Complex Intelligence Preparation of the Battlefield in Ukrainian Antiterrorism Operations

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The U.S. Army Europe Joint Multinational Readiness Center's Raptor 14 team supported "Battle Staff Attack the Network/Network Engagement and Company Intelligence Support Team" training for Ukrainian armed forces officers conducting antiterrorism operations September 2015 at the International Peacekeeping and Security Center (IPSC) in Yavoriv, Ukraine. The training team determined traditional doctrinal tools for intelligence preparation were inadequate to help Ukrainian intelligence staffs understand their operational environment (OE). Consequently, the team adapted the process in a way that would account for group dynamics and how they influence the behavior of populations relevant to the OE, consistent with a concept called *complex intelligence preparation of the battlefield*, or complex IPB. This experience serves as a case study on how cross-functional staffs and company command teams can improve problem framing, understand relevant issues at all levels, and inform operational planning. Complex IPB can support the Army's doctrinal *intelligence preparation of the battlefield* process and the joint process called *joint intelligence preparation of the operational environment* (JIPOE).

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From IPB to Complex IPB

According to Army Techniques Publication 2-01.3, *Intelligence Preparation of the Battlefield*, an Army intelligence staff (1) defines the OE, (2) describes environmental effects on operations, (3) evaluates the threat, and (4) determines the threat.[1] The staff uses this four-step process to analyze certain mission variables in the area of interest for a specific operation.[2] The mission variables analyzed are the enemy, terrain, weather, and civil considerations.[3] The goal of Army IPB is to provide Army commanders and staffs the information necessary to develop courses of action and make decisions.[4]

The IPB doctrine states that all four of the mission variables—including civil considerations—and their interactions must be analyzed if the process is to be effective. Staffs must "determine how the interactions of friendly forces, enemy forces, and indigenous populations affect each other."[5] However, in practice, the process tends to emphasize the enemy rather than holistically integrate the civil considerations. For instance, staffs might not adequately consider multigroup interconnectedness, micro decision making, and population behavior evaluation (i.e., human-domain-centric analysis). Thus, if an OE and its dynamics

A Ukrainian soldier assigned to 1st Battalion, 80th Airmobile Brigade, looks for simulated enemy activity 14 November 2016 during an urban operations training exercise taught by soldiers assigned to 6th Squadron, 8th Cavalry Regiment, 2nd Infantry Brigade Combat Team, 3rd Infantry Division, as part of the Joint Multinational Training Group–Ukraine at the International Peacekeeping and Security Center in Yavoriv, Ukraine. (Photo by Sgt. Jacob Holmes, U.S. Army)

are like a garden, the IPB process described in Army (and Marine Corps) doctrine focuses intelligence analysts on the soil, weeds, and insects, instead of the entire landscape and the interactions that made the plants vulnerable or resilient to harm or imbalance.

Authors Tom Pike and Eddie Brown explain how complex IPB could improve IPB in a March 2016 article in *Small Wars Journal*.[6] According to Pike and Brown, "Using IPB as the nucleus and integrating concepts from complex adaptive systems theory generates Complex IPB."[7] Instead of primarily identifying and evaluating the enemy or the threat, the complex IPB process helps intelligence staffs analyze multiple groups and how they interact and collectively behave. Like the hybrid and dynamic threats it was developed to defeat, complex IPB combines conventional and innovative approaches that emphasize cultural and population factors, perception assessments, and analysis of nonmilitary actors in order to create a more accurate understanding of the OE. Therefore, complex IPB expands the core process to include sociocultural profiling, link and social network analysis, and computational agent-based models. Although complex IPB has not been employed widely enough to validate its effectiveness, it can help staffs develop a more comprehensive picture of the OE than can doctrinal IPB alone.

According to Pike and Brown, "complex IPB is the next-generation of IPB … [that could] dramatically improve foreign population analysis as well as improve U.S. ability to influence foreign populations."[8] The six steps of complex IPB are—

1. Define the OE.
2. Describe fitness landscape effects.
3. Evaluate the major groups.
4. Evaluate major groups' courses of action.
5. Assess the groups' interaction.
6. Evaluate population behavior.[9]

What Pike and Brown call a "fitness landscape" is "a population socio-cultural-political-ecosystem," a construct that relates to the political, military, economic, social, information, and infrastructure (PMESII) system and subsystem analysis used in JIPOE.[10] Complex IPB considers individual capabilities that Pike and Brown call "fitness functions," such as profession, education, ethnic group, family connections, and economic need, that influence individuals' decisions in relation to the fitness landscape.[11] Using these constructs, complex IPB can help staffs understand and take into account how individual decisions interact and affect group dynamics.

A Holistic Way to Frame an Operational Environment

Joint doctrine defines an *operational environment* as "a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander."[12] Understanding the OE and defining all of its dynamics are essential to successful intelligence preparation. The OE construct "encompasses physical areas and factors …, the information environment (which includes cyberspace)," and interconnected systems that can be represented by PMESII.[13]

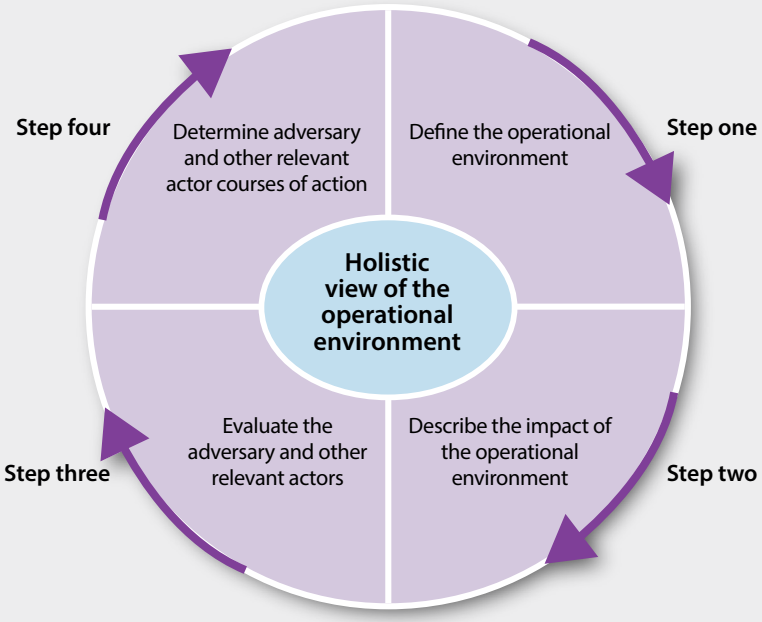
According to Joint Publication (JP) 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, JIPOE consists of four steps intended to ensure joint intelligence staffs include all relevant aspects of an OE in their analysis: (1) define the OE, (2) describe the impact of the OE, (3) evaluate the adversary and other relevant actors, and (4) determine the course of action for the adversary and other relevant actors.[14] The purpose is to help the joint force commander predict the adversary's most likely actions using a holistic view of the OE and "integrating a systems perspective and a geospatial perspective along with the force-specific IPB perspectives."[15]

To distinguish IPB from JIPOE, joint doctrine characterizes the IPB as requiring "micro-analysis … to support component command operations," adding that "JIPOE and IPB analyses support each other while avoiding a duplication of analytic effort."[16] JP 2-01.3 illustrates the focus of JIPOE with a circular illustration that places a "holistic view of the operational environment" at the center.[17] However, any OE is multidimensional, whether in Army or joint operations, and understanding it requires a holistic and tailored approach to intelligence preparation. Complex IPB suggests the need to integrate ways to perform holistic analysis, similar to the focus of JIPOE. Figure 1 (on page 61) shows the circular JIPOE process model, with complex IPB interpreted similarly.

Factors usually regarded as influencing the strategic level also affect operational and tactical planning. For example, the strategic environment is characterized by a mixture of complex geopolitics and demographics such as population growth, mixed migrations, and urbanization. The relationship among these dynamics is particularly complex due to global connectedness and emerging and disruptive technologies. These phenomena have created an ever-evolving ecosystem of converging principal and hybrid threats such as revanchist states, extremist proto-states (e.g., the Islamic State), collective violent extremist organizations, state supporters, and transnational organized crime networks.

Operations such as foreign internal defense, counterinsurgency, counterterrorism, unconventional warfare, and law enforcement employ a variety of activities and collaborative efforts in the processing, exploitation, and dissemination of intelligence relating to the threat groups and their interactions with relevant populations. All of the aforementioned operations can occur in isolation, or they can be combined with conventional-force offensive, defensive, and stability tasks in Army or joint operational areas.

Complex IPB emphasizes civil considerations, which include population groups and the societal conditions that influence them, when analyzing the OE. The threat and threat supporting groups' ecosystem encompasses interactions affecting the OE; they employ a variety of capabilities, tactics, and weapons. The associated weapons threat can be broken down into three main categories: conventional weapons, weapons of mass destruction (WMD), and improvised weapons. Improvised weapons offer the potential to modify and combine conventional and WMD capabilities through nonmilitary means of delivery using readily available and self-manufactured materials and technology, making the use of improvised weapons widespread in irregular warfare. In fact, the use of improvised weapons is widespread in many operational areas, sometimes as modified munitions and weapons, improvised explosive devices (IEDs), or improvised chemical or



Joint intelligence preparation of the operational environment process

(Graphic from Joint Publication 2-01.3, *Joint Intelligence Preparation of the Operational Environment* [Washington, DC: U.S. Government Publishing Office, 21 May 2014], I-25)

Complex intelligence preparation of the battlefield

(Graphic by Victor R. Morris; steps from Tom Pike and Piotr M. Zagorowski, "Dense Urban Areas: The Case for Complex IPB," *Military Intelligence Professional Bulletin* 42, no. 3 [July-September 2016])

Figure 1. Joint Intelligence Preparation of the Operational Environment and Complex Intelligence Preparation of the Battlefield Comparison

biological weapons. The combinations of traditional and irregular capabilities that hybrid threats employ are often facilitated by mutually supporting actors and varying resources. Additional hybrid threat characteristics involve employing proxy forces and conducting high- and low-intensity battlefield operations (ways and means) to reach political objectives (ends).

In a May 2016 article in *Army Magazine*, Phillip Karber and Joshua Thibeault describe how Russia's involvement in Ukraine illustrates its "new-generation warfare," which "combines both low-end, hidden state involvement with high-end, direct, even braggadocio superpower involvement."[18] According to Karber and Thibeault, Russia's strategy includes political subversion, proxy sanctuary, intervention, coercive deterrence, and negotiated manipulation.[19] To achieve its aims, Russia's military efforts include mixed company and battalion tactical groups with electronic warfare, unmanned aircraft systems, massed fires, armor and heavy-infantry fighting vehicles, and air defense capabilities.[20] In this environment, complex group dynamics interact with military operations.

Complex Interactions in Ukraine

Given the varied and dynamic nature of the hybrid threat, the demographics, and the motivating factors present in the Donbass region of Ukraine, it is clear that a holistic OE analysis, using complex IPB, is needed. With regard to Donbass, the fitness landscape and functions are somewhat disconnected from the rest of Ukraine and from Russia. This separation has left these ecosystems in a state of artificial regulation and physical isolation, in which both internal separatists and outside actors manipulate the region's fitness landscape. In addition to manipulating these dynamics, both separatists and outside actors ineffectively attempt to replicate governance and political structures through elections and appointment of chief

executives and parliaments within the region using military and nonmilitary means.

While it is true that the region is isolated, it is only isolated to a certain extent; events in Donbass have ripple effects for the populations in that region and also for Ukraine as a whole, for neighboring countries, and for the rest of Europe and the international community. These are the reasons to employ complex IPB, which emphasizes group behavior. Individuals compose a group, and groups compose populations. Populations are represented by some kind of state, protostate, rogue state, or third party. What IPB and JIPOE tend to neglect are ways to understand how these individuals, populations, and states all interact with one another, as well as how relatively small interactions can have significant ripple effects. Complex IPB accommodates this complexity in how it evaluates groups (step 3) and their courses of action (step 4). However, assessing what drives their interactions (step 5) and how individuals and groups make certain decisions or take certain actions (step 6) requires further analysis of the incentives or motivating factors—the fitness landscape effects.

Incentive structures are the conditions within the fitness landscape, or within the PMESII systems, that on a macro level promote cooperation or competition and on a micro level push individuals and groups to make decisions and perform actions.[21] Actions or decisions may be influenced by a central authority figure or made independently by individuals. If many individuals arrive at similar decisions, a bottom-up group phenomenon manifests. This is evident during color revolutions, for instance.

In Donbass, some individuals and ethnic groups support the separatist movement instead of the government in Kiev. Some of the reasons (i.e., the incentives) individuals support the separatists include a general sense of mistrust toward the central government in Kiev, according to political science writer Elise Giuliano's 2015 study "The Origins of Separatism: Popular Grievances in Donetsk and Luhansk."[22] Giuliano reports that a significant minority feel betrayed by the government, which they claim conducted "discriminatory demographic redistribution within Ukraine."[23] Some believe economic policies such as potential European Union membership will hurt their interests, and some are opposed to certain government policies. Therefore, while some share a sense of political and economic loyalty to Russia, the incentives leading individuals to support the separatists vary. Each group or individual may have different motives for their microdecision to support separatists' goals, but the macroresult is considerable support for the separatist movement. Furthermore, as individuals, groups, and states interact, microdecisions can change over time and cause the collective result to shift.

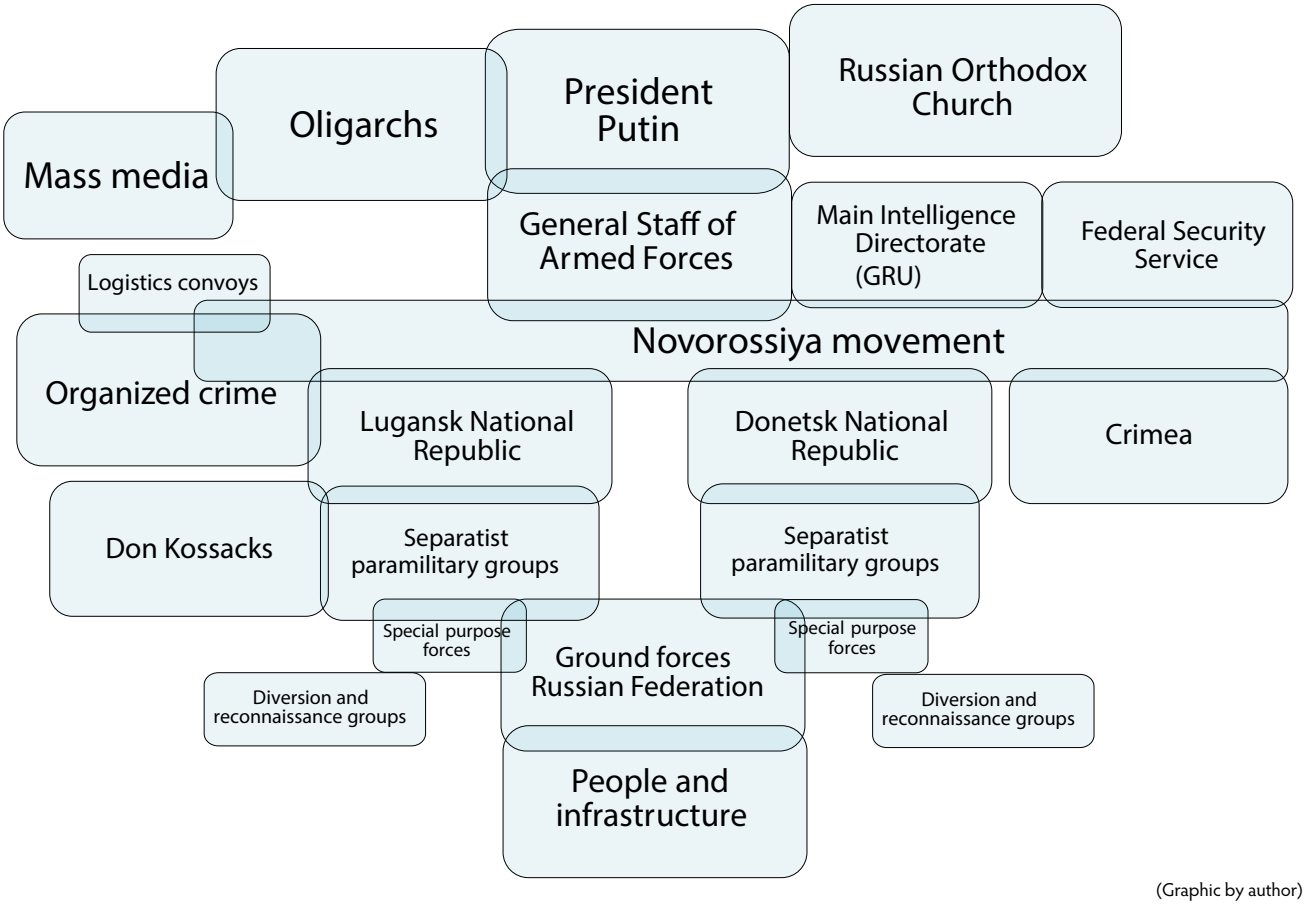
Training the Ukrainian Armed Forces

During the 2015 training in Yavoriv, the training team conducted a process with what amounted to the essential elements of complex IPB, while teaching an introduction to JIPOE lesson that included PMESII system mapping. The practical exercise was directly applied to operations in the Donetsk and Luhansk oblasts in eastern Ukraine in order to understand the separatist movement—including the effort that was known as *Projekt Novorossiya*.[24] Because the focus of this course was intelligence preparation together with system and hybrid network analysis, and because of the complex nature of groups operating inside and outside of Ukraine, it was both appropriate and effective to utilize complex IPB concepts in this context.

The adapted process was more effective than typical intelligence preparation because it not only identified the threat actors and their behaviors but also went a step further to consider the incentive structures that helped create those behaviors and the likely effects of proposed lethal and nonlethal action to support, influence, disrupt, or neutralize targeted behaviors.

The exercise began by identifying actors through adversary evaluation. The usual process was then expanded by first producing a description of fitness landscape effects, and then a graphical evaluation of the major groups influencing political policy and military operations in Ukraine. Major groups' courses of action and group interactions influencing population behavior were also assessed in detail.

Next, the exercise performed complex network modeling that highlighted the sociocultural factors and elements of national power that drove instability, as well as fitness landscape effects and specific incentive structures present. Complex adaptive system emergence characteristics involving decentralized military operations and decision making were also modeled. In



(Graphic by author)

Figure 2. Ukraine Hybrid Thread Threat Model

fact, network modeling and understanding of the mutually supporting relationships between the perceived threat and threat supporting groups were also developed by the Ukrainian students (see figure 2).

As the intensity of warfare fluctuates, so do the threats and employment of various weapons systems. Therefore, since new technologies are constantly changing and complicating the OE, a more detailed analysis identified specific adversary capabilities, tactics, and courses of action. The analysis went a step further by considering the effects generated from the many possible combinations and permutations of overlapping affiliations that could influence pro-government forces, population behavior, and international assistance efforts.[25] For example, enemy diversion and reconnaissance groups appeared at the lower or tactical end of the model and highlighted dispersed interactions. They were associated with modified conventional weapons and IEDs targeting government forces, civilians, and critical infrastructure. As a note, other capabilities associated with diversion and reconnaissance groups involved artillery correction, marauding, and kidnapping and interrogation. Next, since conventional artillery had accounted for 85 percent of the casualties on both sides of the war in Donbass thus far, it was considered a greater threat than modified weapons and munitions (e.g., mines and grenades) and IEDs during a conflict that has fluctuated from high to low intensity over a prolonged period.[26] Furthermore, the conventional fires warfighting function was enhanced through layered, unmanned aircraft system reconnaissance and forward observation. This strategy was then coupled with preplanned and massed multilaunch rocket systems and cross-border artillery strikes.

The exercise and subsequent discussions highlighted shared-understanding requirements. Moreover, they highlighted fundamentals for network engagement and intelligence preparation, including analysis of the OE, and of basic (measures of centrality) and group social networks and behavior. While the threat model in figure 2

illustrates sixteen of the various groups inside and outside of the operational area, it does not account for "friendly, neutral, and unknown" actors and groups whose decisions and behaviors affect operations. These actors should also be included in a holistic analysis for appropriate engagement and effects assessment in order to produce the most comprehensive assessment of the OE.

Nevertheless, the participants did assess that the effects of the threat's behavior and the population's behavior would be "a stalemate, with neither the government nor the insurgency gaining ground."[27] More refined analysis, however, would reveal the factors that were influencing the most vulnerable portion of the population who did not fully support the insurgency and felt betrayed and disenfranchised by the legitimate government in Kiev. Thus, on one hand, future assessments would identify additional, interrelated PMESII implications involving military reform, anticorruption, and reconciliation initiatives by the Ukrainian government. On the other hand, continued assessments would identify implications of external defense support and ceasefire special monitoring missions by intergovernmental organizations.

A Ukrainian company commander analyzes threat network associations and interactions during company-level intelligence and countering threat networks training 17 September 2015 at the International Peacekeeping and Security Center in Yavoriv, Ukraine. (Photo by Josh Ryner)

Finally, while understanding how nonmilitary groups influence their OE can help military forces conduct successful operations, complex IPB assessments also reveal that the problems that lead to conflict cannot be solved by military force alone. Current hybrid threats and external influences will continue to exploit vulnerabilities and grievances if they are not acknowledged, holistically reconciled, and politically accommodated by the Kiev government. Therefore, the

issue becomes what national and international instruments of power could be enabled apart from military force in order to restore the Donbass region's systems specifically, and Ukraine's identity, ecosystem, and postrevolutionary equilibrium overall.

Conclusion

The complex IPB process expands the doctrinal intelligence preparation processes to include bottom-up intelligence refinement and dynamic human network analysis. Therefore, in operational environments characterized by complex demographics and their various incentive structures, complex IPB provides a much needed comprehensive analysis—not only of these system dynamics but also of their interactions and capabilities on varying levels. Complex IPB, as employed during the Ukrainian forces' 2015 practical exercise, undoubtedly helped the participants achieve a more comprehensive understanding of the OE specifically, and of the antiterrorism operations as a whole.

The Ukraine experience with employment of complex IPB suggests the strong potential for achieving similar results in other operations, such as antiterrorism operations in Africa. Other potential test cases for this process could include operations in the Caucasus and Levant regions in complex urban environments, and in megacities. It is crucial that human and group dynamics fuse with infrastructure and physical environment analysis in order to understand anti-access/area denial hybrid-threat connections and to create the most comprehensive understanding possible of human behaviors that affect operations. *Slava Ukraini, Geroyam Slava* (Glory to Ukraine, Glory to the Heroes) ■

Notes

1. Army Techniques Publication (ATP) 2-01.3, *Intelligence Preparation of the Battlefield* (Washington, DC: U.S. Government Publishing Office [GPO], 2014), 1-2. ATP 2-01.3 also is published as Marine Corps Reference Publication 2-3A, *Intelligence Preparation of the Battlespace*.
2. Ibid.
3. Ibid., 1-1. A Marine Corps staff analyzes "the threat and the environment in a specific geographic area."
4. Ibid., 1-2.
5. Ibid.
6. Tom Pike and Eddie Brown, "Complex IPB," *Small Wars Journal* website, 24 March 2016, accessed 5 December 2016, http://smallwarsjournal.com/jrnl/art/complex-ipb. Pike and Brown's model shows similarities to Jamison Jo Medby and Russell W. Glenn, *Street Smart: Intelligence Preparation of the Battlefield for Urban Operations* (Santa Monica, CA: RAND Arroyo Center, 2002), accessed 24 October 2016, https://www.rand.org/content/dam/rand/pubs/monograph_reports/2007/MR1287.pdf.
7. Pike and Brown, "Complex IPB."
8. Ibid.
9. Ibid.; Tom Pike and Piotr M. Zagorowski, "Dense Urban Areas: The Case for Complex IPB," *Military Intelligence Professional Bulletin* 42, no. 3 (July-September 2016). Note that in their March 2016 article, Pike and Brown erroneously called the first step of complex IPB "Define the area of operations," but in Pike and Zagorowski's July-September article, they corrected step one to read "Define the operational area." Although published a year after the Raptor 14 team's experience in Ukraine, the concepts in Pike and Brown, and in Pike and Zagorowski, eloquently capture the principles the team used.
10. Pike and Brown, "Complex IPB"; Joint Publication (JP) 2-01.3, *Joint Intelligence Preparation of the Operational Environment* (Washington, DC: U.S. GPO, 21 May 2014), I-1.
11. Pike and Brown, "Complex IPB."
12. JP 3-0, *Joint Operations* (Washington, DC: U.S. GPO, 11 August 2011), xv–xvi and GL-14.
13. Ibid., xvi.
14. JP 2-01.3, *Joint Intelligence Preparation*, I-1.
15. Ibid., I-5.
16. Ibid.
17. Ibid., fig. I-6, p. I-25.
18. Phillip Karber and Joshua Thibeault, "Russia's New-Generation Warfare," *Army Magazine* website, 20 May 2016, accessed 5 December 2016, https://www.ausa.org/articles/russia%E2%80%99s-new-generation-warfare.
19. Ibid.
20. Ibid.
21. Michael Armstrong, *Armstrong's Handbook of Reward Management Practice: Improving Performance through Reward*, 5th ed. (London: Kogan, 2015), describes ways that incentives influence individual decision making, cooperation, and competition.
22. Elise Giuliano, "The Origins of Separatism: Popular Grievances in Donetsk and Luhansk," PONARS Eurasia Policy Memo No. 396, October 2015, accessed 24 October 2016, http://www.ponarseurasia.org/sites/default/files/policy-memos-pdf/Pepm396_Giuliano_Oct2015_0.pdf.
23. Ibid., 2.
24. A Ukrainian officer described *Projekt Novorossiya* as consisting of seven territories and involving the notion that Ukraine is not sovereign and historically belongs to Russia. Novorossiya plans came to fruition first with Crimea and then by the Donetsk and Lugansk oblasts. The overall goal of the project was to unite Kharkiv, Lugansk, Donestsk, Zaporizhia, Mikolaiv, and Odessa with Transnistria and isolate Ukraine from the Black Sea. Projekt Novorossiya is considered defunct due to lack of popular support.
25. In "Complex IPB," Pike and Brown discuss the potential calculations for the possible effects of different groups.
26. Karber and Thibeault, "Russia's New-Generation Warfare."
27. Pike and Brown, "Complex IPB."