operations Requires Adaptation of Available Transport

Militaries can move casualties from POI to the closest minimally capable medical treatment facility by modifying cars, vans, buses, helicopters, and train cars to transport casualties. When possible and appropriate in the setting of mass casualties, no platform should retrograde without casualties. Casualty evacuation may require the adaptation of any available means of transport, and investments in developing and training field craft
better prepare tactical formations. Notably, manned and autonomous casualty-evacuation platforms have been listed on the geographic combatant commands’ Integrated Priority Lists. When developed, casualty-evacuation platforms can serve multiple sustainment purposes beyond evacuation and Class VIII distribution.

Lesson 4: Protection of Medical Capability and Capacity Must Be an LSCO Priority

As stated earlier, the Red Cross and Red Crescent are soft targets. Fixed medical treatment facilities and medical infrastructure are vulnerable to kinetic and nonkinetic attacks. Efficient and deliberate efforts to conceal, harden, mobilize, and disperse Role 1 and 2 facilities preserve forward capability and capacity.

Lesson 5: LSCO-Associated Medical Care Requires Role 4 Specialty Care in Depth

Reinforcing US lessons learned from the United States Central Command area of responsibility and in accordance with Ukrainian experiences early in the Russia-Ukraine War, efforts to develop and enhance additional Role 4 capacity and capability remain a high priority. The growing volume of injury (complex blast, multi-organ, amputation, burn, and psychological injuries) and illness requires evidence-based specialty care and the resourcing of primary and specialized-care pathways for optimal outcomes and a ready medical force at scale.

Given the previous eight years of hybrid warfare and, most recently, one year of LSCO, Ukraine started to develop requirements for greater Role 4 care and care pathways, including physical medicine and rehabilitation, behavioral health, and other high-demand specialties, to support long-term recovery from combat-related injuries. As early as March 2022, Ukraine's military medical points of contact formally requested support to establish a rehabilitative medical center of excellence in Kyiv. Robust support and coordinated preparations in support of Ukraine remain necessary to deter and defeat Russian aggression.
Way Ahead

Ukraine’s efforts to reform its healthcare system, transform military medicine, and adapt to LSCO conditions have enjoyed relative success. Distilling open-source content, this chapter has described some of the context underpinning reform, the dynamics that have enabled transformation, and the conditions that have required battlefield adaptation. Reviewing Ukraine’s adaptations in greater detail informed the top five lessons and underscored the critical importance of military medicine in this conflict. In a recent *Foreign Policy* article titled “Ukraine’s Military Medicine Is a Critical Advantage,” Tanisha Fazal concludes, “In a war where numbers matter, the side that has better medicine holds a distinct advantage.”

One year into the Russia-Ukraine War, Ukraine’s experience has only affirmed military medicine conserves the fighting strength, reassures the will to fight, and enables military effectiveness. The confluence of Ukrainian reform and transformation collided with the Ukraine crisis of 2013–14. From a military medical standpoint, Ukrainian preparation in the form of doctrine development, changes in structure, and investments in training met opportunity and set conditions favorable to accelerated adaptation. As the United States faces the current set of pacing challenges and threats, DoD preparation and, specifically, Army preparation for a LSCO fight are at a critical inflection point in balancing current readiness, future force structure, and ongoing modernization efforts. Thus far, Ukraine’s experience has both demonstrated resolve and resilience at echelon and, in the context of organizing capability, managing capacity, and training at scale, enabled good medicine in dangerous places. As such, Ukrainian battlefield adaptation can and should inform Army Medicine efforts to transform, advance, and adapt in preparation for LSCO.
Endnotes

3. Fazal, “Ukraine’s Military Medicine.”
7. “Ukraine: Summary.”
8. “Ukraine: Summary.”
25. Ya, “Medical Support.”


30. Ostashchenko, “Current Situation.”


34. Kazmirchuk et al., “Ukraine’s experience,” 2860.


38. “ESICM Mobilises Online Resources to Support Ukraine’s ICU Staff as They Adapt to Conflict,” European Society of Intensive Care Medicine (website), May 6, 2022, https://www.esicm.org/esicm-mobilises-online-resources-to-support-ukraine-icu-staff-as-they-adapt-to-conflict/.


41. Benavides et al., “Golden Hour.”

42. Fazal, “Ukraine’s Military Medicine.”
Russia-Ukraine War Lessons for Multidomain Operations

Steven L. Chadwick

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Following its lackluster performance in the 2008 conflict in South Ossetia, the Russian military undertook landmark reforms to modernize and professionalize its armed forces to confront the challenges of modern warfare. Given the perceived transformation of the Russian military and its surprising success in the Ukraine crisis of 2013–14, most analysts predicted a rapid victory for Russian forces when they invaded Ukraine in February 2022. But the Russian military has failed to achieve success in Ukraine, despite its efforts to modernize its forces, and the conflict has devolved into a war of attrition.

The Russia-Ukraine War provides the US Army an opportunity to reassess the new doctrinal concept of multidomain operations (MDOs) and the service’s supporting modernization efforts. Similar to the inflection point following the 1973 Yom Kippur War, the Army has an opportunity to validate the doctrine of MDOs by studying Russian and Ukrainian operations and adapting Russia and Ukraine’s competing doctrines in combat.

This assessment begins with a review of Russian doctrine and force design and how they failed to prepare the Russian military for large-scale combat operations (LSCO) in Ukraine. Furthermore, this chapter analyzes Russia’s application of its doctrine during the initial phase of the invasion of Ukraine in February 2022 and why Russia’s efforts failed to produce operational and tactical results. Then, this chapter reviews Russia’s challenges adapting to the realities of LSCO and how the Russian military
was unprepared for attrition. Finally, this evaluation concludes with the Russia-Ukraine War’s lessons for MDOs and implications for the US Army’s implementation of its new operating concept.

**Defining Multidomain Operations**

As defined by the Army’s Field Manual (FM) 3-0, *Operations*, MDOs are “the combined arms employment of joint and Army capabilities to create and exploit relative advantages that achieve objectives, defeat enemy forces, and consolidate gains on behalf of joint force commanders.” Joint capabilities use combat power across domains to accomplish missions with minimal casualties and losses. At the level of LSCOs, MDOs are “how Army forces close with and destroy the enemy, defeat enemy formations, seize critical terrain, and control populations and resources to deliver sustainable political outcomes.”

**The Russian Way of War**

When Russia invaded Ukraine on February 24, 2022, most analysts assumed the Russian military would easily defeat the Armed Forces of Ukraine due to the former’s significant overmatch in military material and technology. But after more than a year of conflict, the Russian military has fared poorly against the highly motivated Armed Forces of Ukraine. Many analysts are attempting to explain the inferior performance of the Russian military, with many attributing Russia’s failures to low morale, exaggerations about the Russian military’s readiness, poor leadership, and an overly ambitious operational plan. Another less commonly discussed reason for Russia’s ineffectiveness in Ukraine is the Russian military embarked on a war the military was not functionally or doctrinally designed to fight. In a recent article, Max Boot describes the importance of doctrine to the operationally rigid Russian military, stating, “The Russians fight ‘by the book.’ Trouble is, they’re using the wrong book.” The Russian military has been slow to adapt to the realities of LSCOs in Ukraine and has experienced significant losses in trained personnel and material.

Doctrine provides the conceptual foundation for how a military will conduct operations. As a result, doctrine significantly influences how a military will train and equip its forces in preparation for war. In the formulation of doctrine, military thinkers attempt to anticipate a future operational environment and develop concepts to guide operations. As observed
in Ukraine, when a military fails to anticipate the types of operations it will execute in its doctrine, the results can be disastrous for the forces employed. The current Russian doctrinal strategy is called “active defense,” which is fundamentally misaligned with Russian strategic objectives and has failed to prepare the Russian military for a large-scale ground invasion of Ukraine.

**Russian Doctrine Is Not Built for Large-Scale Combat Operations**

**Active Defense and Hybrid Warfare**

In the 2014 publication *Military Doctrine of the Russian Federation*, Russia defines doctrine as the “military-political, military-strategic, and military economic foundations for ensuring the country’s security. It represents a system of officially accepted views and positions on the goals or character of a potential war, how to prepare for it, how to prevent it.” The latest Russian doctrinal strategy is active defense, which outlines how Russia would deter war as well as the general warfighting tenets for when Russia fights against an enemy with an overmatch in technology and overall military strength, such as NATO or the United States. The chief of the Russian Armed Forces General Staff, Valery Gerasimov, in a 2019 speech to the Russian Academy of Military Sciences, described active defense as a strategy that involves the “preemptive neutralization of threats to the security of the state.” Gerasimov characterized the strategy’s tenets as “achieving surprise, decisiveness, and continuity of strategic action.”

Active defense begins with a discussion of anticipatory actions during a “threatened period” or military crisis before conflict. Anticipatory actions include both nonkinetic and kinetic actions intended as deterrents when Russia perceives a crisis is trending toward potential military conflict. Nonkinetic actions may include demonstrations of military readiness such as mobilization exercises, military-training exercises, and weapon tests. An example of kinetic actions is limited precision strikes designed to prevent opponents from massing combat power to neutralize perceived threats to Russia. To achieve the deterrent effects outlined in active defense, Russia requires forces to maintain a high state of readiness and deployability. The active-defense doctrine also considers the predominant role and integration of nonmilitary means more commonly known as “new-generation warfare” or “hybrid warfare.”
“New-generation” describes the Russian conception of the changing character of modern war and the predominance of nonmilitary means of achieving strategic goals. In a 2013 speech and later article titled “The Value of Science Is in the Foresight,” Gerasimov stated, “The role of nonmilitary means of achieving political and strategic goals has grown, and, in many cases, they have exceeded the power of force of weapons in their effectiveness.” For the Russians, the nonmilitary means described in new-generation warfare represent a holistic, whole-of-government approach to warfare that integrates political, economic, and informational instruments with military power to obtain strategic objectives.

The Institute for the Study of War’s 2020 report on Russian hybrid warfare highlighted the dominance of information in hybrid warfare and the subordination of all actions, including the use of conventional military forces, to an information campaign. Russian theorists contend information dominance is essential prior to kinetic operations, and traditional military actions focus on the final defeat of an adversary in hybrid war. To achieve the synchronization of action required in the whole-of-government approach outlined in hybrid war, the Ministry of Defense of the Russian Federation determined Russia needed to centralize decision making based on the country’s lessons learned from hybrid wars in Syria and Ukraine. The Ministry of Defense established the National Defense Control Center in 2014 to control the hybrid wars in Syria and Ukraine. But the decision to centralize decision making in Moscow and Russia’s initial decision not to appoint an overall field commander for the 2022 invasion of Ukraine significantly impaired operational and tactical decision making once the invasion plan began to falter.

The foundational concept for active defense during wartime is the maneuver defense with constant counterattacks throughout an opponent’s operational and strategic depth. Active defense seeks to degrade an opponent’s critical operational capabilities using long-range fires while executing a maneuver defense. During maneuver defense, Russian forces will avoid decisive engagement and trade space for time while artillery attrits the attacking enemy. Maneuver defense does not envision the inclusion of positional defense or a front with high concentrations of forces like in World War I and World War II, which is interesting given the prevalence of positional defense observed in the Russia-Ukraine War to date. Interestingly, active defense also views the seizure of terrain as less relevant to modern warfare due to the prevalence of long-range weapons using both precision and massed fires along with counterattacks against exposed enemy flanks. Given Russia’s assumption the country will fight at a numerical disadvantage,
the objective of active defense is the preservation of combat power while achieving a decisive outcome during the initial phase of a conflict. Moreover, the active-defense strategy does not expect Russia’s military to extend into an adversary’s territory using offensive land operations given the belief traditional operational boundaries are no longer relevant due to the range of modern weapons.11 Moreover, active defense assumes modern wars will be shorter based on Russia’s observations of the early conventional phase of the Iraq War in 2003, Russia’s 2008 invasion of Georgia, and the former’s rapid occupation of Crimea in 2014.12 The Russian invasion of Ukraine, with multiple axes of advance, represented a significant departure from the doctrinal writings for wartime action articulated in active defense, resulting in a military unprepared for large-scale offensive operations.

**Russian Force Design: Designed for the Wrong War**

Active defense’s flawed assumptions about short, defensive wars dominated by long-range fires and nonmilitary means led to a Russian military that was ill designed for a large-scale invasion of Ukraine. Russian military thinking in active defense continued earlier Russian force design and institutional changes intended to structure a military that was smaller, permanently ready, and able to deploy extended distances to meet the requirements of modern warfare. Since the end of the Cold War, the Russian military has undertaken a series of reforms to transform itself from a conscript-based force that depends on mass mobilization to a smaller, standing-volunteer force of contract soldiers that are considered “enlisted professionals.”13 But the Russian military was not able to recruit enough contract soldiers and had to maintain conscription to meet force-structure manning requirements, resulting in a mixed-personnel system with significant implications for the application of combat power.14

Russian reforms in the 2010s included a transition to a brigade- and battalion-focused force design. With this transition, the Russian military turned away from the regimental and division-based structure that was common in the Soviet military. The reforms intended to create flexible forces that were easier to deploy than a regimental or division-sized organization.15 By 2013, the Russian military had restored the division and designed a structure to employ regiments, brigades, divisions, and combined-arms armies to conduct LSCO’s, increasing force structure without a commensurate increase in staffing. To accommodate staffing shortages and a mixed-manning system that comprised professional officers, contract soldiers, and conscripts,
the Russian military adopted a tiered-readiness system. This system retained brigades and divisions at low levels of readiness, between 70 and 90 percent, with the expectation each regiment or brigade would provide two battalion tactical groups that were maintained at a higher level of readiness. Due to Russia’s mixed-personnel system, the battalion tactical group was supposed to be manned exclusively by contract soldiers and provided the best equipment in the brigade. These features of the battalion tactical group enabled the Russian military to mitigate the challenges imposed by a mixed-personnel system as well as the constraints on conscripted soldiers deploying or participating in combat operations.16

The battalion tactical group is a task-organized, combined-arms formation that uses one of the brigade’s maneuver battalions as a base on which to create a task force that comprises armor, infantry, artillery, and air defense capable of rapid deployment and independent operations. Typically, around 700–800 soldiers were in battalion tactical groups, depending on their task organization and the status of the brigade’s manning, which was often insufficient to man two groups. When the Russian military increased the number of battalion tactical groups from 136 in 2019 to 168 in 2021, the size and capability of these formations varied substantially across the army. Often, battalion tactical groups were deficient in the infantry required to conduct combined-arms operations in restrictive and urban terrain, as observed during the early phases of the 2022 invasion of Ukraine. Additionally, battalion tactical group staffs lack the size and skill sets necessary to provide adequate command and control (C2) for the variety of attachments incorporated into a group during LSCOs.17

The Russian battalion tactical group has been subject to extensive study given its perceived success during earlier operations in the Donets Basin in Ukraine in 2014–15. But the limited scale of operations and the small size of the theater of operations (the Donets Basin theater in 2014–15 was about 420 kilometers, or 260 miles, wide) created an exaggerated perception of the battalion tactical group’s capability that has proved difficult to scale from limited wars to LSCOs.18 Russia’s recent invasion of Ukraine demonstrated a significant inconsistency among the former’s organizational design, training, and conduct of operations in Ukraine.

Russia employed its organic formations during major collective-training exercises such as Zapad and Vostok to test the formations’ ability to execute combined arms, joint integration, C2, and logistics.19 But when Russia invaded Ukraine, the former relied heavily on battalion tactical groups conducting rapid advances with little evidence of brigade-level C2 and limited logistical
capabilities. As a result, Russia’s combined-arms armies directly controlled numerous battalion tactical groups that were exceeding their span of control, which limited the armies’ ability to combine arms across domains, coordinate with adjacent units, and sustain operations. Given the battalion tactical groups’ substandard performance during the invasion of Ukraine, authors such as Amos Fox, Lester Grau, and Charles Bartles correctly highlight the battalion tactical group was the improper formation for the Russia-Ukraine War, and the group was better suited for “low-intensity conflict and counterinsurgencies.” Moreover, Russian tactical units did not receive tactical orders until hours before the invasion to maintain strict operational security. Given the truncated planning timeline, understaffed brigade and regimental headquarters were challenged to create and disseminate plans to subordinate units, further limiting the headquarters’ ability to command and control battalion tactical groups.

The Russian Challenges to Adapt: Lessons for Multidomain Operations

The Russian military’s misalignment of doctrine, force structure, training, and strategic objectives in Ukraine has significantly limited the military’s ability to adapt to the realities of LSCOs. Russia’s Federal Security Service was responsible for planning the occupation of Ukraine. Prewar Federal Security Service assessments indicated Ukrainians were unhappy with their civilian leadership and their country’s direction. Additionally, Russian President Vladimir Putin believed Ukrainians had a favorable view of Russia, and Russia and Ukraine were historically linked. As a result, Russia assumed Ukrainian leadership could be replaced easily, which would galvanize pro-Russian Ukrainians to support the invasion. The Russian military also assumed Ukrainian defenses would be ineffective and Russia’s forces would easily prevail on the battlefield.

Given these assumptions, the Russians developed an operational plan predicated on speed to seize critical infrastructure and government centers rapidly and disintegrate the Ukrainians’ capacity to resist. (To disintegrate means to disrupt the enemy’s C2, degrading the synchronization and cohesion of the enemy’s operations. Disintegration prevents the enemy from achieving unity of effort and degrades the enemy’s capabilities or will to fight.) The Russians anticipated a short war and a decisive victory with minimal casualties due to the perceived effectiveness of nonmilitary means, in accordance with Russia’s active-defense doctrine. Russia’s assumptions have
proven inaccurate, and its operational plan exceeded the capabilities of the forces the country committed to Ukraine.

**The Russian Army Is the First to Fail in Joint Operations**

Initially, the Russian invasion of Ukraine appeared to be a highly joint operation, integrating capabilities across domains to mass effects against the comparatively weaker Armed Forces of Ukraine. But in fact, although Russian operations included the use of multiple capabilities across domains, Russia lacked unity of effort. One of the proximate causes of Russia's poor synchronization was the absence of a joint-force commander and a theater-level headquarters to coordinate domains toward operational and strategic objectives. Consequently, the Russians could not adapt their plan to accommodate divergent conditions once the invasion stalled to allow Russia to prioritize resources.

Russia's initial invasion of Ukraine broadly followed the former's active-defense doctrine, using air and missile attacks against Ukrainian air defense, C2 architecture, ammunition depots, fixed military sites, and known troop-assembly areas across Russia's operational depth. Before conducting air and missile strikes, the Russian military employed electronic attacks and used aerial decoys to degrade Ukrainian air defenses. Despite these efforts, the Russian Aerospace Forces failed to execute effective suppression and destruction of enemy air defenses or to achieve air superiority over Ukraine. Russia's failure presented the Ukrainian Air Force an opportunity to attrit exposed Russian forces using Turkish Bayraktar TB2 unmanned aerial vehicles (UAVs). Furthermore, the Russians integrated cyber operations to limit Ukrainian capabilities to resist and isolate Russian decisionmakers. But Russia's attacks failed to achieve their intended effects due to improved Ukrainian cyber-defense capabilities and external support from Western governments and the private sector. (During the first month of the Russia–Ukraine War, over 40 percent of Russian cyberattacks targeted critical infrastructure, and another 32 percent targeted Ukrainian government sites.) Given the Russian military's widely studied capabilities, the size, scale, and effectiveness of the military's precision-strike, cyber, electronic warfare, and psychological warfare capabilities failed to meet expectations.

The Russian ground invasion proceeded along four distinct fronts, each under the direction of a Russian military-district command post (CP), with individual axes of advance controlled by a Russian combined-arms army. The two northern fronts, which focused on the Ukrainian capital
of Kyiv, were controlled by the Eastern and Central Military Districts, respectively. The eastern front, controlled by the Western Military District, attacked toward Kharkiv. The eastern front was responsible for fixing Ukrainian forces in the Donets Basin. The Southern Military District attacked from Crimea toward Odesa, Zaporizhzhya, and Mariupol to create a land bridge between Crimea and Russia. Each front operated independently, with little coordination, and seemingly competed for resources, especially the northern fronts around Kyiv.\textsuperscript{31} Without a central commander at the operational level, Russian joint effects were increasingly aligned to support tactical-level ground forces at the expense of operational-level targets, especially when the invasion faltered. Russian air operations were not centrally controlled and, instead, operated in separate air components that were subordinate to military-district CPs, diluting Russia’s effectiveness at the operational level.\textsuperscript{32} The Russians have not demonstrated the ability to shape the battlefield effectively at the operational level to enable tactical actions. Conversely, the Armed Forces of Ukraine experienced considerable success isolating Russian formations using operational-level fires in preparation for counteroffensives in Kharkiv and Kherson. Russian air-ground coordination has appeared haphazard, with limited direct support of ground forces, disjointed missile attacks on Ukrainian energy infrastructure, and negligible shaping efforts to degrade Ukraine’s operational-level capabilities.

Despite appointing the first overall commander six weeks into the war, Russian C2 across domains and Russia’s ability to adapt to an LSCO environment remain challenged.\textsuperscript{33} The Russian failure to establish a theater-level headquarters during the initial phase of the war is one of the most important observations for MDOs thus far in the Russia-Ukraine War. The inability of Russian forces to integrate and synchronize effects across domains contributed to Russia’s major defeat in the Battle of Kyiv. Russia’s defeat emphasizes the importance of joint operations to achieving the convergence of effects across domains to enable maneuver.\textsuperscript{34} (Convergence is created by the concerted employment of capabilities from multiple domains and echelons against combinations of decisive points in any domain to create effects against a system, formation, or decisionmaker or in a geographic area.)
The Russian Military Is Slow to Adapt to the Realities of Large-Scale Combat Operations

Following defeat in the Battle of Kyiv, Russia modified its strategic objectives to focus on the Donets Basin and concentrated its battered forces in eastern Ukraine. One of the most significant changes for Russian operational design was a transition from maneuver warfare on multiple narrow fronts to an attritional model on a single broad front. This change enabled Russian forces to mitigate many of the sustainment challenges that contributed to Russia’s defeat in the Battle of Kyiv and to achieve some success at the tactical level. Additionally, terrain in the Donets Basin allowed Russia to leverage its significant numerical superiority in artillery systems, enabled by observers of forward UAVs. The Russian Air Force also adapted, and it has achieved limited, localized air superiority in the Donets Basin with an increase in sortie rates. But shortages in precision-guided munitions (PGMs), trained pilots, and the Russian equivalent of joint terminal attack controllers have continued to limit the effectiveness of air-ground coordination. These limitations and effective Ukrainian air defense have continued to impede Russian efforts to combine arms and synchronize effects across domains. As a result, the Russians have not been able to restore maneuver to the battlefield at the operational level.

Russian forces adopted older doctrinal techniques of maneuver by fire, using massed artillery to prepare objectives to attain local superiority at the tactical level. Russia’s techniques prevented Ukrainian defenders from massing forces larger than company-sized formations, whereas Russian forces could achieve favorable force ratios of up to seven-to-one due to the forces’ artillery dominance. Massed artillery enabled Russian forces to achieve slow tactical gains at a tremendous cost in casualties for both sides. The lethality of the modern battlefield and the degradation of Russian capabilities from combat losses led Russia to modify its offensive tactics from attacking in battalion tactical group–sized elements to attacking in squad- and platoon-sized assault groups.

Assault groups—often, forces of the Wagner Group private military company—attack in multiple groups and successive waves to overwhelm Ukrainian defenses using drones to locate targets and to conduct C2. Initial assault groups serve as a reconnaissance in force to identify Ukrainian defensive positions. Next, Russia prepares artillery before successive assault groups—usually, better-trained forces—attack known Ukrainian defenses. Although effective, Russian assault groups suffer tremendous casualties
for limited tactical gains.\textsuperscript{38} Russian operations in the Donets Basin have demonstrated the Russian military can adapt to the challenges of LSCOs, but this adaptation occurs primarily at the tactical level and with little consideration of casualties. Russia's adaptation at the operational and strategic levels remains challenged—especially, the country's ability to regenerate trained forces to sustain operations.

The Russian military was unprepared for the attrition inherent in LSCOs. Russia, which lost many of its trained forces early in the war, is having to adapt its tactics and operational design to account for units with degraded capabilities. Russian battalion tactical groups, which started as task-organized forces, have struggled to retain combat effectiveness when they have sustained losses of key personnel and equipment due to the groups' reliance on contract soldiers. To sustain operations, the Russians had to merge battalion tactical group elements, exacerbating existing challenges with sustainment and communications and further diminishing the effectiveness of an already-challenged force design.\textsuperscript{39}

Russia's combat losses have forced it to implement a partial mobilization to rebuild depleted formations. Russian mobilized personnel receive minimal training and equipment before being sent to units as individual replacements. Several of the Russian army's most revered units are now primarily staffed with inexperienced mobilized soldiers, degrading the units' capability to execute combined-arms maneuver.\textsuperscript{40} At this point in the Russia-Ukraine War, several units have been reconstituted more than once. For example, the highly regarded 1st Guards Tank Army had to reconstitute division-sized elements in Belarus twice: following the army's defeat at Chernihiv early in the war and, more recently, after Ukraine's Kharkiv counteroffensive.\textsuperscript{41} Russia's combat losses and difficulty regenerating combat-capable formations have forced the country to rely on private military companies—most notably, the Wagner Group—to continue operations. Russia's challenges adapting to the attrition of modern LSCOs serve as a reminder to the US military and NATO allies. (See chapter 11 for more information about personnel depth for LSCOs.)

\textbf{Russia-Ukraine War Lessons for Multidomain Operations}

The Russia-Ukraine War offers innumerable lessons for MDOs, much like the 1973 Yom Kippur War influenced AirLand Battle doctrine. The Yom Kippur War provided a unique opportunity to observe Soviet-equipped Arab forces that were using Soviet doctrine to confront Israeli forces that were using NATO weapons and Western doctrinal concepts.
As the Armed Forces of Ukraine continue to integrate NATO weapons, the opportunities to derive lessons for the implementation of MDOs increase.

The Russia-Ukraine War reminds one of several of the key lessons from the Yom Kippur War, including the challenge of defeating threat-air-defense and antitank weapons to restore maneuver to the modern battlefield. Another critical parallel between the Russia-Ukraine War and the 1973 Yom Kippur War is the lethality of modern weapons and the challenges of attrition at scale. The Russia-Ukraine War differs from the Yom Kippur War in the unparalleled transparency of the battlefield due to modern sensors, the use of information operations, and the capacity of long-range fires to eliminate sanctuary for CPs and sustainment nodes. The application of MDOs must confront the challenges of persistent contact across domains as well as how joint convergence enables combined arms at the tactical level. Furthermore, the Army must address the vulnerability of the service's CPs and sustainment nodes while considering the implications of attrition for the resiliency of MDOs.

**Multidomain Operations Convergence Is Necessary for Effective Combined Arms in Large-Scale Combat Operations**

“Multidomain operations” (MDOs) describes the importance of integrating Joint and Army capabilities across echelons and domains in a combined-arms approach to defeat threats that are capable of contesting Joint forces in all domains. One of the foundational ideas in MDOs is the ability for the Army to achieve convergence. Critical to convergence is determining the decisive points and objectives against which to orient effects is easier said than done.

The identification of decisive points and objectives at the operational level enables commanders and staffs to arrange tactical actions in time, space, and purpose to achieve strategic objectives. A common challenge for operational planners is the alignment of objectives and effects from the tactical to the operational level. Misaligned tactical objectives can take on an outsize level of importance, resulting in unnecessary combat losses. The Russian fixation on the city of Bakhmut, beginning in the summer of 2022, is an example of a tactical action of limited operational and strategic value that has caused tremendous combat losses for minimal gains. The MDO tenet of convergence can assist commanders and staffs with the nesting of objectives and effects at both the tactical and operational levels of war to ensure tactical objectives achieve relevant operational and strategic objectives.
Given the lethality observed in LSCOs in Ukraine, achieving convergence may be a necessary condition for executing combined-arms operations at the tactical level. The observed effects of persistent observation and targeting in Ukraine, which reaffirm the importance of dispersion at all echelons, will require the Army and the Joint Force to reassess how to mass combat power. General Mark Milley, the chairman of the Joint Chiefs of Staff, highlighted the importance of dispersion when he stated, “Your concealment, the size of your force, and the speed at which you move around a battlefield will contribute directly to your survivability on a future battlefield that is highly lethal.”

The Army’s recently published version of FM 3-0 discusses the significance of dispersion at all echelons within the tenets of MDO to minimize the risk of massed and precision fires. As observed by Ukrainian and Russian ground forces, the necessity of dispersion has created challenges for massing combat power in the offense. In addition, the necessity of dispersion creates opportunities for adversaries to isolate dispersed elements in the defense. Given these observations, the Army must continue to consider how the synchronization and integration of multidomain capabilities can establish windows of opportunity for enabling ground forces to mass combat power temporarily and achieve combined arms in the close fight.

The failed Russian gap crossing near Bilohorivka in May 2022 provides an excellent example of the implications of persistent contact across domains as well as poor dispersion. Ukrainian massed-artillery fire, enabled by imagery and drone reconnaissance, destroyed a Russian battalion tactical group that was attempting a river crossing. In this case, the Russians failed to set operational conditions using drone countermeasures and fires to isolate the crossing area. Additionally, Russian forces consolidated near the crossing site during the construction of the pontoon bridge, maximizing the risk of Ukrainian artillery effects. The result was a disastrous tactical defeat and a significant opportunity for Ukraine to highlight its success and Russian ineptitude in the information domain. This failed gap crossing is an invaluable case study for the Army’s newly designed Penetration Division, which is optimized for opposed gap crossings. (Lieutenant General Theodore D. Martin described the Penetration Division as “uniquely empowered with an enhanced combined-arms armored profile to ‘conduct the joint force’s most demanding operations,’ including breaching prepared defenses and leading contested gap-crossings against peer adversaries.” The Penetration Division is purpose-built with additional fires, division-level reconnaissance, and engineering capabilities to enable MDOs.)
This lesson emphasizes how the Army must broaden its conception of combined arms to leverage multidomain capabilities to create windows of opportunity to mass combat power and combine arms at the tactical level. One of the greatest challenges the integration of convergence poses at the operational level and combined arms pose at the tactical level is the timing of multidomain effects with comparatively slow-moving ground forces. Ground forces require greater agility to exploit opportunities presented by capabilities in the space, cyberspace, and air domains. Conversely, operational planners must consider the impacts of terrain, weather, and the capabilities and limitations of ground forces to synchronize effects across domains with the tempo of tactical formations.

As the concept of MDOs matures, technology advances, and the Army integrates new organizational structures like the Penetration Division, roles and responsibilities at echelon will need continuous reassessment.48 Future efforts to automate targeting processes using an “any sensor, any command and control node” model without human oversight or the weighting of priorities by echelon could inadvertently deplete supplies at the tactical level or limit options for operational and strategic targets.49 Moving forward, the Army should consider innovative options for executing multiechelon training on how to synchronize the concepts of convergence and combined arms within the context of MDOs. The integration of corps and division warfighter exercises with combat-training-center rotations would provide an excellent venue in which to provide MDO training at echelon.

The Greatest Vulnerabilities for Multidomain Operations Are Command Posts and Sustainment Nodes

The Russia-Ukraine War has demonstrated the vulnerability of fixed CPs. Russian CPs at all echelons have been regularly located and targeted, resulting in the loss of experienced senior leaders and staffs. Numerous Russian Combined Arms Army (CAA) CPs, roughly the size of a US Corps or Division Staff, have been destroyed including the 8th, 49th, and 2nd Combined Arms Armies’ CPs.50 The destruction of Russian CPs should cause significant concern because US Army CPs are larger and less mobile and have a larger electromagnetic signature than the Russian CPs that have been routinely destroyed in Ukraine. Sustainment nodes and CPs must significantly reduce their physical sizes and electromagnetic signatures and increase their capacity to displace rapidly while mitigating threats’ ability to target the posts and nodes. The two most critical capabilities required for the execution of MDOs are effective C2 and predictive sustainment.
The convergence of multidomain capabilities and the execution of combined arms require detailed, collaborative planning and effective communications in execution, but leaders must learn to conduct MDOs in smaller, dispersed CPs. Furthermore, the US Army must continue to develop more portable communications systems with reduced electromagnetic signatures that enable over-the-horizon communications and distributed collaboration.

Observations from the Russia-Ukraine War provide numerous examples of the importance of understanding the implications of persistent observation and the significant risk large, unprotected CPs and sustainment nodes at the tactical and operational levels pose. At the operational level, the Ukrainians minimized the effects of Russian long-range, precision fires at the onset of the war by distributing ammunition stockpiles, critical C2, air-defense capabilities, aircraft, and maintenance resources. Conversely, the Russians failed to distribute stockpiles of artillery ammunition, which allowed the Armed Forces of Ukraine to destroy numerous ammunition depots. Ukraine’s attacks significantly degraded Russian artillery support and helped to set conditions for the Kharkiv counteroffensive. Moreover, Ukrainian forces have regularly targeted Russian CPs, aggravating systemic C2 challenges. During the Kherson counteroffensive, Ukrainian forces actively targeted Russian C2, reportedly striking 13 CPs as well as supply depots and critical river crossings to isolate Russian forces north of the Dnieper River.51 By the beginning of September 2022, Ukraine had fired more than 400 High Mobility Artillery Rocket Systems (HIMARS) throughout Kherson and Crimea, targeting transportation infrastructure and Russian logistics to isolate Russian forces.52

In addition, the prevalence of persistent observation and long-range precision fires has significant implications for sustainment nodes because the rear area can no longer provide sanctuary from threat capabilities. The US Army must reevaluate doctrinal brigade- and division-support areas to protect critical sustainment capabilities to enable MDOs. For instance, in Ukraine, Russia followed its doctrine to posture its support elements for divisional and army-sized formations at 50 kilometers from the line of contact, which was within range of Russian-made Multiple Launch Rocket Systems operated by Ukraine. Russia was slow to adapt, did not reposition sustainment nodes outside 50 kilometers until April 2022, and had to move sustainment nodes beyond 100 kilometers with the introduction of US-made HIMARS.53 These observations have significant implications for MDOs and how the US Army trains for sustainment operations. Lessons from Ukraine indicate a need for the US Army to disperse critical sustainment capabilities across its operational depth and to consider greater use
of throughput distribution, despite the challenges this usage creates for predictive sustainment. Throughput distribution bypasses one or more intermediate supply echelons in the supply system to avoid multiple handling.

The latest version of FM 3-0 addresses the vulnerability of CPs and sustainment nodes and recommends the use of hardened structures instead of tents for improved survivability of CPs. Unfortunately, without significant improvements in size and communications discipline, CPs are still easily targeted, as evidenced by the continued destruction of Russian CPs located in captured civilian infrastructure. Given the lessons in Ukraine, the US Army must invest significantly in low-cost drone countermeasures, tactical air defense, and deception measures to create false CPs and sustainment nodes. In training, the Army must regain a respect for the effects of precision and massed artillery and rigorously train the force-protection measures outlined in FM 3-0 at every opportunity.

**Conclusion**

The Russia-Ukraine War is the largest war in Europe since the end of World War II, and much like after the 1973 Yom Kippur War, the US Army has an opportunity to reflect on and refine the service’s doctrine while taking lessons from this new strategic inflection point. The pervasive use of UAVs and sensor-based technologies in the war has resulted in unparalleled transparency on the battlefield and increased accuracy of artillery. Consequently, Russian and Ukrainian forces conduct operations in smaller, dispersed groupings to mitigate the effects of massed and precision fires.

The Russia-Ukraine War offers many lessons for the Army’s new MDO doctrine. Multidomain operations must account for attrition and persistent contact across domains. Given observations in Ukraine, the US Army must reassess the roles and responsibilities of headquarters at echelon to incorporate MDO concepts, new technology, and new organizational structures. The concept of convergence in MDOs is necessary for effective combined arms at the tactical level, given the lethality of the modern battlefield. The Army should also expand linkages between Joint exercises, division-level warfighter exercises, and combat-training-center rotations to practice the synchronization of convergence and combined arms within the context of MDOs. In particular, the Army’s greatest vulnerabilities in MDOs are CPs and sustainment nodes. The Army must develop C2 systems and mobile CPs that enable continuous movement, allow distributed collaboration, and synchronize across warfighting functions and domains.
while minimizing electromagnetic signatures. Incorporating lessons learned from the Russia-Ukraine War may significantly enhance the effectiveness of MDOs.
Endnotes


Chapter 14

Russia-Ukraine War Lessons for Multidomain Operations


28. Jones, Russia’s Ill-Fated Invasion, 7–8.


30. Jones, Russia’s Ill-Fated Invasion, 2.

31. Bowen, Russia’s War in Ukraine.

32. Zabrodskyi et al., Preliminary Lessons, 45.


34. HQDA, Operations, 3-3.


43. HQDA, Operations, 3-1.

44. HQDA, Operations, 3-3.


Lessons from the War at Sea

Albert F. Lord Jr. and Thomas R. Kunish

Keywords: unmanned surface vessel, maritime, littoral, Black Sea, sea denial, amphibious, anti-access/area denial, detection, electromagnetic spectrum

The Russia-Ukraine War has featured large-scale ground combat operations (LSCOs), incessant air and missile strikes, and the use of unmanned aerial systems (UASs) that has overshadowed the maritime domain. The Russian and Ukrainian operations at sea have been much less discussed and dissected than their more visible (and perhaps more consequential) operations on land and in the air. But given the nature of modern all-domain warfare, the maritime aspects, which are important, will contribute much to the eventual outcome of the conflict.

The Russia-Ukraine War shows the critical importance of establishing and maintaining sea control in all-domain warfare. This chapter highlights three major findings that describe the complexities and challenges faced by littoral nations that seek to assert dominance in the maritime realm: establishing and maintaining littoral sea control protects maritime flanks; extending sea control seaward from the littoral provides operational reach and limits adversary options for force employment; and unmanned surface vessels (USVs) are the future of maritime warfare.
Fundamentals of the Maritime Domain for Naval Operations

The littoral is commonly defined as “relating to, or situated . . . on or near a shore especially of the sea.”¹ The modern military expands this definition to cover the area both landward and seaward of the shoreline, describing the overlap between the land domain and the maritime domain—in other words, the distance out to sea land forces can affect naval forces and the distance inland naval forces can affect ground operations or threaten land targets.² Given the ever-expanding ranges and effectiveness of sensors and weapon systems, these distances can vary depending on the geography and the capabilities of the combatants.

The concepts of sea control and sea denial define naval operations in the littoral regions. The British maritime strategist Julian Corbett popularized these concepts at the turn of the twentieth century.³ In contrast to Alfred Thayer Mahan’s command of the sea—an all-or-nothing proposition that called for large battlefleets and fleet concentration for a decisive battle—Corbett realized one only needed the use of the sea for a relatively limited time to accomplish the mission at hand.⁴ Importantly, one maritime force did not necessarily need to control the sea to deny its use to another. Submarines and naval mines are the best examples of forces for sea denial.

In the case of the Russia-Ukraine War, maritime priorities for Ukraine in the littoral are

1. protect the coastline from amphibious attack (control the nearshore and deny its use to an adversary);

2. establish a standoff distance seaward to protect military forces, population centers, and critical infrastructure (sea denial); and

3. ensure the use of sea lines of communication for military and commercial purposes (sea control).

Maritime priorities for Russia would be to

1. conduct or threaten the Ukrainian coast with amphibious attack to force the Ukrainian military to use forces that could be employed elsewhere (sea control);

2. use the Black Sea as a haven for naval strikes ashore (sea control); and
3. threaten the Ukrainian Black Sea lines of communication to prevent or restrict the movement of naval or commercial shipping (sea denial).

The uniqueness of the maritime environment requires the discrete characteristics and capabilities of naval forces. Four interrelated dimensions of conducting sea-control and sea-denial operations are in effect in the Russia-Ukraine War: surface, subsurface, naval aviation, and electromagnetic spectrum (EMS) operations. Each of these dimensions has its own physics, sensors, weapons, and engagement timelines to consider. Importantly, traditional ground and air forces may act in these dimensions as well. Army and traditional air force formations, if capable, can conduct sea-control and sea-denial missions.

Surface operations are conducted against surface platforms that range from small boats that traditionally operate close to shore to progressively larger craft that can operate on the high seas very far from shore. The larger the vessel, the more capable it is in sensors, weapons, and the ability to conduct longer-duration operations. Larger-surface ships, which may also have capabilities that span the four dimensions, may include command-and-control (C2) capabilities.

Subsurface operations are the purview of submarines and naval mining. These operations usually involve sea-denial missions, but exceptions, like certain mine placements, might be considered sea control as well. Countering subsurface operations is among the most difficult of operations for a maritime commander. One could say submarines are the original stealth platform, and locating and prosecuting submarines is especially resource intensive. Clearing naval mines is likewise very difficult; finding and removing mines requires time, dedicated vessels, highly trained personnel, and a permissive environment.

Naval aviation operations include conducting intelligence, surveillance, reconnaissance, and targeting (ISR-T); performing anti-submarine warfare operations; conducting strikes against surface vessels and land targets; and executing defensive and offensive counterair missions as well as supporting air operations, such as suppressing enemy air defenses and aerial refueling and conducting combat and noncombat search and rescue. Manned or unmanned platforms can conduct naval aviation operations.

Electromagnetic spectrum (EMS) operations are essential for effective maritime operations. Ensuring the use of the EMS for one’s own activities and denying its use to an adversary is essential to effective C2 and force
employment. Lastly, the maritime environment is not as clean as some would believe. Coastal regions have commercial use for transportation, fishing, and recreation. Shallow waters nearshore, which collect acoustic noise from natural and man-made sources, are difficult environments in which to conduct anti-submarine and mine countermeasure operations. The density of offshore traffic complicates target identification at sea. Naval operations in the Russia-Ukraine War are also subject to the unique physical and political character of the Black Sea.

The Black Sea

Geography profoundly characterizes all wars, and the Russia-Ukraine War is no exception. The Black Sea, which is a 178,000-square-mile inland sea bordered by Ukraine; Russia; Georgia; and the NATO nations of Türkiye, Bulgaria, and Romania, dominates the maritime aspects of the Russia-Ukraine War. Access to the Black Sea is conducted under a unique international agreement: The Montreux Convention is an international treaty signed in 1936 that established Türkiye’s control over the Turkish straits (Bosporus and Hellespont). The treaty guarantees the free passage of commercial shipping in peacetime but regulates the passage of military vessels between the Mediterranean and Black seas. In February 2022, Türkiye declared the Russian invasion of Ukraine a war and restricted the passage of Russian warships through the straits. The Montreux Convention regulates the passage of both Black Sea and non-Black Sea naval vessels. (Considered Black Sea states, the nations that border the Black Sea are Ukraine, Russia, Georgia, Türkiye, Bulgaria, and Romania.) The most important commercial use of the Black Sea for Ukraine and Russia is for the transportation of agricultural products. The invasion of Ukraine and Russia's restrictions caused a significant impact on the world’s food supply. According to the US Department of Agriculture, Ukraine had been supplying 46 percent of sunflower oil, 17 percent of barley, 12 percent of maize, and 9 percent of wheat to the world. Brokered by the UN and signed by Ukraine, Russia, and Türkiye in July 2022, the Black Sea Grain Initiative allows the passage of Ukrainian foodstuffs out of the Black Sea. Russia's foodstuff exports are not affected, but Western economic sanctions have affected Russia's ability to trade on the open market. The parties review the initiative and extend it periodically.
The Maritime War in the Black Sea

The Black Sea has always had geostrategic importance to Russia and a correspondingly significant Russian naval presence. The Sevastopol naval base in Crimea served as the headquarters for the Russian fleet. With the breakup of the Soviet Union and the reversion of Crimea to Ukraine, Russia and Ukraine agreed the Black Sea Fleet would provide some ships to the new Ukrainian Navy, and Ukraine would allow the continued use of the naval facility and supporting infrastructure for the Russian Black Sea Fleet. The Ukrainian Navy was created in 1992 with the older and decrepit cast-off vessels of the Russian Navy. The Ukraine crisis of 2013–14 led to the evisceration of the Ukrainian Navy. About 70 percent of the navy was taken over by Russia, and of a pre–March 2014 strength of 15,470, the Ukrainian Navy counted only 6,500 sailors in 2015. Of similar importance, Russia had taken the critical infrastructure all navies require: training facilities, dockyards, repair shops, and supply depots. The remnants of the Ukrainian Navy fled to Odesa and other ports.

The invasion of Ukraine in February 2022 gave the Russian Navy the initiative. The navy moved quickly to support land operations in southern Ukraine and to establish a blockade of the Ukrainian coast. The service established control of the Sea of Azov, conducted strikes with land attack cruise missiles, and began to provide air defense to Russian ground forces moving on Kherson. Snake Island, a strategic but vulnerable outpost 22 miles off the coast of southeast Ukraine, was taken on the day of the invasion, but not before the famous refusal of surrender from the 13-man Ukrainian garrison. Ukraine immediately began to improvise its maritime defense. A ballistic missile attack on the Russian-occupied port of Berdyansk on the Sea of Azov on March 24 resulted in the sinking of the Alligator-class landing ship, tank Saratov with its cargo of ammunition as well as damage to two other ships and nearby supplies. On April 13, Ukraine carried out a coordinated attack on the Russian Black Sea flagship Moskva that resulted in its sinking the next day while it was being towed to Sevastopol. This attack used Turkish-built Bayraktar TB2 aerial drones to decoy the Moskva's air defenses away from two Ukraine R-360 Neptune cruise missiles that struck the ship, causing significant damage. In early May, Ukrainian forces hit shipping off Snake Island. In three separate drone attacks, two patrol boats were destroyed, and an amphibious ship and a logistics ship were damaged. These attacks, in addition to regular air attack that had been occurring since February, forced the evacuation of Snake Island in late June.
The net effect of these actions resulted in the rollback of Russian naval forces away from the Ukrainian littoral, terminating maritime support to Russian land forces in the Kherson oblast. On October 29, a new turn in maritime operations occurred in the harbor of Sevastopol. A coordinated attack by Ukrainian UASs and USVs penetrated the harbor defenses. The surface attack inflicted damage on the Russian frigate *Admiral Makarov*, the new flagship of the Black Sea Fleet, and two other naval ships. The Russian fleet started to improve the Sevastopol harbor defenses, but the fleet did not deter two further attempts by Ukraine using USVs in March and April of 2023.

Analysis of the maritime operations conducted by both Russia and Ukraine leads to three findings and resultant recommendations for future service, joint, and multinational force capabilities.

**Finding 1: Littoral Sea Control in the Near Seas**

Establishing and maintaining littoral sea control protects maritime flanks. Near-land sea control/sea denial protects joint forces and provides maritime ISR-T and the ability to conduct fires seaward. The littoral region is the air, sea, land, and EMS area that extends seaward from shore and landward from the sea, where military and naval forces conduct operations across and within the traditional physical domains.

The first requirement for the Ukrainian military’s naval war is to secure the coastline to prevent an amphibious operation that would outflank land forces defending the front line. An amphibious operation against enemy-held territory is among the most complex and demanding of all military efforts. Amphibious forces must be of a high quality and competent both in combat and in the complexities of ship-to-shore movement. The same applies to amphibious assault shipping. Successful operations require near-total air and maritime supremacy in the amphibious operating area to isolate the battlefield, to prevent immediate reinforcement by defending forces, and to defend the invading fleet. Supporting shipping must be capable of the rapid buildup of combat power ashore. Threats to supporting forces may sink or damage precious supporting vessels or force delays in buildup.

Defensive mining seaward of likely landing areas can accomplish near-seas littoral sea control (landing beaches must have certain physical and hydrographic characteristics for the delivery of troops, vehicles, and cargo). Small attack craft, like missile- or torpedo-armed fast patrol boats, can deliver lethal fires, and these craft can be difficult to detect and counter. Land-based, anti-ship missiles that are mobile and concealable are
an especially challenging threat to amphibious task groups and supporting forces. Air defenses that can dispute the invader’s air control and support are also important. Finally, hardened beach defenses manned by ground forces that are supported by artillery and mobile reinforcements can counter the initial landing and the development of a lodgment ashore. All the above must have an effective C2 capability and adequate ISR-T to defend as far away from the point of attack as possible.

Finding 2: Extending Sea Control beyond the Littoral

Extending sea control seaward from the littoral provides operational reach and limits adversary options for force employment. Extending Joint Force operational reach seaward, beyond the littoral, threatens the adversary’s maritime safe haven and provides extended standoff or anti-access/area denial to friendly forces. Should the adversary wish to close into the littoral, the adversary would have to defeat a defense-in-depth deployment of forces.

Extending sea control further seaward is a logical follow-on to coastal security. The term anti-access/area denial is familiar to many military and national security professionals. Expanding sea control and sea denial is a way to exercise anti-access/area denial against an adversary. “Anti-access” refers to restricting or preventing adversarial movement into an area of operations. In area denial, an adversary’s forces are held at risk in areas nominally under friendly control. Area denial is closely related to sea denial in the maritime environment. But at this point, sea control and sea denial start to conflate their meanings. Is a military denying an enemy the ability to operate in an area, or is the military controlling an area to conduct defensive operations? For this finding, the more positive objective of sea control is used. Sea control implies the ability to conduct defensive operations in the surface, subsurface, air, and EMS dimensions. Conducting distant sea control means having the ability to conduct ISR-T at range as well as the ability to strike adversary shipping further from shore. Ideally, these abilities would be demonstrated, and the enemy would be forced to make the decision to risk their forces to penetrate the control zone, commonly called the “weapon engagement zone,” of the friendly force.

Sea control beyond the littoral means preventing the adversary from operating within range of land targets; the adversary’s ability to hold friendly land targets at risk is effectively prevented. In addition, friendly forces may conduct operations to protect the forces’ sea lines of communication in much the same way. The first requirement for sea control beyond the littoral
is to have a surveillance regime in place to provide detection, classification, identification, and tracking of shipping and aircraft. These activities are normally accomplished by a combination of active and passive sensors in the form of land-based radars; electronic support measures (EMS surveillance and collection systems); maritime patrol aircraft (both manned and unmanned); surface and submarine patrols; and if possible, space-based assets. The larger the area that is monitored, the more capable the platforms conducting the surveillance must be. Ideally, the area would be constantly monitored, but if constant monitoring is not possible, an effective system could be created to surveil the area periodically. The second requirement is the ability to strike maritime targets, which means having the C2 structure and weapon systems to discriminate between targets and background shipping (in a contested EMS environment) as well as the munitions required to conduct maritime fires. Maritime fires can be conducted from ashore (the sinking of the Russian Navy flagship Moskva is the first example) as well as from aircraft, surface warships, and submarines (whether manned or unmanned). 29

The use of USVs in the Russia-Ukraine War has been especially noteworthy.

Finding 3: Unmanned Surface Vessels

The Ukrainian attack on the Russian fleet and naval facilities at Sevastopol was a watershed event in the war and, perhaps, for the conduct of future naval operations. On October 29, 2022, seven to nine small USVs penetrated and attacked the Russian naval base at Sevastopol. 30 About eight unmanned aerial vehicles (UAVs) accompanied the USVs. One frigate, the Admiral Makarov, and at least one minesweeper sustained damage. 31

In an environment where necessity is the mother of invention, Ukrainian forces are turning to asymmetric approaches to war at sea. Lacking larger, more conventional naval vessels with which to engage the Russian Navy directly, the Ukrainian forces have improvised the funding and construction of small, capable USVs. These vessels offer significant advantages, such as ISR-T, force protection, and the delivery of fires, in the littorals and beyond.

Unmanned surface vessels (USVs) provide several advantages over manned craft. The space needed for a crew can now be eliminated to reduce size and cost, and putting the crew at risk in high-threat environments is not a concern. The use of high-quality sensors with secure communications links provides the same C2 capability as manned vessels. Unmanned surface vessels (USVs) may be remote controlled, semiautonomous (man-on-the-loop),
or fully autonomous. Fully autonomous operation would significantly reduce the electromagnetic signature. Small USVs, like those used at Sevastopol, have an extremely low silhouette and, when made with materials with low radar reflection, are virtually undetectable. Even when operating within visual range of an opposing force, the low silhouette and camouflage painting reduce the detection range and probability to a great degree. Ukraine has both plans to construct 100 such USVs and a crowdfunding campaign to finance the $250,000 unit price.\(^{32}\)

Unmanned surface vessels (USVs) play a significant role in sea-control and sea-denial operations. Conventional naval vessels have not been designed to combat the swarm tactics that are possible with large numbers of small UAVs, which can overwhelm target defenses. The US Navy has been concerned with Iran’s Revolutionary Guard navy’s potential use of large numbers of small, fast attack craft in the vicinity of the Strait of Hormuz.\(^{33}\) Larger UASs are possible, and with size comes increased capability and endurance. The US Navy’s concept of distributed maritime operations calls for numbers of USVs to provide ISR-T and C2 in contested maritime environments.\(^{34}\)

Unmanned vessels are not limited to the surface fleet. Navies have made significant progress with unmanned undersea vessels, which promise to provide a greatly expanded capability for undersea ISR-T, maritime fires, and mining. The implications of unmanned undersea vessels for sea control and sea denial are clear.\(^{35}\)

**Recommendations and Conclusion**

Operations in the maritime domain are not limited to naval forces. The Russia-Ukraine War shows the dynamic integration of air, land, sea, and the EMS in the littoral and beyond. An important factor in the conduct of maritime operations in the war is Ukraine’s ability to innovate and improvise to exercise sea control and sea denial. Without conventional naval forces, Ukraine has been forced to conduct asymmetric maritime operations for coastal defense and to keep Russian forces at an arm’s length. These strategies have primarily featured the use of UASs for ISR-T and the employment of anti-ship missiles and USVs. The operational approach Ukraine has taken requires three critical capabilities: integrated C2, maritime ISR-T, and maritime fires delivery.
The first of these capabilities needs a robust and resilient C2 system that can be integrated across all domains and, preferably, with allies and partners. In the future, artificial intelligence (AI) will assist in providing a more accurate picture more quickly and aid in decision making, linking sensors to shooters. A capable ISR-T regime will provide the sensors, also in all domains, including the EMS. A layered approach that provides denser and near-constant monitoring closer to shore will defend against smaller, stealthier platforms, like small boats, USVs, and UAVs. Backed up by surface patrols (manned or unmanned) for investigating suspicious contacts, land-based radars and passive sensors are suitable for cueing. A network of offshore passive detectors, like hydrophone arrays, can cover the undersea environment. The density of coverage can decrease further out to sea, where longer-range, maritime patrol air assets and longer-duration surface patrol vessels would detect and identify potential threats. The third capability is the ability to deliver maritime surface, subsurface, and air fires. Surface-to-surface and surface-to-air missile systems would provide this capability, using a mix of shorter-range (and cheaper) systems for coastal defense and longer-range systems that can reach beyond the littoral and conduct sea denial.

For the US Army, the findings and recommendations coming from an assessment of the Russo-Ukrainian maritime war are straightforward. Land forces can have significant impact on sea control in the littoral and sea denial seaward as well as several significant advantages when operating in the maritime domain. The first is survivability. A well-trained, well-equipped, and well-distributed mobile ground force adept at cover, concealment, and deception (especially in the EMS) can provide ISR-T and lethal fires into the littoral and beyond. Adversarial forces will be wary of operating within range of a ground force that is difficult to detect, target, engage, and destroy. A resilient, joint C2 system can feed an accurate and comprehensive common operational picture to a joint fires network that can deliver lethal and nonlethal effects at scale, at distance, and at echelon. A second advantage of ground forces is the ability to integrate with allies and partner forces to provide critical enabling C2, ISR-T, and fires capabilities. Partner nations have maritime interests that range out to the limit of their 200-nautical-mile exclusive economic zone. Most partner nations do not have the capability to enforce their jurisdiction over their resources that far out to sea, which leads to exclusive economic zone violations and, in the case of the People’s Republic of China, illegal claims of sovereignty in the South China Sea that infringe on the rights of nations in the region. The US Army’s persistent efforts in theater security cooperation and near-constant exercise presence with key partners can develop significant littoral sea-control and
sea-denial capabilities over time. The Army’s focus on multidomain operations and the multidomain task force formations indicate the service will be able to provide the right capabilities to the Joint Force as well as allies and partners to address maritime security problems.
Endnotes


23. “Video Shows.”


29. Ozberk, “Analysis.”


The Failure of Russian Airpower in the Ukraine War: Potemkin on the Dnieper

Sean M. Wiswesser

Keywords: airpower, VKS, Russian air force, Russian air doctrine, Russian invasion, SEAD, GBAD, Russia-Ukraine War, noncontact warfare

Russia's military performance during the 2022 invasion of Ukraine fell short by all marks—perhaps most of all in airpower. Through the first eight months of the invasion, Russia failed to achieve air superiority, suppression of enemy air defense (SEAD), and denial of the use of airpower to Ukraine. The absence of Russian airpower was prominently on display during the September 2022 counterattack in the Kharkiv area, where Ukraine took back more than 3,000 square miles of its territory, and again with the counteroffensives in the south, where Ukraine retook Kherson. The surprising lack of Russian air superiority, despite a massive numerical advantage, led experts and militaries worldwide to ask, “Where was Russia’s air force?”

Note: The Russian Aerospace Forces (Vozdushno-kosmicheskiye sili or VKS in Russian) were renamed after the merger in 2015 of Russia's air force (previously Voennno-vozdushniye sily or VVS), army aviation, and some long-range air defense and space forces. For the sake of simplicity, in this chapter, the author refers to the Russian Aerospace Forces by the more generalized “Russian Air Force.” Russian airpower failed in Ukraine because the Russian military was not competent in air campaign planning and was outfought by Ukraine's highly effective ground-based air defense (GBAD). Russia failed miserably in SEAD, and Ukraine conversely won with its ability to counter the same. This defeat in the air was the result of the Russian Air

Note: The journal, Small Wars & Insurgencies, published an earlier version of this chapter as “Potemkin on the Dnieper: The Failure of Russian Airpower in the Ukraine War” in March 2023.
Force’s uncertainty as to which doctrine to apply in the conflict as well as the service’s inability to execute a proper air campaign to achieve the doctrine. Russia’s military planners showed an overreliance on “noncontact war,” a concept Russian Chief of Staff Valery Gerasimov and others have articulated widely in their own military journals and official writings but were unable to execute in Ukraine.

These failures show the previously vaunted and feared former Soviet Air Forces have become a “paper bear” Russian Air Force, a shadow of its former self. Like Catherine the Great’s Potemkin village, the Russian Air Force has struggled to put up a facade of competence the longer the conflict has persisted. As a result, by fall of 2022, Ukraine controlled the operational tone on the battlefield and in the air. As one of many lessons from the war highlighted thus far, the Atlantic Council’s Hans Binnedijk correctly assessed, “A platform-heavy, twentieth-century Russian force was defeated hadily by a light twenty-first century one.”

To facilitate analysis of Russia’s airpower failures, this chapter is broken into four sections. First, the chapter will briefly discuss faulty assumptions about the war at its start along with Russia’s obsession with perceptions from the West. Second, to lay the groundwork for understanding the Russian side of the air war, the author briefly analyzes air-campaign doctrine from Russia’s military writings and strategy. From this doctrine, one sees Russian airpower should have played more of a role in Ukraine, even by Russia’s standards—albeit one that is different from the role of airpower as it is understood in the West. The third section focuses on Russia’s attempts to execute this doctrine and the country’s losses in the first eight months of the 2022 conflict, when the Russian Air Force was trying but failing to play a decisive role. This discussion leads to the fourth section, which examines why Russia failed with airpower and failed to execute the country’s doctrine, despite overwhelming Russian numerical superiority. In closing, this chapter discusses Ukraine’s highly effective network of GBAD, which has consistently denied Russian use of the conflict’s airspace, and Russia’s inability to counter this network of air defenses.

Examples from the initial eight months of the conflict, through Ukraine’s successful counteroffensives in the east and south in October and early November 2022, illustrate each of these themes. Finally, the conclusion provides potential lessons that might be drawn from Russia’s failed airpower efforts against Ukraine, which the former has been forced to recognize as a peer-level adversary as a result of these failed efforts.
Early Assumptions by Russia and the West

The 1990s were an era of decline for the Russian military and its air force. Although the Chechen wars were internal conflicts that featured mostly Ministry of the Interior and other specialized police units, such as the Russian Internal Security Police, the Russian military and air force units that did engage in Chechnya did not distinguish themselves militarily. Old weapon systems were employed poorly, troops lacked training and had poor morale, casualties were high, and victory was achieved only by vast numerical superiority. That decade was followed by another that showcased Russian failures, particularly in the air over Georgia in 2008. The Russian military and political leadership demanded change and called for modernization. Projecting confidence and competence to the West and NATO was important for Russia and remains desperately so.

Perceptions and assumptions about the Russian military, both within Russia and around the world, are important to Russian President Vladimir Putin and his ruling siloviki circle. (Note: The term siloviki or “strongmen” is derived from Russia's institutions of strength, also known as the organi or “organs of power,” which include the security services, such as the Soviet Committee for State Security, where Putin is himself a veteran. In modern times, this term often refers to Putin’s inner circle of advisors, most of whom are Soviet Committee for State Security, Federal Security Service, or other security veterans.) Perceptions in the West of the “Russian bear” have previously included an intimidating military posture. Russian insecurity over maintaining these perceptions has driven Russian policy and military decision making on the battlefield. These same insecurities have played out in the Russia-Ukraine War as well. President Putin articulated repeatedly in his justification for the war the West had ignored his warnings over NATO expansion, meaning the West was not respecting Russia’s military posture.2

Once the decision was made to reinvade Ukraine in February 2022, all initial signs indicated the Russians were sure of a quick victory, and they were not the only ones. Military experts worldwide anticipated overwhelming Russian airpower along with a large ground invasion would help Russia to win the “new” conflict in 2022 in its opening days or weeks. (Eight years of war with Ukraine predated the February 2022 invasion, and the war in the east and Donets Basin never relented over that multiyear period.) Experts on all sides were wrong. Instead, Russia’s bungled air operations from the outset of the war quickly exposed a Russian Air Force incapable
of carrying out integrated air- and ground-attack operations or achieving air dominance on the battlefield. A significant reason everyone, including Russia, was surprised lies with incorrect assumptions about the war and its duration as well as the Ukrainian ability to fight back.

As part of the intended lightning-fast invasion, Russia conducted ground operations with about 150,000 troops divided into roughly 140 battalion tactical groups. To support this force, Russia’s air force carried out hundreds of sorties in the opening weeks of the war; conducted airborne assaults; and launched thousands of air-to-ground missiles, air-launched cruise missiles (ALCMs), and drone attacks. Despite any maskirovka Russia attempted later, the Russia-Ukraine War was and is a complete military invasion of a sovereign neighbor. (Maskirovka—literally, “disguise” in Russian—is a concept as old as the tsarist military. The concept has been carried through to Soviet and now Russian Federation services, military, and intelligence. Maskirovka can also be translated as “denial and deception,” and in the West, the term refers to the ability to confuse, disorient, and mislead the adversary by deception.) This understanding of the war as a major strategic operation, vice any claims of a smaller “special military operation” from the Russian side, is important because the understanding is key to applying Russia’s military doctrine to strategic air operations (SAOs)—a term and concept discussed next.

**Russian Strategic Air Doctrine**

Some military historians argue Russia has always used airpower as an extension of the country’s artillery, dating back to the Great Patriotic War (World War II), and the Red Army Air Force and its Russian successor never undertook the aim of air supremacy and strategic bombing in conflicts like the West does. This narrative is false. Russian military writings indicate Russians believe in air supremacy as much as the West does. The difference lies in Russia’s recognition of its relative weakness and where the country has focused airpower modernization efforts in recent decades. But despite widely advertised and written-about reforms and billions spent on new fighter aircraft, the flaws of Russian Air Force doctrine and air campaigning are on full display in Ukraine.

The Russian Air Force’s main flaws in Ukraine have been a lack of effective air-campaign planning and an inability to apply operational art to the battlefield. Russian military operational art has a proud tradition that dates back to Soviet military writers like Georgiy Isserson. But in execution, the Russian Air Force failed to integrate its air operations over the
critical operational pieces of space and time. As Elena Ioanes noted in September 2022, “Russian military doctrine—the planning, systems, and strategy that are supposed to underpin how it conducts war—hasn’t been particularly effective in Ukraine.”

As a prelude to understanding the Russian airpower failure in Ukraine, Russia’s claimed military “modernization” over the previous 15 years is important to explore briefly. Over those years, Russia had battlefield experiences in Georgia and Syria that influenced Russian doctrinal changes as well as later supposed modernization efforts. From the Georgian invasion and limited conflict in August 2008, the Russian military analyst Anton Lavrov from the Moscow-based Center for the Analysis of Strategies and Technologies drew several conclusions. Lavrov’s findings were later echoed by other Russian military leaders. As Lavrov noted, “The Russian Air Force was burdened by the obsolescence of its planes, helicopters, tactics, and weapons. . . . Russian aircraft used only unguided weapons. . . . Due to poor training and a shortage of pilots, flight instructors were sent out on combat sorties. . . . Russia’s substantial numerical advantage did not, to put it mildly, translate into battlefield results.”

Russia lost six fighter-bombers in only five days of air conflict—hard lessons for Russia in a limited conflict with its neighbor, one not considered a peer-level adversary. For the most part, Russia’s military and civilian leadership recognized their shortcomings. In the years following the conflict in South Ossetia, Russia produced large numbers of new aircraft and made organizational reforms (like the standing up of the Russian Air Force in 2015) along with investments in communications and training.

Within a decade of the Georgia intervention, Russia engaged militarily in Syria and used that conflict as a deployment exercise, rotating virtually the entire Russian strategic and tactical air fleet through Syria. Russia lost very few aircraft in Syria, mostly from accidents. But Syria—or for that matter, Georgia—should not have been considered effective as a test for the new Russian Air Force. Neither theater had an integrated air defense network, though the Georgians made a good showing of one in the opening days. But in neither conflict did the Russian Air Force have the experience of operations against an adversary that was systematically battling for control of the airspace. The lack of a developed and tested SEAD doctrine was thus a key flaw that would come to the fore in Ukraine. The Russians would pay dearly for this deficit of experience.
With this brief overview of previous conflicts, one can examine Russian doctrine in more depth. CNA provided an illustrative analysis in the fall of 2021. This analysis uses Russia’s military writings and doctrine to define a Russian SAO as one of the “main strategic operations in Russian military strategy.” In Russian, this concept is referred to as “стратегическая воздушно-космическая операция,” which is abbreviated as SVKO. But for the purposes of this chapter, the author uses SAO for the sake of simplicity. CNA defines an SAO as an operation in which the Russian Air Force attempts the following.

1. counters (deflects) an adversary’s aerospace attack

2. achieves dominance in the air and strategic space zones (“air superiority” in Western parlance)

3. inflicts damage on opponent aerospace forces and means in the aerospace and land domains (and at sea)

4. defends main points of state (administrative) and military command and economic infrastructure

5. disrupts state and military command of the opponent

6. thwarts a strategic operation and the operational deployment of forces

7. interdicts maneuver between theaters of operation

8. decreases military and economic potential

For the sake of this chapter, the author focuses on the first five objectives, which are the most salient to air operations in the Russia-Ukraine War.

Many of these concepts are familiar to experts on Western and NATO air doctrine. Notably, criteria 1 and 4 emphasize denying air attacks to the adversary. This objective is important and will be discussed below. Equally important, the Russian Air Force places comparatively less weight on SEAD as compared to the US Air Force. Nor is SEAD stated as emphatically as in US doctrine, which sees SEAD as a precursor to further air operations. In its official airpower doctrine, the Air Force notes, “Air superiority is normally a desired state before all other combat operations.”
In comparing these definitions and Russian doctrine with that of the United States and the West, a flaw is revealed in Russian airpower and how the Russians would apply it, or fail to apply it, in a twenty-first-century conflict. This flaw in Russian doctrine as it pertains to ground-air joint operations was not a new one. The very term “joint” is neither understood nor practiced in Russia’s military to anywhere near the degree jointness is appreciated in the United States and NATO. Over the past 30 years, while the United States and the West went through a modern revolution in air-ground joint operations and experienced conflicts involving campaigns for air superiority, Russia had no comparable battlefield experience with anything like peer-level adversaries. The Russians lacked battlefield experience and the lessons in associated campaign and operational design that come with this experience.

As Mike Pietrucha notes, “There does not appear to be a Russian equivalent to Colonel Warden’s *The Air Campaign: Planning for Combat*, which has served as the foundational document for modern air campaign planning for the United States since Operation Desert Storm.” Further, Russia has not “developed the follow-on tools, processes, or techniques which are routinely used by the United States and NATO for air campaign planning.”

The Russian Air Force in Ukraine could not demonstrate a thorough and professional air campaign plan because the service has not developed a generation of successful air campaign planners the way the United States and other Western countries have. The Russians do not plan campaigns, fly training missions, or wargame like the US Air Force and NATO. The Russians are limited in flight hours, with numbers at or below roughly 100 flight hours per year. Actual flight hours are hard to come by, given Russian secrecy on all military issues, but 100 flight hours seems at the upper end of most estimates the author found. In addition, Justin Bronk at the Royal United Services Institute (RUSI) notes a lack of night-trained Russian pilots in Ukraine. Until very recently, Russian forces lacked a national-level command-and-control (C2) center, and the one they built in recent years is untested. For further perspectives on joint operations and the lack of demonstration of them in Ukraine, see the related products from NATO’s Joint Air Power Competence Centre. Among the other issues highlighted below, these weaknesses explain the Russian Air Force’s inability to fight in the air in Ukraine in the way the US Air Force and its allies have fought for decades.
Finally, an important doctrinal consideration is the issue of Russia’s senior military leaders’ view of modern war. In a RUSI study on Russian military thinking before the conflict, authors Sam Cranny-Evans and Sidharth Kaushal highlighted the work of Russian military figures such as Vladimir Slipchenko, Major General Alexander Vladimirov, former Deputy Chief of General Staff Makhmut Gareev, and Chief of Staff Valery Gerasimov to point out why “Russia’s failures reflect a series of long-standing erroneous assumptions about modern warfare that are held by wide segments of the military.” The authors note the upper Russian military brass had an overinflated “fixation with ‘noncontact warfare.” This thinking, which has been prevalent since the end of the Soviet era, helped to promulgate assumptions the Russia-Ukraine War of 2022 would be short.

This doctrine, also referred to by senior Russian leaders as the “noncontact” or “without contact” (bezkontaktnaya voina) doctrine of warfare, stresses hybrid warfare coupled with an emphasis on over-the-horizon air warfare (see, for example, the Russian-language article characterizing the invasion of Ukraine as “a classic noncontact war taking place”). In Georgia in 2008, Russia attempted heavy air assaults by cruise missiles and short-range ballistic missiles (SRBMs), called massirovani massirovani raketnii aviatsionii udar in Russian, followed by the subsequent ground push into Ossetia and Abkhazia. The concept was further reinforced in Syria, where Russia took efforts not to put its pilots in jeopardy with close air strikes, preferring the use of precision-guided munitions (PGMs). Losses were thus kept very low.

Gerasimov spoke of this new Russian doctrine with its emphasis on standoff air action and the destruction of the enemy before engagement with infantry forces in 2013. Gerasimov famously stated, “The primary method for achieving military objectives are non-contact actions against the enemy through the massive employment of precision-guided, long-range munitions from air, sea, and space.” Roger McDermott discussed how Gerasimov’s comments on operations in Syria since 2015 frequently stress “‘limited’ application of hard power” and “non-contact warfare strategies such as high-precision weapons systems.” The so-called Gerasimov doctrine—which was more of a description of several hybrid and noncontact elements rather than an official Russian doctrine—garnered more attention over the subsequent decade, with repeated mentions by Russian military leaders, experts, journalists, and bloggers. But Gerasimov’s speech was not the first mention of noncontact warfare. The idea and concept go back at least another decade.
Predictably, then, Russia’s invasion started with a heavy reliance on standoff ballistic, air-launched, and other cruise missiles as the main feature of the country’s Ukrainian airpower engagements. Gerasimov and other Russian writers on this subject emphasize “noncontact” does not mean nonlethal combat, nor does the term mean Russia will not directly engage the enemy (for instance, in air-to-air combat). Russia was essentially trying to mimic the United States’ heavy use of airpower and missile attacks the world witnessed in the Persian Gulf War and Iraq War as well as the Balkans, a version of standoff and long-range, kinetic attacks. As an example of this application, during the Syria conflict, Russia started to share footage of PGM strikes on the country’s nightly news, much as the United States did during conflicts going back decades. Russia was essentially saying to its people and the world, “See, we can fight like they do in the West.” But in practice, Russia could not, and Ukraine would show why.

Russian development of noncontact doctrine was also heavily biased by interpretations of that which the US Air Force and NATO were likely to do in a first strike against Russia. Fearing NATO strikes that would incapacitate its C2 and the destruction of its air assets on the ground, Russia focused on the threat of standoff missile strikes. (For an excellent analysis of Russia’s anticipations for a NATO attack and Russian efforts to counter it, see Michael Kofman et al.) But Russia appears to have not adapted its doctrine and engaged in even less advanced planning for the Russia-Ukraine War and its unique battlefield circumstances. Even after eight years of conflict in the Donets Basin, Russia clearly underestimated Ukraine as an adversary—in particular, its ability to deploy a highly effective GBAD network covering the country.

With this understanding of Russian doctrine, the next section uses Russia’s definition of effective air operations to focus on how Russia was failing in the air as a precursor to a final analysis of why this failure occurred. Again, the focus is within the context of the first eight months of the war, through early November 2022.
Russian Air Force Initial Execution and Losses: How It Lost in the Air

Using its criteria and doctrine noted above, the Russian Air Force might have claimed some limited success early in the war. Indeed, in early November 2022, a RUSI report highlighted Russia likely undertook more air operations initially in Ukraine in the spring of 2022 than was generally known in the West.  

Early in the conflict, Russia had mixed success with the first SAO goal: countering air attacks by the enemy. Russian forces in long convoys came heavy attack from Javelins; Ukrainian forces on the ground; and, as was covered heavily by the international press, Turkish Bayraktar TB2 unmanned aerial vehicle (UAV) strikes. But as Bronk and others would note later, the Ukrainian Air Force also carried out heavy air-to-ground attacks using traditional, fixed and rotary attack aircraft (Sukhoi Su-24 and Su-25 fighter bombers as well as Hind and Hip attack helicopters). Although the Ukrainians were heavily outclassed by Russian fighter aircraft (by their own admission), they fought bravely and took heavy casualties. For its part, Russia’s GBAD took its toll on the Ukrainians, but Russia was not able to stop these air-to-ground attacks.  

In the early weeks Russia also settled largely for a tie on the second part of an SAO, achieving air superiority. Neither side was achieving air dominance. Russia also achieved some success on criterion 3 in the SAO air-campaign list (inflicting damage on enemy air forces) during the early summer of 2022. The Russian Air Force was forced to accept parity (a tie) with Ukraine, at least on criteria 4 (defending administration and military command and infrastructure) and 5 (disrupting command of the enemy). On the final two criteria, consider Russia could not hold off major Ukrainian counteroffensives, despite launching hundreds of ALCM attacks in Ukraine through the spring and summer. At the same time, Ukraine successfully targeted, destroyed, or captured 191 Russian command posts (CPs) and centers, and it had killed nine Russian generals by the summer of 2022.  

But this rough parity and the scorecard had changed dramatically by the end of the summer of 2022 as Ukraine launched an offensive in the Kharkiv region that took back over 3,000 square miles of territory by the end of September 2022. This counteroffensive was all the more remarkable because in response, the Russians offered no sustained effort in the air. The lack of airpower from the Russian side exposed a true Potemkin facade for Russia’s
The Failure of Russian Airpower in the Ukraine War

Chapter 16

The Russian Air Force. With this calamitous action, the Russian Air Force had failed on all five of the SAO air-campaign criteria from Russia’s own doctrine noted above.

An examination of Russian actions early in the war would help to explain how this strategic failure happened and what had changed. As the aforementioned November 2022 RUSI report noted, the Russians tried early in the war to launch air operations and deny air supremacy to Ukraine. In line with Russia’s SAO doctrine, the Russian Air Force wanted to keep the Ukrainians from operational use of the airspace and allow for Russian air support to ground operations. In this vein, Russian ground-attack helicopters inflicted some early and notable attacks. (Again, the Russian Air Force includes rotary-wing and other elements not traditionally included in US or Western air forces.)

Take, for example, Kherson, which was seen by both sides as key to Russian aspirations of controlling the Ukrainian coast and as part of a land corridor to Crimea. In late February 2022, Kherson was one of the early objectives of the Russian army and Air Force. But the assault on the key Chornobaivka air base outside Kherson turned out to be an abysmal failure for the Russians. The Ukrainians destroyed dozens of helicopters, multiple ammunition depots, two Russian generals, and the better part of a Russian battalion. Much of this damage was due to Ukraine’s successful use of drones. 28

This defeat outside Kherson was but one example of many early failures of Russian air assaults and offensives, all launched with the absence of air superiority. The defeat was a harbinger of more losses to come across Ukraine for the Russian side. A similar airborne assault at Hostomel Airport near Kyiv in early March was also pushed back with disastrous consequences for Russia’s invasion timeline. The loss of the airfield precluded Russian attempts to ferry Russian airborne and other reinforcements to Kyiv’s doorstep.

As the conflict ground on from days to weeks, Russian use of airpower became both more predictable and less frequent, with more emphasis on targeting ground operations and less focus on even an attempt to achieve air superiority. Part of the problem may have been the subordination of Russian Air Force C2 to ground forces as well as the need for Russian air sorties to support Russian Ground Forces, which were increasingly bogged down as weeks turned to months. 29 Russian air attacks were often too limited and lacked sustained follow-up to ensure their battle-damage assessments were accurate and, if they were not, to redeploy another sortie to effect total destruction. The Russian equivalent of US air tasking orders seemed either nonexistent or chaotic, with often little logic or pattern as to what they were
aspiring to achieve. In short, Russia was systematically failing to conduct an effective air campaign, and no simple explanations or fixes could be found.

The early failures notwithstanding, some experts in the West and other countries continued for months to believe the Russian Air Force was meeting its goals and possibly holding back some resources in the air for unknown reasons. Western military experts collectively struggled to understand Russia’s airpower failure and lack of sustained air operations. For months, these experts continued to speculate Russia must be waiting to bring in all its airpower or resources. But the truth below the surface and hidden by a lack of reliable reporting in the early weeks and months was the Russians were losing in the air just as they were losing on the ground because they were not able to plan and carry out true joint operations—a failure of air-campaign planning.

Russian pilots were also losing in the air, no doubt in part due to a lack of training. As Lars Peder Haga noted in his 2020 overview of the Russian Air Force, which referenced many Russian journal articles by senior air force officers, the Russians were themselves disappointed with a lack of training. In 2020, still in the midst of a rebirth of its air forces (according to Russia), the country’s pilots were lucky if they received half the average time in the cockpit of their Western counterparts. Even with the Syria deployment as a training ground, the key deficiency was Syria was a battlefield environment where GBAD was a minor or nonexistent threat to Russia’s air force compared to that which it would face in Ukraine.

By the summer of 2022, more and more Western military experts were taking notice of the failure of Russian airpower. As Rebecca Grant, president of IRIS Independent Research, correctly assessed, “Russian pilots commonly take off, only to reach altitude, launch a missile into Ukraine and then immediately go back to the airfield.” This procedure became Russia’s fallback air strategy—effectively, a variation of shoot-and-scoot and over-the-horizon warfare that was started and finished over Russian airspace. “That kind of performance,” Grant continued, makes one “doubt previous perceptions of Russian airpower.” If Gerasimov and others were referring to this strategy when they used the term “noncontact,” then Russia needed to pivot to a new approach; it was not working.

The refrain from experts in recent years, with Russia’s advertised military reforms and Putin’s increased defense spending, was the “Russian bear is back.” With the Ukrainian invasion, the whole world was waiting to see how the Russian bear would perform, but it never showed up as expected. The question, then, is how to reconcile Russian SAO doctrine—which called
for SEAD, Russian air superiority, and integrated ground-air operations—with the increasing lack of any demonstration of Russian airpower or denial of Ukrainian airpower by the late summer of 2022.

In his continuing analysis of the conflict, Bronk assesses, “The lack of Russian fixed wing fighter and strike aircraft sorties allowed Ukrainian SAM operators and troops with MANPADS such as the US-made Stinger missile to engage Russian helicopter gunships and transports with significantly less risk of immediate retaliation.”34 (Bronk later returned to the issue of failing Russian airpower in the comprehensive November 2022 RUSI study noted above.)35 Russia failed to carry out an effective SEAD air campaign, and this failure heightened Ukrainian success with GBAD. Russia launched many sorties and thousands of attacks by missiles, fighter-bombers, and rotary aircraft, but this campaign was not systematic and did not abide by Russian SAO doctrine.

As Bronk notes, Russia’s reticence to engage more forcefully in an American-style battle for dominance in the air and the country’s lack of a sustained SEAD campaign led to more and more problems on the ground. Russia engaged less and less in the air as the weeks turned to months. By the fall of 2022, the Russian Air Force gave up on SEAD. In a later podcast on the same issue, Bronk notes figures he obtained during visits to Ukraine that suggest Russia may have had fewer than 100 combat-ready pilots to use in Ukraine.36 If so, this scarcity would explain much of Russia’s reticence to engage in the air. With the loss of dozens of aircraft and pilots in the opening months, the Russian Air Force could not afford to lose any more pilots.

Can one see effective and sustained air control by Russia in Ukraine on any of the main Russian operational lines of effort? Effective and sustained air control was virtually nonexistent, particularly during the massive Ukrainian counteroffensives in the east in the Kharkiv region and in the south, when Ukraine retook Kherson. By the time these counteroffensives occurred, as David Axe noted, “For more than two weeks after Ukrainian brigades counterattacked—first in the south just north of occupied Kherson, then in the east outside the free city of Kharkiv—the Russian air force seemed to go missing in action.”37 Although Russia’s SAO does mirror some elements of US Air Force doctrine, as noted above, Russia did not follow through in air-campaign planning; the country simply failed to execute.

Along with the doctrinal failures noted above—a lack of effective air campaign planning and training—one has to consider Carl von Clausewitz’s admonition war is not fought against an inanimate object. The Ukrainians
fought back very effectively against Russian airpower. A brief analysis of Ukraine’s effort and the country’s GBAD network follows. Having established Russia failed, now, the chapter investigates the reasons this failure occurred.

Why Russia Could Not Execute Its Airpower Doctrine in Ukraine

Three main factors made Russia ineffective at its own doctrine, forcing the country to give up on air control of the battlespace by the fall of 2022: a highly effective and well-managed Ukrainian GBAD network that Russia was unable to counter with SEAD, leading to heavy losses in the air; a lack of sustained Russian effort to engage in the air, likely due to a fear of Russian aircraft and pilots being shot down either from enemy fire or friendly fire from Russian GBAD; and the rapid depletion of Russian PGMs as well as other inventory and equipment difficulties that occurred by the summer and fall of 2022, forcing Russian adaptation. These adaptations included the introduction of foreign UAVs and other attempts at improvised or backup options when the leadership of the Russian military realized it was unable to achieve air dominance in an air war the leadership had hoped would be “noncontact.”

Estimates of Russian air losses through early November 2022 vary considerably according to the source. The estimates were hampered by a complete blackout of Russian reporting. That said, most reputable think tanks and foreign defense sources, including the well-sourced figures from the blog Oryx, indicate the Ukrainians shot down 65 fighter-bombers, 75 rotary-wing aircraft, and hundreds of drones and cruise missiles. These casualties were inflicted by various air defenses and, according to the Ukrainians, at least some direct air-to-air engagements early in the war.38 (Note: The author has found Oryx to be one of the best websites documenting actual Russian losses vice accidents or friendly fire and so forth. Oryx carefully documents each instance of downed aircraft by either side and often includes references to press reporting, photos, or other evidence.)

These losses represent, by reliable reporting, nearly one-tenth of all active Russian fighter-bombers, given the Russian order-of-battle numbers were estimated at about 700 active aircraft before the war’s start.39 In addition, as with any modern air force, about one-third of the total aircraft include nonoperational aircraft that are in for repairs, are disabled, or lack parts. Russian aircraft maintenance is also hampered by the inability to carry out
competent repairs at the squadron level, so Russia’s level of combat readiness is likely much lower than that of the West. Old Soviet habits persist, necessitating the return of damaged aircraft to the defense industry (and the inherent bribes and corruption endemic to this practice). The RUSI estimated Russia deployed about 350 fighter-bombers and about 100 combat-ready pilots into Ukraine.\(^{40}\)

Regardless of the actual figure before the war, losses of dozens of fighter-bombers in the opening months of the war were significant for the Russian Air Force. These estimates are added to upwards of 100,000 ground-troop casualties by the fall and several thousand combat vehicles lost to Ukrainian attacks.\(^{41}\) By any measure, these numbers represent tremendous losses for a modern military, even one the size of Russia’s.

These losses were due in large part to a very effective Ukrainian GBAD network. To counter GBAD, Russian SAO doctrine called for “deflecting and parrying the blow” and “conducting counterattacks to suppress an opponent’s airpower.”\(^{42}\) In other words, doctrinally, Russian campaign planning and its execution should have included an aggressive and comprehensive effort to deny Russia’s enemy the air and to use it for the Russian Air Force’s effect. The first step in this doctrine should have been SEAD and the destruction of Ukraine’s ability to fight back against air attack, but this step never came.

These and other failures of Russian air-campaign execution were on full display during Ukraine’s Kharkiv counteroffensive in September 2022. During the critical weeks when Ukraine successfully took back thousands of square miles of territory, the Russian Air Force was largely absent from the conflict. This absence was observed again in November, when Ukraine retook Kherson with exposed vehicles that would have been easy targets from the air. But Ukraine’s air-denial strategy and tactics were so successful Russian pilots were wary of attacking. Indeed, as an article in the *Defense News* summarized, “Ukrainian tanks and military vehicles rumbling down highways . . . should have made easy work for the Russian Air Force. But Ukraine’s air denial strategy made Russian pilots wary of flying into Ukrainian airspace at all, much less loitering and hunting for targets on their own.”\(^{43}\)

Russia ended up completely unprepared for the Ukrainian offensives and unable to counter them both on the ground and in the air. Ukraine’s successful air-denial strategy, in combination with Russia’s inability to respond
to the strategy, was a critical enabler of Ukraine’s counteroffensive successes both outside Kharkiv and later in Kherson. This denial of air operations on the battlefield was not a new tactic for Ukraine, nor was it new to Russia. Russia should have seen this tactic coming because it was an extension of some of the air parity seen on the eastern front since 2014.

Ukrainian GBAD networks included extended zones of defense that used Ukraine’s highly effective inventory of SA-300, Buk, 9K33 Osa, and other systems. These systems were supplemented by new Western systems as well as other mobile surface-to-air missiles and man-portable air defense systems, including hundreds of Stinger missiles quickly imported from NATO countries. In this way, the Ukrainians employed Soviet-era air defense doctrine to great effect against their former Soviet comrades turned invaders.

The result was an umbrella of air cover, some of which included mobile units Ukraine deployed to great effect during the counteroffensive in September 2022. New Western technology helped to up the ante for Russian air incursions, making the potential cost of more pilots and aircraft higher for Russia. New self-propelled antiaircraft gun systems like the Gepard systems helped the Ukrainians to fill gaps in their GBAD network next to their Osa and other guns, allowing them to save more expensive and higher-altitude stocks of ordnance for use against ALCMs and SRBMs.

In another case study of the success Ukraine achieved in the first seven months of the war, David Axe analyzed the impact of losses on one formerly elite, frontline, Russian fighter-bomber regiment: “In seven months of intensive fighting, Ukrainian air-defenses reportedly have shot down a quarter of the crews belonging to the 559th Bomber Aviation Regiment, based in Morozovsk.” As Axe notes, nearly half the unit was lost, dealing Russian Air Force units like this one a lethal blow.

Contributing to Ukraine’s success with its effective GBAD was, ironically, Russia’s equally effective GBAD along the country’s border as well as the Russians’ fear of friendly fire from their GBAD. This air challenge is not unique to the Russians. Bronk correctly notes, “Friendly-fire incidents by ground-based SAM units have been a problem for Western and Russian air forces alike in multiple conflicts since 1990.” But these incidents did not freeze Western and US air forces from operating during those conflicts. Although NATO faced similar challenges—for instance, in the Balkans—it demonstrated a competent air force sets up either time or altitude space windows for air sorties to be carried out against tough GBAD.
The United States and NATO have effective communications, and they rehearse sorties in training to build confidence. Russia showed none of this competence, so its air force was sitting on the ground when needed.

Although this chapter focuses on Russia’s airpower failures in Ukraine, the Ukrainians deserve credit for their valor and professionalism on the battlefield in setting up a complete and, in some areas, nearly impenetrable integrated air defense network. Losses like those suffered by the 559th Bomber Aviation Regiment are sure to be repeated across the Russian Air Force. As Lawrence Freedman summed up, “Military power is not only about a nation’s armaments and the skill with which they are used. It must take into account the resources of the enemy, as well as the contributions from allies and friends.”

The Ukrainians deserve credit for defending their homeland successfully, but they did not do it alone. The Ukrainian counteroffensives of September through November 2022 demonstrated how great an impact Ukraine’s allies and friends made in countering Russian airpower. The High Mobility Artillery Rocket System (HIMARS), joined with Western air defense assets, changed the tide of the war. At the same time, with each engagement, the Russian Air Force’s absence was demonstrating how little the service could impact events on the battlefield and how effectively the Ukrainians had begun to deny the Russian Air Force any tactical use of the air. As Ukraine imposed air denial with the country’s increasingly effective GBAD and the war dragged on much longer than anticipated, the Russian Air Force struggled to come up with methods to continue to keep airpower relevant in the conflict.

In the late fall of 2022, after its failure to hold on to Kherson, Russia tried turning to extensive UAV and drone warfare amid an obvious shortage of PGMs and ALCMs. In addition to the intelligence, surveillance, and reconnaissance (ISR) tactics employed heavily on both sides, Russia tried, mostly unsuccessfully, to employ UAVs to fill gaps of airpower on the battlefield. This adaptation is still underway, and an in-depth discussion of UAVs and their role on the Ukrainian battlefield is beyond the scope of this study. But some brief generalizations can be made based on the use of UAVs in the conflict so far.

Shortly after the invasion, Russia’s domestically produced drone aircraft clearly took second seat to Ukraine’s very effective use of Turkish Bayraktar TB2 and other drones. Russian Orlan-10 drones took heavy losses early in the war when the Russian Air Force did not yet appreciate the effectiveness of Ukrainian GBAD. These heavy losses of Russian drones along
with declining arsenals of PGM munitions led Russia, by October 2022, to purchase large quantities of Iranian Shahed drones. Russia renamed them GERAN-2 and initially tried to pass them off on the battlefield as domestically produced. Russia launched hundreds of these Iranian drones in the winter of 2022 in an extended terror campaign that is still playing out, targeting civilians and civilian infrastructure, such as electrical grids and utilities.

Ukraine’s GBAD was to make a significant impact in this phase of the conflict as well. The Iranian-produced drones were shot down en masse, with Ukraine claiming in the early winter of 2022 a success rate of 70 percent against the new “kamikaze drones.” By and large, Russia’s use of drones was not a successful tool of war or airpower. Some might argue the use of the Iranian drones suggested the Russians were finally attempting an actual air campaign against Ukrainian infrastructure (concentrating on electrical grids, in particular). These tactics would follow US air doctrine used in the Kosovo conflict and the Persian Gulf War, which was in line with John Warden’s Air Force doctrine of so-called “concentric rings of attack.” (Warden’s argument, famous in Western schools of air campaigning, is attacking the enemy’s concentric rings of leadership, infrastructure, and so forth can lead to strategic “paralysis.”) But on the Russian side, drones have been used as an attempted tool of terror, and as seen with the populations on all sides in World War II, these terror attacks have mostly been counterproductive, serving only to unite the Ukrainian people.

Conclusion

A highly effective air defense network confronted Russian failures in air-campaign planning and execution in Ukraine, leaving the Russian Air Force searching for solutions as the war approached the one-year mark. Although sadly making a tragic impact on the Ukrainian civilian population with random ALCM, SRBM, and drone strikes, Russian airpower failed to impact the strategic outcome of the battles for Ukraine in all theaters of the conflict. Put more simply, the Russian Air Force failed to execute its doctrine and accomplish its mission.

As of November 2022, the vast majority of Russian fighter and bomber aircraft were no longer engaged in Ukraine and instead were sitting out the conflict. Even while passively sitting on the tarmac at bases like Engels-2 Air Force Base deep within Russia, Russian bombers came under attack;
take, for example, the long-range drone strikes Ukraine carried out against Russian bomber bases in December 2022. Ground-attack helicopters took heavy casualties early in the conflict and in the battles of Chornobaivka and Hostomel and similarly have been limited, sitting out the conflict ever since.

Russian ALCMs and other ballistic missiles have become Russia’s go-to weapons of the war as the country attempts to follow Gerasimov’s noncontact doctrine in attacks over the horizon. But these ballistic missiles proved inaccurate and ineffective. The missiles are launched almost exclusively from Russian-controlled territory and at long distances, making the resulting inaccuracy difficult to evaluate. Is this inaccuracy a reflection of poor guidance from Russia’s Global Navigation Satellite System? Does the inaccuracy result from a failure of guidance, inadequate maintenance of systems, or ineffective terrain tracking? Whatever the reason, ballistic missiles have not helped Russia achieve its doctrine of a noncontact air war. Air-launched cruise missiles (ALCMs) and SRBMs have not been a decisive tool.

Advanced air defense systems and GBAD have limited the utility of both traditional airpower and drones on both sides. But although Ukraine’s GBAD has been paralyzing on the Russian side, Ukraine has managed to carry out massive counteroffensives successfully in both the east and southeast, as noted above. Ukraine has also defied Russia’s interior air defenses, making forays with its drones deep into Russia.

In comparing Russia’s dramatic losses to its limited experiences in both Georgia and Syria discussed above and drawing lessons back to Russian doctrine, what is different about Ukraine, and where has Russian doctrine and campaign planning changed or failed to change? In the earlier conflicts, Russia’s air force did not face an integrated air defense system. In 2022, the Ukrainians deployed GBAD to devastating effect while augmenting and integrating the GBAD with Western-manufactured systems. Russia’s air force has not countered this GBAD, and the service lacked effective air-campaign planning tools, experience, and understanding to adapt. The experience in Ukraine shows Russian pilots were not trained effectively enough in SEAD, and the Russian Air Force largely gave up trying to accomplish this crucial mission.

The effectiveness of Ukrainian GBAD despite Russian numerical superiority suggests a paradigm shift for future conflicts in which Russia (or other regional powers) may attempt to project airpower. Bronk argues the effectiveness of Ukrainian GBAD makes a strong case for the West to supply reinforcements and new air defense systems. But policy decisions
are beyond the scope of this chapter, which is intended as an overview of Russia’s airpower failure in Ukraine.

The success of Ukrainian GBAD will also inevitably bolster discussions on air-denial strategy—vice pressing for air superiority—on the modern battlefield can be effective, at least in stalling the offensives of an adversary. That said, the same Russian failure to accomplish a sustained SEAD mission despite heavy losses strengthens the US Air Force doctrinal arguments favoring both SEAD and air superiority as precursors to all other airpower instruments.

Finally, the West and military experts around the world incorrectly assessed Russian airpower and military strength in general. The studies of this conflict and Russia’s failed preparation and planning will continue for years to come. As argued above, Russian doctrine, Russia’s attempted modernizations before the 2022 invasion, and the effectiveness of these reforms should be explored further. This chapter offers only an overview and glimpse at some of this doctrine. Much more will be discovered in the years to come as Russian primary sources on the war become available.

Despite the terror tactics and attempts to intimidate, Ukraine fights on. And as military experts finally are starting to agree, the Russian Air Force has proven incompetent. Rebecca Grant summed it up well: “Russia’s performance in the air has been terrible. . . . Turns out, really, they were just sort of a continental air force. They don’t like to fly at night. They don’t like to fly very far into Ukraine.”\textsuperscript{53} Indeed, as judged from the September–October counteroffensives in particular, the Russian Air Force did not fly into battle much at all. Gerasimov’s doctrine outlined above calls for Russia to conduct a noncontact war. So much for Russian noncontact war, then, and its chances for success.

This failure is one of the main lessons one should draw from the Russia–Ukraine War and Russia’s constant game of maskirovka. Russia wants to be respected and desperately wants its military to be feared. But the West should pay less attention to Potemkin villages and projections of military might and more to doctrine and the execution of such in air campaigning. In Ukraine, the practice of Russian airpower has been, and continues to be, an abject failure.
Endnotes


13. Pietrucha, “Amateur Hour Part II.”


18. Leonid Dmitriev, “‘Идет классическая бесконтактная война’—военный эксперт Леонид Дмитриев о первом дне вторжения в Украину” [“There is a classic noncontact war going on” — military expert Leonid Dmitriev on the first day of the invasion of Ukraine], Insider (website), February 24, 2022, https://theins.ru/news/248864.


30. Haga, “Russia.”

31. Haga, “Russia.”


35. Bronk, Watling, and Reynolds, Russian Air War.


40. Bronk, Watling, and Reynolds, Russian Air War, 6.


42. Kofman et al., Russian Military Strategy, 64.

44. Bremer and Grieco, “Success Denied.”
45. Axe, “Ukraine’s Ex-German Air-Defense Guns.”
47. Bronk, “Mysterious Case.”
52. Bronk, Watling, and Reynolds, Russian Air War.
53. Perez, “Russia’s Invasion of Ukraine.”
As British theorist Sir Basil Liddell Hart wrote, the purpose of war “is a more perfect peace.” To arrive at a better peace, Russia and Ukraine must apply the just war ethic to steer both governments toward a peace in which the two countries address the root causes of conflict and end human suffering. Analyzing possible outcomes of the Russia-Ukraine War begins with applying the just war ethic as a starting point from which to judge the moral quality of the war’s possible outcomes. Creating a better peace means learning how to apply the just-war ethic—in particular, the jus post bellum principles—to the conflict at hand. To achieve sustainable peace, the focus must be on the jus post bellum principles, which include just cause for termination; right intention; public declaration, legitimate authority, and domestic-rights protection; discrimination; and proportionality. The Russia-Ukraine War demonstrates the challenges of concluding a war in a modern context and provides insight into how the United States may better seek to resolve armed conflicts in the future.

What Is Jus Post Bellum?

As Canadian philosopher Brian Orend wrote, the just-war ethic is “a system of ideas describing when and how a state might behave morally at the beginning, middle, and end of warfare.” The just-war ethic has three components: jus ad bellum (a state’s right to wage war), jus in bello
(a state’s actions or behavior while at war), and *jus post bellum* (justice following a conflict).^4

According to *jus post bellum*, to conclude the war justly, both Russia and Ukraine must reach a better peace, justice must be served, and the reconstruction of Ukraine must start. The postwar period will be difficult for the Ukrainian people as the reality of the war begins to sink in and the outlines of possible peace emerge. The principle of *jus post bellum* can provide the Ukrainian people a sense of justice while they rebuild their nation and economy. The principles of *jus post bellum* can also offer a framework for articulating the sustainability, fairness, and stability of peace agreements and postconflict societies.

**Jus Post Bellum Principles**

Just cause for termination is when “a state has cause to seek termination of the just war in question if there has been a reasonable vindication of those rights whose violation grounded the resort to war in the first place.”^5 The principle of just cause for termination seeks to ensure the belligerents can reach an agreement to end the war completely. Territorial integrity is restored, with the aggressor returning most or all territories it captured to the country of origin. Finally, the victims of the war must receive some sort of compensation, and punishment for the perpetrators must receive punishment.

Right intention stipulates a state “must intend to carry out the process of war termination only in terms of those principles contained in the other *jus post bellum* rules.”^6 The principle of right intention is meant to ensure a commitment to justice, accountability for those involved, and the long-term interests of everyone the conflict affected direct the transition from war to peace. But vengeance or personal gain must not motivate right intention.

The principle of public declaration, legitimate authority, and domestic-rights protection stipulates the “terms of the peace must be publicly proclaimed by a legitimate authority.”^7 This principle is meant to ensure the transition from war to peace is transparent and the public is kept informed. Furthermore, the legitimate governing authority is the only one authorized to make decisions and take actions at the end of a conflict. Finally, the rights of all parties involved must be protected throughout the process.

To achieve discrimination in “setting the terms of peace, the just and victorious state is to differentiate between the political and military leaders,
the soldiers, and the civilian population within the aggressor regime.”

The victorious state holds political and military leaders accountable for any aggression the leaders’ militaries committed against another country. Hardship should not befall the civilian population or soldiers who simply carried out superiors’ orders. But the victorious state still holds soldiers who are guilty of war crimes accountable for these crimes, whether the soldiers were following orders or acting on their own volition.

Proportionality in terms of *jus post bellum* means “any terms of peace must be proportional to the end of reasonable rights vindication.” The principle of proportionality stresses the importance of creating programs for reasonable compensation in hopes of minimizing the damage and harm the conflict caused victims. Likewise, any actions taken to promote justice must be appropriate, considering the crime, and must not worsen injustice or cause more harm.

An example of *jus post bellum* in practice occurred at the end of World War II. As American strategist Edward N. Luttwak noted, “War brings peace only after passing a culminating phase of violence.” The most compelling example of Luttwak’s sad truth is World War II. After six years of devastation and millions of casualties, most of whom were civilians, the Axis powers were unable to continue the war because Germany had faced total military defeat and Japan had sought peace after the atomic bombings of Hiroshima and Nagasaki. Japan had the right intention in ending the war because the people had lost the motivation to fight. Following the Axis powers’ defeat, a complex transition from war to peace began, including determining the disposition of all territories the Axis powers had occupied.

The Allied powers also established the International Military Tribunal in Nürnberg, Germany. The Nürnberg trials are an example of discrimination because political and military leaders were held responsible for crimes against humanity, crimes against peace, and war crimes, even if the leaders committed the crimes pursuant to official responsibilities. Furthermore, the Nürnberg trials sought to protect the defendants’ rights throughout the process and to serve justice to the guilty parties. The efforts to establish justice and accountability and rehabilitate war-torn countries at the end of World War II are excellent practical examples of *jus post bellum* principles.

Although a relatively recent addition to the just-war ethic, *jus post bellum* is relevant to a just conclusion of the Russia–Ukraine War. Applying the principles of *jus post bellum* will enable the belligerents to argue the explanation
for the end of the war is fair and consistent with the interests of both the parties involved as well as the international community. For Ukraine and its population to attain a just peace following Russia’s unjust war, *jus post bellum* may inform the way forward.

**Applying Just-War Principles to the Russia-Ukraine War**

Ending a war justly requires understanding and, in many cases, changing that which the parties to the conflict hoped to achieve when the war began, recognizing war objectives can change over the course of the conflict.

**Russia’s Objectives at the Start of the Conflict**

Russia aspires to be the regional hegemon among former Soviet republics that share the country’s interests and values. But Vladimir Putin’s goals in Ukraine are complicated, entwined with deception, and ever-changing. At the onset of the Russia-Ukraine War, Russia had multiple objectives in Ukraine. The first objective was to prevent Ukraine from becoming too close to Western influences—in particular, keeping Ukraine from joining NATO and the EU. Preventing Ukraine from joining these international alliances would lay the groundwork for restoring a pro-Russian government similar to the government of President Viktor Yanukovych. The Russia-Ukraine War can be best understood as an effort to prevent Ukraine from being ensconced in the NATO bloc.

Russia’s second objective was to “denazify” Ukraine; Russia claimed Nazi ideology had taken over the Ukrainian government. This narrative stems primarily from the checkered past of the Azov Regiment. This regiment, which defended Ukraine as a volunteer unit during the 2014 crisis in Crimea, has a history of attracting far-right members, including some neo-Nazis. Although the Azov Regiment has ties to far-right and, in some cases, neo-Nazi ideology, the Ukrainian government has been conscious of concerns about the regiment, and its political wing, the National Corps, has failed to gain seats in parliament. This lack of political popularity casts doubt on the presence of Nazism in the Ukrainian government. Moreover, President Volodymyr Zelensky is of Ukrainian Jewish descent, further discrediting the notion neo-Nazi influence exists in the Ukrainian government. The narrative Putin employed was misleading because it characterized an entire government by referring to a small group of bad actors that has repeatedly failed to gain political power. The argument the
Azov Movement’s past equates to the Ukrainian government’s present has no merit.

Russia’s third objective was to assert dominance around the Black Sea. Access to warmwater ports would provide Russia an economic advantage as well as the ability to project power into the region. In particular, such access would position Russia to exert influence over Ukraine and Georgia, two countries that were formerly part of the Soviet bloc, giving Russia the ability to attempt to counteract the Westernization of the two countries. From a security perspective, Russian control of the Black Sea would ensure a buffer was maintained between Russia and Western Europe and decrease Russia’s vulnerability to NATO members’ intermediate-range missiles.20

Russia’s final objective was to create economic dependence between Russia and Ukraine. Putin claimed Western companies were exploiting Ukraine’s natural resources and reaping the benefits.21 Putin may be correct but not to the extent he asserts. Survival is the objective of most capitalist organizations. Furthermore, Ukraine serves as a key strategic hub for goods and services transiting between Europe and Russia.22 As a result, Russia would benefit from complete economic control over Ukraine. To achieve Russia’s extreme goals, Putin employed all Russian instruments of power. According to Putin, the “true sovereignty of Ukraine is possible only in partnership with Russia.”23

Ukraine’s Objectives

Ukraine’s objectives are easier to understand. In the early days of the Russia-Ukraine War, Zelensky said, “Our people are fighting for our shared values, for freedom and democracy, not just in Ukraine but in the whole world.”24 Zelensky contends Ukraine is fighting a war for liberal democracy and must do everything possible to prevent Russia’s assault on democracy from spreading to other countries. Ukraine’s first objective is to retain sovereignty, which includes territorial integrity.25 The Armed Forces of Ukraine have halted Russia’s advances, recaptured some formerly occupied territory, and defended the Ukrainian government.26 These battlefield successes have helped Ukraine obtain financial and military aid from the international community.27 Ukraine’s ultimate objectives are to reunite the country and rebuild the economy.28 As a result of the war, many Ukrainians have been displaced. For displaced Ukrainians, the hope is the war will end so they can return to their country and begin rebuilding.
Russia’s New Objectives

With the failed fait accompli of Russia’s initial invasion, mounting casualties, and Ukrainians’ resiliency, Russia has likely reassessed its original objectives and developed new objectives it believes it can achieve. Russia requires more troops to attempt to accomplish even these new, more limited goals. Russia has mobilized more than 300,000 personnel and commuted prison sentences for prisoners willing to fight in the war.  

Russia’s new objectives include the “liberation” of the Donbas region as well as the assertion of control over newly annexed regions. A pro-Russian government has been established in occupied regions of Ukraine. Referenda were held in occupied and annexed territories of Ukraine upon the territories’ entrance into the Russian Federation; the Ukrainian government and the international community do not accept these referenda as valid. Finally, Russia seeks to diminish Ukraine’s military capability so that it no longer poses a perceived threat to Russia.  

The Russia-Ukraine War has continued for more than 18 months, with no foreseen de-escalation on the horizon. According to Hart, “Self-exhaustion in war has killed more States than any foreign assailant.” Russia and Ukraine are edging closer and closer to exhaustion; the just-war ethic can inform potential resolutions to the conflict to prevent the total demise of each country.  

As Luttwak wrote, “An unpleasant truth often overlooked is that although war is a great evil, it does have a great virtue: it can resolve political conflicts and lead to peace.” If Russia and Ukraine are unable to end the ongoing conflict and make progress toward a more stable peace, the principles of just cause for termination; right intention; public declaration, legitimate authority, and domestic-rights protection; discrimination; and proportionality may provide a road map to a better peace.  

For just cause for termination to apply, Russia and Ukraine must obtain some vindication for the war or continuing the war must be detrimental to one or both nations. Russia may wish to end the war in its current form and settle for the new status quo. The Ukrainian territories Russia currently occupies, including Crimea, would remain under the Russian Federation. In addition, Western states would have to stop providing financial and military aid to Ukraine in order to degrade Ukraine’s military capability. On the other hand, Ukraine would take a completely different approach to the war ending. Ukraine wants its pre-2014 territorial integrity restored, to include...
Crimea.36 This restoration would require the withdrawal of all Russian forces from Ukraine.37 Russia’s demands would cause friction with the principle of just cause for termination.

For the principle of just cause for termination to apply, either Russia or Ukraine must be militarily defeated, reach a state of exhaustion, or lose the will to fight. To achieve territorial sovereignty, Ukraine may have to make some concessions to achieve peace. Russia should return all territories it occupied at the start of the conflict in February 2022 to Ukraine. The question of Crimea is more problematic; the region may be a redline for Russia—or at least, for Putin. Crimea is likely to be the biggest issue at any peace negotiations, and Ukraine may have to yield on this point while Putin remains in power. But yielding does not mean the outcome is final because “a remedy may still be found in political conditions at some later date.”38

Right intention is essential to ending the conflict and ensuring peace can hold for both Russia and Ukraine. But Russia has not been completely transparent about its intentions and has exploited the past to advance the country’s interests.39 Therefore, Russia, at present, would likely exploit the principle of right intention to divert attention from the war and achieve the country’s goals in the future. In addition, the Russian government has suffered significant human and financial losses due to the war.40 If the Russian government were to take retaliatory action in the form of covert operations against Ukraine and the West, Russia could recoup some of the human and financial losses. If Russia does not return Crimea to Ukraine, Ukraine would likely continue to restrict the entry of any resource, such as fresh water, into Crimea. Losing Crimea would complicate Ukraine’s vision of a more favorable peace. To foster some form of peace, both parties must commit to the principle of right intention.

For the principle of right intention to work, both Russia and Ukraine must put their own individual goals and desires for revenge aside. Both countries must reach an agreement that is recognized by the international community without any hidden agendas and work toward a peaceful resolution. In addition, a special international tribunal, rather than individual nations, should have jurisdiction over the trials of those accused of committing war crimes. According to the Indian strategist Kautilya, “a king shall make peace when he finds himself relatively declining compared to his enemy.”41 The Russia-Ukraine War has reached its second year, during which thousands of military casualties have occurred on both sides, and thousands of civilian casualties have occurred on the Ukrainian
side. With no end in sight, perhaps a better peace is possible if both Russia and Ukraine can develop the right intention to end the war.

The principles of public declaration, legitimate authority, and domestic-rights protection can put Russia and Ukraine on the right path to peace. But Russia, which does not approve of the current Ukrainian leadership, claims the Ukrainian government has been infiltrated by Nazis. As a result, Russia will almost certainly seek ways to undermine Ukraine's government through subversion. In addition, Putin stated Russia and Ukraine constitute a single nation with a common ancestry. The expectation is Ukraine will seek greater unity with Russian kin and abandon any desire to be closer to the West. Hence, Ukraine must align with Russian interests for the principle of public declaration, legitimate authority, and domestic-rights protection to apply to the Russians. In contrast, the Ukrainian government wants to oversee its country, and Ukraine's interests more closely align with the interests of Western nations. If the terms of peace Russia proposes force Ukraine to change its leadership or the way Ukraine conducts business with the West, Ukraine will most likely not accept these terms and proclaim peace.

As Indian strategist Kautilya stated, “Making peace is entering into an agreement with specific conditions.” Russia and Ukraine will have to exert considerable effort to achieve the *jus post bellum* principle of public declaration, legitimate authority, and domestic-rights protection. The current governments in both countries must understand unless each country’s citizens decide on different leadership, the current leaders will remain in power. In addition, the heads of state of both countries, upon reaching an agreement that puts an end to the hostilities, are required to announce the agreement to the public officially. For the principle of public declaration, legitimate authority, and domestic-rights protection to have any chance of succeeding, the legal rights of the participants must always be safeguarded.

Discrimination as a principle means Russia and Ukraine must differentiate between high-ranking military officials and regular soldiers as well as elected and government officials and their constituents. Despite the claim it is liberating Ukrainians from an oppressive government, Russia has targeted both military and civilian targets throughout the war. As a result of Russia’s aggression, millions of Ukrainian citizens have been displaced from their homes and are suffering from a shortage of basic amenities. Russia has also persecuted or arrested Russian citizens who are opposed to the Russia-Ukraine War or have protested it. Russia’s actions have demonstrated the country makes no distinction between
combatants and noncombatants and Russia will impose punitive measures on anyone who opposes its interests. Ukraine’s main goal is to protect Ukrainian territory and citizens. But the international community has come to Ukraine’s aid and imposed harsh sanctions on Russia. International sanctions have impacted the Russian economy and, to a lesser extent, Russian citizens.

The principle of discrimination will only be effective if Russia and Ukraine can implement a system that does not subject citizens to disproportionate and unjust hardship. Political and senior military authorities bear the sole responsibility for any act of aggression carried out on the nation’s behalf against another country. Military personnel on both sides bear responsibility for any war crimes they have committed. As mentioned in the discussion on the principle of right intention, a special international tribunal must be responsible for bringing charges against the leadership of the aggressor. Recently, the International Criminal Court issued an arrest warrant for Putin on charges of war crimes. The international community will recognize any punitive measures taken against Russia in the International Criminal Court case, but the chances of any leaders facing jail time are minimal.

Proportionality will allow Russia and Ukraine to advance justice while alleviating or ending the suffering of each country’s citizens. The international community has heavily sanctioned Russia. As a result, banks located outside Russia are holding billions of dollars. Russia would like all sanctions lifted and access to assets restored. Russia has also raised the stakes by employing hypersonic munitions. These new munitions are wreaking havoc on Ukraine’s military installations and infrastructure, causing additional hardship and devastation for the country. Russia has ratcheted up its war efforts in an attempt to defeat Ukraine, thereby making peace less likely. When Russia escalates its attacks, Ukraine maintains the stance of protecting its territory and population at any cost. Actions either nation takes to promote justice must be proportional to a better peace and not exacerbate injustice.

The principle of proportionality is a crucial element of *jus post bellum*, which facilitates the transition from conflict to peace and initiates the process of reconstruction and healing. The international community must ensure the imposed punishments and sanctions do not cause the average citizens of either Russia or Ukraine unnecessary suffering. Furthermore, appropriate reparations from the aggressor could help some war victims rebuild their lives as well as restore the normal operations of critical services the war may have disrupted.
Lessons Learned for the United States

War is a costly search for a better peace, and the Russia-Ukraine War exemplifies these costs and the challenges of bringing violence to a halt in the current international climate. Although specific recommendations are difficult to offer because the United States is not currently involved in active large scale combat, the Russia-Ukraine War provides valuable lessons. The challenges of enacting *jus post bellum* in the Russia-Ukraine War offer insight into how the United States could adjust the approach to conflict termination according to the principles of just cause for termination; right intention; public declaration, legitimate authority, and domestic-rights protection; discrimination; and proportionality.

Just Cause for Termination

The end of a war is contingent on just cause for termination, which means peace must be better than the alternative. The war must either induce surrender by increasing the cost of conflict or lower the consequences of suing for peace. In both cases, the paradigm must shift so surrender becomes the more attractive option. Since Ukraine is in an existential war, for the Ukrainians and likely for Putin personally, the bar for just cause for termination is incredibly high.

When the United States conducts war, the country must understand both the stakes for itself and its adversaries as well as the American public’s willingness to sacrifice blood, treasure, and time. For Ukraine, the cost of losing is high, which means the country is more willing to accept hardship. But the stakes have been lower in recent US conflicts, which results in a mismatch between expectations for conflict termination and the attainable results. For example, in the Vietnam War and the Battle of Mogadishu, the outrage among the American people at the casualties American troops suffered partially drove the United States’ failure to achieve victory. Such outrage prompted the United States to withdraw before achieving the stated objectives.

Longer conflicts like the Iraq War and the Afghanistan War also show the public’s impatience with extended conflict. If the stakes are existential for either side, the United States must be prepared either to commit the resources necessary or to change the terms of peace. On the one hand, the United States’ commitment may mean boots on the ground, more casualties, and higher grades of weaponry. On the other hand,
Chapter 17

Jus Post Bellum

the commitment may mean making concessions for a better but far from perfect peace that contains compromises and face-saving measures. The Russia-Ukraine War has demonstrated a dilemma in which countries are entrenched in a conflict because the conditions for peace are costlier than continuing the war. Only when a paradigm shift occurs can just cause for termination occur.

**Right Intention**

Peace is only stable if both sides pursue a resolution that is consistent with the other principles of *jus post bellum*. Unless the Russia-Ukraine War concludes because the parties reach some measure of justice, the war will likely be rekindled or continue at a lower level of conflict. In recent years, the United States has not always ended conflicts with right intention, resulting in further violence. Although exhaustion contributes to just cause for termination, this principle must apply to the combatants at the center of the conflict or the peace will be unstable. In the Vietnam War and the Afghanistan War, the United States intervened on behalf of one of the powers that were already at play. Ending the wars with right intention would have required the original parties to have had just cause for termination. But the United States attempted to impose peace because of exhaustion and political pressure from within (not from the country where the fighting was occurring). The United States’ imposition of peace created situations in which commitments within agreements were not credible; as a result, the peace dissolved. The United States sought to end the Vietnam War because of domestic forces—namely, the antiwar movement—rather than just cause for termination stemming from the native Vietnamese parties.

Among the important driving factors for the withdrawal of US troops from Afghanistan were the United States’ failure to achieve objectives and war fatigue. When the Agreement for Bringing Peace to Afghanistan was reached, experts understood the Taliban was likely negotiating in bad faith, and intelligence predicted both the breakdown of the cease-fire and the violation of the principle of discrimination via the targeting of civilians who were associated with the US presence. Hence, the principle of right intention, meaning a pursuit of justice according to *jus post bellum* principles, was unfulfilled. In both Vietnam and Afghanistan, the peace did not hold and further bloodshed occurred nearly immediately. Leaving a conflict does not mean it is over. Just as the Russia-Ukraine War cannot conclude without a measure of justice that incites both parties to come to an agreement, conflicts in which the United States is involved can—and should—
only be terminated sustainably if both sides intend to abide by the peace agreement and the other principles laid out in jus post bellum theory.

Discrimination

As the United States looks to end conflict in the future, the country must discriminate between leaders and the public. Lack of discrimination heightens the costs of Ukraine losing the Russia-Ukraine War. Russia has historically not discriminated between civilians and soldiers in war. After the Second Chechen War, many Chechens fled their country and, fearing retribution, never returned, even years after the war had ended.\textsuperscript{66} Even if Ukraine conceded territory in the name of peace, the inhabitants of the territory could expect retribution. Furthermore, Russia, because of its treatment of Ukrainians, could anticipate an insurgency like the backlash against the US de-Baathification effort in Iraq.\textsuperscript{67} If discrimination is not expected, greater resistance, additional difficulty coming to an agreement, and long-term stability issues can be expected. The anticipated treatment of citizens is a major factor in the price of peace; therefore, a prudent course would be for the United States to develop a merciful reputation that makes peace more attractive.

Conversely, discrimination still creates issues for negotiating peace. Although warring parties fear retribution against the populace, retribution against political leadership also hinders peace because the very political leaders responsible for making treaties would be the individuals accepting punishment. If Ukraine won the Russia-Ukraine War, discrimination would include repercussions for the leaders, as evidenced by the International Criminal Court warrant for Putin. At the very least, Russian officials would continue to be ostracized for a time and would be humiliated from losing. Although the US government may see itself as a warrior of justice, by touting the punishment of an opposing statesman in a conflict, the United States risks alienating its negotiating partner.

Legitimate Authority

Vilification aggravates attempts at peace, and aggravating effects are often amplified when the legitimacy of a belligerent state’s government is called into question. In the Russia-Ukraine War, Russia’s denial of the Ukrainian government’s legitimate authority stalls attempts at negotiations. Historically, the United States has also used the tactic of denying the legitimacy
of a belligerent state’s government. When the United States is fighting a war with an enemy whose values run contrary to democratic principles, a tendency to deny the legitimacy of the enemy’s government often abounds. Instances include the US refusal to recognize the North Vietnamese government in 1954 when others did, delaying the recognition of the People’s Republic of China until 1979, not formally recognizing the North Korean government, refusing to recognize the Taliban, and choosing to topple Saddam Hussein and install a new government in Iraq. Many of these regimes were regarded as antithetical to American ideals and were installed through means the international community condemned. But all these instances represent diplomatic breakdowns at some level that resulted in miscommunication, competition, and conflict.

The Russia-Ukraine War demonstrates negotiations are far more difficult if one side does not recognize the legitimacy of the other’s government. To disagree with the actions of another state is one thing; to discount another state’s government is entirely different. As the United States looks to future conflicts, both large and small, it should consider the costs of choosing not to recognize a government. Not recognizing a government denies sovereignty and functions as probable cause to invade and establish a “legitimate” government, as is evident in Ukraine. Although not recognizing a government may be the desired outcome, it backs the aggressor into a corner. Because Putin has denied the legitimacy of the Ukrainian government, an about-face would be detrimental to his own credibility with the Russian people.

For the United States, negotiating with an unrecognized government is only a few steps down from negotiating with terrorists. Even so, arriving at a political settlement with a recognized leader is far less costly than the alternative: expending copious amounts of blood, treasure, and time to install a new, stable regime. Even at the end of World War II, the Nazi government surrendered to the Allied powers in a state-to-state interaction. Recognizing a state does not mean condoning the state’s actions, but recognition does open further possibilities for negotiation, which suggests the United States should consider a state-to-state dialogue, even amidst extremely trying circumstances.

**Proportionality**

During and after a conflict, the states will be tempted to overcompensate to protect their interests or even exact revenge. Action or punishment that reaches beyond the bounds of proportionality engenders more violence.
This idea has come to prominence with discussions on the types of munitions Russia and Ukraine use—specifically, cluster munitions. If arms escalation continues, peace becomes less likely as grievances for injustices mount. Similarly, if either Ukraine and the West or Russia take excessively punitive economic measures in the aftermath of the Russia-Ukraine War, the measures are likely to strain relations further.

In the fog of war, losing perspective and focusing only on the pain of one’s own nation is easy. The United States does not intend to be vindictive when responding to threats, and the country was a gracious victor at the end of World War II. But attempts to minimize US casualties have at times led to high civilian casualties, such as during the bombing of Tokyo or drone strikes in “undeclared theaters of operation.” A failure of proportionality is characterized by a use of force or the implementation of measures that inflict harm beyond that which is necessary to achieve objectives. The Russia-Ukraine War is a reminder to be very mindful when implementing force to avoid strengthening your adversary’s resolve. By keeping perspective, the United States can prevent counterproductive destruction and, thus, help to set the stage for a just peace.

**Conclusions**

The Russia-Ukraine War has impacted the lives of millions of Ukrainians and claimed the lives of countless innocents. The Ukrainian people require a better peace to begin the healing and reconstruction processes. According to the late Dr. Martin Luther King, Jr., “Peace is not merely a distant goal that we seek, but a means by which we arrive at that goal.” The just-war ethic can provide the means of achieving a better peace and bringing an end to the Russia-Ukraine War. As the United States faces the future challenge of settling on the terms for a postwar world order, the United States must comprehend a better peace means justice with reconciliation. The principles of *jus post bellum* are essential to a framework Ukraine can use to articulate the durability, fairness, and stability of peace agreements and a postconflict society.

When the reasonable vindication of rights, majority or total restoration of territorial integrity, compensation for victims, and punishment for perpetrators have occurred, then termination has been justified. Justice, accountability, and long-term interests must be the impetus for the right intention. To ensure the transition from war to peace is conducted openly, a public declaration, legitimate authority, and domestic-rights protection
are essential. At the conclusion of a conflict, only the legitimate governing authority is authorized to make decisions and act, and all parties’ rights must be protected. A state exercises discrimination when the state differentiates between political and military leaders, soldiers, and the civilian population. The terms of peace must be proportional to the goal of reasonable rights vindication, and any actions taken to advance justice must be appropriate and not vengeful.

The sad truth is for the principles of jus post bellum to lead to a better peace, unless a change in leadership occurs, Russia will have to reach a level of exhaustion at which the country does not have the means or the will to continue fighting. Only then can the principles of jus post bellum bring about a better peace for the Russia-Ukraine War.
Endnotes

17. Kirby, “Putin’s War.”
23. Putin, “‘On the Historical Unity of Russians and Ukrainians.’”


30. Kirby, “Putin’s War.”


34. Luttwak, “Give War a Chance,” 36.


43. Vladimir Putin, “Address to the People of Russia on the Donbas Problem and the Situation in Ukraine” (speech, Kremlin, Moscow, RU, February 21, 2022).

44. Kautilya, Arthashastra, 528.


50. “Ukraine-/Russia-Related Sanctions.”


57. Pifer, “Existential War.”


Lessons from Ukraine for the Future Force

Gabriella N. Boyes, Jingyuan Chen, and Vincent R. Scauzzo

Keywords: strategic inflection point, US Army Training and Doctrine Command, Russia-Ukraine War, command post, personnel depth, mission command, allies, UAS, artificial intelligence, OSINT

The Russia-Ukraine War is a call to action for the Department of Defense (DoD) and the nation as a whole. Large-scale combat operations (LSCOs) remain decidedly relevant, and though the nature of war—of “politics by another means”—remains unchanged, the ways and means by which war is waged are evolving. The United States stands at an inflection point marked by the first near-peer LSCOs in decades, the application of artificial intelligence (AI) and digitized information technology to warfare, and the rise of China as the United States’ pacing threat.

A half-century ago, US Army Training and Doctrine Command helped the military learn from the lessons of the Yom Kippur War and revitalized US forces to win the Cold War. Training and Doctrine Command consolidated all the development of training and doctrine at one headquarters, supporting greater coordination and collaboration. Today, all aspects of war become increasingly connected as multidomain operations (MDOs) gain importance, and bad actors in cyberspace pose threats to military and civilian infrastructure alike. Just as Training and Doctrine Command once helped the military prepare for a new generation of warfare, now, the command must leverage its multidimensional approach to equip a new generation of leaders to confront modern warfare.

This study has determined for the United States to succeed in deterring and, if necessary, winning future LSCOs, the Army’s culture must change. Decades of counterinsurgency with technologically inferior opponents have
allowed the US military to ignore many of the ramifications of the information age in combat. The ability of nonstate actors and small states to wield power through unmanned technology, rising threats to communication security, the increased tempo of war, and the complications of open-source intelligence (OSINT) are among the unprecedented challenges the US military faces.

Technology is not the end of the story. War is a human endeavor, and the war in Ukraine has highlighted the importance of the humans behind the technology. Modern warfare demands an army that can use the technology available under optimal conditions while functioning independently when this capability has been compromised or destroyed. Furthermore, success in LSCO requires leaders at all levels who are prepared to take disciplined initiative, move quickly, and coordinate with other units that have complementary capabilities. Finally, cooperation between soldiers and citizens is essential to operational success. The Army is responsible for informing the public of the service’s needs, actions, and motives, and the public is responsible for aiding in the accomplishment of LSCO missions. Without this interconnectivity, OSINT, manufacturing at scale, and resilience of both material and personnel are impossible.

This cultural shift—the reprioritization of needs within the military and civilian worlds—demands buy-in from the top down and the bottom up. As the Training and Doctrine Command’s mantra goes, “Victory starts here.” Victory starts with every citizen and soldier contributing his or her part in any available capacity. This final chapter examines the three aspects of war—technology, leadership, and the home front—which we believe encapsulate the primary areas of cultural change, both militarily and socially, seen in the Russia-Ukraine War so far.

**Technology and the Changing Character of War**

The Russia-Ukraine War has seen the emergence and application of new technologies in all domains. The new technologies include everything from unmanned surface vehicles (USVs) and AI to unmanned aerial systems (UASs). Some equipment is manufactured under the order of the world’s largest departments and ministries of defense. Other weapons are bought off the shelf from civilian retailers. Still more hardware and software, such as the Starlink satellite system, comes from the private sector and is disseminated at the will of nongovernmental executives. A failure to comprehend and apply new technologies—along with a failure to acknowledge nonstate actors; less capable nation-states; and private-sector,
transnational corporations—would diminish the Army’s capabilities against its adversaries in future warfare.

The proliferation of new technologies among nonstate actors and inferior nation-states will allow undertrained aggressors to attack a more lethal force from a safe distance and survive the counterattacks. Such phenomena have been repeatedly observed in US interventions in Iraq and Afghanistan and, again, in the Russia-Ukraine War. Where previous decades’ conflicts have shown improvised explosive devices (IEDs) to be one of the primary low-cost threats to ground forces, the new, cheap, low-tech devices of choice for modern LSCOs are UASs. Both Ukrainians and Russians have used UASs in the war and effectively gathered intelligence on sustainment areas, command posts (CPs), and battlefield operations. These devices—drones like the ones civilians purchase for filming or flying as a hobby—are small and require little training to fly. Because of the size of UASs, they do not appear on radar and are difficult to shoot down once spotted.

To prepare for future LSCOs and all forms of combat, the Army must invest in its own frontline UASs as well as the necessary training and tools to protect the service from the threat of constant surveillance by UASs. To make these investments, the Army will have to work with nongovernmental organizations and nongovernment-affiliated companies that produce easy-to-fly drones. Unmanned aerial systems (UASs) have proven incredibly potent against a traditionally stronger force. Thus, as a standing power, the United States must learn how to counter new, unconventional threats such as UASs.

In addition to preparing for adversaries’ application of new technologies, the United States must also make use of its own technological advantages and establish public-private partnerships with corporations in the commercial sector. As technology improves and intelligence can be gathered and searched for more quickly, OSINT will only become more useful in providing immediate information about regional circumstances to military leaders. Beyond the need for updated weapons and machinery, intelligence management systems that incorporate AI will be essential for disseminating information across domains in a future conflict. The United States’ current overreliance on classified intelligence makes working with allies, the public, and corporations difficult and inhibits the rapid communication of information necessary on the modern LSCO battlefield. The current systems already have to manage an overwhelming amount of intelligence. Thus, assistance from the private sector will be essential for processing even larger amounts of data in the future. The US military and government need to change their attitudes
about OSINT and invest more in people and equipment that can handle the increased amount of information.

One of the key reasons for analyzing and applying intelligence is for its use in MDO. Although the convergence of air, land, sea, cyber, and space across echelons can expand the pools of resources and the number of options available to the military in combat, unsurprisingly, the vast convergence of different arenas presents its own difficulties. A plethora of sources feeds into the creation of MDOs, and the decisions made based on intelligence use an equally diverse set of sensors, fires, and personnel to carry out missions. This complexity threatens to slow the pace of combat. But decisions must be made in modern LSCOs faster than ever before. Because of the necessity for speed, the decision making process must be streamlined, and technology applied where possible.

Intelligence, technology, and cross-domain communication require an extremely capable central hub of command. But among the new threats exposed by the Russia-Ukraine War is the vulnerability of CPs to electronic warfare, satellite imagery, and electromagnetic signal detection in addition to the threat posed by surveillance UASs. The threats to CPs have been an Achilles’ heel for the Russians, who have seen CPs and commanders suffer disproportionate levels of damage under Ukrainian attacks. Sensors can identify objects on the electromagnetic spectrum (EMS), which includes radio waves and other signals, and place hubs of activity at greater risk. Traditionally, US CPs have been more stationary, larger, and unconcerned with their electromagnetic footprints and have increasingly relied on emitting technology to oversee operations. These weaknesses will be exploited in a future conflict. Army personnel must be able to function without any electromagnetic signal–producing devices. The United States must learn from Russia’s failures to develop solutions that adapt to the changing characteristics of war.

The Army faces a difficult challenge preparing for future conflicts. On the one hand, the Army must keep up with the technological advancements of adversaries and continue to develop innovative, high-tech devices and systems for combat. The Army must be able to act fast and use all information available to carry out operations. On the other hand, leaders, soldiers, and equipment on the battlefield need to be agile and flexible. Leaders and soldiers cannot solely rely on technology for assistance because technology is vulnerable to jamming and often emits signals that the enemy can track. The Army will have to develop solutions to this conundrum when the service engages in combat while employing MDOs in the future.
The United States must quickly adapt to the changing character of warfare in the modern, information-saturated, lightning-fast sphere of combat. As wars become more costly and adversaries become more advanced tactically, strategically, operationally, and at all echelons, the Army cannot let internal inefficiency and technological stubbornness impede its performance on the battlefield.

**Leadership and Mission Command**

In addition to revealing the necessity of flexibility and speed in fires and technological adaptation, the Russia-Ukraine War has also proven the ability of leaders to adapt, cooperate, and communicate invaluable both on the battlefield and when garnering support for the war effort at home and internationally. Examining how leaders have managed their duties in the Russia-Ukraine War’s LSCO reveals several key points for development among US forces.

Of all the ways in which Ukraine has shown its departure from an antiquated Soviet system, none has been more impactful than the country’s restructuring and reimagining of its leadership methods. Through its adoption of a mission-command philosophy and embracing of Western methods of delegating authority, Ukrainian military leadership has prepared itself over the last decade for the current war, and the lessons the leadership has learned will last for generations to come.

Ukrainian senior leaders also have the unique advantage of knowing their enemy’s strategy and tactics—the leaders studied the strategy and tactics in school. Knowledge of the enemy is an area of potential improvement for the United States, which often lacks a deep understanding of its enemies’ methods of fighting. By being fluent in Russian military methods, Ukrainian senior leaders have had both a reference point upon which to improve their methods and an intelligence advantage that allows the leaders to understand how their enemy behaves and operates. The United States should learn from Ukraine’s example and the advice of Sun Tzu: “Know the enemy.”

Although Ukraine is familiar with the Soviet methods, it has adopted many leadership methods the United States and NATO teach and employ. The combat effectiveness Ukraine has demonstrated suggests the United States does not need to make many changes to the leadership principles it teaches, but it may need to apply them more readily in peacetime. Ukraine’s successes underscore the importance of embracing a mission-command philosophy.
while operating within the command-and-control (C2) warfighting function. Although the United States and its close allies have not engaged in an LSCO conflict in over two decades, Armed Forces of Ukraine generals and other senior leaders have shown the principles the US Army stands by are effective in LSCOs. By allowing junior leaders to take initiative while maintaining an efficient and clear, two-way line of communication, Ukraine’s senior leaders have maximized their effectiveness against the Russians.

In stark contrast, the Russians who still hold on to the old, Soviet, top-down, micromanagement style of leadership have had to deal with an inefficient, cumbersome, orders-based culture. Russian senior leaders are forced to go to the front lines and expose themselves to Ukrainian fires because the Russian military does not have a natural system of trust. Instead, junior leaders are forced to obey their senior leaders, and because no effective, two-way communication system exists in the Russian army, senior leaders must intervene directly when operations go awry, bringing them closer to the battle and exposing them to more danger. Of course, Russia has had military success in the past without embracing a mission-command philosophy. As the war progresses, researchers must continue to analyze the Russian style of leadership to determine its efficacy because after one year of fighting, we cannot make a definitive conclusion.9

Based on Ukraine’s success in adopting mission-command principles, the Army needs to display courage in structurally embracing decentralization within the service’s C2 system. Teaching, training, exercising, and living with mission-command doctrines will be a major part of the United States’ successful transformation at this strategic inflection point. The decentralized and flexible nature of mission command will help to prepare the Army to respond to the challenges of new technologies, including UASs and AI. Critically, a decentralized C2 system will be more resilient against adversaries’ targeting of CPs.

The successful implementation of mission command relies most heavily on the quality of training of midtier to low-tier commanders and officers. Teaching mission command beginning at entry into service will help to institute and enforce mission-command doctrine and produce concrete cultural change.

The Army must adopt accountability measures that ensure leaders are dismissed and replaced based on their performance in combat. Although in a handful of instances, the Ukrainian Army has demoted
leaders based on their nonbattlefield performance, currently, we cannot confirm how Ukraine dismisses and replaces its senior officers or the criteria upon which the country bases its decisions.\textsuperscript{10} Russian senior leaders are often relieved of their positions for internal, political reasons just as much as performance in battle.\textsuperscript{11} Although the nature of the Russian military (and, perhaps, the Ukrainian Army) fosters questionable dismissal decisions, the US Army is not immune to stubborn or unnecessary methods of leadership replacement. The conclusion of the Russia-Ukraine War will provide additional information about how the Ukrainian military manages its senior leaders. In the meantime, the United States must reevaluate its methods and qualifications for replacing leaders based on battlefield performance.\textsuperscript{12}

The United States may envision and implement all changes necessary for future LSCOs successfully, but if the country’s allies are not willing to adapt their doctrine and preparation for international collaboration in combat, then fighting will become even more burdensome and costly for each state. Alliance management remains strategically vital to the United States’ global policies in Europe and the Asia-Pacific region. No other nation on Earth has an alliance network that is as robust and influential as the United States’. During the Russia-Ukraine War, the United States successfully coordinated with members of NATO and the EU to deliver strategically significant supplies to the Armed Forces of Ukraine. From tanks and unmanned aerial vehicles (UAVs) to Stingers and Javelins, US and NATO supplies have played an integral role in maintaining a sustainable Ukrainian logistics system.\textsuperscript{13}

Allied armies must be prepared to work with each other every step of the warfighting way to conduct effective multinational MDOs. Due to the great quantity of fires needed for LSCOs, NATO armies must increase their production of weapons and ammunition for both the militaries of NATO countries and militaries that receive arms from other countries in conflict. Arming partners is vital to security cooperation, and having a shared understanding of doctrine, maintenance, and ballistics will increase international efficiency, interoperability, and trust in combat. So, too, will multinational-partner training exercises and the use of combined targeting and airspace-management systems. In addition, NATO armies must agree on how to engage in future combat as an alliance, and a shared-fires platform is a critical part of NATO armies’ agreement.

Sharing information and building trust before combat will make C2 and the philosophy of mission command more effective. Forming a compatible C2 system will enable the United States and its allies to achieve high
operational efficiency in real wartime scenarios. The integration of equipment, resources, and logistics between the United States and its allies will further maximize the advantages of the former’s alliance network.

One of the methods that helps to foster international unity is controlling a war’s narrative, and this is an area in which the US Army and government can learn from the Ukrainian experience. Ukraine garnered significant public support by strategically and deliberately releasing intelligence and articulating why the nation must defend its land. Most of the developed world picking Ukraine’s side almost as soon as the conflict began was no accident. Chapter 2 of this book lays out a history of Ukraine’s relationship with Russia. Understanding of the history of Ukraine’s relationship with Russia has spread around the globe since the start of the war, increasing support for the argument the former is entitled to its land. In future impending or ongoing conflicts, the United States must similarly produce and attempt to control the narrative. Ukraine’s government and military have worked with the public and commercial sectors to rally the globe around the country’s cause successfully. Information—and misinformation—have never been easier to access. Using social media, cooperating with the press, and working in tandem with the public where necessary and beneficial will garner greater support from civilians and allies—relationships imperative to success in LSCOs.

The United States is learning valuable lessons from the war in Ukraine. But as the United States takes lessons from the Armed Forces of Ukraine and the Russian Armed Forces, it must go beyond analyzing the successes and failures of other nations. The United States must decide whether it is ready to find solutions that will respond to changes in other nations and position itself as advantageously as possible while the country emerges from this new strategic inflection point.

The Home Front

The military fights for the home front, and wars are won and lost there. Ukrainians’ patriotism and dedication have been integral to their success and willingness to fight. Despite high personal costs, from the loss of personal property to the loss of loved ones, Ukrainians’ commitment to the cause allows them to keep going. If the United States faces similar risks in a future conflict, fortitude on the home front will be essential. Every aspect of society is challenged during LSCO. Thus, the United States must be ready to sustain, protect, and reinforce. An army could have all the weapons, intelligence,
leadership, and strategic intellect necessary to defeat an enemy, but if the army does not have the backing of the people it defends, the service will never be victorious.

Today, the American military is facing a recruiting crisis. Only 9 percent of military-aged Americans are interested in serving, and only 23 percent are eligible to serve.\(^6\) The American public is growing distant from those in the military, as those who serve increasingly come from legacy military families.\(^7\) After decades of American exceptionalism, mistaking decades of safety for the absence of a threat is tempting. As it stands, the all-volunteer Army is struggling to sustain the deterrence needs of the United States, and the service would simply not be able to sustain the effort LSCOs would require.

In addition, the United States does not have the industrial base to support LSCOs. Even supplying Ukraine is outpacing current munitions manufacturing. Years of “just-in-time delivery” have weakened supply chains.\(^8\) Although globalization is inevitable and incredible, the United States must be aware of strategic industries and not trade “cheap today for embargoed tomorrow.” In the current conflict, Ukraine depends on outside help. Ukraine has been fortunate its partners are willing to furnish it with supplies, but the country still struggles to keep pace with the heavy demands of LSCOs. Nevertheless, if the United States engages in LSCOs, outside support is not a given because other states will likely need to use their own weapons, and future enemies may hold supply lines at risk. To ensure continuity of operations in industries such as microchips and munitions manufacturing, the United States must maintain manufacturing capability at home or, at a minimum, on the territory of easily accessible, dependable allies, such as Canada, rather than in countries that may restrict supply in times of crisis, sell to competitors, or use the technology against the United States. Domestically, increasing the number of defense firms to improve both capacity and competition is imperative. Furthermore, the United States must streamline procurement and acquisition procedures to make procurement from small firms easier. Diversification will mean better quality, lower prices, and a stronger supply chain. Only if more Americans can access defense infrastructure jobs will the United States have the logistical capacity the country needs both for itself and for its allies in an LSCO scenario.

The challenges the US population faces are not strictly physical. Often, the invisible challenges, such as cyber ones, are more insidious. As the Russia-Ukraine War has demonstrated, US adversaries are both capable of and willing to wage cyberwarfare on civilian and military
infrastructure alike. The new cyber domain marks a turning point at which the civilian population must play an active role. Cybersecurity must become embedded in US infrastructure. As the Biden White House suggests, “‘[B]ake it in, don’t bolt it on.’”19 Modernizing and standardizing the systems firms and individual Americans use helps to safeguard against cyberattacks.20 Only a willing public that is prepared to secure its information and step up to help the nation secure its secrets can fill the gaps in national security.

Security extends beyond hardware and cyberspace into the hearts and minds of the people. Ukrainians have clung to the truth of their independent heritage, their right to sovereignty, and the essential immorality and unlawfulness of the Russian invasion. With the knowledge the threat is existential, Ukrainians have responded with one heart and mind, which has driven support at home and abroad, even under extreme adversity. From undergoing first-aid training to contributing to OSINT, Ukrainians have undertaken the responsibility of helping to support the war effort.21 If the United States is to win the next war, Americans must subscribe to a common narrative and a common cause. The United States’ dissemination of the early warning of impending invasion as well as nightly video addresses from President Volodymyr Zelensky have garnered widespread international support for the Ukrainian cause. Such actions bolster trust in leaders and the war effort. When the United States faces a near-peer threat, winning the hearts and minds of the American people will be essential.

The United States has not paid the price of a war at home since the American Civil War. Americans do not know what sitting in a shelter and having bombs explode overhead is like. Few Americans remember the gold stars hanging in the window, and the idea of rations and shortages is foreign to American consumer culture. Although violence, superheroes, and science fiction wars rule the screen, few Americans are acquainted with the acute pain of sending a loved one to war. The casualty rate in Ukraine is like nothing the United States has seen since World War II; the Vietnam War, the Afghanistan War, and the Iraq War pale in comparison.22 If the United States is to engage in a major conflict successfully, the nation must be prepared to face the costs—economic, systemic, and human.
Conclusion

Sir Basil Liddell Hart stated the purpose of war is creating a “more perfect peace.” Peace will always be imperfect, and the United States must decide which flaws it can afford. For much of Europe, memories of peace under an autocratic regime persist, whether that regime be the Soviet Union or Nazi Germany—or, in Ukraine’s case, both. The Ukrainian people, many of whom experienced autocracy under Nazi—and later, Soviet—occupation, have steadfastly refused to endure autocracy again. The courage and example of the Ukrainian people should give Americans the courage to prepare for war today so we can preserve our freedom in the future.


5. Kullab, “Inexpensive Commercial Drones.”


15. “Ukraine Will ‘Fight.’”


About the Project Director


About the Chief of Staff

Colonel Katie Crombe is the chief of the Joint Operational War Plans Division, Joint Staff. An Army strategist, Crombe is a distinguished graduate of the USAWC class of 2023.

About the Researchers

Gabriella N. Boyes is a double major in international studies and economics at Dickinson College. Boyes plans to continue her research on societal factors that influence conflict.

Lieutenant Colonel John “Jay” B. Bradley III is an artillery officer currently assigned to III Armored Corps as the fire support coordinator. Bradley is a graduate of the USAWC class of 2023.

Colonel Larry D. Caswell Jr. is the commander of the Portland District, US Army Corps of Engineers, and a graduate of the USAWC class of 2023.

Lieutenant Colonel Steven L. Chadwick holds a master's degree in management information systems from the University of Maryland and a master's degree from the US Army War College. Chadwick is a graduate of the USAWC class of 2023.

Jingyuan Chen is a student at Harvard College. Chen plans to continue to pursue his studies in international relations.

Jason Du is a junior at the College of William & Mary, double majoring in international relations and history. A member of the Model UN team at William & Mary, Du also works as a research assistant for the college’s Global Research Institute lab AidData.
Lieutenant Colonel Brian A. Dukes is an armor officer in the Oregon Army National Guard. Dukes is a graduate of the USAWC class of 2023.

Volodymyr Grabchak is a colonel in the Ukrainian Army. Grabchak has now returned to Ukraine to serve his nation. Grabchak is a graduate of the USAWC class of 2023.

Lieutenant Colonel Matthew S. Holbrook is a US Army Reserve engineer officer with over 21 years of active and reserve service. Holbrook is the chief of plans for the 9th Mission Support Command in Hawaii. As a civilian, Holbrook is an associate director of network contracting for UnitedHealthcare Insurance Company. Holbrook lives in the Knoxville, Tennessee, area with his wife and six children. Holbrook is a graduate of the USAWC class of 2023.

Lieutenant Colonel Clay M. Huffman is assigned to United States Africa Command’s J-2 Intelligence Directorate as an intelligence officer. Huffman is an Army military intelligence officer in the Active Guard and Reserve with significant experience in intelligence analysis, targeting, collection management, and force development. Huffman is a distinguished military graduate of Clemson University and a 2023 graduate of the US Army War College.

Dr. Rebecca W. Jensen, a visiting researcher at the US Army War College, will be a visiting scholar at the Royal Danish Defence College in the fall of 2023. Jensen’s work focuses on operational art, campaign planning, and military adaptation and innovation.

Colonel Jamon K. Junius is a military police officer with deployments to Iraq and Afghanistan. Junius holds a master of strategic studies degree from the US Army War College, a master of arts degree in business and organizational security management from Webster University, and a bachelor of arts degree in psychology from the University of North Carolina at Chapel Hill. Junius is a graduate of the USAWC class of 2023.

Thomas R. Kunish is a US Navy civilian contracting officer with Naval Supply Systems Command. Kunish has extensive experience providing husbanding services in support of the fleet maritime operations of the United States and its allies around the globe. Kunish is a 2023 graduate of the US Army War College.
Lieutenant Colonel Jason R. Lojka is an Army infantry officer and a graduate of the USAWC class of 2023. Lojka is assigned to Allied Joint Force Command Brunssum, the Netherlands, which is responsible for NATO’s article 5 plan to defend Poland, Lithuania, Latvia, and Estonia.

Professor Albert F. Lord Jr. is a professor of theater planning at the US Army War College. A retired Navy captain, Lord is the director of the Joint Warfighting Advanced Studies Program.

Syeda Myra Naqvi is an Army Reserve Officers’ Training Corps cadet studying international studies and political science at Dickinson College.

Colonel Dennis M. Sarmiento is an Army psychiatrist who serves as the US Army Training and Doctrine Command surgeon. Sarmiento is a graduate of the United States Military Academy and the Uniformed Services University of the Health Sciences. He is also a 2023 graduate of the US Army War College.

Vincent R. Scauzzo is a classical languages major and a physics minor at Davidson College. Scauzzo is grateful to have been a part of this project and looks forward to serving his nation in the domestic and foreign spheres in the future.

Colonel Povilas J. Strazdas, a Eurasian foreign area officer in the Army, is the Army attaché in Kyiv, Ukraine. Strazdas is an expert on Russia and Eastern Europe and a graduate of the USAWC class of 2023.

Lieutenant Colonel Marlon A. Thomas, US Army, is assigned to the Pentagon. Thomas is a graduate of the US Army School of Advanced Military Studies and the USAWC class of 2023.

Lieutenant Colonel Stephen K. Trynosky, a 2023 graduate of the US Army War College, is a practitioner-in-residence at the George Washington University’s Elliott School of International Affairs. Trynosky holds a juris doctor and a master of public health degree from the University at Buffalo, a master of strategic studies degree from the US Army War College, a master’s in military art and science from the US Army Command and General Staff College, and a bachelor of arts degree in history from Saint Peter's University.

Lieutenant Colonel Darrick L. Wesson, who serves as the deputy chief of staff in the Army Reserve, has over 27 years of experience in combat service support in Haiti, Afghanistan, and Djibouti. Wesson is a 2023 graduate of the US Army War College.
Sean M. Wiswesser is a national security professional with over 27 years of service. Wiswesser holds a master’s degree in strategic studies from the Air War College.

About the Interns

Max Blumenfeld is a third-year student majoring in computer science at Villanova University. Following graduation from Villanova in 2025, Blumenfeld hopes to earn a commission through officer candidate school and serve his country in uniform.

Bridget Butler is a recent graduate of the University of Hawaii at Manoa with a double major in marketing and international business. Butler now works for the Commonwealth of Pennsylvania. As the daughter of a career military-strategist father and a federal civilian-employee mother, Butler is strongly interested in international affairs and national security.
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