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## **Confronting the RMA in Russia**

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Russian military analysts face three sets of fundamental issues when addressing the nature of future conflicts:

*Why did Soviet military science fail to predict the trends leading up to the Soviet overextension of resources, the Soviet Union's collapse and the Cold War's end, and what should be done to restore such foresight?*

*What future armed conflicts are likely to threaten Russian national interests, and what are the military-political implications in Russia in the post-Cold War world?*

*What impact has the revolution in military affairs (RMA) had on technical questions associated with military doctrine and art? How will the RMA shape how Russian armed forces are raised, organized, trained, armed, deployed, sustained and re-equipped? How will a post-communist Russia-in the midst of political, economic and social transformation-respond to the RMA's demands?*

As yet, there are no definitive answers to these issues in Russia. But there is broad and intense debate concerning them. This article focuses on the RMA in Russia and Russian military theorists' responses to it. As expected during a period of dynamic change, military crises, internal instability and international reorganization, there are wide-ranging opinions about the RMA and its impact on future armed conflict. One of the most important voices in this debate has been that of General of the Army Makhmut Akhmetovich Gareev.

Gareev sees a persistent utility in military science and champions adapting it to new geostrategic and military-technological circumstances. For him and those who agree with him, the military

forecasting crisis in Soviet military science was real but had other, political causes associated with the Soviet system's nature. Gareev sees a need to reform military science to broaden its institutional bases to include research centers outside the government, but he does not reject military science's claims. Military systemology, a new discipline relying on modeling and cybernetics to establish a "theory of combat systems," and other forecasting techniques have their place, but expert opinion and experience are vital to military forecasting. However, this is not a "hind-bound" view that sees no changes afoot in military art. Evaluation of past combat experience is necessary but insufficient, and foresight is necessary but extremely difficult to develop.<sup>1</sup>

The Russian military, and especially its General Staff, inherited from the Soviet military the firm belief that revolutionary changes in warfare's nature are afoot and demand significant changes in military doctrine's military-technological side and in the approach to military construction. Beginning with Marshal Nikolai Vasil'evich Ogarkov's tenure as chief of the [Soviet] General Staff from 1977 to 1984, Soviet military analysts, including Gareev, began to speak of an RMA. They associated it with a new generation of nuclear weapons and advanced high-precision conventional weapons. Gareev, then deputy chief of the Soviet General Staff and chief of the Directorate for Military Science, described the RMA: "Now we can speak about a turning point in the development of military science and military art. In general, a new qualitative leap in the development of military affairs, connected with the modernization of nuclear weapons and especially the appearance of new types of conventional weapons, is ripening. In connection with this [process] there has arisen the need to rethink the basic military-political and operational-strategic problems of the defense of the socialist Fatherland."<sup>2</sup>

The world saw harbingers of the RMA in the Gulf War. In today's post-Cold War environment, the socialist fatherland is gone, the Soviet army has dissipated to become the various national armies of the successor states, and a Russian state is dealing with radical internal transformations and a dynamic international system.

### **Gareev: Soldier, Scholar and Forecaster**

One of the leading military theorists of the Soviet Union and Russian Federation, Gareev has gained a wealth of practical experience as a soldier, trainer, military historian and forecaster. Born in Chelyabinsk, Gareev is one of the last of the famous "cohort of 1923," the young men born in that year who went off to fight in 1941, survived the Great Patriotic War and went on to lead the Soviet armed forces during the Cold War.<sup>3</sup>

Gareev's generation was shaped by the Stalinist revolution that began in the late 1920s with industrialization and collectivization. His family left Chelyabinsk in 1932 in the midst of famine and traveled six months to Tashkent, where his two older brothers said conditions were better. On the trip, the family lived in shanty towns at rail junctions, barely surviving. When the family arrived in Tashkent, they found hard times there too. In 1935, Gareev's father placed him in a military school in Tashkent to reduce the family's economic burden. Young Gareev attended a cavalry school, where he played in the band, before he was accepted into officers' school in 1939. He completed officers' school in the spring of 1941, just in time to join the fighting around Moscow that winter.<sup>4</sup>

Gareev's predictions about how warfare is changing are based on his extensive experiences that go back almost six decades to fighting with the cavalry against the Bashmakhi in Soviet Central Asia. He fought with the Western, Third Belorussian and Far Eastern fronts during the Great Patriotic War and saw the Red Army's transformation from the infantry army that defended Moscow into the tank and mechanized forces that liberated Soviet territory and carried the war into Eastern Europe and Germany. Gareev was in the Far East for the August 1945 lightning operation that defeated Japan's Kwantung army. Like most of his cohorts, he was wounded several times during the war.

After World War II, Gareev held increasingly important positions in the Soviet armed forces, including various command and staff positions in the Far Eastern, Belorussian and Ural military districts and in the Group of Soviet Forces in Germany. He served as chief of staff to the main Soviet military adviser in Egypt in the early 1970s during the air war of attrition over the Suez Canal.<sup>5</sup> From 1989 to 1990, Gareev assumed the post of chief Soviet military adviser to the president of Afghanistan. With a small operational staff, Gareev advised Kabul government forces on how to conduct the war after the Soviet 40th Army departed.<sup>6</sup>

In both Egypt and Afghanistan, Gareev focused on training to give combat stability to unstable armies. Within the Soviet General Staff, he was known for his work in training and military science. The author of *Tactical Exercises and Maneuvers and Combined-Arms Exercises*, Gareev is known to most Western audiences for his study of M.V. Frunze as a military theorist. During Ogarkov's tenure as chief of the Soviet General Staff, Gareev led the development of the operational-maneuver group concept for the conduct of deep air-mechanized operations.<sup>7</sup> His last active duty assignment was deputy chief of the General Staff and head of the Directorate of Military Science. He is the organizer and first elected president of the recently founded Academy of Military Sciences and continues to write on history and theory. He is completing his study of Marshal G.K. Zhukov's operational art theories. Gareev's military experience extends from the cavalry era to information warfare. He has confronted the challenge of change and its effects on the art of war.

## **Gareev and the RMA**

Compared with extensive claims about the radical impact the RMA will have on future armed conflicts, Gareev's views are universal and evolutionary. Although the enhanced conventional capabilities associated with the RMA can make future conventional warfare more destructive, this will not deter the use or threat of force. Conventional wars of various intensities are being fought now. Gareev analyzes the trends affecting changes in military art by considering certain political-military assumptions about the course of world affairs over the next 15 years. He stresses the low probability of a "conventional world war." Instead, states will rely on two means to achieve their objectives: subversive actions against other states and gradually accomplishing limited goals through local wars, which could evolve into large-scale armed confrontations.

According to Gareev, the armed forces can be strategically employed three ways:

- Partial deployment for local wars and complete deployment for large-scale wars.
- Using combat forces in local wars and conflicts.

- Using armed forces in large-scale armed struggles, including nuclear force readiness for strategic deterrence, operations to counter the enemy's aerospace assaults, operations in a continental theater, operations in oceanic and sea theaters and long-range aviation operations.<sup>8</sup>

Gareev reread Sir B.H. Liddell-Hart's writings from the 1930s and has become a forceful voice for the application of indirect strategy. Gareev finds the roots of this approach in the works of Sun Tzu, Carl von Clausewitz and Baron Henri Jomini and emphasizes the link between limited means to achieve limited ends and applying stratagem *voyennaya khitrost'* à la General V.N. Lobov. The emphasis is on the political utility of measures to prevent war and supporting an indirect approach to achieve strategic objectives. As a successful example, Gareev cites the deployment of Russian warships to US waters in 1863 as part of a deterrence strategy.

Russia threatened England and France with a *guerre de course* if they intervened in the Polish insurrection. Russia's deployment of two squadrons to the US East and West coasts during the US Civil War was influenced by a shared Russian-Union hostility toward European intervention. It was also a function of communications made possible by the telegraph, which allowed commanders to receive timely information on any break in Russia's relations with the maritime powers.<sup>9</sup> In short, advanced technologies' leverage potential will go to those who first recognize its advantages and thus, place themselves in a position to exploit them. The ideal use of force will be one that achieves the desired goal without the outbreak of hostilities. Short of that, the objective will be to resolve the conflict before it escalates into a general war.

Under current conditions, preventing and localizing conflicts are tied to political measures, such as "economic sanctions; naval, air and ground blockades of communications; demonstrations of force; peace-making to separate disputing sides; and other means of action."<sup>10</sup> Gareev cites US intervention in Haiti in 1994 as an example of how such actions can achieve political success. He treats these measures as political-military instruments to achieve limited ends through compromise. Should such measures fail, escalation can follow, involving offensive actions aimed at the offending side's military power. These actions may involve a sequence of operations such as those in Operation Desert Storm, which began with a strategic air operation and culminated in an air-ground offensive after the enemy's basic fire means and most important assets, including command, control, communications and intelligence (C3I), were suppressed or destroyed.

Reverting to a theme that has not been seen in Russian/Soviet military writings since the 1920s, Gareev stresses adapting military art to the problem of warfare between more-technologically and less-technologically developed states. In part, this is a lesson drawn from Afghanistan, but it carries with it two contradictory conclusions with very significant consequences. Advanced states may be able to conduct a new generation of warfare in which force is not focused on the direct destruction of the enemy but is used to politically and economically cause the opponent's military power to collapse from within.

On the other hand, the armed forces involved in combat in such wars will be quite numerous, incur significant losses and require reserve mobilization. Protracted conflicts will negate the advantages of small, professional armies, because such wars will still be fought by nations.<sup>11</sup> Gareev does not assume that the state initiating combat will want a protracted conflict. Rather,

that state will gamble on the RMA to win quickly and decisively as it optimizes its force structure and strategy to destroy or disable the enemy's combat power. Failing to achieve decisive results only leads to protracted and costly operations. The indirect approach will avoid overt armed conflict in favor of information warfare. Information operations have the potential to end a conflict before it becomes overt and, at the same time, to prepare favorable conditions for conducting combat operations.

The internal content of military art-strategy, operational art and tactics-will undergo even more profound changes, thanks to technological innovations. Future developments will shift the balance among fire, strike and maneuver, because advanced precision weapons, electronic warfare and troop control systems will allow for theaterwide simultaneous fire and strike maneuvers in what Gareev terms "sea-air-land" operations. These operations could lead to the simultaneous destruction of the enemy's most important forces and thus negate the need for successive operations. Such combat actions will link battles on the opponent's front, flanks and rear on a nonlinear battlefield. Stable front lines will not exist, and significant in-depth maneuver will be conducted by air-mobile forces. Offensive and defensive actions will blend.<sup>12</sup> Forces will be increasingly dispersed to enhance their survivability, while fire and strikes will be concentrated. The situation's rapid and sharp changes, along with automated control systems, will complicate and profoundly transform commander and staff actions in relation to troop and naval force control. A tendency toward greater central control will go hand-in-hand with the need to give junior commanders the information they need to exercise initiative.<sup>13</sup> Gareev says these fire, strike and maneuver developments are improvements, not qualitative changes.

## **Information Warfare in the Gulf**

This view starkly contrasts with that of retired Rear Admiral V.S. Pirumov, president of the Geopolitics and Security section of the Russian Academy of Natural Sciences and chief of the Security Council's Scientific Council. Pirumov, who served as chief of radio-electronic warfare on the main naval staff under Admiral Sergei Georgievich Gorshkov and taught at the General Staff Academy until the early 1990s, speaks of changing roles in reconnaissance, command and control (C2) and radio-electronic warfare as creating a new combat category-"electronic fire." He describes this as a process designed to disorganize enemy C3I and says 20th-century warfare has evolved from fire dominance to command of the air and, now, to command of the "ether," a concept US and coalition forces demonstrated in the Persian Gulf.<sup>14</sup> Command of the air waves allows the attacker to disorganize the opposing force, including its air defenses, thus setting the stage for command of the air and deep fire strikes. Pirumov asserts that the RMA has turned radio-electronic warfare into an important combat system and made information warfare a new category of armed struggle. He suggests that in a time of military reform and declining budgets, a new method should be developed to determine various systems' contributions to the force's overall combat potential.<sup>15</sup> In his official capacity as chairman of the Scientific Board of Russia's Security Council, Pirumov has stressed the need to make information security into a vital component of Russia's national security.<sup>16</sup>

The debate over radio-electronic combat's impact on future armed struggle has led to a more intense debate concerning criteria for combat system effectiveness. Retired General-Lieutenant A.I. Paliy, a member of the International Academy of Informatization and a Soviet expert on

radio-electronic combat, sought to combine force-on-force methodology with a systems approach. Captain 1st Rank Eduard

Shevelev, a leading proponent of military systemology as a new combat system-based model for military science, rejected force-on-force modeling's validity in forecasting the RMA. Paliy, however, sought to apply that methodology and a modified systems approach to radio-electronic warfare's role as a combat arm. He did this by developing an armed struggle typology, based on the forms often used in striking targets and objects: physical, chemical and biological. Under physical strikes, he included mechanical/kinetic, acoustic, electromagnetic, radiation and thermal, noting that acoustic, electromagnetic and radiation all inflict radiation injury on the target.<sup>17</sup> Paliy also added psychological strikes to his list and emphasized the need to increase research and development funding for troop and weapons control, reconnaissance and electronic countermeasures. Paliy rejected the existing structure of Russia's five armed services, proposed three and forecast the development of a fourth.

Paliy classifies armed services according to the spheres where they mainly wage combat actions: on land and sea, in the air and in outer space (army, air-space forces and navy). With the development of space combat, outer space becomes the fourth armed combat sphere, where even now various means of reconnaissance, communication, navigation, weapons targeting, electronic countermeasures and meteorological observations operate. Combat spacecraft, intercontinental ballistic missiles and space defense can make outer space the basis for a fourth armed service.<sup>18</sup> As Paliy's comments on the prospects for space's development as a theater of military operations suggests, the debate between the avant-garde advocates of military systemology and the more conservative approaches is one of emphasis and priorities and is not based on advanced thinkers versus hind-bound conservatives.

In discussing the balanced development of Russia's armed forces, Colonel-General Viktor Baryn'kin, then first deputy chief of the General Staff and chief of its Main Operations Directorate, called attention to the possibility of Russia's fighting "an enemy who already now has a certain military-technical superiority and attaches great significance to realizing the principle of winning victory with minimum losses."<sup>19</sup> In discussing such air-land operations, Baryn'kin stresses the role of radio-electronic warfare as a combat arm and the use of high-accuracy weapons to conduct massed deep strikes. He notes that Russia's armed forces must prepare to counter "enemy air-offensive operations and the massed strikes of high-accuracy weapons." Ground forces and naval groupings will also have to conduct intensive maneuver battles, operations and engagements that result in the simultaneous and deep destruction of all enemy tactical and operational elements.<sup>20</sup> Baryn'kin calls for a shift from five to four services by merging the air and air defense forces to more effectively conduct aerospace operations.

A particularly valuable recent work that combines traditional methods drawn from operations research and a systems approach is an anthology on combatting high-accuracy weaponry: *Vysokotochnoe oruzhie i bor'ba s nim* by S.A. Golovin, Yu G. Sizov, A.L. Skokov and L.L. Khundanov. Sponsored by the Russian Academy of Missile and Artillery Sciences and the Military-Technical Problems of Russian Engineering Academy, the book addresses the nature of high-accuracy strike weapons, as well as the struggle against them.<sup>21</sup> The authors give a mathematical description and an example for calculating the norms of an air defense system's

capabilities when under massed air attacks with high-accuracy weapons.<sup>22</sup> The authors emphasize that disrupting the precision weapons' target-tracking capabilities is a low-cost, productive approach to negating their combat effectiveness. The authors also discuss the significant psychological burdens air defenders face when combatting such weapon systems.<sup>23</sup> In their conclusion, they stress the dialectic of the struggle between high-precision weapons and air defense systems: "High-accuracy weapons and the means to combat them are two sides of the same coin, and they will determine the character of armed struggle in the immediate future and influence the development of military science and the force structure of the armed forces."<sup>24</sup>

This is the basic theme of "Evolution of Strategic Actions Forms to Counter the Aerospace Enemy," a recent *Military Thought* article on countering the enemy's aerospace threat. The article's authors give a historical analysis of the evolving aerospace threat, address the problem of nuclear and conventional attacks on the state's military and economic potentials and conclude that Russia's strategic defense forces should be capable of ensuring a guaranteed delivery of an effective strategic nuclear force strike regardless of any arms control reductions and a US initiative to field a space-based, multitiered ABM (antiballistic missile) system. With the creation of multitiered ABM systems, a new situation emerges: the strategic nuclear forces' success depends on the outcome of strategic defense force actions, which lead to still more intensive confrontation, extending to the information and intelligence levels.<sup>25</sup>

## **Military Systemology and the RMA**

Military systemology is also the topic of a new textbook prepared for the Frunze Military Academy by several prominent faculty members, including General-Major Viktor Ryabchuk, Colonel I.E. Epifanov, Colonel M.S. Murlaga, Colonel A. Ya Vayner, Colonel V.V. Zhikharskiy, Lieutenant Colonel V.K. Siryy and Colonel Yu S. Kryzhanovskiy. The book provides a general introduction to military systemology and its application to the operational art and the tactics of combined arms units and formations, including armies, corps, brigades and regiments. Its first chapter on complex systems and systemology begins with the intelligence and communication failures associated with Japan's attack on Pearl Harbor. It stresses C2's critical role in processing and disseminating information. The authors emphasize that US signals intelligence was unable to transmit information to field commanders in a timely fashion.<sup>26</sup> The book presents a straightforward approach to combat systems modeling and is based on systemology and applied military systemology. It also discusses the application of a systems approach to military-scientific research, operational art and tactics, military education, C2 problems, the development of qualitative norms to augment those based on force-on-force models and the use of expert systems and artificial intelligence to assess combat effectiveness.

Military systemology has become more important as older approaches to techniques have lost their ability to forecast the outcomes of modern combat and operations. The experience of local wars revealed this problem and provided a significant push for applying military systemology to the more dynamic and complex reality of combat. In systemology, the forecaster searches for ways combat systems and subsystems can maintain effectiveness and how enemy combat systems can be disrupted by targeting critical subsystems for destruction, disruption or neutralization.<sup>27</sup>

Ryabchuk, who served as a military intelligence officer with the artillery during World War II and specialized in conducting counterbattery fires and strikes, appreciates information's increased role in troop and force control on the modern battlefield. He has pointed out that a balance between will and intellect-Napoleon's square-in the successful commander has become more like a cube-a combination of will, intellect and the ability to manage information.<sup>28</sup> Just as the past "rectangle" of will and intellect was an invitation to battlefield disaster, a "square" can only bring disaster for the commander and his staff who cannot deal with the information they need to effectively control the forces and means at their disposal.

Information warfare has emerged as one of the RMA's central features and has a prominent place in the works of military systemologists. Colonel S.A. Modestov and General-Major D.A. Turko have examined information warfare's impact on the geopolitical and geostrategic aspects of Russia's national security. Modestov, a professor of the General Staff Academy, and Turko have suggested that the RMA is changing the very nature of the threat, as well as threat deterrence. Nuclear weapons remain a reliable deterrent. The counterforce and megatonnage concepts still apply. However, nuclear confrontation is losing its momentum, and information superiority is becoming the goal. Smart weapons, with their precision strikes on strategic targets, now make nonnuclear deterrence realistic. It is no longer necessary to cross the enemy's borders, because it is possible to destroy the enemy without occupying his territory. The enemy can be destroyed without using nuclear weapons, and his communication and transportation structures can be incapacitated so he cannot retaliate.<sup>29</sup>

Other students have defined information warfare as a particular aspect of the armed struggle. V.I. Tsymbal has linked a broad concept of information warfare to psychological operations aimed at a state's civilian population and economy. In the broad sense, information warfare is a "Cold War" variant- countermeasures between two states implemented mainly in peacetime-affecting not only the armed forces but also extending to the civilian population and public and social awareness, to state administrative and production control systems and to scientific and cultural control. It is namely in this sense that the information security of the individual, society and state is usually understood.

In the narrow sense, information war is a variant of military activity, operations or actions aimed at achieving overwhelming superiority over the enemy in efficiency, completeness and reliability of information use. Successful use of information results in effective administrative decisions and their purposeful implementation to achieve victory in combat. Waging information war is mainly the responsibility of defense ministers.<sup>30</sup>

Gareev's renewed interest in Liddell-Hart's indirect approach and the notion of information operations as a Cold War form fit information warfare's broad definition. The narrow concept, however, fits more easily with Gareev's definition of military science or the armed struggle, while the broad definition fits more closely with conflict studies, psychological operations and national security policy. Information security is a component of national security policy. Thus, Ryabchuk's comments on combat systems and Pirumov's on electronic warfare not only link information warfare to the RMA but turn information warfare into a capital concern of the state's military policy or Russia's national security policy.

## NOTES

1. GEN Makhmut Akhmetovich Gareev, *Esli zavtra voyna* (Moscow: Valdar, 1994), 5.
2. Gareev, M.V. Frunze -- *voyennyi teoretik*(Moscow: Voenizdat, 1985), 438.
3. The "cohort of 1923," which included such well-known Soviet military officers as Marshal Sergei Akhromeev and General Varennikov, fought the war from beginning to end, experiencing the initial defeats, the struggle for the initiative and the great offensives of the last two years. While in wartime service, these men joined the Communist Party and had little doubt about the justice of the cause they served during the war or Cold War that followed.
4. GEN Gareev, Interview by author, 26 July 1996, Moscow, Russia.
5. Ibid. In a discussion about the Egyptian air defense problem in the air campaign over the Suez Canal in 1970, Gareev pointed out what he meant by a dialectical approach to the practical problems of military art. The Israeli air force arsenal included antiradar missiles, which the United States had successfully used against North Vietnam's air defense system. After analyzing that experience and the initial combat actions along the canal, Gareev determined that massed employment of large numbers of radars in the SAM batteries confused the missiles' lock-on mechanisms, greatly reducing their effectiveness. In this case, quantity took on a qualitative character in negating a critical Israeli combat capability and restoring the Egyptian air defense system's combat stability.
6. GEN M. A. Gareev, *Moya poslednaya voyna (Afganistan bez sovetskikh voysk)* [My Last War (Afghanistan without Soviet Troops)] (Moscow: INSAN, 1996), 5-7.
7. Russian officers who served on the General Staff with Gareev during that period refer to the operational maneuver group (OMG) as "*operativnoe myshlenie Gareeva*" [operational thinking of Gareev].
8. Gareev, *Esli zavtra voyna?*, 112 and 113.
9. Ibid., 116.
10. Ibid., 119.
11. Ibid., 122.
12. Ibid., 123-24.
13. Ibid., 125.
14. V.S. Pirumov, "O nekotorykh itogakh i posledstviakh boevogo primeneniya sistem i sredstv razvedki, upravleniya i REB v boevykh deistviyakh v zone Persidskogo zaliva," (*Geopolitika i bezopasnost'* No. 2, 1994), 81-84.

15. Ibid., 84.

16. V.S. Pirumov, "On the Concept of Russia's National Security" (*Russian Executive and Legislative Newsletter*, No.9 1995), 7. In 1992, Pirumov began speaking about the "informatization" of warfare, which he described in the Gulf War as "the large-scale usage of various types of information complexes and systems by the multinational forces (MNF), which were realized in the means of reconnaissance, control and high-precision weapons, as well as by the forces and means of electronic warfare (EW)." See V.S. Pirumov, "Nekotorye posledstviya informatizatsii vooruzhennoy bor'by po itogam boevykh deistvii v zone Persidskogo zaliva" in *Akademiya Estestvennykh Nauk Rossiiskoy Federatsii, Sektsiya Geopolitiki i Bezopasnosti, Problemy regional'noy i global'noy bezopasnosti v kontse XX-nachale XXI vekov; Vooruzhennye sily i vysshee voyennoe obrazovanie (Moskva, 6-11 sentyabrya 1992 goda. Vystupleniya i materialy* (Moscow: AVIAR, 1993), 111-13.

17. A.I. Paliy, "Methodology of Classifying the Means and Forces of the Armed Struggle" (*Military Thought*, February 1993), 53-55.

18. Ibid., 60.

19. Viktor Baryn'kin, "Sbalansirovannoe razvitie Vooruzhennykh Sil Rossii" (*Armeyskiy sbornik*, February 1996), 16.

20. Ibid., 17.

21. S. A. Golovin, Yu. G. Sizov, A.L. Skokov and L.L. Khundanov, *Vysokotochnoe oruzhie i bor'ba s nim* (Moscow: Izdatel'stvo "Vooruzhenie, Politika, Konversiya," 1996), 205-6.

22. Ibid., 205-24.

23. Ibid., 224-28.

24. Ibid., 229.

25. A.P. Bondaenko, N.I. Turko and S.I. Fedorchenko, "Evolution of Strategic Actions Forms to Counter the Aerospace Enemy" (*Military Thought*, April 1994), 24.

26. Ryabchuk, et al., *Elementy voyennoy sistemologii primenitel'no k resheniyu problem operativnogo iskusstva i takitiki obshchevoyskobykh ob'edineniy, soyedineniy i chastey: Voyenno-teoreticheskiy trud*, 4.27.

27. Ryabchuk, et al., *Elementy voyennoy sistemologii primenitel'no k resheniyu problem operativnogo iskusstva i takitiki obshchevoyskobykh ob'edineniy, soyedineniy i chastey: Voyenno-teoreticheskiy trud*, 4.

28. Ryabchuk, "Nauka, obrazovanie, reforma" (*Voyennaya Mysl'* February 1994), 39.

29. S.A. Modestov and N. Turko, "Geopoliticheskie I geostrategicheskie aspekty obespecheniya natsional'noy bezopasnosti," in *Protecting National Security*," Bezopasnost', No. 9 (1995), 23.

30. V.I. Tsymbal, "Kontsepsiya `informatzionnoy voyny'" ["Concept of Information War"], paper (Moscow: Russian Academy of State Management conference, 14 September 1995).

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