Russian Academy of Military Sciences Analysis of War in Iraq

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[FBIS Translated Text]

Scientific Information and Reports

On June 6, 2003, a session of the Scientific Council of the Academy of Military Sciences was held at the Russian Federation Ministry of Defense Institute of Military History, which was devoted to an analysis of the war in Iraq in March-April 2003 and an assessment of its consequences. We offer for your attention the statements made by the session's participants (material offered as presented by the author with some editing).

Lessons and Conclusions from the War in Iraq

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Military-Political Aspects

The military operation of the coalition forces of the US and Great Britain against Iraq in March-April of 2003, to a significant extent is accelerating the formation of an essentially new system of international relations. It is becoming obvious that a significant portion of the global community is yielding to Washington's pressure, which is taking active measures toward radically reshaping of the world in its own image. The agenda has already come to include questions about the forms of US global domination, primarily about the establishment of American control over the main hydrocarbon resources and the transformation (according to Washington's scenario) of the US ruled Islamic world.

An analysis of official documents of the G. Bush administration that have recently come to light and statements made by members of the American establishment offers grounds to highlight two primary directions for the new course of US foreign policy. First of all, this would be the accelerated reinforcement of a unipolar world system with the formal recognition of the US in the role of sole arbiter and gendarme. International organizations such as the UN apparently will be relegated to the role of supernumeraries in a round of chess being played on the "global chess board" with but one active player. Even NATO will be left only with the job of performing "peacekeeping missions" on territories "liberated" by the Americans from "international terrorists."

Meanwhile, in Washington they cannot help but take into account that simultaneously the idea of a multipolar world with regional power centers is developing. In light of this, a second essential direction of US foreign policy is discrediting this idea, as well as controlling the forces promoting it.

This means that the establishment of the new system will be done under conditions of a relatively slow-moving war with no deterrence factor in the form of a "second superpower" under the pretext of combating terrorism in both its classical and unconventional forms. The military operations in Iraq and the events associated with them in the international arena to no small extent have initiated a variety of manifestations of global opposition: from the resurrection of individual elements of the "Cold War," pandemic crises and conflict situations to the revival of "wars for resources" and "trade wars" that were characteristic of the era of the shift of capitalism to the imperialistic stage at the end of the 19th Century and the first half of the 20th Century. An essential element in this is the new, all-encompassing background of confrontation, and simultaneously one of its components -- the battle in the information realm.

Washington's actions directed toward insuring its domination in the international arena, to include through "neutralization," or toward the reorientation of the forming regional power centers, in addition to the simplification (for the US) of the methods and means for controlling the world (in the near future) could lead to an overexpenditure of resources, both material and human, and in the end to the undermining of the leading economic positions of the US and damage to its military potential in the foreseeable future.

Thus, the military action against Iraq should be viewed on the one hand as the clearest manifestation in recent years of the US military-political course, expressed in the forceful subordination of a "rebellious" regional center in violation of all norms of international law, as well as in the capacity of one of the first steps on the path toward the establishment of Washington's absolute hegemony in the world.

Military-Strategic Aspects

The factor of strategic surprise from the perspective of the time for the start of combat operations essentially did not play a special role owing to the overwhelming superiority of the coalition's forces.

Planning for the operation was done by the US Central Command, which was also assigned to execute the entire operation. In the course of preparing for it, they considered several possible variants for the coalition forces' operations, which were checked and re-checked with the aid of computer modeling.

In all likelihood, the decision was made to conduct a joint air and ground operation concurrently. The ground phase of the operation began simultaneously with the launching of air strikes. Three ground groupings were to be created on the territories adjacent to Iraq (the "Northern" grouping in Turkey, "Western" in Jordan and "Southern" in Kuwait), which could operate under the cover of and in coordination with the air and naval groupings (in the Persian Gulf, Mediterranean Sea and Red Sea). The planning stipulated the employment of strategic platforms (SBA) [strategic bombers] in the fire destruction of Iraqi troops and facilities in the overall context of the assigned missions.

A grouping of space forces and equipment was created ahead of time, which was capable of accomplishing the assigned missions (intelligence collection, guidance, targeting, etc.).

The overall manning of the coalition forces totaled up to 280 thousand servicemen (to include about 250 thousand from the US Armed Services).

The following were the possible directions of strikes by the ground groupings of the US and its allies:

from the territory of Turkey *on Mosul -- Tikrit*;

from the west from Jordan *on Baghdad* with a simultaneous sweep of the western desert regions of Iraq, where mobile ballistic missile launchers could have been situated;

from the territory of Kuwait *on Basra* and then later -- *on Baghdad*. This direction was estimated to be the most convenient for maneuvering "heavy" forces.

The primary mission, apparently, was not the destruction or defeat of the Iraqi armed forces, as was the case in Operation Desert Storm, but rather the destruction of Iraq's top leadership. The chosen objects of destruction were the high-level centers of military and state command and control, suspected WMD production facilities, units and subunits of Iraq's elite troops, and the air defense system. When assessing the situation with regard to issues concerning the enemy's status and possible actions, they underestimated the morale and psychological status of the Iraqi troops. The allied grouping's leadership believed that after the first strikes there would be mass surrenders.

Iraq's armed forces, despite their large manning level (375-390 thousand men), were significantly weaker than they were on the eve of the war in 1991. The international sanctions played their role, denying Iraq up-to-date weapon systems.

The Iraqi leadership concentrated its elite Republican Guard units and special forces in the cities and population centers, effectively turning them into well-prepared defensive areas, and actually into fortresses. Urban combat operations could have nullified the military-technical superiority of the US and British armed forces.

Ankara's refusal to allow the placement of the northern grouping on Turkish territory had a substantial influence on the way combat operations were conducted. In reality, the ground operations only began from a single direction (from the south). This was tied in with coalition intelligence reports that said S. Husayn at that time was holding a meeting in one of the Iraqi military's command posts with high-level officials, which made a convenient target for the allied armed forces.

Taking into account the experience of disunity in operations in the course of the majority of operations in recent years, **the leadership of the coalition forces decided to conduct a joint air and ground operation**. The air strikes were conducted for the most part for fire support of the ground forces' operations. This was made possible as a result of the allies achieving overwhelming superiority in the air and at sea in the course of the operation's preparation phase. In addition, this fact is confirmation of the substantial increase in the role of intelligence in the course of preparations for the operation, which facilitated discovering the majority of enemy targets.

The method of moving the Army and Marine Corps formations and units along the main arteries and roadways in approach march formations was executed with cover from the air. The Iraqi troops' strongpoints and fortified areas were blockaded by a portion of the forces. The garrisons were offered time for a possible surrender after which, as a rule, powerful artillery preparation continued involving all available forces and weapons. Close combat was initiated only in exceptional instances. As a rule, in such situations the attackers had the advantage owing to the greater range of fire of their weapons.

The role of army aviation (AA) increased substantially. Army aviation helicopters and airplanes were employed across the entire spectrum of missions accomplished (fire support of tactical battle groups, disrupting the enemy's command and control system, performing all types of reconnaissance, escorting and covering columns, etc.).

For supporting troop operations and providing direct air support to the forces on the ground, in addition to Air Force and Navy tactical aviation, broad use was made of strategic aviation and various types of cruise missiles. It is possible to highlight the following methods of operation: air space patrols in expectation of emerging missions, to include the destruction of ground targets, eliminating the Iraqi military-political leadership, shipments of troops and cargo, and so forth.

Special operations forces (SSO) [SOF] **units and subunits were put into action long before the start of the active phase of the air and ground operation**. They performed reconnaissance and final reconnaissance of important targets, tracked the Iraqi leadership's movements, performed targeting, took control of oil fields and so forth. They were dropped behind the Iraqi troops' lines using the air mobility method with the personnel landing directly in the population centers where they were to carry out their special missions (measures).

Airborne assaults were used with parachute drops of a significant number of personnel, arms and military equipment (airborne landing operations by the 173rd Airborne Brigade in the northern part of Iraq, and by subunits of the 82nd Airborne Division and 101st Airborne Division in the western regions.).

Psychological operations were conducted with high intensity both in the interests of forming positive public opinion among the population of Iraq, as well as of working on the Iraqi military personnel. They began long before the active phase of the ground operations and continued throughout the entire operation.

Thus, an initial analysis of the results of operation "Shock and Awe" allows us to conclude that the coalition forces' combat operations in Iraq in March-April of this year had a whole series of distinctive features both in their organization as well as in their execution. They differ from the use of the Western states' armed forces in previous years primarily in **the high level of cooperation between the branches and service components, the employment of all types of troops and weapons maneuvers, and the further development of the forms and methods for conducting combat operations.**

Military-Technical Aspects

The system of armaments activated by the US and British coalition troops in Iraq included types and models of VVT [arms and military equipment] that had been tested in previous military conflicts. However, never before has such a large number of various state-of-the-art arms and military equipment been used so intensively and simultaneously in the course of a single military campaign, which placed exceptionally high demands on the quality of operation of the command and control systems, and primarily of tactical level automated command, control, communication, and intelligence systems.

In order to facilitate the interaction between the equipment for collecting intelligence on targets and the systems for destroying them they made wide use of the latest communication, navigation and targeting equipment within the tactical level intelligence information networks, which for the first time in the course of actual combat operations allowed them to demonstrate the effectiveness of the automated creation of an electronic integrated tactical situation map for all of the various command and control echelons. In particular, used for the first time on the "platoon-company" level and by the recon-raid groups were the JTT-B joint tactical terminals, which allow for the real-time

display of data obtained via satellite and land-line communications channels on an electronic map either directly on the terminal's own screen or on a laptop computer hooked up to the terminal. When connected to the automated command and control system equipment, the terminal's capabilities in either automatic or semi-automatic mode support the preparation of data for firing at detected targets in real-time. In many ways this determined how effectively the tactical level precision weapons were employed.

The intelligence collection equipment used insured the effective detection of enemy forces and weapons at great distances, and the automated command and control systems allowed them to organize interaction very quickly between the various weapons systems to destroy them.

One of the distinctive features of the combat operations conducted in Iraq was the large-scale use of weapon control systems, the employment of which is based on data obtained via communications channels in real-time from the NAVSTAR global positioning system, electronic intelligence and imagery intelligence systems. The high degree of targeting accuracy allowed them to increase the share of guided munitions used up to 85 percent.

The coalition forces' state-of-the-art intelligence collection systems and equipment showed that achieving information superiority over the enemy is technically possible. In the course of the war in Iraq, the US used urgent data received with the help of the imagery intelligence system based on the KH-11 satellite, as well as data obtained during the preparation phase of the war with the aid of the commercial remote Earth sensing satellite systems Ikonos and QuickBird. While conducting combat operations in Iraq the US Department of Defense did not buy exclusive rights to use the commercial remote Earth sensing satellites as it did during previous armed conflicts. The reason for this was the large amount of time it takes to deliver the information to the weaponry.

For the first time a powerful reconnaissance aviation grouping was created that included U-2, RC-135, EP-3E, and JSTARS aircraft and the Global Hawk drone. In addition, for the first time a C-130 aircraft was used to support receiving data from and controlling the Predator reconnaissance drone.

In Iraq for the first time the AN/AAQ Litening thermal imaging and targeting pod was used, which is installed on F-16 and AV-8B aircraft. This unit is accurate to within about 6 meters, which allows it to be used for navigating weapons that do not have their own homing head, like the JDAM and JSOW. This system, which is equipped with laser targeting, supports reconnaissance and observation from altitudes of up to 13 kilometers.

We should note that **the concept of linking the various information systems of the NATO countries found practical confirmation in the course of combat operations**. Interaction was realized between American and English information systems, in particular intelligence data was received from GR-4A Tornado (Great Britain) aircraft,

equipped with the RAPTOR reconnaissance pod using American intelligence data receivers and processors.

As a result of the complete superiority of the US and British coalition troops in the air, the PVO [air defense] and PRO [missile defense] forces did not conduct active combat operations. However, in Kuwait, Qatar and Jordan they brought in the latest surface-to-air missile, the Patriot PAC-3, which is capable of performing in-theater missile defense missions, and in Turkey they placed Patriot PAC-2 surface-to-air missiles. For the first time in combat operations the Patriot PAC-3 successfully intercepted an Iraqi Scud missile. However, the lack of coordination in the coalition troops' command and control system resulted in a Patriot PAC-3 shooting down a British Air Force Tornado fighter because of a failure in the IFF system. Due to a mistake in the updating of the integrated air situation map in the automated air defense system, an anti-radar missile launched from an American fighter was fired at a Patriot complex.

The effort to realize the concept of "surgical" and "precision" strikes was reflected in the widespread use of VTO [precision weapons] (air- and sea-launched cruise missiles, guided surface-to-air and air-to-air missiles, GBU-24, -27, and --28 guided aerial bombs with laser homing and the GBU-29, -31, -37 guided bombs equipped with inertial navigation systems and Navstar GPS systems, and the AGM-154), which allowed them to avoid massive casualties among the non-combatant population, and also allowed them to destroy buried targets and tactical targets at long ranges.

However, we should emphasize that insufficient effectiveness was displayed in the use of strategic precision weaponry for taking out targets of destruction, primarily associated not with destruction accuracy, but with insufficient warhead yields, which required that repeated strikes be conducted.

We should note that during the combat operations, the US conducted its latest tests on its *microwave weapons* (electromagnetic bombs), however, there have been contradictory assessments of their results.

For conducting air strikes they used strategic aircraft (B-52, B-1 and B-2), tactical aircraft (F-16, F-15E, F-117, Tornado, and A-10), and carrier-based aircraft (F/A-18C, F-14). For destroying highly fortified, buried targets, GBU-37 2000 kilogram guided bombs with penetrating warheads were dropped from B-1 and B-2 bombers.

In the course of combat operations, the coalition troops used practically every type of helicopter in their arsenal (AH-64A/D, OH-58D, UH-60L/Q, CH-47D, AH-1W, UH-1N, CH-46, CH-53D/E, SH-60B/F, MH-53J, SA-330, and various modifications of the Sea King helicopter), but they were unable to use their helicopters effectively due to the weather and climatic conditions. Their engines turned out to be extremely sensitive to the desert sands. Under the conditions of the heat, the hot sand and the ever-present hot dust in the air, the thermal imaging devices installed on the helicopters turned out to be completely ineffective. In addition, the fine crystalline dust caused many breakdowns in their on-board electronics.

In the course of the combat operations in Iraq, the US Armed Services used the following types of armored equipment: the M1A2 Abrams, the M2A3 Bradley armored fighting vehicle, the M113A3 armored fighting vehicle, as well as the LAV-25 light armored vehicle and the AAV7A1 (Marine Corps subunits). Great Britain used the Challenger-2 tank and the Warrior armored personnel carrier. The ways they were employed in combat were brought about by the physical, geographic and weather conditions (desert, dust storms), as well as by the experience of combat operations during Operation Desert Storm. For example, in the previous campaign there were massive breakdowns in the M1 Abrams gas turbine engines (GTD) due to wear and tear from the sand. This was followed by serious improvements in the engine's air breathers. A distinctive feature of the armored equipment used was their being equipped with IFF systems for the purpose of preventing accidental friendly fire incidents.

Information Warfare Aspects

Prior to the start of combat operations, the mission was assigned to win superiority in the information realm. The protracted "information strike impulse," a semblance of which could be seen in the course of the operation in the Balkans, not only stunned the Iraqi military-political leadership, robbing it of any possibility of an adequate opposition, but also to a significant extent inflicted damage to the initially united policy of the European states with regard to waging a campaign against Iraq. In this the "ultimate goal of the entire campaign was achieved quickly and decisively, with minimal losses of material and human resources."

An analysis of information warfare measures taken allows us to highlight several of its characteristics and features. **The allied forces' information warfare against Iraq can be divided into three stages**. During the first stage, prior to the phase of open armed clashes, the models of "us" and "them" were set up and reinforced, emphasizing ideological symbols that justified direct intervention. In this phase, the possibility of a peaceful solution was propagandized, which in reality was unacceptable to both sides, - in order to attract public opinion to its own side. By manipulating the mass media, the tasks of having an adequate psychological impact on the country's leadership, disorganizing the state command and control system, demoralizing the country's population and armed forces, as well as supporting the inter-Iraqi and emigrant opposition and the separatist forces in Kurdistan, were all accomplished.

When the conflict shifted to its open phase, the second stage began, changing the way in which information warfare was waged: the mission of this stage -- to catch the enemy in the act of engaging in morally unacceptable forms of waging conflict, and also to attract new allies to their side. In this stage (with the initiation of missile and bomb strikes and the landing on the coast and in the north of Iraq) **the primary emphasis of the information warfare shifted to the operational-tactical level**. It was part of the military campaign and was designed to achieve Iraq's unconditional capitulation on the allied forces' terms. Meanwhile, only individual components of information countermeasures were used, and several of those were conducted in a limited fashion.

This was brought about by the Iraqi state and military command and control system's lack of automated equipment, as well as by the enemy's lack of effective means of impacting the information infrastructure of both the allied grouping of forces and the infrastructure of the allied countries as a whole.

The primary components of information warfare in this stage were information-propaganda actions, electronic warfare, and taking out elements of the civil and military infrastructure. In addition, to an insignificant extent the allied party worked on technologies for attacking computer networks.

Within the framework of information-propaganda actions, radio and television programs were broadcast to Iraq from neighboring countries. In order to increase the coverage of these broadcasts, UHF receivers with a fixed reception frequency were spread out all over the territory of Iraq. In addition, propaganda fliers were constantly dropped from the air, some weeks up to 70 million copies, while because of the overall poor literacy of the Iraqi population, the fliers for the most part were graphic (cartoons, posters, drawings, playing cards with portraits of Iraqi leaders).

Finally, during the third stage (the completion of the actual armed conflict) the information warfare shifted to a new phase -- the positive aspects of the interpretations of what had happened.

The information warfare strategy even allowed for the use of provocations or the juggling of facts in the second and third stages. It is not surprising that television became the primary attacking force of information warfare, both on the level of international relations, as well as actually during the military phase of the campaign. A cocktail of video clips with a reliance on spectacular imagery and background commentary, which virtually rules out two-way communication, is easily digested by the viewers, their political predilections notwithstanding. In addition, the juggling of facts was initiated directly by the highest level leaders of the US. Indeed, prior to the start of combat operations, US President George Bush appealed to journalists not to publish details about the American Armed Services' preparations for combat operations and generally to try to approach coverage of the United States' plans and designs for combating international terrorism with maximum restraint. However, American and European publications began racing to publish the plans and designs for conducting the military campaign, describing not only the manning levels of the armed grouping of allied forces, but also its possible tactics. Clearly the leaks of this information were organized within the US military and political spheres of authority themselves.

Yet again television proved that it is much better than the other mass media outlets at handling the interpretation of reality and forcing a picture of the world. The stronger the television channel's brand, the larger its audience, and the more it is trusted. And the more channels that offer a similar interpretation of events, the more strength the model of reality they have shaped acquires.

The simplest method of manipulating information is not to allow journalists access to the events themselves, instead "feeding" the press official reports and video chronicles received from military personnel armed with notebooks and mobile telephones with built-in photo and video cameras.

Another technique is based on the use of cinema and television imaging devices: naturally among the operational footage or pictures from reconnaissance aircraft or satellites chosen by the military to be demonstrated at the press briefings in the press center during the war in Iraq there was not a "bad" clip to be found. But then the journalists, and then even the television views could fall in love to their heart's content with the impressive scenes from the fighter cockpit, from its bomb bay or even from a missile flying directly at its target.

A great deal of information was published in the foreign press during the combat operations. However, we must recognize that the majority of the aforementioned publications were actually elements of the information warfare itself. From where were the journalists culling the reports they published? Most likely the only reports to ever see the light of day were those that were advantageous to the ideologues of the battle against terrorism.

However, disinformation and instilling fear in the enemy through the use of the contemporary media are not the only elements of information warfare. On the strategic level the objective of this campaign is **to create so much interference in the enemy's decision-making process that he cannot act or wage war in a coordinated or effective fashion**.

Generally speaking, the allied grouping prepared for information warfare with an enemy that relies heavily on information systems when making decisions. For this they developed combat viruses, electronic warfare weapons, and electromagnetic impulse sources. For Iraq all of these state-of-the-art methods for waging information warfare did not carry any special threat. However, the theory of information warfare presumes that even pre-industrial or agrarian societies can still have vulnerable spots. For the Iraqis use modern communication devices, have aviation in their arsenal, which presupposes the presence of navigation systems, and they even have electronic accounts in foreign banks.

By devoting so much attention to information warfare, the US and its allies were counting on waging "contactless" combat operations, in which the number of casualties (in the direct meaning of the word) would be kept to a minimum. "We are approaching the stage of development when nobody is a soldier, but everybody is a participant in combat operations. The mission now lies not in the destruction of live forces, but in undermining the population's goals, views and world outlook, in destroying the socium."

Deputy Chief of the Military PVO University Lieutenant-General V. V. Barvinenko, Doctor of Military Sciences, Distinguished figure of science of the Russian Federation

In the sheer number of forces and weapons, **Iraq's aviation grouping and air defense forces at the start of the war were quite significant**. They included 200 warplanes, including 80 fighter-bombers and 120 fighters, more than 100 surface-to-air missiles and 700 antiaircraft guns. However, those airplanes (MIG-21, -23, -25, -29, SU-22, -24, -25, and the S-75 Volkhov and S-125 Pechora SAM complexes) were an old pool and were not entirely suitable for a modern day war. Organizationally speaking, the air defense system consisted of four air defense sectors: Northern, Central, Western and Southern, which included a zrbr [SAM brigade], rtbr [radio-technical brigade], zenbar [antiaircraft artillery brigade], and ozend [separate antiaircraft artillery battalion].

The opposing aviation group of the US and Great Britain, deployed at air bases in countries of the Persian Gulf region, as well as on aircraft carriers located in the northern part of the Mediterranean Sea totaled about 1000 warplanes, to include strategic bombers from the US Air Force at forward air bases on Diego Garcia (the Chagos archipelago, Indian Ocean), Markiz-Tamarid [Thumarit] (Oman) and Fairford (Great Britain).

The complete quantitative and qualitative superiority of the coalition forces made it impossible for Iraq to employ its aviation and air defense weapons effectively for repulsing missile and aviation strikes.

According to information in the press, in the first hours of combat operations, there were two launches of guided surface-to-air missiles in the vicinity of Baghdad. As time progressed, during the course of combat operations only the crews of antiaircraft artillery batteries and portable surface-to-air missiles offered any resistance.

The multinational forces' losses, according to US and British open-source reports (as of 4/02/03), were as follows: 4 airplanes, 6 helicopters and 2 drones, and 5 helicopters were damaged. According to other sources the losses totaled more than 40 aircraft.

There was absolutely no participation of Iraqi Air Force aircraft noted. The main possible reasons for Iraq not using its aviation and air defenses are as follows: the quantitative and qualitative superiority of the coalition forces; the inoperability of the Iraqi aircraft and air defense weapons and military equipment due to their not having received components and spare parts for such a long time; the lack of trained crews and SAM combat crews; and demoralization within the army.

Nor is it out of the question that the weak resistance of the air forces and air defenses were associated with the possibility that the leadership of Iraq may have transferred the bulk of its battle-ready aircraft and air defense weapons to Iran and Syria prior to the initiation of combat operations with the goal of keeping the combat equipment within the Arabic world.

However, analysis shows that neither the condition of the air force and air defense weaponry, nor the army's demoralization were the primary reasons for the lack of success of Iraq's air force and air defense combat operations. What was for all intents and purposes the non-use of Iraq's aviation and surface-to-air missiles against the US and British aerial attack weapons was most likely the result of **the recognition by the Iraqi command structure that it would be impossible to achieve even insignificant results by virtue of the complete superiority of the opposition**. This superiority was achieved not so much by the quantity and quality of aerial attack weapons as much as by the *complete informational superiority* of the US and British armed forces grouping and its effective command and control.

The last two reasons are the ***main lessons*** of the war in Iraq of 2003 and other previous wars, which have been analyzed, but the appropriate conclusions in the practice of structuring the Russian Federation's PVO [Air Defense] and VVS [Air Forces] and the methods and forms for employing them have not been introduced.

In the Russian Federation's art of war, air operations (offensive and defensive) are considered to be the highest form of operational employment of aviation and air defense troops (forces). The air operations of a VVS and PVO combined formation and an armed forces grouping in a strategic sector (theater of military operations) were comprised of the sum total of previously developed and planned air and air defense engagements and battles, coordinated and interconnected by target, missions, place and time, group, concentrated and individual air strikes and maneuvers by the aviation and air defense forces to accomplish the missions of repulsing enemy missile and air strikes and destroying his facilities.

Despite significant theoretical study, at this time the practical realization of operations presents significant difficulties to the chain of command of VVS and PVO combined formations and the aviation and PVO joint commands in strategic sectors (theaters of military operations) associated with our forces' and equipments' low capabilities for reconnaissance of enemy air and ground targets, the insufficiently developed communication system for transmitting intelligence data and data about our own troops (forces) and those cooperating with us, the lack of modeling systems to support the decision-making process and the planning of operations and combat actions, and the limited capabilities of our rear and technical support systems.

Until recently, operations, to include air operations (in theater), were also the highest form of operational employment of the potential adversary's groups of troops (forces). And while the Russian Federation Armed Forces are experiencing difficulties in realizing operations, the armed forces of the leading states, primarily the US and NATO member-countries, in our view, are transitioning to fundamentally new and even more effective methods and forms of combat operations, which they have demonstrated in recent localized wars and especially in the war against Iraq in 2003.

This transition to new methods and forms of combat operations became possible owing to their achievements in information support of combat operations,

realized within the framework of their information warfare concepts, as well as to developed rear and technical support systems. Indeed, in the concept for the creation of a joint information-command and control structure for the US Armed Services, it was noted that in order to conduct operations effectively it would be necessary to create an information support system built based on the principle of the functional integration of uncoordinated space-, air-, sea- and land-based information systems (reconnaissance, electronic warfare, communication, navigation, weapon guidance, automated processing, modeling and so forth) while relying on the services of global telecommunication networks, both military and civilian. This would, in the opinion of leading analysts, lead to the appearance of a new quality -- the ability to systematically observe a changing situation in any region of the world, dynamically assess it and aim strike weapons with precision at any point on the globe to accomplish both strategic and tactical missions.

The most important tasks to be accomplished in this information system are as follows: the provision of detailed maps (with a resolution of 10 meters, and as time progresses even less) of the combat operations area via satellite communication channels within minutes of a request from the combined formations', formations' and units' chain of command showing the current situation and a mosaic of video images displaying important individual features of the terrain and sites for targeting, preparation of the weapons and assessing the results of strikes; the automated assessment of the enemy's intentions and coming up with options for their own troops' operations.

At this time, substantial results have already been achieved under the information-command and control infrastructure programs. For example, American pilots prior to the initiation of combat operations in Iraq studied targets on a scale model of Baghdad.

The development of intelligence and communications systems and mathematical models in support of the decision-making process and in support of planning has allowed the US Armed Services and the armed forces of other states to demonstrate new elements of methods and forms of military operations in recent localized wars, starting with the war in the Persian Gulf region in 1991. An analysis of the multinational forces in the Persian Gulf shows that the use of the air strike forces in that war began with an air offensive operation that lasted for three days. In subsequent combat operations, the air strike forces demonstrated elements of a new form of combat operations. They were comprised of the consecutive accomplishment of individual missions for the destruction of individual targets and groups of targets using aviation and cruise missiles with sustained activity for 35 days on air operation levels (400-850 combat flights per day). An analysis of these operations gave rise to a multitude of hypotheses on their forms, which were referred to both as a traditional air operation and as new forms: electronic warfare and air campaign. Unfortunately, the characteristics and features of the new form were not thoroughly analyzed.

The US and British military operation in Iraq "Desert Fox" lasted 73 hours (from 17 to 20 December 1998). In the course of those operations they also demonstrated elements of

this new form -- consecutive missile and air strikes with precision weapons, in the course of which more than 100 targets were destroyed.

The military operations against Yugoslavia (1999) began with two massive air and missile strikes, after which, as was the case in Iraq, they conducted consecutive selective single and group strikes with an intensity of about 50-70 airplanes per day. The aircraft and missiles operated in groups against a significant number of targets, while air defense weapons that were spotted visually or by their electronic and thermal emissions were destroyed primarily with PRS [antiradar missiles] or using specially assigned forces.

While conducting the counterterrorist operation "Enduring Freedom" in Afghanistan in 2001, from the very beginning the American chain of command rejected such operations as ineffective owing to the dispersed nature and concealment of the targets of the strikes against the terrorist group Al-Qa'ida and the Taliban regime. The objectives of the operations were achieved thanks to the employment of the "Network Centric Operations" concept. The intelligence collection system allowed them to study in detail and assess the situation in the combat operations areas and to use a wide variety of forces and weapons from state-of-the-art weapon systems with laser guidance to the old B-52 bombers, to coordinate their use with the help of the so-called "piggyback" method, whereby the strikes were conducted with direct observation of the targets by their own or affiliated intelligence resources. The improved system of communication between the crews of warplanes and special operations forces in a fundamental way facilitated reducing the time from the moment of target detection by the special forces subunits until the moment of strikes being launched against it by aviation from several hours to just a few minutes.

Analysis of the air strike forces' operations shows that **they cannot be placed in any one of the categories of known forms of military operations**. They are not combat operations, since they are very closely interconnected with the overall objective, missions and methods to execute them. But nor are they operations, since first of all these actions are not planned ahead of time and are not coordinated, and secondly, they are not limited to a set time span (for air operations up to three and up to a maximum of 5-7 hours). These actions are characterized by a shift from combat operations according to an earlier formulated plan to the execution of "adaptive" combat operations, whereby the distribution (clarification of distribution) of targets and the delivery of weapons to targets are done not very long before or even immediately prior to their execution.

Let's take a more detailed look at the **algorithm for preparation and implementation of this new form of military operations.**

The air strike force grouping's chain of command defines the target destruction missions. Then, on the basis of a model of the combat and information fields of the opposing grouping of air defense troops (forces) groups of targets are selected, against which at that given moment it is possible to act (conduct strikes) using certain forces

and weapons. These forces and weapons are immediately assigned to act against the selected group of targets and the time and methods (techniques) are determined for their actions. In doing this, a method of operations is chosen is such a way as to neutralize the capabilities of the enemy's air defense systems. When carrying this out they employ either "evasion tactics" (i.e. circumventing the zone of detection and fire of ground-based air defense weapons or employing stealth strike aircraft), or "forceful suppression tactics" using radio-electronic equipment, weapons or special operations forces.

The method formulated is then modeled, and the effectiveness of its impact on the opposing side's targets and the cost of accomplishing the mission (losses of forces and resources) are assessed. If the effectiveness and cost satisfy the requirements, the developed plan is given to the group that is to execute it, which then assigns the task to the forces assigned to carry out the act (conduct the strike), and the necessary data is entered into the on-board computer equipment. Meanwhile, the logistics and technical support systems must ensure that the assigned forces are ready by the time they are to carry out their next mission.

The planning group then plans subsequent operations without being distracted by the process of direct command and control of the forces and weapons carrying out the previously assigned missions.

Thus, this new form of military operations, as it applies to the aviation's and air defense forces' actions, is comprised of aviation and missile strikes that are both concurrent and consecutive, coordinated and integrated by target and mission, and adaptive to the situation unfolding, and aerial and antiaircraft engagements and battles for the destruction of enemy targets and repulsing his missile and aviation strikes. Adaptive operations can be executed only under the conditions of developed intelligence and communications systems, as well as with the availability of modeling complexes for presenting information about the enemy and his troops (forces) in aggregate form, suitable for use by command and control officials, as well as for the development and assessment of methods of operations for the troops (forces) and weapons. Here we must stress that without modeling, the aviation would not be able to execute the planned strike. The chain of command must be convinced that the strike will be effective and that the safety of their crews will be necessarily insured. Timewise, the duration of adaptive operations is limited only by the capabilities of the rear and technical support, that is, of course, given the assigned forces and weapons take on acceptable losses.

The operations of the US and British armed forces, which were launched against Iraq on May 20 of this year, also clearly reflected the characteristic of being adaptable to the activity of the air defense system.

The operations of the US and British armed forces clearly displayed an adaptive character, which could be adjusted to the activity of the air defense systems. Based on intelligence data, group and individual strikes were subsequently launched against selected targets, and even the first air strike was conducted unexpectedly and quickly

against a residence where, according to intelligence data, Saddam Husayn was supposed to be located. In light of the fact that Iraq did not deploy ground troops simultaneously with the initiation of strikes, the multinational forces' ground troops were inserted within its borders. Tactical carrier-based and army aviation worked actively, as did the weapons of the ground troops, and special operations forces were activated as well. Iraq's armed forces and air defenses simply could not withstand all of this. Nor could Iraq employ its aviation, since its airplanes would have been shot down immediately by long-range air-to-air missiles and land-based guided surface-to-air missile systems (Patriot and so forth).

The capabilities of the US aerial attack forces for planning and making adaptive impacts a reality at this time are increasing even more with the implementation of the concept of "dynamic planning," which envisages the retargeting of aviation strike weaponry and cruise missiles after the issuance of the order to carry out a mission even when already in flight. The appropriate technical resources are being developed to make this happen. In light of this, the theory of the US art of war has marked a new form of military operations. It is called "joint operations."

Effectively opposing adaptive operations of troops, forces and weapons ("joint operations") using traditional Russian Federation Armed Forces methods, in particular air operations, is impossible. In order to eliminate this forming negative trend, Russia's Armed Forces must also transition to adaptive forms of military operations, and in particular, to adaptive air operations (both defensive and offensive). This is the most important lesson of the US and British war against Iraq. This will require the following: **first**, to amend the information warfare concept with the inclusion of directions for the creation of information networks and the development of modeling complexes; **second**, to launch immediate work on the top-priority creation of information networks and modeling complexes; **third**, to bring the KSA [automated systems complex] structure into compliance with the new operating algorithm of the command and control organs, i.e. to create subsystems for combat operations decision-making and planning, as well as for implementing those plans; **fourth**, to introduce the necessary computer equipment and modeling complexes into the created automated systems complex of the command and control organs of the Armed Forces (the VVS specifically); **fifth**, to continue research into new forms of military operations, to develop provisions for them and to introduce them into practice.

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The war in Iraq became a sort of test range for the American Army for testing new models of arms and military equipment and for improving the methods for using them in combat. This assertion applies to the fullest extent to *satellites* as well.

Whereas before the use of satellites in the course of localized wars and armed conflicts was as a rule sporadic (Vietnam, the Middle East, Afghanistan, the Falkland Islands and so forth), involving the presence of satellites in orbit, the ability of those satellites to pass over the surveilled area, and the creation of sets of space-based communication and navigation instruments, now the situation has changed in a fundamental way.

The first experience in the broad-based practical use of space-based systems in the course of combat operations was the events in the Persian Gulf (1991), when the multinational forces used satellites in all phases of the operation. The primary missions assigned to the command and control organs of Space Command in the vicinity of the conflict boiled down to providing intelligence, communication and battle damage assessments, navigation, topogeodesic and meteorological support to the troops.

According to expert assessments, the 1991 Persian Gulf War was "the first war of the space era" or "the first space war of our era."

Further work on and development of the forms and methods for employing satellites in support of combat operations occurred in Yugoslavia. The planning of missile and bomb strikes, monitoring the results of their use, topogeodesic and meteorological support in all stages of the operation were done with the use of data acquired from satellites. Special importance was assigned to the space-based navigation system, the information from which supported the operation of precision weapons at any time of day and in any weather conditions. An analysis of the experience of the use of satellites in Yugoslavia and in previous conflicts confirmed once and for all the need for and high effectiveness of using so-called space support groups created on the various command and control echelons. Indeed, in the Yugoslavia conflict for the purpose of coordinating the activities of the various intelligence resources, as well as optimizing the information obtained, under the NATO Supreme Allied Commander in Europe a special subunit was created for the employment of satellites. About two dozen expeditionary groups were sent to the combat operations zone to provide satellite-derived information to the tactical level commanders of the aviation and naval groupings.

The 2003 war in Iraq was even more impressive with regard to the scales on which data from satellites were used. A wide array of military and commercial surveillance, communications, navigation and meteorological satellites were used, as well as missile strike early-warning satellites. In total, according to open-source data, in the course of the war the orbital grouping consisted of 50-59 military satellites for various purposes, 28 GPS satellites, and an even larger number of commercial communications and remote Earth sensing satellites.

The US began preparing to use satellites long before the start of the invasion. In doing so, the US Department of Defense devoted special attention to training highly-qualified military specialists who could effectively accomplish operational missions from outer space in support of the employment of troops in combat. This allowed the Air Force Space Command to send its own trained specialists to traditional joint command posts.

The Space Command was most fully represented in the Combined Air Operations Center (CAOC), which was deployed at Prince Sultan Air Base (Saudi Arabia). The Space Command Group's mission in this center consisted of operational coordination of the use of satellites in the course of planning and conducting combat operations. For example, when planning aerial bomb strikes, the Air Force headquarters coordinated them so that they would coincide with the most effective disposition of the GPS satellites over the battlefield, received data about the weather situation and images of the planned targets of the strikes, and also monitored satellite communications channels. In addition, the Space Command specialists informed the headquarters of the various branches of service about the current and other capabilities of the satellites, both military and commercial, in the interests of integrating them into combat operations.

The use of spy satellites. Research conducted in recent years, and especially the experience of military conflicts, has allowed the US to lay the foundation for creating integrated composite intelligence and weapon systems. The concept of the combined and interconnected use, with regard to time and space, of airborne reconnaissance equipment, weapons and satellites, integrated into a single system, is a qualitatively new phase in the development of precision reconnaissance and weapon systems.

It was this ***integrated aerospace reconnaissance system*** that was activated in the course of the current war in Iraq. The operating algorithm of the various equipment is rather simple, but effective. The satellites (SIGINT and IMINT), which have a lengthy surveillance interval over their given areas and are efficient at delivering intelligence data, reveal the location of targets practically in real-time. The data received about the targets are then transmitted to the troops and weapons command and control posts and (or) directly to the airborne weapons platforms, which simultaneously conduct final reconnaissance and launch the strike. Thus the concept of "seek and destroy" is realized.

In the US, the space circuit of the integrated reconnaissance system includes the Keyhole imagery intelligence satellite, the Lacrosse radar satellite, the Magnum and Vortex signals intelligence satellites, and the DMSP meteorological satellite. In addition, wide use is made of information from the civilian remote Earth sensing satellites IKONOS, QuickBird as well as the French satellites Spot. The aviation circuit consists of drones such as Hunter, SD-289 and Predator.

Such integrated systems possess several fundamental features. First and foremost would be operational flexibility of tactics when using the aviation and space circuits,

while each circuit can also be operated autonomously taking the current tactical situation into account. Second would be an increase in the system's combat stability owing to its multiple circuits and its ability to perform non-stop, all-weather and round-the-clock reconnaissance, which is made possible by the presence of the satellite systems as well as the radar observation equipment in both circuits. Coordination of the operations of both circuits and their interaction is performed by joint space support groups. In addition, each of the circuits can be used to accomplish independent missions. Indeed, according to press reports, for the destruction of Iraqi armored equipment the Central Command used satellite intelligence data that was transmitted to the strike aircraft in real-time. For getting a fix on the Iraqi armored equipment and transmitting the targeting data they used three state-of-the-art Keyhole-11 imagery satellites, which operate in the visible and infrared spectra, and also Lacrosse satellites equipped with on-board radar. The satellites' orbits were chosen in such a way that every 2 to 3 hours one of them was passing over the territory of Iraq, transmitting information to data transmission stations on the ground. Thus, space-based information about the situation in the Iraqi theater of military operations obtained from imagery and radar intelligence satellites was updated about 12 times in a 24 hour period.

One drawback of the imagery intelligence satellites used at this time is the ability to deceive them by taking relatively simple countermeasures: using camouflage, creating fake targets. This was widely used by the Yugoslavs, but the Iraqis were unable to take advantage of this.

An enormous role in the war with Iraq was played by navigation satellites. We are primarily talking about the use of information from the GPS Navstar satellite for precision weapons guidance. According to some data, the share of such weapons in the current war amounted to 95 percent (for comparison -- in the 1991 war that share amounted to 7 percent).

As was the case in the aggression against Yugoslavia, the missiles and bombs that use signals from the Navstar satellite navigation system for homing on the target were the most effective. In the 1991 war, such weapons were not used since the full-scale deployment of the system was not completed until the mid-90s.

A trend has been noted of satellite navigation information receivers being installed on weapon systems that were previously guided using other principles. In particular this would be the Tomahawk sea-launched cruise missiles and the EGBU-27 bombs.

The transition to satellite guidance systems allowed for a radical increase in the number of aircraft capable of employing precision weapons against ground targets. In 1991, only 98 American tactical general-purpose warplanes possessed this capability. In the 2003 war, practically every combat aviation aircraft participating in the operation was equipped with precision weapons -- about 600 aircraft.

Of even greater significance to the coalition troops was the broadest possible use of satellite navigation information for organizing reconnaissance, troop command and control, air support and so forth.

According to some press reports, the GPS signals supposedly were relatively easily jammed with the aid of simple jamming devices, which resulted in a large number of precision weapons missing their targets. It is rather doubtful that such measures could be highly effective. However, it is abundantly clear that instances of the use of electronic countermeasures equipment could have taken place.

The military operations in Iraq yet again confirmed the great importance of communications satellites in the command and control of troops when preparing for operations and while conducting combat operations. This includes providing secure communications for Central Command with the US military-political leadership, communications for the highest echelons of the military leadership with the units and subunits, and communications between subunits. For this they used both military satellite communication systems (SDCS, MILSTAR, FLEETSATCOM and others) as well as a multitude of commercial communications satellites.

A feature of the current war is that the operations were conducted across an enormous territory without a clearly defined front line. Under these conditions, the forces and equipment were dispersed over a very wide area, and only communications satellites were capable of supporting effective troop management.

The role of communications satellites in the efficient delivery of intelligence information obtained using the integrated intelligence system was great. According to some estimates, information was transmitted from reconnaissance drones using satellite communication systems.

Satellite telephones gained wide distribution for mobile groups and even individual servicemembers to communicate with commanders and with each other. These include the civilian personal satellite communication systems Globalstar, Inmarsat and Iridium.

Speaking of prospective developments in military satellites we should note that information support of armed forces operations from space will remain one of the key missions in the 21st Century. Research that has been done, as well as the experience of using satellites to support combat operations, which has been gained in the Iraq war as well, show that the development of satellites for accomplishing this mission should be done in two interconnected directions.

The first direction is the creation of satellites with operational-tactical specifications that meet the demands of wartime: detail, productivity, periodicity, efficiency of deployment, survivability and so forth.

The second direction is taking space-based information all the way down to the very lowest command and control echelons, and in the future -- down to the individual

soldier. Taking space-derived information all the way down to the lowest command and control echelon all the way to the individual soldier only began to be developed at the end of the 20th Century, when models of "smart," compact high-tech gear appeared and the very understanding of the character of modern-day warfare changed. Indeed, in the United States in 1993, the SMP (Soldier Modernization Plan) program was launched. Its goal -- to increase the capabilities of the soldier on the battlefield. Within the framework of SMP variants are being developed not only of combat weapon systems, but also of gear for the individual soldier.

These developments are founded on the concept of "information warfare," which is based on the latest achievements of scientific-technical progress and the corresponding revolution in military affairs in the 21st Century. For its consequences it can be compared only to the creation of nuclear weapons in the mid 40s of the 20th Century. The introduction of space-based information technologies on all command and control levels and the employment of troops truly allows us to talk seriously about the possibility of "conducting digital combat operations." And so, according to this new concept the gear of every soldier will be required to include command and control (communications), navigation and information display equipment. And it must be done not haphazardly, but combined into small-scale, individual complexes (sets). Its effectiveness in many ways, and maybe even to a decisive extent, will depend on the degree of integration of information-computer and satellite technologies. Modern portable notebook computers, virtual reality helmets, pocket communication devices -- pagers and cell phones -- and finally individual GPS units could serve as the prototypes of its individual components. Later it might even include weapon control equipment, individual protection, and camouflage. As a result of the individual soldier being able to accomplish combat missions in any conditions, his autonomy will increase many times over. As far as the effectiveness of his impact on the enemy, according to the most modest estimates, the individual soldier could be compared with modern-day subunits like a detachment. **True, he must also have the corresponding training. Such a professional cannot be trained in a "new recruit's month-long training course." He will require constant training.**

Scientific research conducted in recent years and the results of studies of issues concerning the practical use of space-based forces and equipment in the troops have confirmed that the creation of a compact satellite information transceiver must be one of the highest priority directions of development. They have defined levels of delivering satellite information on the battlefield to various consumers without "informational redundancy," the structure and missions of the organs responsible for receiving, processing and transmitting that information, as well as preferred options for organizing orbital and ground equipment.

What will the soldier become in the near future? Even if we agree with the assertion that in the 21st Century war or armed conflict can be viewed as confrontation between "smart" information-weapon systems, man will continue to play the lead role, his level in the army hierarchy notwithstanding. Nobody can make decisions for him or absolve him of responsibility. But in order to "fit the situation," each of them (the soldiers), in addition

to state-of-the-art weapons, must have reliable high-speed gear for receiving, displaying, processing and transmitting information about the combat situation. An integral element of his gear will be satellite communication devices with high transmission speed, jamming resistance and protection, a GPS unit, devices for connecting it to individual information display devices and so forth, linked to computer equipment.

Individual subunits, and if necessary even the individual soldier, will receive **constant communication with any level of the chain of command irrespective of the distance, reliable command, control and interaction (including mutual fire support) with other subunits and units, and the timely exchange of intelligence information.** This will allow them to receive orders and if necessary (depending on the situation) to coordinate and carry out combat operations in real-time. Precise terrain orientation in any weather conditions, day and night, will become as ordinary as telling the precise time. Traditional paper maps will become a thing of the past. They will be replaced with precise digital maps transmitted to individual field terminals, which will display the actual combat situation and one's own location. Even IFF could be done using coordinates taken from the terminal. Receiving intelligence data on the status of the area of operations, to include radiation and chemical reconnaissance, will become more efficient and simple.

Accomplishing these tasks will inevitably lead to a new qualitative level of command and control of troops and will increase their combat potential many times over. In the past this took decades and the passing of several generations of military equipment. It is hard to believe that now this can be done by a miniature, individual set, weighing just a few hundred grams and consisting of a computer with a device for information input and display, communications and navigation.

One of the basic prototypes of such gear could be a protective *monitor-helmet*. Its screen will display integrated information about the presence and composition of enemy forces, the status of the combat operations area, the location and the make-up of your neighbor's forces that may be required for mutual combat support. Naturally, the majority of combat orders and directives will also be transmitted using this helmet. It could be that the problem of the soldier' perception of heterogeneous information coming in from the display and from his actual environment would have to be resolved -- "dividing" his attention in conditions of a dynamic combat situation, selecting and distributing data for various consumers, secrecy, protection and so forth. In addition, it is still not possible to talk about creating prospective universal gear with satellite-based elements that will be suitable for the soldier in any conditions. In the first stage, at the foundation of the creation of its elements should be the modular design principle, which would allow for efficiently developing variants that correspond to the maximum extent possible to the soldier's specialty and the conditions in which he will have to operate. However, there are no fundamental "irresolvable" problems foreseen. Similar tasks have been accomplished successfully in aviation for a long time now!

The predominant role of outer space in achieving the goals of armed combat in the 21st Century will be determined by the ability to accomplish missions such as **active influence and combat support of armed forces operations from outer space**. Accomplishing this task stipulates the creation and deployment of space-based combat equipment for conducting military operations in space and from space. This task encompasses the protection of one's own satellites, ensuring access to space and preventing the enemy from using satellites for his own purposes, destroying ground stations, equipment and lines of communication with satellites, taking out orbital resources, and also it could include using space-based weapons, envisaging their use from space against ground targets. In the future, it is likely the emphasis in the development of space-based weapons will shift toward accomplishing this task, which will become more defined.

Foreign specialists believe that **the shift toward controlling outer space and conducting strikes from space will be unavoidable**, since their role is steadily growing. In the future it is entirely likely that not only will the enemy's satellites be destroyed in space, but also strikes will be conducted from there against ships, airplanes, ground targets and warheads in flight. That is why some space powers are in the process of developing directed energy and kinetic weapon systems for the destruction of targets. Ground complexes as well as aircraft are supposed to be used for their employment in combat. An indicator of the growing importance of space forces is their inclusion along with nuclear weapons in the "combat air force" (CAF).

At the threshold of the 21st Century, technologies for information warfare and non-lethal effect on humans appeared on the scene. The weapons created on the basis of these technologies could be placed on satellites and should offer the capability to have a constant and periodic massive influence on selected regions for the purpose of taking out live forces for a certain amount of time, demoralizing the population and so forth. **The ability to accomplish such missions from space will lead to a qualitative and quantitative change in the form and methods for conducting combat operations and organized armed conflict as a whole.**

We should note that the modern era is characterized as the information warfare era (information conflict), in which the role and importance of *space-based information systems* is especially great.

The war in the Persian Gulf zone (1991) was called the first "information war," in which the US was victorious. Under present day conditions, information is acting in the capacity of a command and control tool, which is used at all stages of the command and control cycle. A lack of information denies those who are making the decisions the ability to orient themselves and serves as one of the sources of unjustified, subjective decisions. In other words -- it is the same kind of military resource as soldiers and combat equipment.

Proceeding on an analysis of the results of the war "Desert Storm," the US Department of Defense developed new methods for combat effect on the enemy, among which a

special role is assigned to measures within the framework of the concept that has since been given the name "information warfare." Realizing its provisions within the context of armed combat means **shifting the emphasis of conflict with traditional forms of influence (fire, strike, maneuver) to the information-intellectual realm -- in the decision-making process.**

The main goal of "information warfare" is the disintegration and destruction of the integrity of the enemy's command and control grouping, breaking them into isolated, disoriented and uncontrollable elements and their subsequent removal from service by means of fire (physical) destruction. Preliminary analysis indicates that the Americans achieved some successes in the "information war" in the second Iraqi campaign. The search for new forms, methods and means of conducting armed conflict in various spheres of human activity in the 21st Century will continue.

We must note that outer space is given a special place in the contemporary military doctrines and national security concepts of the leading space powers. Indeed, the "US National Security Strategy for the New Century," which was published in October of 1998, contains Washington's fundamental approaches toward the outside world and the use of outer space in the national security interests. In it, outer space is viewed as one of the primary spheres in which existing and prospective technologies are extremely necessary for the purpose of protecting the US itself and which is capable of playing a key role in its use of its military power to create a favorable international climate, and their readiness to be responsible for the whole range of possible threats and crisis situations.

Therefore, in accordance with the "US National Security Strategy for the New Century," they intend to maintain their leadership in outer space, to achieve unprecedented access to outer space and its use in the interests of protecting the national security, which will facilitate the well-being and prosperity of the country. It stresses that outer space has taken on global informational importance, and this brings with it serious political, diplomatic, military and economic consequences for the US. Washington's policy boils down to developing all forms of space-related activities and doing so while protecting the vital security interests of the US. It proposes deterring threats to their interests in outer space, and if this does not yield the desired results, then the hostile forces preventing the US from accessing and using outer space will be suppressed. It assigns the mission of maintaining the ability to combat space-based systems and weapons, which could be used against their ground, air and naval forces, command and control systems or other structures of vital importance to the national security. The US attentively tracks commercial long-range observation satellites so that the collection of visual information from space will not be used to the detriment of the US security interests.

Thus, a preliminary analysis of the use of satellites in the war in Iraq confirms the scientifically well-founded thesis that we have repeated on numerous occasions over recent years that the role of outer space in support of the combat operations of troops is growing. Hence the need to increase the amount of attention devoted to outer space on

the part of the country's military-political leadership, which dropped sharply in the early 90s, but which for all intents and purposes has not grown at all in the early 21st Century. Unlike the Americans, we do not connect national security with activities in outer space for some reason, evidence of which is the "National Security Concept," which was approved by the Russian Federation Presidential Decree of January 10, 2000, No. 24, in which there is not a single word mentioned about outer space.

Now about **the concrete lessons from the latest war in Iraq, and the directions of activities to change the situation with military space-related issues in Russia for the better.**

First. *The search for new forms and methods for conducting combat operations*.

As its National Security Doctrine manifests itself, the US is actively searching for new forms and methods for conducting combat operations with the massive use of satellites in future wars, both world wars and localized wars, as well as in antiterrorist operations. For the American Army, the war in Iraq was a sort of test range for conducting testing on new models of arms and military equipment, and for improving the methods for using them in combat. Therefore, the intensification of work on theoretical research and practical studies of new forms and methods for conducting combat operations, to include in outer space and from outer space, is a pressing need.

Second. *The use of the capabilities of satellites in the troops.*

A fundamental solution to the question of organizing the use of all of the capabilities that intelligence, navigation and communications satellites offer is needed. First and foremost we are talking about working out methods for using precision weapons and developing the means to provide information to tactical level subunits, and improving the forms and methods of employing communications satellites for the command and control of troops.

It seems to us that one of the possible ways to resolve this problem is through *integration*, the combined use, interconnected in time and space, of ground, naval, and aviation reconnaissance and weapons systems and spy satellites as part of a single integrated intelligence, targeting and destruction system.

Another possible way to improve the organizational forms for using information from intelligence satellites in the troops could be the creation of *space support groups*. The Russian Army has a certain amount of positive experience in using space support groups on the operational-tactical and tactical echelons, which it gained while preparing for operations. The main missions of the aforementioned groups is assessing the status and operability of satellites and preparing proposals for their activation for obtaining data, as well as providing the information obtained (intelligence, meteorological, navigation and communication) to the army commanders of the various command and control echelons with recommendations for its use.

In order for the space support groups to be able to work effectively, specialized mobile posts for receiving and processing satellite information and transmitting it in a form that is suitable for the consumer will be required. When creating operationally deployable satellites, the space support groups could plan their targeted use, the operational deployment of space-based systems and control the satellites that make up those systems. The space support groups would be one of the most promising directions toward eliminating the "gap" between the potential capabilities of satellites and their practical use in the troops.

***Third**. The improvement of navigation satellites*.

The widespread introduction of space navigation user equipment in the troops will allow us to increase the effectiveness of weapon systems drastically. Therefore, the introduction of user navigation terminals in the units and subunits is a mission of the utmost importance. As concerns the navigation satellites themselves, here we need to build up jamming resistance, providing them protection not just from "microwaves," but also from more powerful and complicated jamming equipment.

***Fourth**. The improvement of the capabilities of intelligence satellites*.

The experience of the Iraq war shows us that in order for an intelligence satellite to be able to distinguish between a wooden mock-up of a tank or an inflatable, metallic dummy target from a real one, there needs to be a shift toward spectrozonal systems, which allow for revealing certain characteristics based on an analysis of the target's subtle signatures. Intelligence satellites should be created that will not be seriously affected by sand storms, dust and smoke, or by cloudiness and precipitation.

***Fifth**. The creation of more up-to-date electronic warfare equipment*.

This most serious mission comes from the previous lesson. Electronic warfare equipment must be able to counter the use of precision weapons and disrupt the command and control of troops in combat. An integrated electronic warfare system, including the use of satellites, is one possible way to resolve this problem.

***Sixth**. The creation of antisatellite weapons.*

This is a completely natural conclusion to draw from the thesis of the increasing significance of space-based information support systems in increasing the effectiveness of troop operations. Antisatellite weapons could be based in a variety of ways, to include in space. We must note that the US Air Force is already dealing heavily with issues relating to monitoring outer space. They even created the 35-man Space Situational Awareness Initiative Office (SSAIO). It has been assigned the mission not only of simply monitoring outer space, but also of providing offensive and defensive countermeasures in space.

***Seventh**. The build-up of the orbital grouping*.

No space support groups or other tricks will be of any help at all if orbital resources are lacking. Consequently, a top priority is the need to bring the orbital grouping up to authorized levels, ensuring the normal use of existing satellites.

***Eighth**. The development of anticipatory scientific-technical groundwork.*

The measures cited above are actions to be taken today, which will require not only political will, but also a rather large sum of money. But in order to ensure that we are not "left behind" in the future, we need to intensify work on laying the scientific-technical groundwork for prospective satellite systems.

In conclusion I would like to note that at this time in the press there is much discussion about the problems of a militarized outer space. In particular, in "Nezavisimoye Voyennoye Obozreniye" (2003, No. 19) we find the article "Does Russia Need a Fourth Branch of the Armed Forces?" in which the author, Doctor of Technical Sciences, Colonel Baskakov, shares his thoughts on the growing role of space-based weapons under present-day conditions, and reviews various options for the organizational structure of the space component of Russia's Armed Forces and offers his vision on its role and place. He offers some rather convincing arguments in favor of the creation of a new branch within the Armed Forces -- the Missile and Space Forces, which would include the Military Space Forces, the Missile and Space Defense Forces, and the Strategic Rocket Forces [Raketnye Sily Strategicheskogo Naznacheniya].

Not all of the author's arguments and proposals are inarguable, but of one point he makes there can be no doubt -- the growing role of satellites in armed combat requires that the government and the Ministry of Defense pay more attention to and intensify activities directed toward improving the organizational structure of the space formations, as well as toward the search for new forms and methods for conducting combat operations, taking the contribution and capabilities of the space component into account.

President of the Russian Federation Academy of Military Sciences, General of the Army M. L. Gareyev.

The need to review the results of the Iraq war is brought about by the fact that a wide variety of speculation, conjecture and disinformation is emerging in this regard. In addition, the war in Iraq, being the continuation of the events in the US on 11 September 2001, and the war in Afghanistan, marked ever more clearly the sharp turn in the United States' policy toward diktat in international affairs and gave rise to the problems associated with that, which require their own new sort of comprehension.

Military-Political Conclusions

The American-British coalition, far from having exhausted all of the possibilities for a political settlement, to include the potential of the UN, launched its war in Iraq under the pretext of Saddam Husayn's concealment of weapons of mass destruction. But from the very beginning it was clear to everybody that their main goals were oil, a solution to economic problems that had arisen of late, and the further strengthening of the US geopolitical positions in the world. In particular, the mission was set to eliminate all undesirable regimes, "to instill order throughout the world," and to establish a new world order under the aegis of the US. For all intents and purposes what is occurring is a new post-"Cold War" redistribution of the world, and most importantly its energy resources. Not just individual political activists, political scientists and journalists, but also responsible state officials are saying that next in line after Iraq will be Syria, Iran, North Korea, Cuba and Belarus.

Under such conditions some rather influential people in Russia believe that our country has no way out other than to go along with everything that has anything to do with this expansionist policy and to participate in all military actions to bury other "undemocratic" states. In doing so they fail to consider the following: what will happen with our country from a moral and international legal perspective, as well as to the protection of its national interests, if we find ourselves in a permanent state of war with all countries that someone might find undesirable?

As we know, Russian Federation President V. V. Putin with regard to the Iraq war took a position of principle. He said the following with complete justification: "If we allow the rule of brute force to substitute the rule of international law, whereby the strong are always right, can do anything, and are unrestricted in the ways in which they decide to achieve their goals, then one of the fundamental principles of international law will come into question: the principle of the inviolability of a sovereign state. And if that happens, no country will ever be able to feel secure."

Such a position facilitates strengthening Russia's international authority, uniting the forces of the global community that are in favor of the equitable relations of sovereign states, and the resolution of contradictions emerging in the world through peaceful political means. But this sensible policy is being attacked. There is a growing chorus of voices that are saying that by not supporting the American-English aggression in Iraq,

Russia has committed a mistake, believing that no matter what we need to ally ourselves with the likely victor. Indeed, Sergey Karaganov writes: "...So far there has been no visible trend that would indicate a future weakening of the US... Recognizing this means one thing: to have friendly relations with the US as a rule is beneficial, and to oppose it, as a rule, is not." Of course being friends is always more beneficial than being hostile, but that does not depend solely on us.

Incidentally, in 1941, Great Britain and the US, led by Churchill and Roosevelt, did not take sides with Hitler who it seemed would be the victor, but rather they supported the USSR -- the victim of aggression, and in many ways that determined the fate of all of mankind. Even in our times we must not simply trudge along behind those forces who score a victory today. Under all circumstances, a far-sighted, just policy in the final tally will turn out to be the right policy.

Naturally we have to take into account the alignment of forces that has actually taken shape in the world. Behind the standard bearers of this expansionist policy and their apologists are some rather influential political and financial forces. They are creating powerful information centers in various countries, to include in Russia, and these "asses bearing gold" have penetrated not only the gates of Baghdad, but also many state and scientific organizations and the mass media.

In recent times a large-scale campaign of a pseudo-scientific and informational character has been launched for the purpose of vindicating and justifying this expansionist policy. What are we talking about here?

First of all, the Iraq war was proclaimed to be the presentation of a unipolar world and the burial of the multipolar world. It is believed that the UN has become obsolete and it must be replaced by some kind of world government. The founders of this "new world order" proceed on the notion that all countries must subordinate themselves to this global center and then there will be order in the world. The norms and rules of international life are being reconsidered. They are being tailored to suit the interests of those who are aspiring to global domination.

Secondly, the concept of "state sovereignty" is being declared outdated. In the opinion of certain political scientists, as a result of the struggle for national liberation, a large number of politically and economically bankrupt states have been formed. They give rise to crisis situations and destabilize the situation in the world. Indeed, S. Karaganov asserts that "it is global destabilization, along with, naturally, the desire to reinforce its power and position as a superpower, that is the main reason for America's actions in Iraq." Others believe that countries that are "developed democracies" are now acquiring the right to overthrow undesirable regimes in such states and to turn them into "true democracies" by force.

Thirdly, corresponding forms of ruling the conquered peoples are being developed. This year, Oxford University professor Niall Ferguson published his book, which was widely advertised throughout the world, "Empire. How Britain Made the Modern World," in

which he tries to prove that the British Empire was the most purposeful and civilized way to rule the rest of the peoples. After the collapse of the colonial system, the situation deteriorated. The book's author believes, as do some of his proponents in Russia, that "the most logical method for countering chaos and also the method most widely employed in the past is colonization... the possibilities and maybe even the need for colonization are no less now than they were at any time in the 19th century."

In order to satisfy all of this, attempts are being made to rewrite our entire history. In *Moskovskiy Komsomolets* (2003. No. 19) an article was published that was written by G. Popov, in which he writes about the battle to join the West in the Time of Troubles in the early 17th century. Others go even further and declare Minin and Pozharskiy to be reactionaries, who supposedly chased the Poles out for no reason and prevented a closer union with the West. On top of that there have also been various falsifications of the history of the Great Patriotic War.

Such is the "scientific justification" for the present day heavy-handed policy, which has as its goal the imposition of a the colonial ideology of capitulation. Meanwhile, that side does everything it can to avoid the question of how this new world policy could affect Russia. Naturally, our country must do everything possible not to enter into a confrontation with the US or with other countries, but rather to establish first and foremost cooperation with the developed states. At the same time we must be united with all social forces and countries that are in favor of a sensible, peace-loving policy, which rejects extremism in international affairs.

There can be no doubt that opposition to such a policy will continue to grow. For example, right now they are snubbing France for refusing to support the war with Iraq. They have talked so much about the democratization of international life -- and then suddenly one of the greatest powers is being refused the right to express its opinion. One can hardly reconcile oneself with such an approach. Yet in all of this there is no, nor should there be, any wholesale anti-Americanism. We have a great deal of respect for the American people and special reverence for the veterans of the Second World War who fought alongside us against fascism. While in the US in April of 2003, and having met with the veterans, we saw that they and an enormous mass of people spoke out against the war in Iraq and expressed their disagreement with the advocates of arbitrariness in international relations and their apologists.

And we can and must cooperate with the current US administration. V. V. Putin's summits with G. Bush in St. Petersburg, and the G-8 summit, and the NATO-Russia Council, EU-Russia -- it is desirable that these and other forms and structures be used to their utmost for expanding and deepening mutual understanding and defending Russia's interests.

But what are we supposed to do when, as has been the case in several instances, confrontation is artificially inflamed and imposed on us? For example, when the US maintains laws that restrict trade with Russia, when they oppose the Russian Federation's cooperation with Greece and Azerbaijan in the gas and oil industries, when

they plan the largest transfer of NATO troops to Russia's borders since the end of the Second World War, and so on and so forth.

We can reject the calls of political scientists such as Z. Brzezinski on the need to dismember Russia, by approaching them as an effort to publicize his books, even though in the past officials have listened to him on numerous occasions. We can explain the predictions and development of scenarios for war against Russia made by the "Rand Corporation" as the costs and peculiarities of professional scientific activities. In those scenarios they mention the following possible grounds for launching strikes against it: declines in Russia, which could hurt the interests of the US; actions by Russian troops in regions gripped by unrest; nuclear weapons storage safety and security violations and so forth. So, a pretext can always be found. The aforementioned scientific research organization exists partially on the state resources of the US Air Force. Let's suppose that this corporation is not developing concrete war plans. Even so, Deputy US Secretary of State John Bolton, accusing Russia of assisting Iran in carrying out its nuclear program, stated outright that US strikes could extend not only to any country connected with terrorism, but also states that are cooperating with Iran on its program for using nuclear materials for peaceful purposes.

However, it is a well known fact who financed and armed the Taliban in Afghanistan, who raised Bin Laden, who brought Saddam Husayn to power in Iraq, who outfitted him with chemical weapons and who encouraged him to go to war against Iran in the 80's of the last century. If you nurture terrorism on the state level and then decide to fight against it -- it will be a never-ending battle.

In addition, despite the apparent ease of the victories scored in Yugoslavia, Afghanistan and Iraq, the goal of establishing a "new world order" has not been achieved. Not only has the situation not stabilized as a result of such military actions, but some new severe problems have arisen. One of them -- the Kurdish problem -- could serve to explode the situation in Iraq, Iran, Syria and Turkey.

Throughout the entire 20th Century a strong suit of US state activities was its ability to create the most favorable foreign policy conditions for waging war and using its armed forces. It entered the First World War in 1917, when military operations were already coming to an end. In the Second World War, it began its decisive Normandy Operation in Europe in 1944, when the fate of fascist Germany had already been sealed. In the early 1950's, they succeeded in dragging the UN into the Korean War. Their only failure was in Vietnam. During the war against Iraq (1991), Yugoslavia, and Afghanistan, the majority of countries unequivocally supported America. In a political-diplomatic context, everything was arranged so that the armed forces would not have to exert themselves too much. In the war with Iraq in 2003, the US did not receive such unequivocal support even from the countries of NATO. That is why even in the American press they spoke about a serious misfire in foreign political and informational support for the military action in Iraq.

There is a saying: "There is no better way to spite another than to agree with everything he says." From this perspective, the calls of the apologists of American hegemony to please and support the US in everything run counter to the interests not only of the international community. By encouraging arbitrariness and adventurism in policy, in the long-term they are creating a dangerous future for the American people. And it is out of respect for America that honest people must say this without hesitation. After combat operations the US was forced to a certain extent to return to the inclusion of the UN and other countries in the post-war normalization of the situation in Iraq. It became clear that without Russia's participation it would be impossible to resolve all of the important international problems. It also shows that in the relations between Russia and the US (NATO), and between Russia and China there are not only contradictions, but also common interests requiring joint action. Such was the case during the Second World War, when the interests of combating fascism required that we put aside our differences and join forces to fight side-by-side.

In the current stage, Russia and the US have two areas that will objectively predetermine the potential need for close cooperation and partnership -- security and energy resources.

On the whole, in the interests of the international community the role of the UN and respect for its proclaimed principles must be restored and strengthened. The UN is not an abstract international organization. It consists of concrete countries, and it is on them and primarily on the policies of the permanent members of the Security Council that the role this organization will play in the life of the international community will depend. Then Russia, and France, and China will be able to participate more fully in the battle against terrorism, in peacekeeping operations, and in other actions in support of international security.

The Parties' Plans and their Execution

Some foreign and domestic experts predicted that as was the case in 1991, we should expect the American chain of command to conduct a lengthy air operation at the start of the war with the goal of demolishing and destroying the country's most important infrastructure facilities, military facilities, and state and military command and control centers. Such an operation apparently was indeed prepared as one of the possible options. But the situation unfolded in such a way that they decided to reject such a full-scale operation, although some of its elements were indeed carried out.

The reason for this, as some sources point out, is that prior to the start of the war, the American intelligence services held secret talks with Iraq's political and military officials, to include the presidential guard. However, the conditions set were unsatisfactory for one side or the other. Individual generals, who were under the control of their corresponding institutions, were afraid to act on their own traitorous intentions as long as it was possible that S. Husayn was still alive or until he settled his fate with the Americans himself.

Knowing this, the American chain of command strove to destroy the Iraqi leader as quickly as possible. We can presume that the first missile and bomb strikes, which in order to achieve surprise were conducted prior to the expiration of the ultimatum given to the Iraqi leadership, did not achieve their objective. Then massive air and sea-launched missile strikes had to be conducted against preplanned targets. Since they did not expect any serious resistance from the enemy, they simultaneously moved their ground troops onto Iraqi territory, and also conducted airborne landings and dropped special operations forces deep inside the country.

For their incursion onto the territory of Iraq they created three operations groups: the first in the south (3rd ID, 101st Airborne Division, 82nd Airborne Division, marine units and so forth); the second in the north (special forces, 173rd Airborne Brigade); and the third in the west (mainly special forces). The plan was to bring the overall manning up to 300 thousand men and 700 aircraft.

The Iraqi chain of command pinned their hopes primarily on the Arab countries and the UN succeeding in preventing the American invasion of the country's territory. In the event war should start, they planned to use their available air forces and air defense weapons when possible at least to repulse the attack of the enemy's aerial weapons, and most importantly -- to offer resistance to the enemy ground troops. Taking the experience of 1991 into account, when the defensive positions of the troops, armored equipment, and artillery guns were situated in the desert and were easily detected by the enemy, the decision was made to concentrate the bulk of their forces on defending the cities and other population centers, and to launch guerilla warfare against the enemy formations and units. However, the complete refusal to create defensive lines in the desert, especially on the approaches to Baghdad, can hardly be considered justified. With thorough camouflage combined with a large number of decoy targets and minefields, they could have played an important role in repulsing the invasion of the Anglo-American troops.

The military operations according to the plan for operation "Shock and Awe" began on March 20, 2003, with the launching of missile strikes against targets where it was believed S. Husayn was located, as well as against communications nodes and the command and control posts of the Iraqi Army. As a result, from the very beginning the command and control of the troops was disrupted to a significant extent. Nevertheless, until 7-9 April, the Iraqi Army (especially in the south) offered the American and English troops some rather stiff resistance.

In turn, the American troops, having as their objective to make their way to Baghdad as quickly as possible, as well as to make their way to the country's other important centers, while striving to avoid combat engagements with the Iraqi units and storming the large population centers, they went around the pockets of resistance. The defending enemy was blocked in, artillery fire was immediately called in, and strikes were conducted using tactical aviation helicopters and airplanes. Only after the complete destruction of the opposing side's forces and air defense weapons were further troop advances carried out, sweeps conducted and territory taken. Characteristically, the

cities of Umm-Qasr and Basrah were surrounded by English troops for the first week of military operations. Then, several times there were reports that they had been taken, but in reality there were no large numbers of people killed or prisoners taken. The combat operations were rather strange in other places as well.

As always, the American chain of command paid a great deal of attention to intelligence collection. Even prior to the start of the war, a broad net of intelligence agents was created. To a significant extent this mission was carried out illegally by certain members of the IAEA commission during their inspection of the territory of Iraq. A great deal of reliable data was acquired by spy satellites. However, the intelligence gathered was not always of the highest quality. Indeed, the Americans believed that with the start of coalition troops' military operations the Shiites would immediately rise up against the S. Husayn regime. However, reality showed that in a fight against a common threat to the country the religious differences would be put on the back burner. In addition, the weather conditions were not predicted with sufficient accuracy.

One of the goals of the American military action in Iraq was the testing of new models of weapons. Whereas in 1991 precision homing (guided) munitions were used in a comparatively limited fashion (of a total number of 227 thousand missiles, shells and bombs, 210 thousand were unguided), in 2003, about 85 percent of the munitions used were guided. The use of satellite guidance systems allowed for a significant increase in the number of airplanes capable of employing precision weapons. The creation of the GPS system [sic] had a decisive impact on the effectiveness of the employment of the weapons by the various branches of service. In addition, there were 60 satellites of various types in space that allowed for receiving information about the situation in the combat operations zone in a timely fashion.

The role of the Navy is growing, which conducted the largest number of precision strikes against Iraqi targets (in 1991 they employed approximately 282 Tomahawk precision cruise missiles, while in 2003 they used about 1000).

In the war with Iraq, they employed electromagnetic bombs as well, but they did not play a special role, since there was practically no Iraqi electronic equipment in operation.

Meanwhile, the intelligence collection assets performed superbly: spy satellites, spy helicopters, the E-8 JSTARS aircraft, the E-3 AWACS, tactical signals intelligence aircraft, artillery radar and instrumentation intelligence, special forces, artillery fire correction and forward aviation spotters. Night vision devices, satellite and other navigation devices on the whole provided reliable terrain orientation, sufficiently accurate artillery, bomb, air- and sea-launched missile guidance to the targets, day and night, in the most unfavorable weather conditions. The uninterrupted and timely command and control of the troops was facilitated by automated communications and data processing equipment.

However, even in this field not everything went smoothly. Instances such as when a landing was planned to take place in the Iraqi desert, but the landing party ended up in

a swamp on the territory of Iran, and when missiles launched at Baghdad fell on the territory of Turkey, or when on 27 March an A-10A ground attack fighter in conditions of bad visibility fired on its own column of armored equipment and then called in artillery fire on it (almost 50 men were killed and wounded), all speak for themselves. The destruction of an English airplane by an American surface-to-air missile system serves as evidence of the insufficient integration of the IFF system within NATO. All of this confirms the fact that even the most up-to-date equipment cannot take the place of man -- commander and soldier. Practically all of the branches of the US Armed Services depend to an enormous degree on satellite communication for targeting and orientation. It is this very thing that predetermines its vulnerability, since at any given moment it can be neutralized by taking appropriate jamming measures.

At the end of the war in Iraq, the Americans' overwhelming superiority in the air had a decisive influence. The attempts by the Iraqi chain of command to execute a troop maneuver in a threatened sector or to launch a counterattack were intercepted through timely detection and immediate destruction using artillery and aviation, linked to reconnaissance and strike complexes, with the use of precision, self-guided [smart] munitions.

Enormous losses were inflicted on the non-combatant population of Iraq. There were instances when bombs were dropped on markets, hospitals, hotels and other peaceful facilities, which speaks of more than just the insufficient "smartness" of the precision weapons. One gets the impression that in several instances peaceful facilities were consciously subjected to destruction for the purpose of striking fear in the hearts of the population and the troops, and to force them to capitulate as quickly as possible. Despite the existing ban on the use of cluster bombs, the American army continued to employ them, to include against housing sections of Baghdad, which resulted in the massive destruction of the population.

Some Conclusions from the Experience of Military Operations in Iraq

First, a clear overall diagram and sequence are appearing for executing political-diplomatic, economic, informational, psychological, military and other actions permeated by a single concept against undesirable states. In the example of Iraq we see that in the beginning such a country is declared to be a "rogue." Before starting the actual war (military operations), an economic blockade, political isolation, and purposeful information influence on the population are maintained for a long period of time, international public opinion is formed, sympathy and potential allies are neutralized, and measures are taken to weaken its military potential.

Not only did Iraq not have the ability to acquire new weapons, it was denied the right to purchase spare parts to repair and modernize the outdated arms and military equipment that it already had. That is why a significant portion of them were inoperative. After 1991, zones were established for Iraq in the north and south where it was forbidden to operate air defenses, against which periodic bomb strikes were carried out.

On the whole, such powerful political, economic and psychological pressure was put on the people and the armed forces that they could not even think about any kind of resistance. And then they conducted missile and bomb strikes in order to break their will to resist once and for all. It would be worthwhile for other countries that intend to stand up for their sovereignty to take a lesson from this.

Russian Federation Minister of Defense S. B. Ivanov addressed how this relates to Russia's security when he spoke at the general assembly of the Academy of Military Sciences on January 18, 2003. "Let's face it," he said, "a war against Russia is ongoing and has been ongoing for more than a year now. Nobody declared this war. There is no one specific state that is in a state of war with Russia. But there are some people, organizations in many countries, that have been taking part in conducting hostile actions against the Russian Federation."

Second, from the perspective of the development of the art of war, the experience of the war in Iraq does not allow us to draw any far-reaching conclusions, since there was no serious war with a strong enemy. It was a politically acute and technologically powerful state's harsh treatment of a country that was obviously weak in all regards, which was betrayed by its very own rulers. What kind of war is it when a grouping of troops, aviation at airfields, and the headquarters of the attacking side are outside the range of influence of the enemy? The Iraqi air defenses and aviation were paralyzed. After 9 April, when Baghdad was surrendered without a fight, the military operations for all intents and purposes came to an end. Under such conditions it is difficult to say to what extent the American command and control system, weapons or strategy and tactics stood up to the test of combat.

But even in such a simplified situation, which looked more like a one-sided exercise than a war, there were plenty of problems in the coalition grouping with the command and control of forces and weapons with their dispersed operations along wide fronts, with recognizing their own troops, with the accuracy of guiding the artillery, tactical aviation and helicopters to the targets, and interactions between the various branches of arms. The armored equipment turned out to be insufficiently equipped for operations in the desert. Even in such a comparatively limited war they had to expend a larger amount of ammunition and GSM [fuel and lubricants] than they planned.

Judging from certain episodes, the operations of the 3rd ID did not fully justify the division's organizational structure, which consists of 10-12 battalions without a regimental echelon. In operations involving a great deal of maneuvering across wide fronts with the assignment of battle subunits to protect the lines of communication, command and control becomes substantially more difficult. Brigade commanders, without their own logistics and technical support organs, cannot reinforce in a timely fashion or fully replace the regimental echelon.

In spite of all of this, on the whole there can be no doubt about the enormous technological superiority of the American military and the significance of its fine-tuned, technologically well-equipped command and control system. The assertions of some of

our critics to the effect that the **Iraq war** dispelled the myth about the role of precision weapons in high-tech warfare, about the professionalism of the American military, that not a single mission was accomplished on time among other things, do not stand up in the face of what actually happened.

The American military's strongest aspect is that all of its branches of service are equipped with long-range precision weapons, which allows them in many cases to conduct "contactless" combat operations. In addition to great losses, this causes the opposing side to have a feeling of helplessness and doom, which weakens his will to resist. For the defending side there are two main ways it can react to such frightening superiority: first -- to concentrate decisively its financial and military-technical efforts on the creation of its own long-range precision weapons, and second -- to draw the enemy into the very thing he is trying to avoid, namely active, decisive contact operations.

Third, the predictions and far-fetched premature conclusions of some so-called "experts" and "great specialists" in the field of future wars turned out to be incorrect. As should have been expected, not every war must necessarily begin with lengthy air operations. As was the case in Iraq, the situation could demand other kinds of operations. Of course, despite the idle conjecture, there still exist in theory and in reality such objective phenomena and concepts as an operation (battle), strategic deployment, maneuver, regrouping, offense and defense, concentrating the main efforts in decisive sectors and much more. But the conditions, forms and methods for their execution are changing significantly.

In combat training we must take more fully into account the specifics of the operations of troops in the zones of armed conflicts and antiterrorist operations: there must be more variety and more flexible ways to set up battle formations; the creation of tactical groups must be practiced; the subunits' and units' readiness for independent, maneuver-intensive raid operations must be increased, the tactic of operational maneuver groups must be revived; greater attention must be devoted to providing reliable protection for lines of communication, command and control posts, and logistics units. In accordance with this, the organizational structure of the troops must be clarified, in particular, formations must be created that are capable of operating in the capacity of an operational maneuver group [OMG]. All of this must be more fully reflected in the combat manuals.

Also maintaining their significance are the ground troops, which in the US, NATO and PRC are widely equipped with precision and other new types of weapons. The premature statements made by certain experts and journalists to the effect that non-stop missile and bomb strikes over the course of three weeks for all intents and purposes had wiped Iraq's regular armed forces divisions, as well as the state's infrastructure, from the face of the Earth were not borne out, neither by the number of servicemen killed or wounded, nor by the remnants of equipment taken out of commission. The discussions to the effect that the ground troops are not worth destroying with a precision gun, and that after the life-support and military command and control systems are destroyed they would fall apart and flee on their own simply

appear trivial. Back in 1991, during the first war in the Persian Gulf zone, it was clear that without inserting ground troops the United States' Iraq problem would remain unresolved. In 2003, objective necessity forced them to use their ground troops for the occupation of Iraq from the very outset of the war.

Fourth, the experience of the war in Iraq refutes the heavily propagandized thesis heard throughout Russia that the very essence of the reformation of the Russian military must lie in equipping it only for combating terrorism and that no other defensive missions ahead of that will arise. The NATO members themselves are not following that path. Clearly the strategic nuclear forces, aircraft carriers, large groupings of American ground troops that are supposed to be transferred to the east and southeast are not just intended for use against terrorists.

Nor should we oversimplify the problem of the fight against terrorism, portraying it only as operations conducted by small subunits against armed bandits. The experience of Afghanistan and certain other states shows that terrorist organizations and regimes, having thousands of tanks and guns, and hundreds of airplanes, are capable of capturing whole countries and establishing their authority there. Combating such large terrorist formations requires well-equipped regular troops.

In addition, in all seriousness, it is clear to any person with common sense that there are many other threats to Russia that result in defensive missions. This requires that we have powerful, multifaceted Armed Forces, which must systematically and persistently train to accomplish a variety of strategic and operational-tactical missions.

Fifth, it is becoming clear that some are twisting the truth and engaging in all kinds of intriguing speculation and statements with regard to the 200 thousand-man professional army beating Iraq's million-man army, and that in Iraq the Soviet and Russian military system suffered defeat. Some lightweight "experts" are declaring that the European (German, French and Russian) military school has died, which for centuries was the arbiter of military thought, and that now only one, specifically the American military system has a future, and all must bow to it. I ask you: which of the tenets of Soviet and Russian military science and the art of war did not stand up to the test of the Iraq war? Could it be that they have in mind surrendering the country's capital or other cities without a fight on the enemy's first approach as was the case, for example, in Singapore (1942), Tobruk (June 1943), or Baghdad (2003)? The whole world knows how Moscow, Leningrad and Sevastopol were defended. And even in our times the 6th Airborne Company in Chechnya showed how one must defend one's positions. Is it really true that in Iraq they destroyed bridges and other structures, created minefields on the enemy's path of movement, set up barricades, dug ditches, set up tank obstacles and ambushes in the cities, and the people desperately fought for every house, every floor, as was the case in Stalingrad? There were individual elements of such resistance that took place in the defense of Umm-Qasr and Basrah, but in Baghdad and other cities they surrendered their positions without a fight. This was done contrary to the Russian canons of waging armed combat.

So, if we proceed on actual facts and not conjecture, everything that happened in Iraq serves as evidence of just how vital the fundamentals of Russian military science and the art of war are. But such a military school requires will and decisiveness from the leadership, the people and the army until the battle for the Fatherland is done, and it requires an enormous amount of moral strength from the warriors. But as experience has shown, not all are up to the task. That is why it is deceptive to draw premature conclusions that supposedly all peoples and armies can be broken so easily based on the experience of the Iraq war.

As concerns Russia, the patriotism of the people and the army have saved it in times of trouble on more than one occasion. However, this priceless source of combat might must not be limitlessly exploited without constantly building up human potential. This is even more true since in Russia certain ultra-liberal "avangardists" do not hesitate in the least to make some rather cynical declarations in this regard. A certain Maksim Glikin, recalling his own service in the army, states the following: "If foreign aggressors were to have appeared, we would have dropped our automatics and changed into civilian clothing while the enemy was still far away from our troop unit" . Even our military journalists who are upset at what is going on are beginning to assert that the "epoch of massive heroism, let's admit it, is a thing of the past. History has taken such a turn that we now live in a different country. It isn't the same one that defended Stalingrad. Something has been lost, and it can never be reclaimed" . Of course, one would very much like to hope that this is not true, and that possibly all is not lost yet.

There is also much to be learned from the Americans, especially their national egotism, political pragmatism, high level of technology, their ability to wage information and psychological warfare to a high degree of perfection, and to equip their servicemen and organize a system of everyday material support in field conditions. Of course, it would be nice if the Russian Army had the same observation and communication equipment, but this would require corresponding financing, which is being hindered primarily by those who offer us the example of other armies. Nor would it be a sin to take a look at how the American press services work with representatives of the mass media, how they strictly limit everything that does not serve the interests of the operation, for example, how they prohibit showing American prisoners of war or the remains of those killed, or even sloppily dressed soldiers on television.

Even when we are talking about bribery we must not fail to take into account that even in this the overwhelming American might, enormous political, psychological and military pressure had an effect. Had force been less prevalent and had there been a real chance of successfully opposing an invasion, it could be that the Iraqi leaders would not have resorted to a policy of appeasement so easily.

In principle, apparently there is nothing shameful in bribing those officials who would resort to that. Even more so since there is nothing new here, for this has existed for hundreds of years now. But why are some of our journalists and experts so offended at real live "underhanded bribery," and why did Tommy Franks' admissions cause such irritation in some American circles? The effort to conceal or not to advertise the bribery

and treason of Iraqi leaders was brought about by the desire to portray this as a high level of military artistry. But those who more or less have an understanding of military affairs aren't buying that.

Therefore, from the perspective of the interests of developing the art of war it is simply irrational to dismiss the wealth of military experience of such countries as Russia, Germany and France. It is the common property of all mankind. That is why the cooperation of Russia, China and other countries with the US and NATO presupposes the mutual exchange of and mutual enrichment through experience and military-scientific knowledge. Disdain for the military experience of other countries and tailoring everything to American and NATO standards will only lead to the degradation of military affairs.

In connection with the upcoming 60th anniversary of the victory over fascism, I would like to remind you yet again that the objectively imminent common threats facing the US, Russia and other countries yet again demands absolute cooperation and a joining of efforts.

Such, in our view, are some of the objective lessons of the Iraq war.

Head of the Center of Military Forecasting, Colonel A. D. Tsyganok, Military Sciences Doctoral Candidate

Objectives and Missions Assigned by the US Government

The main objective is to establish a base of operations in the Middle East.

The military objective is to destroy Iraq's armed forces, and subsequently to leave behind occupation troops and set up bases; to test the network centric concept for combat operations and troop transfers, as well as the reliability of the combat command and control systems and the logistical transport system.

The political objective is to deny the enemies of the United States control over the Middle East's oil reserves; to establish an occupation regime, under which democratic institutions of civil authority will be established.

The geopolitical objective is to decrease the influence of the primary European countries and the Russian Federation on the countries of the Middle East.

The technical objective is to perform massive testing in real combat conditions on new components of the missile defense system, combat equipment and weapons.

The Course of Combat Operations

We can divide the war into three stages.

The first stage -- the initial stage, which was characterized by the staunch defense of every large city by two Iraqi army corps. Over the course of two weeks, the troops of the US and Great Britain could not take a single sufficiently large city (Basrah, An Najaf, An Nasiriyah and so forth) with complete superiority in space, the air and with radar monitoring of the country's entire territory.

The second stage -- the so-called "strange defense of Baghdad." The city, which is operationally predisposed to urban combat (the presence of a wide river, 12 bridges, prepared tunnels under the river, radial city blocks suitable for defense) did nothing in its own defense and was taken by American troops with the strange disappearance of the Iraqi army.

The final stage -- when four Iraqi corps surrendered to American troops over the course of a week. The most characteristic event of this period was the surrender of the Western Army Corps to one American battalion.

The war in Iraq began on March 20, at 5:30 in the morning, when two F-117A fighters, which took off from El-Udeid Air Base (Qatar), launched an attack on a small house in Baghdad. The strike was conducted using "Joint Direct Attack Munitions" bombs using satellite navigation systems.

The first strike against S. Husayn missed its target. Analysts believed that Iraq's military and political leadership would be built according to the "network" principle, which was first approved in 1991 in Iraq, and then employed in 1999 in Yugoslavia. At its foundation is the constant movement of the highest political and military leadership around a network of command posts and bunkers. All correspondence would only be via secure communications channels. Concentrations of more than two key leaders in one place at the same time would be prohibited.

Immediately after the strike, the US ground forces formations and units went to war. However, actual combat operations did not unfold as planned. First of all, the morale of the Iraqis turned out to be higher than believed and there were no mass surrenders. Secondly, the popular uprising against S. Husayn in the south did not happen. Thirdly, the Iraqi chain of command chose the only right tactic -- taking up a defense in well fortified population centers and not engaging in battle with the coalition troops on open terrain. Fourthly, the Iraqis created a decentralized command and control system, nullifying the allies' attempts to destroy it. Fifthly, contactless warfare did not work out, and the Americans actually suffered losses, and on top of that, guerilla warfare began.

Nor could the English troops take Basrah on the move. They encountered a competently built system of defensive structures, and a multitude of swamps and salt marshes, crisscrossed by a large number of channels, which became impassable when the water levels rose. In the first two weeks of battles, despite non-stop missile and bomb strikes, the allies did not achieve any visible successes. The cities of Basrah, An Nasiriyah, An Najaf, and Karbala remained in the hands of the Iraqis.

There were also some miscalculations. Indeed, the US and Great Britain overestimated the capabilities of precision weapons as the decisive factor in the war, which would allow them to achieve the assigned missions without contact with the enemy in the course of the air and ground operation. If we were to analyze previous wars over the last 15 years, we would note that the decisive factor was not the military defeat of the armed forces of the defending army, but the political isolation of its leaders. Such was the case in Iraq in 1991, in Yugoslavia in 1999, and in Afghanistan in 2001. Indeed, the accuracy of the cruise missiles amounted to 62 percent. The myth about the complete superiority of the new weapons and the inability of weapons of the previous generation to effectively withstand the 25-30 year technological gap was dispelled, while traditional forms and methods of combat operations were used in a rather weak fashion.

However, the power of the air strikes was amazing. On the night of 21-22 March alone, 12 series of missile and aviation strikes were carried out against Iraqi targets. In just one night the number of sea- and air-launched cruise missiles launched was three times greater than the number launched throughout the entire 1991 Gulf War. On the whole, if we were to compare it with Operation Desert Storm, in 43 days 283 precision Tomahawk cruise missiles were used, but in the current war in just 15 days they launched somewhere around 1000 Tomahawk cruise missiles and several thousand smart bombs.

A serious underestimation of the enemy's forces, by approximately 40 percent, forced the US government to begin the immediate deployment of a 120-thousand-man reinforcement to Iraq. Something else that caused nervousness among the military chain of command was the absence of a second front due to the uncooperative position of Turkey and Jordan's refusal to offer more than 5 airfields of the 35 that it has.

On the whole, analyzing the battles of the initial period, we should recognize that the Iraqi chain of command was relatively successful in conducting the first phase, making competent use of its strong positions in the psychological war.

Analysts believe the following to be the reasons why this phase was so drawn out: the superficial approach to the first strike on Baghdad, which eliminated the element of surprise; the elements of adventurism with which the operation began; the underestimation of the enemy's forces, his capabilities and readiness for fierce resistance and the transition to guerilla warfare; the idealization of combat operations with the use of precision weapons and the weak use of traditional forms; the rift between the Pentagon and the White House; the participation in urban battles foisted upon them by the Iraqi command; the loss of the Columbia, which in the opinion of American experts reduced their capability to uncover the country's military and political leadership system by 38 percent.

A characteristic feature of the operations of the Iraqi air defenses during air raids was the simultaneous shutdown of all of the Americans' intelligence radars and the powering up of more than 300 radar sources -- false targets -- across their entire territory.

Over the course of the first weeks of combat operations, neither their airborne intelligence, nor their signals intelligence, nor their spy satellites were able to reveal the defenses and air defense command and control network.

The number of casualties suffered by the American and Iraqi armed forces have been concealed by official propaganda. Meanwhile, on some days (03/22), Medevac helicopters performed up to 30 flights, which is evidence that the casualties were significantly greater than were reported. Direct confirmation of serious losses was the immediate deployment of the hospital ship "Comfort" to the combat operations area to the Fao Peninsula.

Due to dust storms, on 25-26 March, the American troops' offensive for all intents and purposes came to a grinding halt. In some divisions (3rd ID) during the storm more than 100 armored personnel carriers broke down. Breakdowns in the M1A2 "Abrams" tank engines when they became completely packed with sand were the scourge of the tank operators. The advantages of the thermal imaging equipment installed on the tanks were practically nullified. Their visibility did not exceed 300 meters in column march, and up to 700-800 meters at the halt. Only on cold nights did visibility reach 1000-1500 meters. That is why the chain of command was forced to issue the order not to move

combat equipment at night under conditions that would lend themselves to coming in contact with the enemy.

Of special concern during the first two weeks was the enormous overexpenditure of precision guided munitions and cruise missiles. Their expenditure rate was not commensurate with the results achieved. "We are literally shooting gold into the dirt!" declared General Richard Myers at a meeting in the Pentagon. "It was enough for the enemy to show minimal fortitude and shrewdness for our technological superiority to swiftly lose its value. Our expenditures are not paying for themselves in results. The enemy, with weapons of an order less expensive and more accessible is accomplishing the very missions that we have spent billions on the technical whims of the weapons corporations to accomplish!" stated another general, Stanley McChrystal.

Another no less important problem that the Americans resolved in the course of the entire campaign was the interaction of the ground units with the various branches of arms. Under conditions whereby the time for making a decision on fire for effect is taken down to a bare minimum, and the intelligence assets allow for detecting the enemy at rather great distances that preclude visual identification, friendly fire incidents became the scourge of contemporary warfare. Everyday, as analysts point out, the coalition troops fired on their own units and subunits.

All analysts and observers are unanimous on one thing -- the second half of the war turned out to be strange, starting with the so-called "defense of Baghdad" and ending with searches for the main evidence for this war -- weapons of mass destruction, which they just could not find.

Where do the specialists agree, and where are questions raised?

S. Husayn's troops (according to the data of the London Institute for Strategic Studies) numbered about one million men, but in the battles (and only in the initial period at that) in reality only one corps out of seven actually participated. Why? Where was the bulk of Iraq's aviation? The suggestion has been made that most of it flew to Iran. Why was there not one single flight of an aircraft or a volley from a multiple rocket launcher throughout the entire initial period of the war? Why were the majority of the tanks, armored personnel carriers and artillery not activated?

Apparently there was no plan to defend the capital either. Basrah, Mosul, Kirkuk, and An Nasiriyah were all defended for three weeks, but Baghdad surrendered without a fight. No elementary protective measures were even taken to defend Baghdad -- no bridges were blown up, no obstacles were set up in the streets, no lines of defense were set up, it was an all-out surrender. Throughout the entire war no power stations were destroyed, no bridges, no oil wells. That is even though Saddam Husayn had many opportunities on more than one occasion to do so during the three weeks of the war.

Operational Camouflage, Concealment and Deception Lessons

The preparations for and execution of combat operations in the Persian Gulf zone provided a mass of factual material and displayed both positive aspects as well as deficiencies in the planning, organization and practical execution of operational support measures. Even now a preliminary analysis of available information has shown that both sides devoted rapt attention to issues concerning operational camouflage, concealment and deception.

First and foremost we should note what both sides had in common, what was characteristic of both sides. Both Iraq and the US counted on the measures for insuring the concealment of troop operations and deceiving the enemy being highly effective. They built their operational plans proceeding on the mandatory achievement of the goals of operational camouflage, concealment and deception.

For the US and Great Britain those goals were: concealing the scales and timeframes for the strategic regrouping of troops in the Persian Gulf zone, deceiving the Iraqi leadership as to the timeframes for the operation, and ensuring the surprise of the first strike and the actions in the ground phase of the operation.

For Iraq the goals of operational camouflage, concealment and deception consisted of the creation of conditions for maintaining their ability to wage combat, increasing survivability, and deceiving the enemy as to the degree of damage inflicted to the armed forces' combat potential.

The concept of operational camouflage, concealment and deception for both sides stipulated carrying out a whole series of measures that require large amounts of forces and expenditures. Both Iraq and the US did a great deal of preparatory work, including the implementation of disinformation programs, building up camouflage and concealment resources and so forth. The CC&D measures were augmented by strict measures to preclude information leaks, as well as to reveal, suppress and destroy intelligence organizations and assets. Not only did they conceal the facilities themselves, but they also covered up all of traces of their activities.

The procedures for and features of the execution of specific measures should be reviewed within the dynamics of the development of the situation in the region.

In the course of the deployment of the US grouping in the conflict zone, operational CC&D measures were taken according to the special plan of the US Armed Services Joint Chiefs of Staff, coordinated with the organs of state command and control under the direct supervision of Secretary of Defense D. Rumsfeld.

With the start of operation "Iraqi Freedom," the American chain of command, making extensive use of the mass media, began spreading knowingly false information about the Armed Services' preparations. Important disinformation measures were executed in

the first half of February of 2003, during the intensive build-up of the grouping of American troops.

Through all channels they broadcast knowingly inflated figures for the live forces and equipment deployed to the region (for example the presence of the 4th Infantry Division in Turkey), which forced the Iraqi military command to hold two corps in the north in expectation of a strike from the north.

For the purpose of misleading the enemy and the global community as to the true goals and timeframes of the operation, a special group of journalists was created, who underwent background checks for their loyalty and promised only to report in mainstream publications and on television only those events that were beneficial for the US.

Starting in the second half of January of 2003, in addition to instituting an information limitation regime (all information was released in small doses only through the Central Command press center), they began to disseminate false reports about their intentions, strength and manning of the units deployed to the conflict zone. The primary emphasis in operational CC&D was on ensuring surprise for the first strike. Therefore, strike measures were instituted to keep information about the planned actions secret.

In the US troops they devoted a great deal of attention to measures for ensuring the secrecy of troop command and control. For secret exchanges of information between units, subunits and crews they used the DMS system (Defense Message System), which operates on the basis of the Pentagon's global multimedia network DISN (Defense Information System Network).

The operational CC&D measures taken by the Iraqi army primarily differed in their heavy emphasis on engineering measures.

In order to deceive the enemy, the Iraqi military command made extensive use of simulation measures involving the use of industrial decoys with a high degree of detail. For this they used Italian fiberglass decoys and inflatable decoys from British firms, as well as from other firms. We should note that even with their high cost, for each decoy is estimated to cost around 30-40 thousand dollars, their effect went a long way to covering their cost. According to one of the US officer pilots, he did not know what he dropped a bomb on, a tank or a decoy: "...we're dumping gold on the ground."

Iraq devoted a special place in its overall set of measures for deceiving the enemy to the task of saving its Scud missile launchers. For the purpose of ensuring the survival of their mobile missile launchers they employed the tactic of taking up their launch positions at night at a distance of several kilometers away from their camouflaged underground shelters and then returning to them quickly after launching, thereby denying airborne and space-based reconnaissance platforms the ability to get a fix on the launcher's location.

Coalition Forces' Strong Points

First. The presence of the joint information-command and control system and the high level of saturation of the troops with the most up-to-date intelligence, communication and targeting equipment, which allowed them to detect the enemy with sufficient effectiveness and at great distances and to organize the interaction of the various branches of arms in a very short period of time for fire suppression.

Second. On the whole the American soldiers displayed a sufficiently high level of fortitude. In extremely difficult weather conditions the troops did not experience a breakdown in command and control, the soldiers assessed the situation adequately, and their fighting spirit was sufficiently high. The majority of soldiers remain confident in their forces, believe in the superiority of their weapons and are convinced of that the war being waged is just.

The Coalition's Weak Points

First. The overestimation of their air mobility forces' capabilities. The massive use of helicopters as a separate branch of arms did not work out. All attempts by the American chain of command to organize the air and ground operation forces using air mobility units ended in failure. That is why just four days into the war the air mobility units were distributed throughout the grouping and included in the make-up of the offensive groups as reconnaissance and fire support subunits. The greatest load was on the "heavy" mechanized and tank units.

Second. The extremely weak logistical support. Despite the presence of a new logistical support system, there were still serious interruptions in fuel deliveries. At times the tank units sat with empty fuel tanks for up to 6 hours, essentially making them targets for the Iraqis. The delivery of food, water, ammunition, fuel and lubricants became a headache for the American commanders. Also noted was massive dissatisfaction among the soldiers with the quality of the new army MRE's.

Iraq's Strong and Weak Points

Among the Iraqis' strong points we can include their outstanding knowledge of the terrain; the high level of engineering preparation of their defenses; their ability to camouflage and conceal their primary strike weapons; their fortitude and perseverance in defense in the initial stage of the war.

Among their deficiencies we can include the bureaucratic "inflexibility" of the military chain of command, whereby all decisions are made only by the supreme commander; the somewhat "stereotyped" manner in which the combined arms commanders conducted combat operations; and the insufficient interaction between the various branches of arms. Meanwhile we must highlight as a positive aspect the special

operations forces' chain of command, which skillfully and competently employed its forces and weapons and waged widespread guerilla combat operations in the enemy's rear.

Strategic Lessons of the War for Russia

The main lesson is the complete dependency of all of the weapons (air- and sea-launched cruise missiles, airplanes, helicopters, fire support, tanks, multiple rocket launchers) on navigational support.

For the Russian Army we need to deploy our own space grouping with the naval, air and ground components linked with it, which will be capable of providing navigation data to the naval, air and ground elements, as well as to the nuclear deterrence weapons, as well as navigation systems on the operational and tactical echelons.

There is now a need for substantiating and introducing into operation a new operational support system -- a navigation system that at this time the Russian Army lacks.

The second lesson is the strategic significance of the VVS [Air Forces] as the most important branch of the armed forces in modern day warfare. Only the coalition's complete supremacy in the air allowed it to achieve a decisive superiority in forces in any battle.

The third lesson is the importance of saturating the combat ranks with powerful precision guided munitions, capable of destroying armored enemy targets at maximum distances. A new tactical battlefield weapons complex is needed that is capable of spotting the enemy at maximum range, day and night, that will destroy modern combat tanks at average distances of 800-1000 meters, and will ensure the destruction of the enemy's infantry with bullet and shrapnel at distances of 300 to 500 meters, despite its having individual protective equipment.

The fourth lesson is the ever increasing importance of camouflage, concealment, deception and secrecy as one of the main forms of combat support. Under conditions whereby precision guided munitions are used, camouflage, concealment and deception and adhering to a regime of secrecy will become a strategic mission of the defending troops.